



Annual Review of MTA Sponsored Pension & Retirement Funds

As of December 31, 2018



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Executive Summary

MTA Sponsored Pension Plans on solid footing

- Complex Plans that are conservatively administered (i.e. ADC, Return Assumption, Amortization)
- MTA Defined Benefit Plan: \$4.1 billion, 78.2% Funded
- LIRR Additional Plan: \$951.3 million, 64.6% Funded
- MaBSTOA: \$2.9 billion, 79.4% Funded
- Combined pension plans assets under management grew 0.67% year over year
- OPEB Trust: \$351.4 million

Extreme weak performance in Q4 of 2018 erased all of 2018 market gains

- The Plans are designed to perform equal to or better than a traditional 60% Equity / 40% Bond benchmark over time, while demonstrating less volatility (risk)
- For 2018:
 - MTA Defined Benefit Plan, LIRR Additional Plan returned -2.6% (net)
 - MaBSTOA returned -2.3% (net)
 - OPEB Trust returned -5.1% (net)
- Underperformance driven by financial markets turbulence in fourth quarter of 2018
- Portfolio remains conservatively managed, with 60% less volatility (risk) than the market benchmark
- 2019 YTD returns as of March 31, 2019:
 - MTA Defined Benefit Plan, LIRR Additional Plan returned +6.6% (net)
 - MaBSTOA returned +6.5% (net)
 - OPEB Trust returned +8.3% (net)

MTA Deferred Compensation Plan (401k/457)

- Ended year at \$6.2 billion in assets and 54,070 active participants
- Year over year assets under management fell by 0.5%
- Participation rate 72.7% amongst highest in public plan peer group
- Plan design and investment lineup continually developed to enhance participant experience



Overview – MTA Sponsored and Multi-Employer Plans

Pension Plan	# of Active Members ³	2018 Pension Contributions - Actual (\$ mm)	2018 Pension Cost - Adopted Budget (\$ mm) ^{1,2}	Assets (as of 12/31/18)
MTA Sponsored Defined Benefit Plans				
MTA DB Plan	18,631	\$332	\$339	\$4.1 billion
MaBSTOA	8,686	203	213	2.9 billion
LIRR Additional Plan ⁵	84	59	60	\$951.3 million
Total	27,401	\$594	\$612	\$7.95 billion
MTA Sponsored Defined Contribution Plans				
MTA Deferred Compensation Program (401k & 457)	53,291	\$0	\$0	\$6.2 billion
MNR 401(k)	495	3	3	
TCU/HQ 401(k)	284	<1	<1	
Total	54,070	\$4	\$4	\$6.2 billion
Other Multi Employer Plans				
NYCERS	37,061	\$807	\$819	
NYSLRS	1,121	15	18	
Voluntary Defined Contribution (Tier 6 option)	147	<1	<1	
Railroad Retirement Board (RRB, Tier II expense only) ⁴	N/A	162	182	
Total	N/A	\$985	\$1,020	
Total Pension & Retirement Contributions / Expenses		\$1,583	\$1,636	

Notes:

1) The Budget figures are per the 2019 February Financial Plan (February Financial Plan 2019-2022)

2) Financial Plan estimates may differ from the Actuarial Certification since Agencies may anticipate hires, terminations and transfers. These changes could occur after the date used by the Actuary to determine the valuation results.

3) Number of active members are based on the latest actuarial valuations.

4) MNR and LIRR employees are in RRB. MNR employees are participants in either the MTADBPP or the MNR 401 (k) Plan. LIRR employees are enrolled in the MTADBPP with a small closed group in the LIRR Additional Plan.

5) Participants in the LIRR Additional Plan also receive part of their retiree benefit from the MTADBPP and are reflected in the MTADBPP as well.



Market Overview & Outlook

Equity Markets were negative for the year

- Global equity experienced steep selloff during the fourth quarter, driving 2018 calendar year returns negative
- The S&P 500's decade-long winning streak came to an end, returning -13.5% in the fourth quarter and -4.4% in 2018
- Small cap stock experienced a more significant selloff, returning -20.2% in the fourth quarter and -11.0% for 2018
- International markets were also negative in 2018, with MSCI EAFE returning -13.8%
- In line with the rest of the world, emerging markets were also negative, with the MSCI EM Index returning -14.6%

Fixed Income was mixed for the year

- Risky assets underperformed safe assets
- In the US, the Aggregate Bond Index returned 0.0% with Treasuries and Mortgages outperforming US Investment Grade Credit
- High yield underperformed safe assets as spreads widened in the fourth quarter, returning -4.5% in 2018

Outlook for 2019

- Market dynamics shifted in 2018, with Fed policy and US-China trade tensions coming to prominence
- US economy has entered a late-cycle market environment; this transition is likely accompanied by a more risk-adverse investment outlook as economic risks become more pronounced
- Safe-haven fixed income exposure is an essential asset class exposure as the potential for an adverse economic outcome appears to have expanded
- Emerging market equity and debt remain attractive from a total return perspective



MTA Sponsored Plans – Asset Allocation (12/31/18)

	MTA DB & MaBSTOA Target Allocation	MTA DB Actual	MaBSTOA Actual	MTA OPEB Target Allocation	MTA OPEB Actual
Equities	33.0%	28.8%	28.7%	35.0%	38.7%
<i>Domestic Equity</i>	15.0%	14.4%	14.2%		
<i>Large Cap</i>	10.0%	9.4%	9.2%		
<i>Small Cap</i>	5.0%	4.9%	5.0%		
<i>International Equity</i>	18.0%	14.4%	14.4%		
<i>Developed Markets</i>	13.0%	11.6%	11.6%		
<i>Emerging Markets</i>	5.0%	2.8%	2.9%		
Fixed Income	16.0%	15.3%	14.3%	18.0%	17.0%
Global Asset Allocation*	15.0%	14.2%	14.0%	30.0%	28.5%
Absolute Return	14.0%	13.0%	14.5%	12.0%	9.6%
Real Assets	4.0%	5.4%	5.0%	5.0%	4.0%
Real Estate	5.0%	5.1%	4.5%		
Opportunistic	6.0%	9.6%	10.2%		
Private Equity	7.0%	5.0%	5.5%		
Cash**	0.0%	3.6%	3.3%	0.0%	2.2%

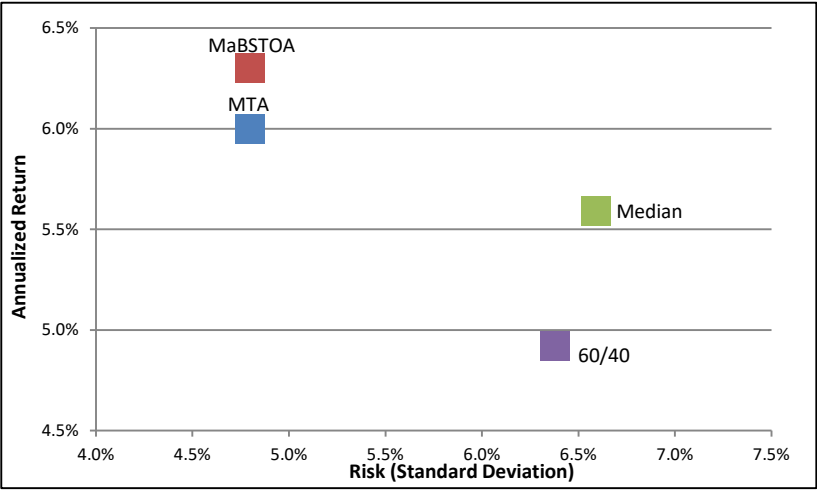
* Global Asset Allocation Managers may invest across various liquid asset classes including stocks, bonds and commodities

** MTA DB and MaBSTOA utilize an overlay manager (Parametric Clifton) in an effort to ensure that cash remains invested

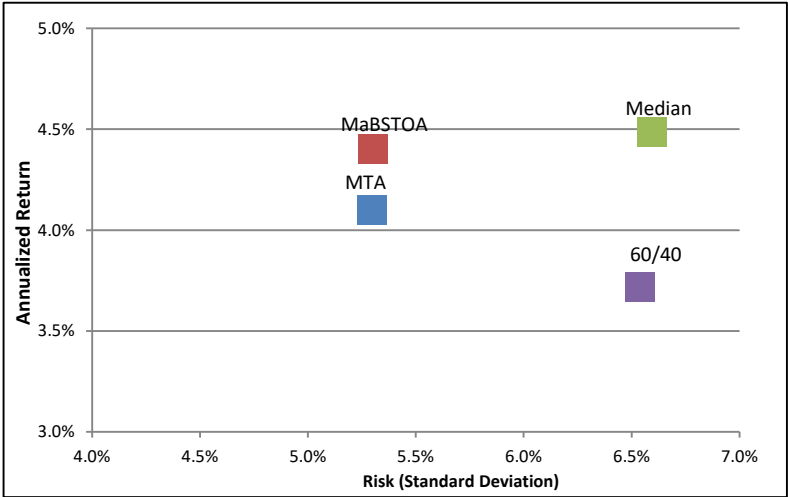


MTA Sponsored Plans – Historical Performance

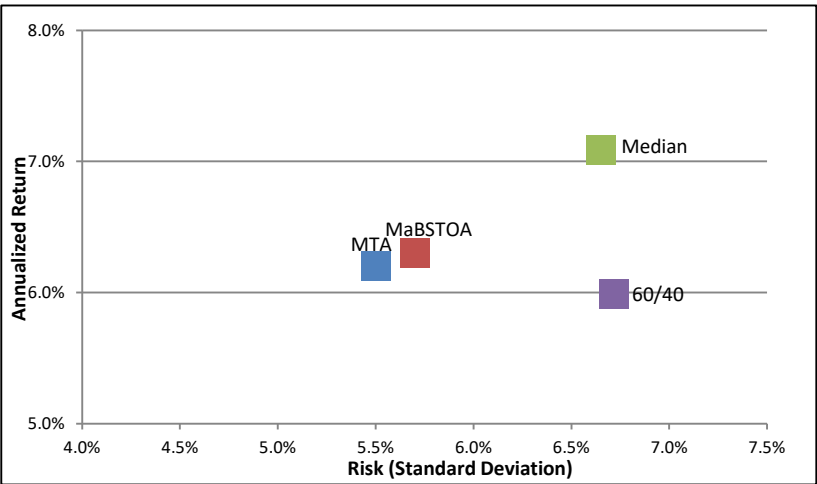
3 Year Risk-Return Chart



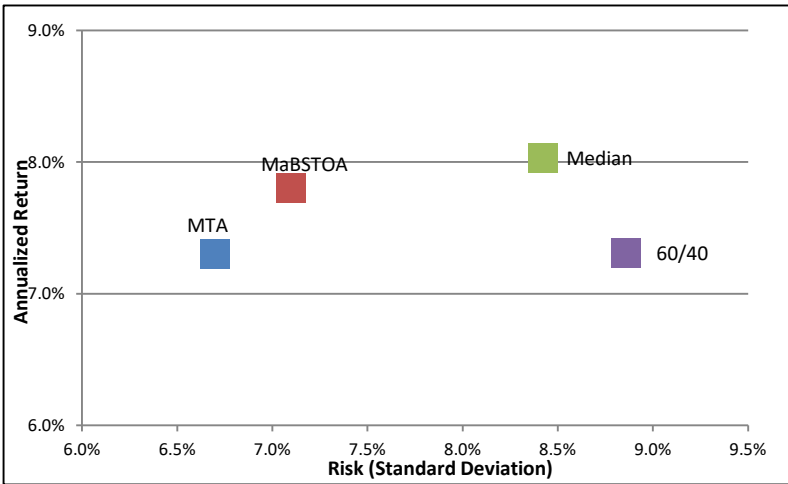
5 Year Risk-Return Chart



7 Year Risk-Return Chart



10 Year Risk-Return Chart



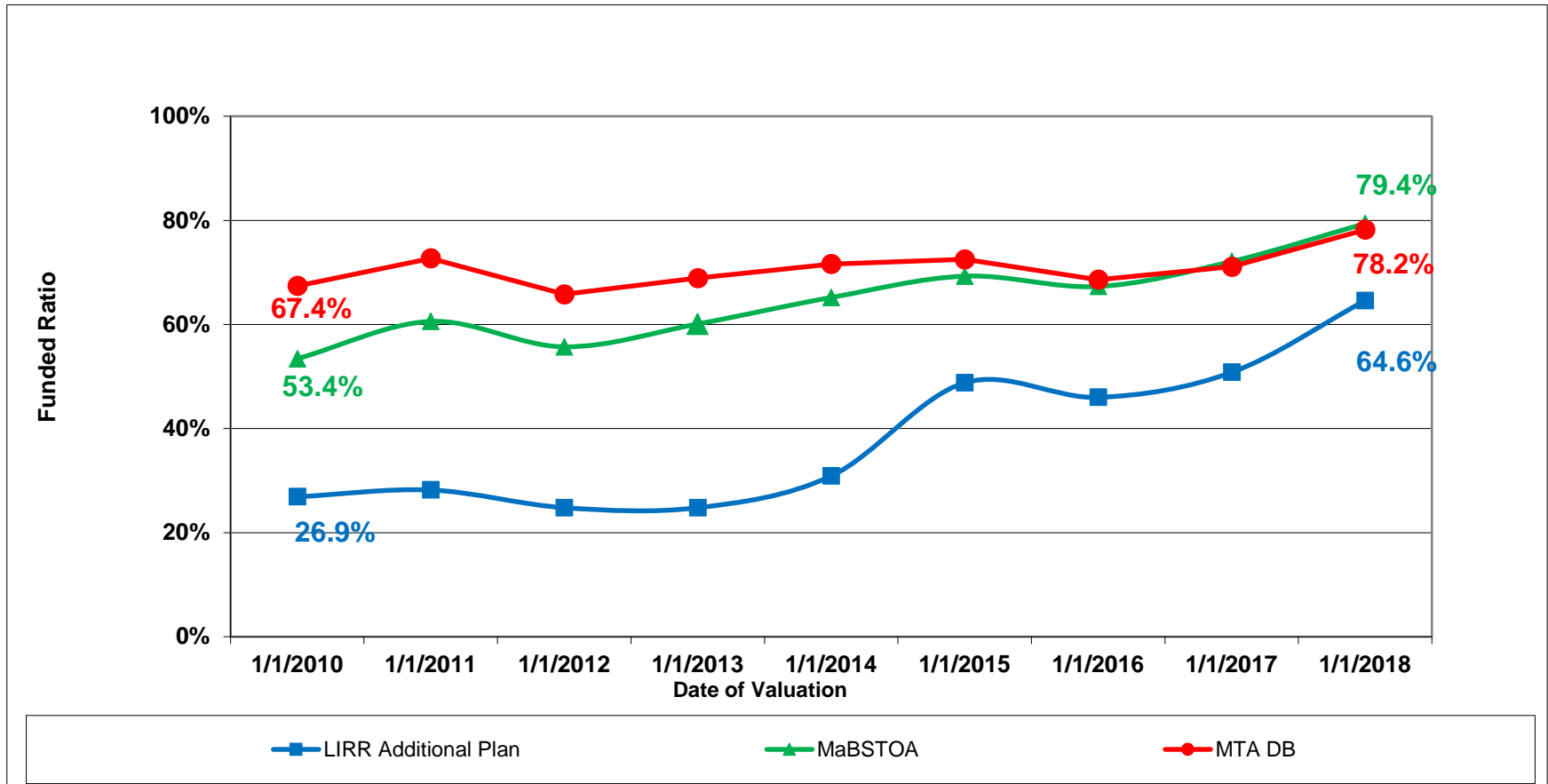


MTA Sponsored Plans – Investment Rate Return Assumptions

	Investment Rate (net of fees)						
	2012	2013	2014	2015	2016	2017	2018
Pension Plan							
LIRR - Additional Plan	8.0%	7.5%	7.0%	7.0%	7.0%	7.0%	7.0%
MaBSTOA	8.0%	7.5%	7.0%	7.0%	7.0%	7.0%	7.0%
MTA DB Plan	8.0%	7.5%	7.0%	7.0%	7.0%	7.0%	7.0%
NYSLERS				7.5%	7.5%	7.0%	7.0%
NYCERS				7.0%	7.0%	7.0%	7.0%



MTA Sponsored Plans – Funding Status



	1/1/2010	1/1/2011	1/1/2012	1/1/2013	1/1/2014	1/1/2015	1/1/2016	1/1/2017	1/1/2018
LIRR Additional Plan	26.9	28.2	24.8	24.8	30.9	48.8	46.0	50.8	64.6
MaBSTOA	53.4	60.6	55.7	60.1	65.2	69.3	67.3	72.1	79.4
MTA DB	67.4	72.7	65.8	68.9	71.6	72.5	68.6	71.1	78.2



MTA Sponsored Plans – MWBE Participation

New England Pension Consultants (NEPC) Diversity Advisory Committee

- In the interest of promoting equal access to all who seek to provide financial services to the MTA sponsored defined benefit plans, the MaBSTOA Investment Committee and the MTA Defined Benefit Pension Plan Board of Managers of Pensions has directed its investment advisor, NEPC, to review whether minority-owned and women-owned investment management firms are qualified in connection with every investment manager search that the investment advisor performs.
- NEPC has an in-house committee that is tasked with identifying emerging managers across all asset classes
- NEPC's committee is made up of 14 consultant and research professionals
- The goals of the Committee include:
 - Proactively expand selection and recommendation of MWDBE Managers
 - Identify top-tier firms across all asset classes (public/alternatives)
 - Maintain a database of viable emerging managers
 - Thought leadership in emerging manager research
 - Increase utilization of emerging managers within our client's portfolio



MTA Sponsored Plans – MWBE Participation

As of December 31, 2018

Executive Summary

Combined Plans

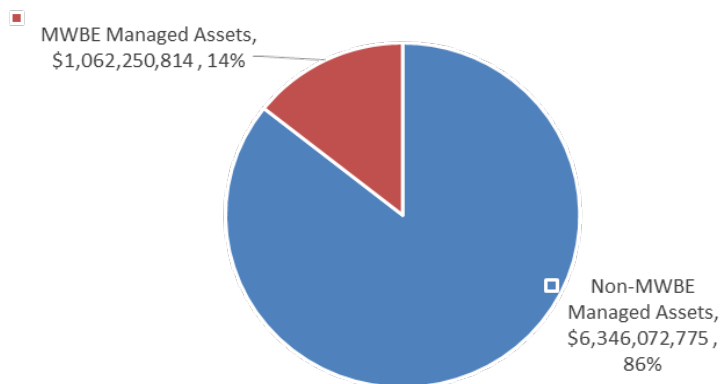
- Total assets managed by MWBEs: \$1.062 billion; or 14% of total assets
- Majority of assets are in traditional asset classes
- Traditional assets managed by MWBEs: \$984 million; or 21% of traditional assets
 - MWBE firms manage
 - 53% of US Equities
 - 31% of Real Estate
 - 27% of Non-US Equities
 - 9% of Fixed Income
 - 1% of Opportunistic
- Alternative Investments managed by MWBE's: \$77.7 million; or 3% of alternative investments
- Continue to actively source new relationships and investment managers
 - Engaged with investment consultants, industry groups, custodians, and brokers



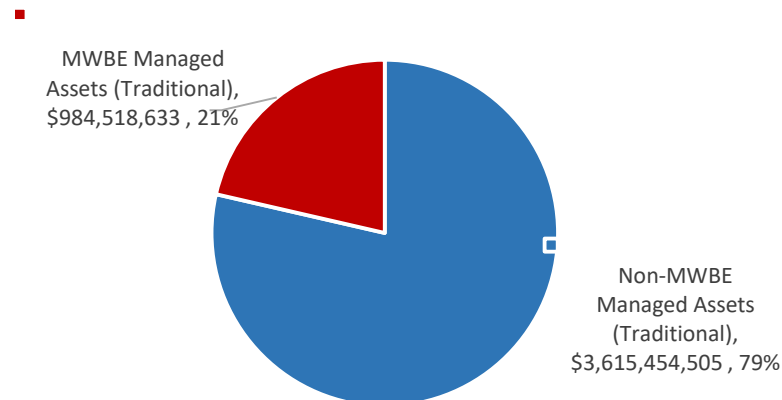
MTA Sponsored Plans – MWBE Participation

As of December 31, 2018

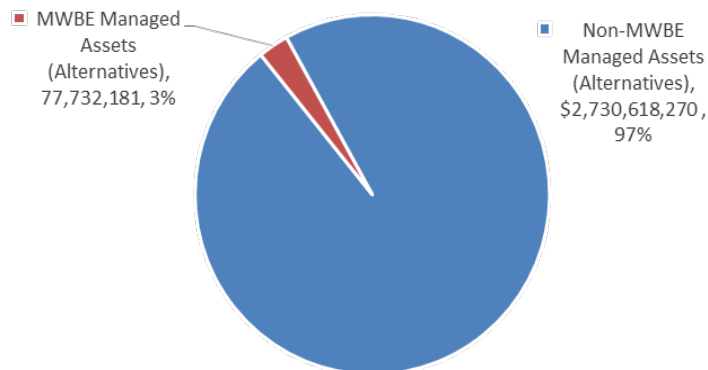
Combined Plans - Total Assets



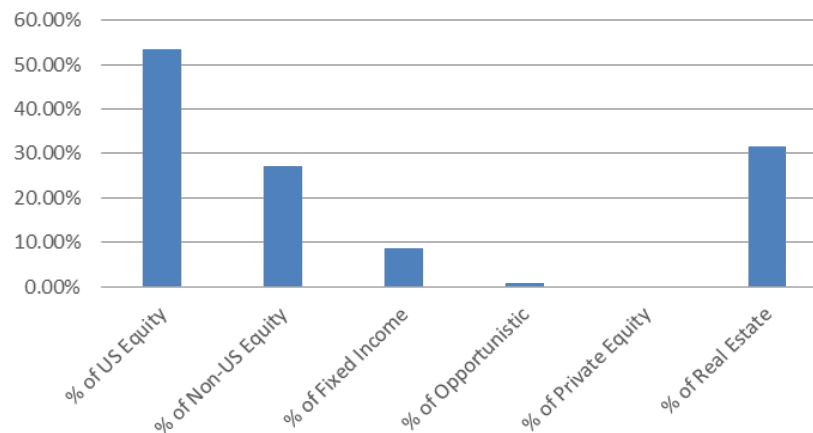
Combined Plans - Traditional Investments



Combined Plans- Alternative Investments



MWBE Managed Assets by Asset Class





Appendix



MTA Defined Benefit Pension Plan LIRR Plan for Additional Plan Pension Board of Managers

MEMBER

Chairman of the MTA

MTA Labor Relations

MTA Chief Financial Officer

Metro North

Long Island Railroad

SIRTOA

MTA Bus

Long Island Bus

TWU Representative

DESIGNEE

Margaret Connor

Chair of Pension Board of
Managers

Richard Cairns

David Keller

James McGovern

Michael Reilly

VACANT

Roy Grey-Stewart

Patrick McCoy

Peter Rosconi

MTA TITLE

Sr. Dir. of Human Resources and
Retirement Programs

Deputy Dir. Labor Counsel, HQ
Acting Director of Mgmt & Budget
Controller, MNR
Controller, LIRR

Director of Finance, MTA Bus
Director, MTA Finance

MTA Chief Investment Officer
Investment Advisor
Actuary
Trustee

Recruiting
NEPC, LLC
Milliman, USA
J P Morgan Chase



MaBSTOA Pension Plan Investment Committee

MEMBER

Chairman of Employer's (MaBSTOA)
Board

MTA Chief Financial Officer

President of Transit Authority

TWU Local 100 (2 representatives)

DESIGNEE

Margaret Connor

Joseph Cornwall

William Vazoulas

James Whalen

Richard Davis

MTA TITLE

Sr. Dir. of Human Resources and
Retirement Programs

Asst Comptroller, Ben Plans

Controller, NYCT

MTA Chief Investment Officer

Investment Advisor

Actuary

Trustee

Recruiting

NEPC, LLC

Milliman, USA

J P Morgan Chase



MTA Retiree Welfare Benefits Plan Other Post Employment Benefits (OPEB) Board of Managers

MEMBER

Chairman of the MTA

MTA Chief Financial Officer
MTA Labor Relations

DESIGNEE

Robert Foran, Chair of Welfare
Benefits Plan
Josiane Codio
Margaret Connor

MTA TITLE

Chief Financial Officer

Director, MTA Treasury
Sr. Dir. of Human Resources and
Retirement Programs

MTA Chief Investment Officer
Investment Advisor
Actuary
Trustee

Recruiting
NEPC, LLC
Milliman, USA
J P Morgan Chase



MTA Deferred Compensation Programs (401K and 457)

Deferred Compensation Committee

MEMBER

Chairman of the MTA

MTA Labor Relations

MTA Chief Financial Officer

NYCT, President

TBTA, President

Metro North

Long Island Railroad

MTA Bus

MTA Capital Construction

DESIGNEE

Margaret Connor, Chair

Richard Cairns

Frances Chou

James Masella

VACANT

James McGovern

Michael Reilly

Roy Grey-Stewart

VACANT

MTA TITLE

Sr. Dir. of Human Resources and Retirement Programs

Deputy Dir Labor Counsel, HQ

Assistant Director, MTA Budget

AVP, NYCT Employee Benefits

Controller, MNR

Controller, LIRR

Director of Finance, MTA Bus

MTA Chief Investment Officer
Investment Advisor
Recordkeeper

Recruiting
Mercer
Prudential



MTA Defined Benefit Plan Investment Managers

*MWBE
Investment
Manager

Asset Class	Investment Manager	Asset Class	Investment Manager
Large Cap Equity	Independent Franchise Partners* Lazard Rhumbline*	Opportunistic Investments	Carlyle Crescent Entrust Gramercy MC Seamax VWH Partners Orchard Landmark Orchard Taiga Park Square Perella Weinberg PIMCO Riverstone
Small Cap Equity	Atlanta Capital Pzena Earnest Partners*		
International Equity	Blackrock Johnston* Sanderson	Global Asset Allocation	Bridgewater Mellon PIMCO Wellington
Emerging Market Equity	Eaton Vance Lazard		
Fixed Income	Advent* Baird GAM SSgA Vanguard Wellington	Private Equity	AEA Apollo Brookfield Crescent Gamut Goldman Sachs JFL Equity Partners Lexington Lightyear Capital Newbury Equity Partners One Rock* Pantheon
Absolute Return	Allianz BeaconLight Bridgewater Canyon LibreMax Makuria Passport Senator	Real Estate	JP Morgan Real Estate Siguler Guff
Real Assets	Arclight EIG NGP Rhumbline* Wellington	Overlay	Clifton Parametric
		Cash	Williams Capital* JP Morgan



MaBSTOA Defined Benefit Plan Investment Managers

*MWBE
Investment
Manager

Asset Class	Investment Manager	Asset Class	Investment Manager
Large Cap Equity	Independent Franchise Partners* Lazard Rhumbline*	Opportunistic Investments	Carlyle Crescent Entrust Gramercy MC Seamax Orchard Landmark Orchard Taiga Park Square Perella Weinberg PIMCO Riverstone VWH Partners
Small Cap Equity	Times Square Pzena		Bridgewater Mellon PIMCO Wellington
International Equity	Blackrock Johnston* Sanderson	Global Asset Allocation	
Emerging Market Equity	Eaton Vance Lazard	Private Equity	AEA Apollo Brookfield Crescent Gamut Goldman Sachs JFL Equity Partners Lexington Lightyear Capital Newbury Equity Partners One Rock* Pantheon
Fixed Income	Advent* Baird GAM SSgA Vanguard Wellington		
Absolute Return	Allianz BeaconLight Bridgewater Canyon LibreMax Makuria Passport Senator	Real Estate	JP Morgan Real Estate Siguler Guff UBS
Real Assets	Arclight EIG NGP Rhumbline* Wellington	Overlay	Clifton Parametric
		Cash	Williams Capital* JP Morgan



MTA OPEB— Investment Managers

Asset Class	Investment Manager	Asset Class	Investment Manager
Global Equity	Artisan	Global Asset Allocation	Bridgewater
	Hexavest		PIMCO
	Walter Scott		Wellington
Fixed Income	Baird	Absolute Return	Allianz
	GAM		Bridgewater
	Wellington	Real Assets	Wellington
	Vanguard TIPS		



MTA Defined Contribution Plan – Investment Managers

Asset Class	Investment Manager		Asset Allocation Funds
	Active	Passive	
Stable Value	Galliard		MTA Income
			MTA 2015
Fixed Income	Loomis Sayles TCW Wellington	SSgA	MTA 2020
			MTA 2025
			MTA 2030
			MTA 2035
			MTA 2040
Large Cap Equity	T Rowe Price Jennison	Vanguard	MTA 2045
			MTA 2050
			MTA 2055
			MTA 2060
			MTA 2065
Small/Mid Cap Equity	AllianceBernstein Dimensional Jackson Square William Blair	SSgA	
International Equity	William Blair Mondrian	SSgA	
Real Assets		SSgA	