

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
10 CORPORATE WOODS DRIVE, ALBANY NY

Risk Committee Meeting

A meeting of the Risk Committee of the Retirement Board of the New York State Teachers' Retirement System was held at the System on July 31, 2024.

The following individuals were in attendance:

Committee Members: Ruth Mahoney (via WebEx), Oliver Robinson, Nicholas Smirensky

Board Members: Juliet Benaquisto, Phyllis Harrington, Eric Iberger, David Keefe (via WebEx)

Risk Committee Advisors: Sean Atkinson, Peter Cosgrove, Steven Huber

NYSTRS' Staff: Thomas Lee, Don Ampansiri, Matt Tice, Matt Albano, John Rosenburg, Ryan Ranado, Rick Jensen

Visitors: Anin Kofi-Addo, Omni Research Associates
Via WebEx: Cyril Espanol; Alexandra Paradowski, Wisconsin Legislative Bureau; Mitchell King, Alvaro Carrillo and Christopher Albanese - Black Rock

The meeting was called to order by R. Mahoney, Chair at 8:30 a.m.

The following items were discussed:

1. Approval of the minutes of April 24, 2024

Upon motion of N. Smirensky, seconded by O. Robinson and unanimously carried, the meetings minutes of the April 24, 2024 were approved.

2. Compliance Update

M. Albano and M. Tice presented the compliance update (Appendix A, pp. 3-4).

3. Investment Risk Update and KRI Dashboard

R. Ranado presented the investment risk update and reviewed the KRI dashboard (Appendix B, pp. 5-16).

Upon motion of O. Robinson, seconded by N. Smirensky and unanimously carried, the Committee went into Executive Session at 8:38 a.m. to discuss personnel matters.

With unanimous consent, the meeting came out of Executive Session at 8:50 a.m. There being no further business, the Committee unanimously adjourned at 8:50 a.m.

Respectfully submitted,

A large black rectangular redaction box covering the signature of the person submitting the document.

Thomas K. Lee



Enterprise Risk and Compliance Update

Risk Management

Risk Committee: July 31, 2024

Matthew Albano, CFA, Chief Risk Officer

Matthew Tice, Director of Enterprise Risk

Regulatory Items Requiring Board Action

July Meeting	Regulatory Item	Owner
	Adoption of the Annual Employer Contribution Rate	Actuary
	Signatory Approval	Finance
	Annual Investment Asset Allocation	Executive
October Meeting	Regulatory Item	Owner
	External Auditor Report	Finance
	Approval of the IPM	Executive

Period of **April** Through **June**: All **50** required regulatory items due were completed by departments



Investment Risk Update

Risk Management

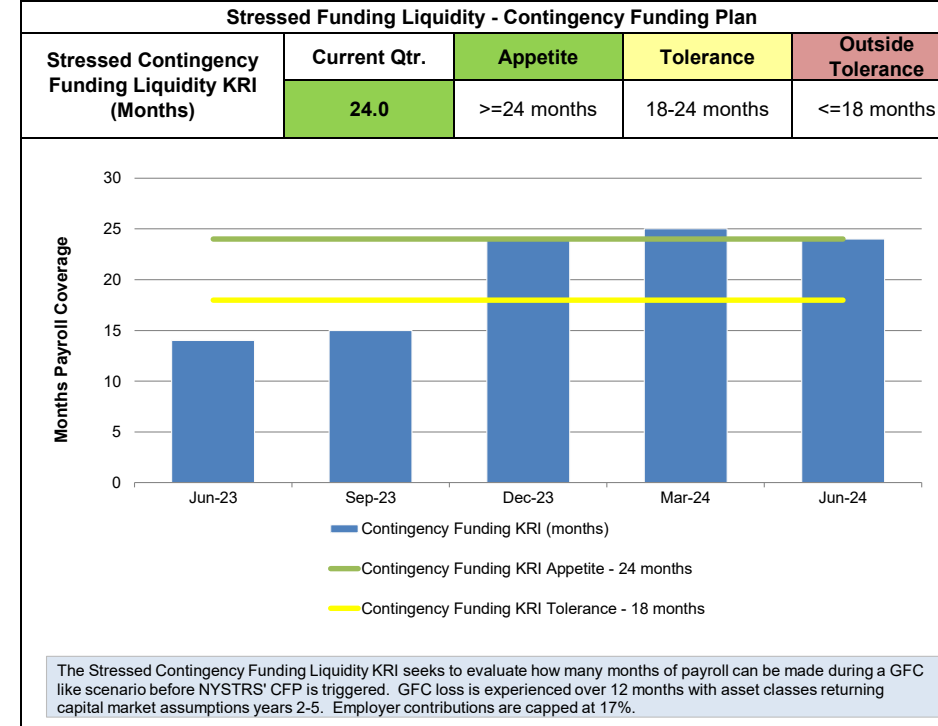
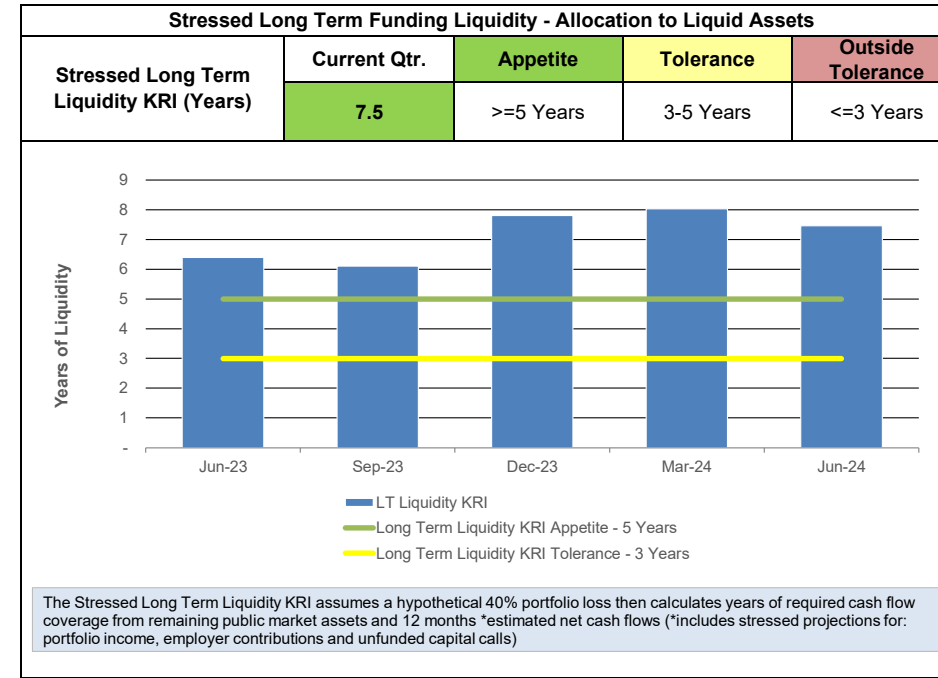
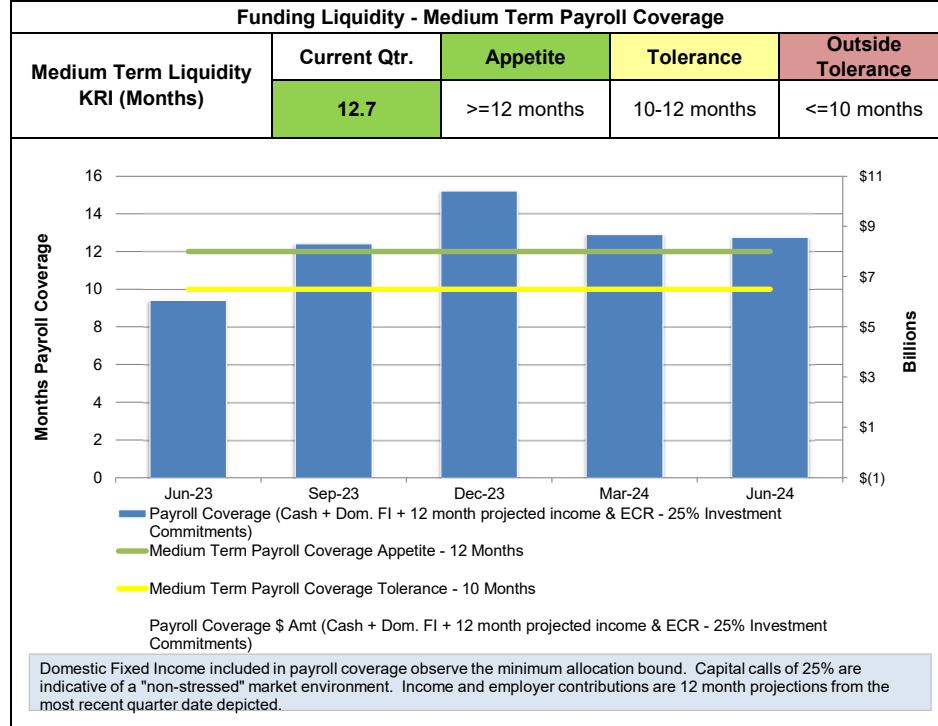
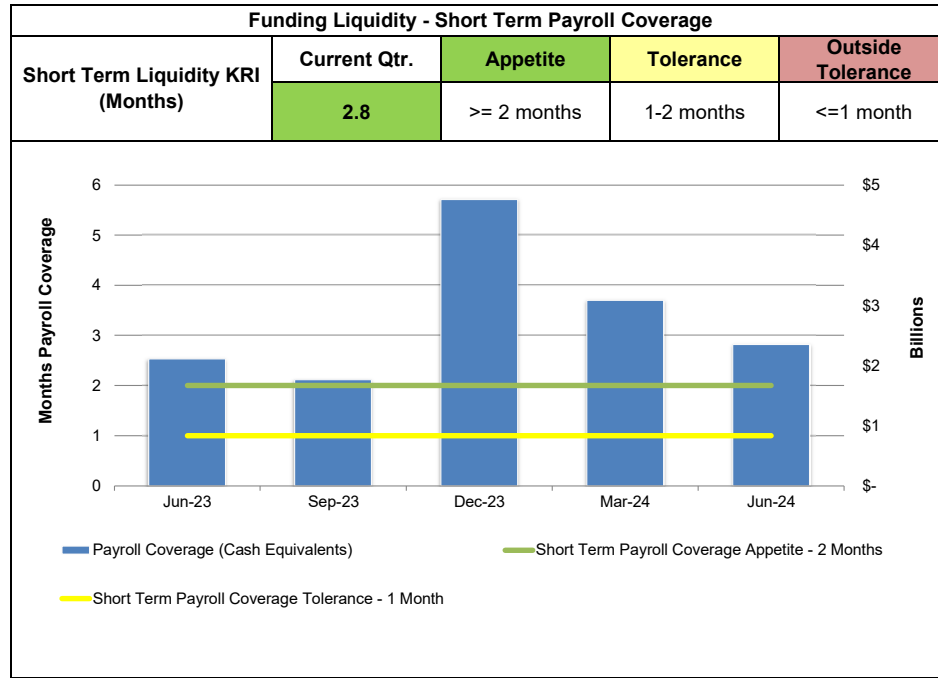
Risk Committee: July 31, 2024

Matthew Albano, CFA, Chief Risk Officer

Ryan Ranado, CFA, Assistant Director of Investment Risk Management

Investment Risk - Key Risk Indicators				
Updates: <ul style="list-style-type: none"> All Liquidity KRI's remain within our "Risk Appetite". Funded Ratio and ECR KRI's are now updated as of 6/30/2023 and remain within our "Risk Appetite". Staff continues to work towards target asset allocation levels. Total Plan Risk continues on a downward trajectory towards pre-covid levels. 				
Key Risk Indicator	Outside Tolerance	Risk Tolerance	Risk Appetite	Current Assessment
Asset Allocation (Market Risk Management)	One or More Asset Classes Out of Bounds	One or More Asset Classes Outside of Policy During Transition Period	All Asset Classes within Policy Range	All Asset Classes within Policy Range
Net Benefit Payments as % of Assets (Liquidity)	>10%	>5 - 10%	<= 5%	4.40%
Short Term Liquidity (Liquidity)	<= 1 Month	1 - 2 Months	>= 2 Months	2.8 Months
Medium Term Liquidity (Liquidity)	<= 10 Months	10 - 12 Months	>= 12 Months	12.7 Months
Stressed Contingency Funding Liquidity (Liquidity)	<= 18 Months	18 - 24 Months	>= 24 Months	24 Months
Stressed Long Term Liquidity (Liquidity)	<= 3 Years	3 - 5 Years	>= 5 Years	7.5 Years
Funded Ratio: Market Value of Total Plan Assets (Unfunded Liability)*	<80% or >120%	80 - 90% or 110 - 120%	90 - 110%	98.6% (6/30/2023)
ECR Volatility (Unfunded Liability)*	Δ +/- >3%	Δ +/- 2 - 3%	Δ +/- 2%	0.35% (6/30/2023)
ECR Level (Unfunded Liability)*	<4% or >17%	4 - 6% or 12 - 17%	6 - 12%	10.11% (6/30/2023)
Actuarial Valuation: Periodic Full Scope Audit (Valuation Process)	Replicated Liabilities >4% of NYSTRS' Calculation	Replicated Liabilities 1 - 4% of NYSTRS' Calculation	Replicated Liabilities <=1% of NYSTRS' Calculation	0.04% (4/16/2019)
Actuarial Valuation: Annual Independent Review (Valuation Process)	Adverse Opinion	Modified Opinion	Unmodified Opinion	Unmodified Opinion (10/26/2023)

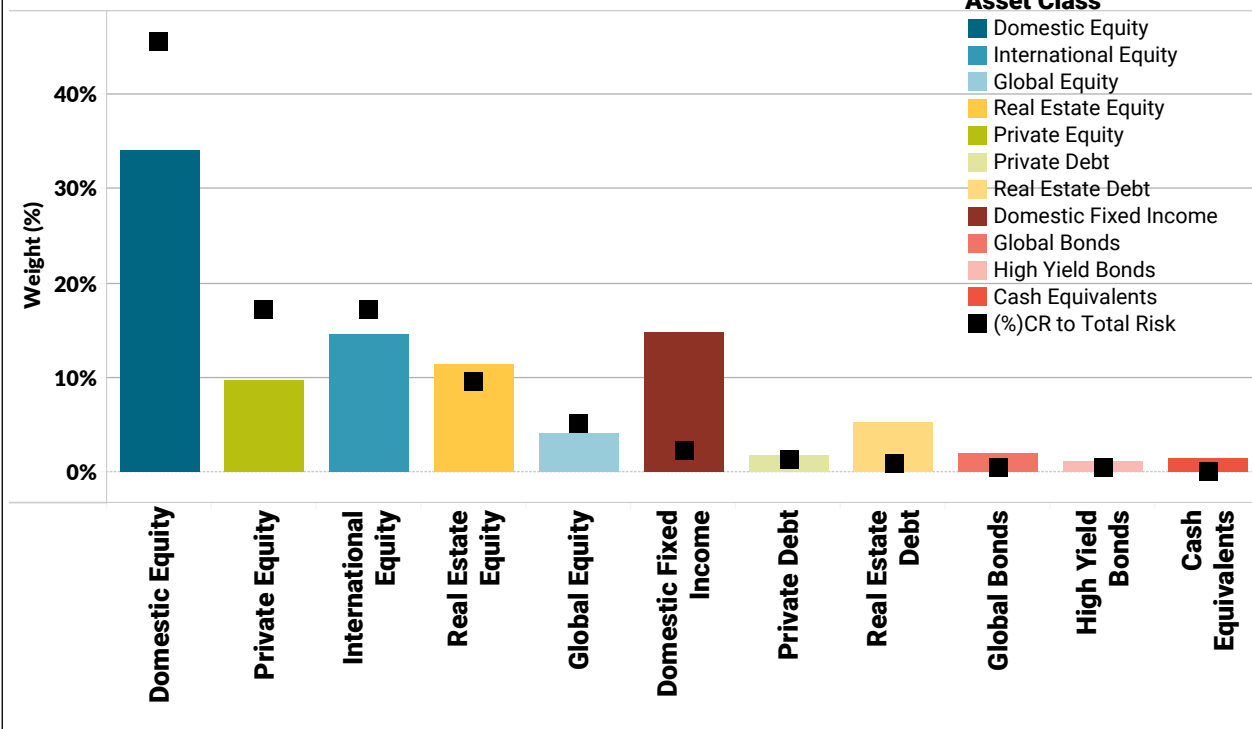
*ECR Numbers are pending the Board's adoption of the ECR at July Board Meeting.



Observations:

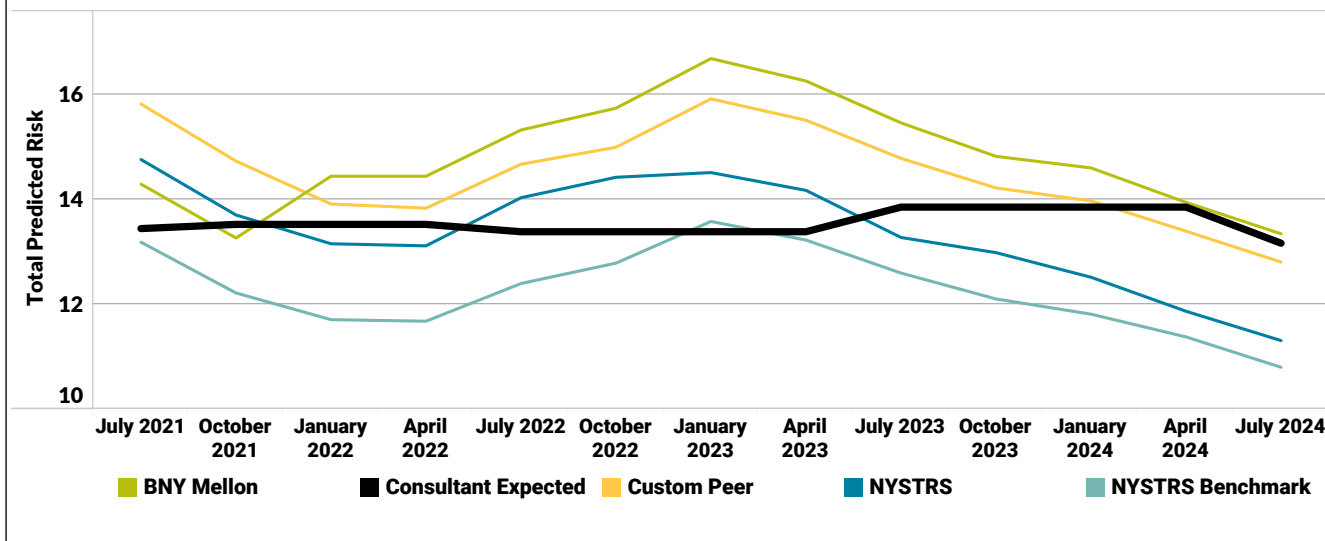
Total plan risk continued lower as it dropped to 11.31 from 11.87 last quarter. As the heightened volatility experienced during covid gets further behind us, it is weighted exponentially lower in the risk models, driving the predicted risk levels lower. As expected, equity investments continue to contribute the majority of total plan risk.

Total Predicted Risk By Asset Class

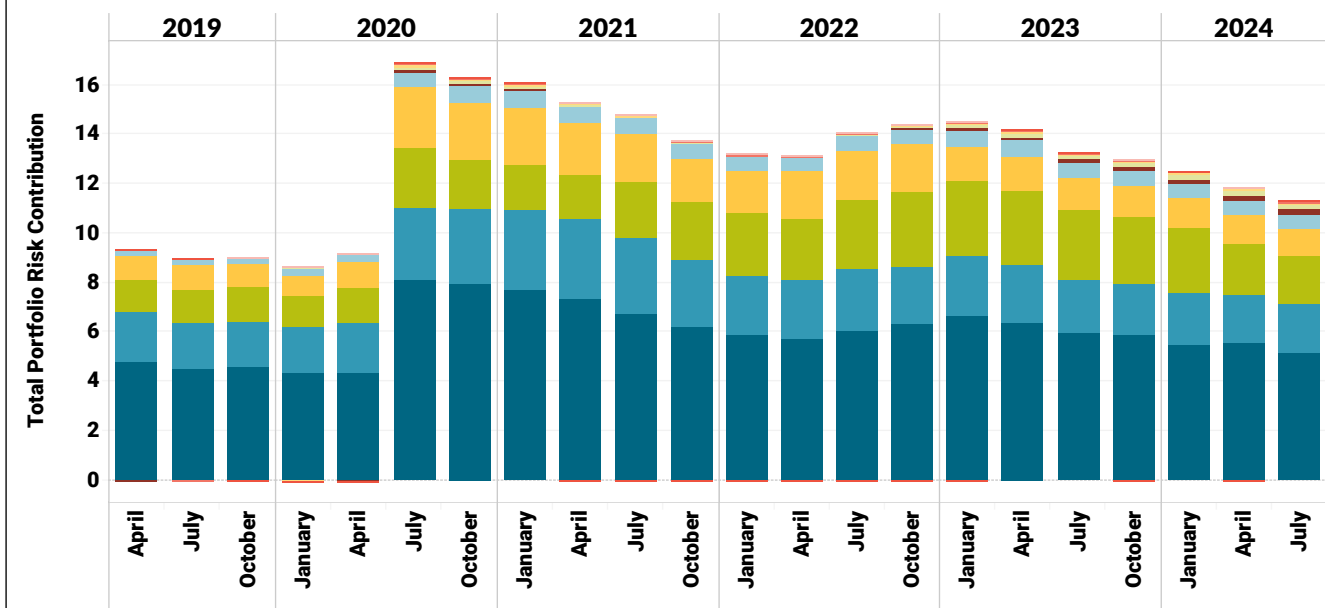


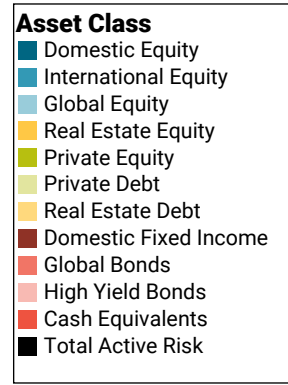
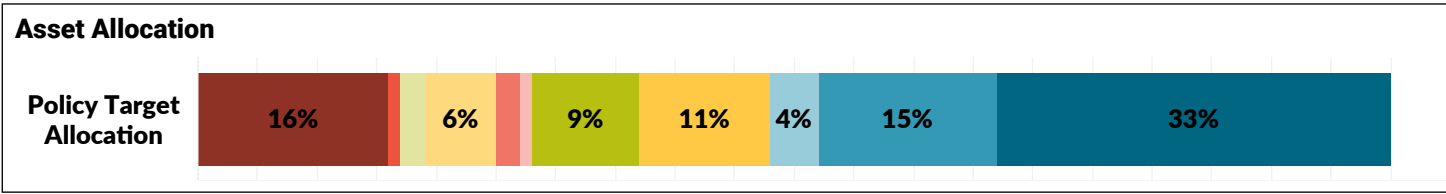
Asset Class	Market Value(\$M)	Weight(%)	(%)CR to Total Risk	Portfolio Risk Contribution	Total Risk
Total Plan	\$142,123	100.00%	100.00%	11.31	11.31
Domestic Equity	\$48,432	34.08%	45.60%	5.16	15.77
Private Equity	\$13,757	9.68%	17.29%	1.96	24.89
International Equity	\$20,587	14.49%	17.27%	1.95	14.97
Real Estate Equity	\$16,245	11.43%	9.54%	1.08	12.01
Global Equity	\$5,804	4.08%	5.11%	0.58	14.63
Domestic Fixed Income	\$21,062	14.82%	2.33%	0.26	6.10
Private Debt	\$2,447	1.72%	1.26%	0.14	9.57
Real Estate Debt	\$7,395	5.20%	0.85%	0.10	3.42
Global Bonds	\$2,806	1.97%	0.38%	0.04	5.48
High Yield Bonds	\$1,507	1.06%	0.37%	0.04	5.44
Cash Equivalents	\$2,072	1.46%	0.00%	0.00	0.06

Total Predicted Risk and Peer Comparison



Historical Total Predicted Risk



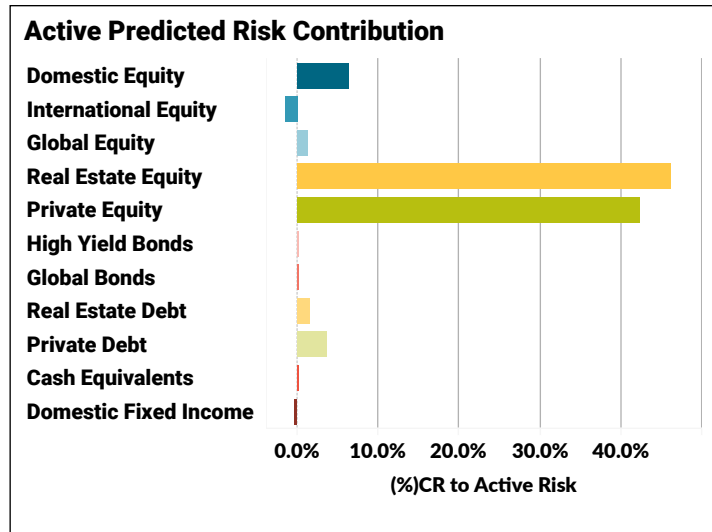
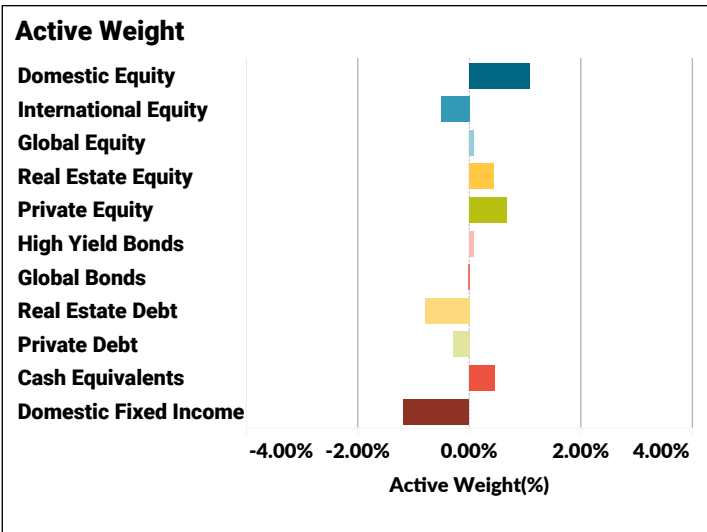


Active Predicted Risk:

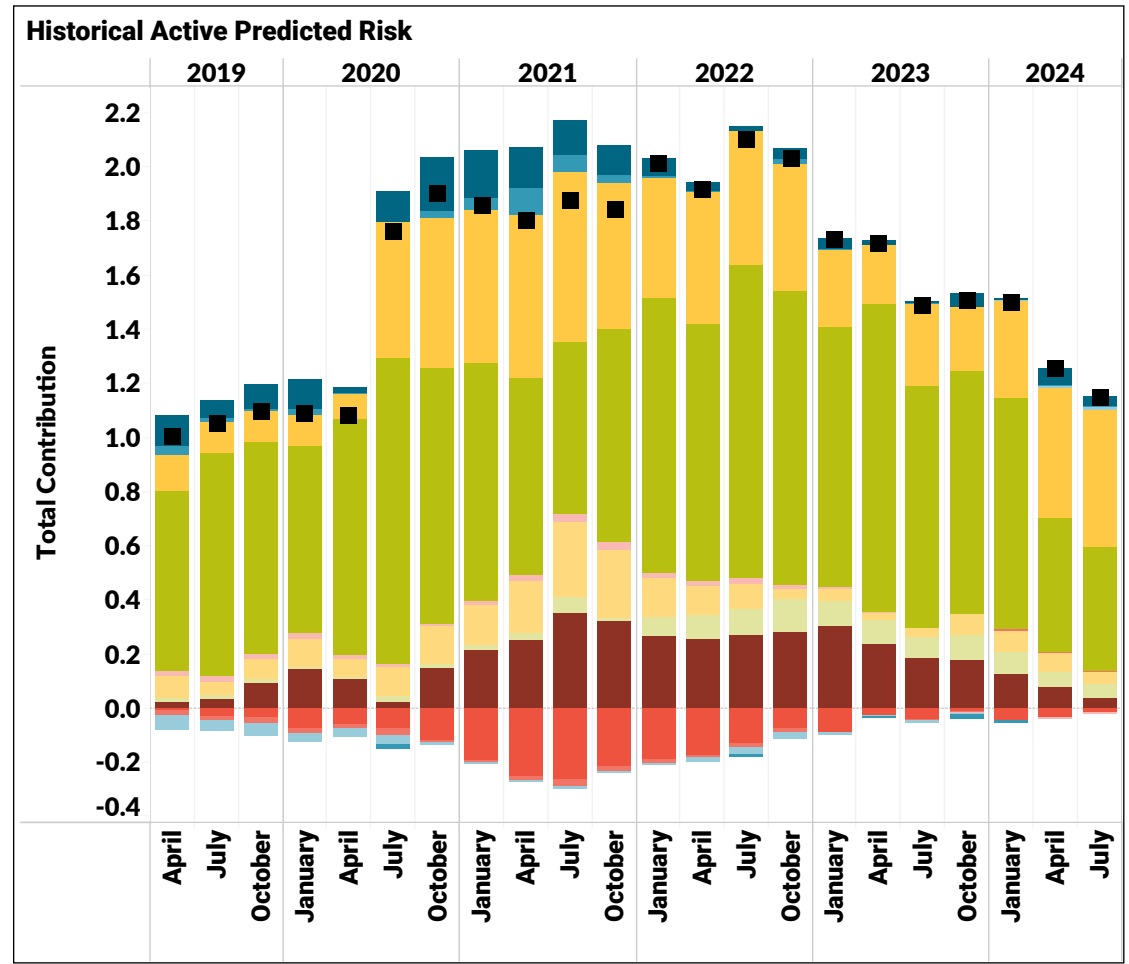
Active Predicted Risk is defined as the expected volatility of excess returns, and results from differences between actual portfolio weights and holdings vs. policy weights and holdings. Excess returns may be positive or negative.

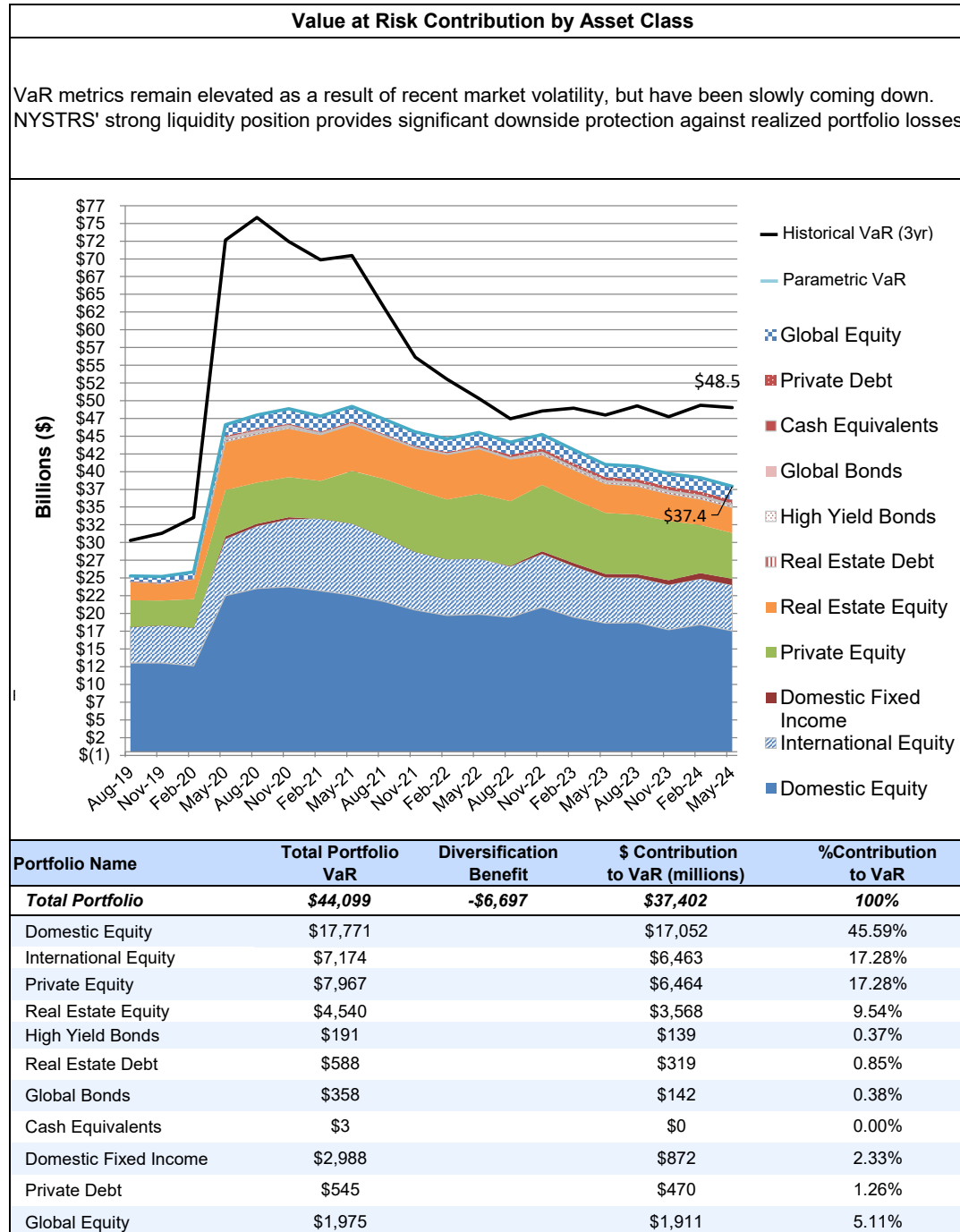
Active Risk for the Fund is largely controlled by limiting the difference between the actual and policy benchmark (target) weights for each asset class.

Benchmarking issues associated with private market portfolios also affect the measurement of 'active' risk. We see this most significantly with NYSTRS' private equity portfolio.



Asset Class	Weight(%)	Benchmark Weight(%)	Active Weight(%)	(%)CR to Active Risk	Total Contribution	Active Risk
Total Plan	100.00%	100.00%	0.00%	100.00%	1.13	1.13
Domestic Equity	34.08%	33.00%	1.08%	6.36%	0.03	0.10
International Equity	14.49%	15.00%	-0.51%	-1.41%	0.00	0.52
Global Equity	4.08%	4.00%	0.08%	1.43%	0.01	2.12
Real Estate Equity	11.43%	11.00%	0.43%	46.16%	0.51	7.53
Private Equity	9.68%	9.00%	0.68%	42.33%	0.45	6.16
High Yield Bonds	1.06%	1.00%	0.06%	0.03%	0.00	0.36
Global Bonds	1.97%	2.00%	-0.03%	0.14%	0.00	0.55
Real Estate Debt	5.20%	6.00%	-0.80%	1.56%	0.05	1.20
Private Debt	1.72%	2.00%	-0.28%	3.69%	0.05	4.98
Cash Equivalents	1.46%	1.00%	0.46%	0.00%	-0.02	0.06
Domestic Fixed Income	14.82%	16.00%	-1.18%	-0.28%	0.04	0.32





Value at Risk:

Value at Risk (VaR) is an estimate of the maximum portfolio loss over a specified time period and confidence interval given normal market conditions. VaR can be expressed in % loss or dollar terms. In this analysis, we use a 1 year time horizon and a 99% confidence interval. VaR can also be stated as: There is a 99% chance that the portfolio's market value will not lose more than [VaR amount] over the next year.

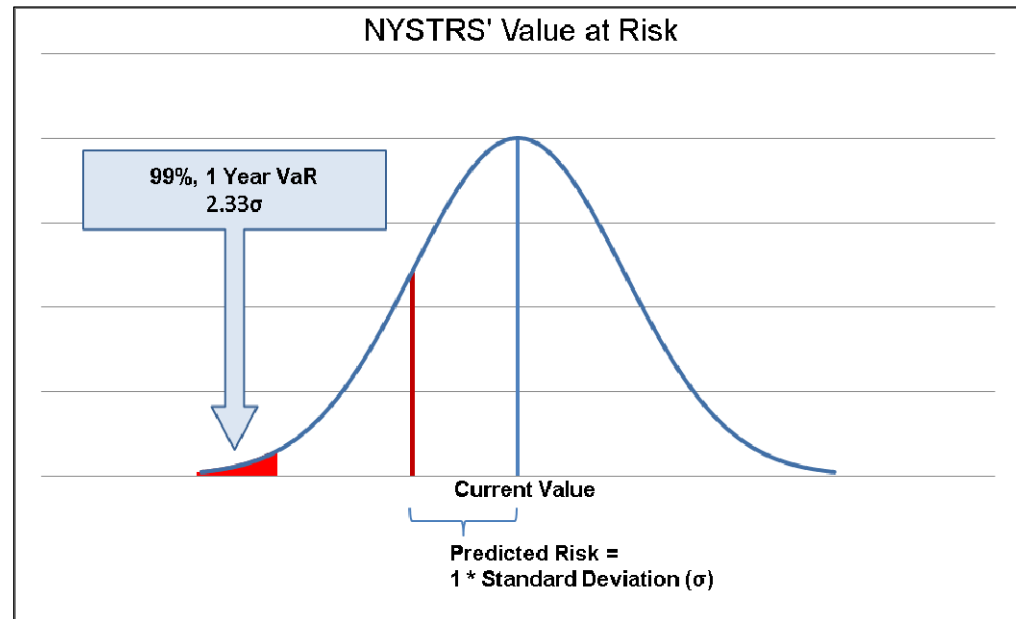
Methods Used:

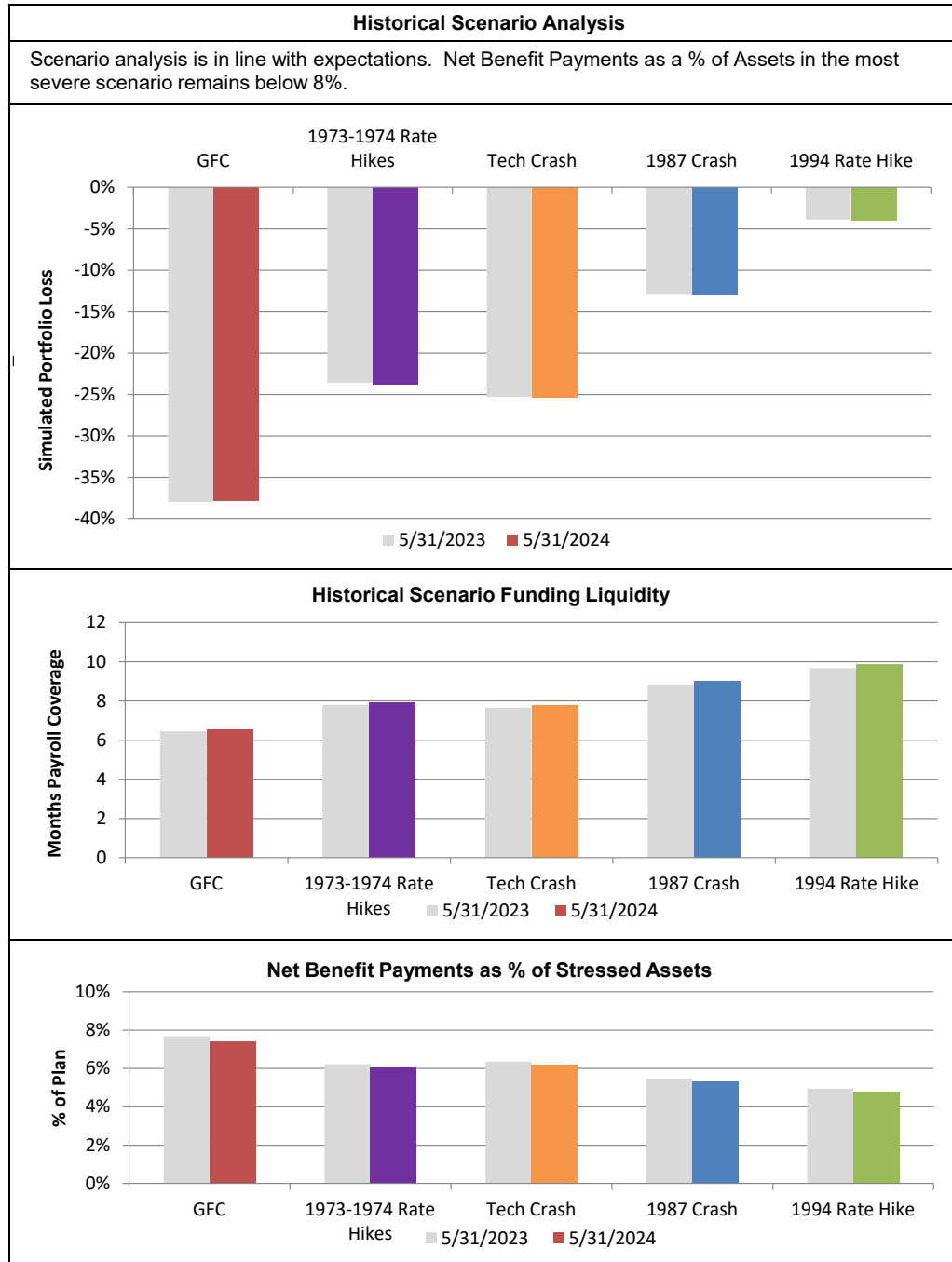
- ▶ *Parametric VaR:* $99\%VaR(\$) = 2.33\sigma * \text{Portfolio Market Value}$
- ▶ *Historical Simulation VaR:* $99\%VaR(\$) = \text{Simulated P\&L of portfolio utilizing empirical daily risk factor/price changes. 3 year lookback period (756 trading days) observed.}$

Drawbacks:

Parametric VaR assumes asset returns are normally distributed which may not be realistic. This could underestimate the VaR due to unfavorable asset returns having a higher chance of occurring in real life.

Historical Simulation VaR assumes past returns are indicative of future returns which may not be realistic. The specific return period analyzed directly impacts results which may or may not capture typical volatility, market extremes, or cyclicity.





Scenario Analysis

A scenario analysis seeks to determine how a portfolio may be affected by subjecting it to various historical or hypothetical market conditions.

Historical Scenarios:

The following historical scenarios apply market conditions experienced during their respective timeframes to NYSTRS' current portfolio as an instantaneous shock with no ability to rebalance or otherwise manage assets during the event. Simulated losses are illustrated on the chart to the top left. High level scenario inputs are provided below for context:

Historical Scenario	Domestic Equity	UST Yields: 2y/5y/10y (bps)	Credit Spreads: AA/BB/CCC (bps)
Global Financial Crisis: (9/30/07-3/4/09)	-54%	-308/-226/-115	+234/+849/+3779
1973-1974 Stagflation & Rate Hikes: (1/1/73-8/31/74)	-35%	+347(1y)/+239/+158	LIBOR +334
Tech Crash & Recession: (1/9/00-3/12/03)	-47%	-488/-387/-281	-13/+244/+1151
1987 Stock Market Crash: (8/3/87-11/30/87)	-27%	Unchanged	Unchanged
1994 US Rate Hike: (1/31/94-12/13/94)	-6%	+162/+152/+131	+2/+36/+0

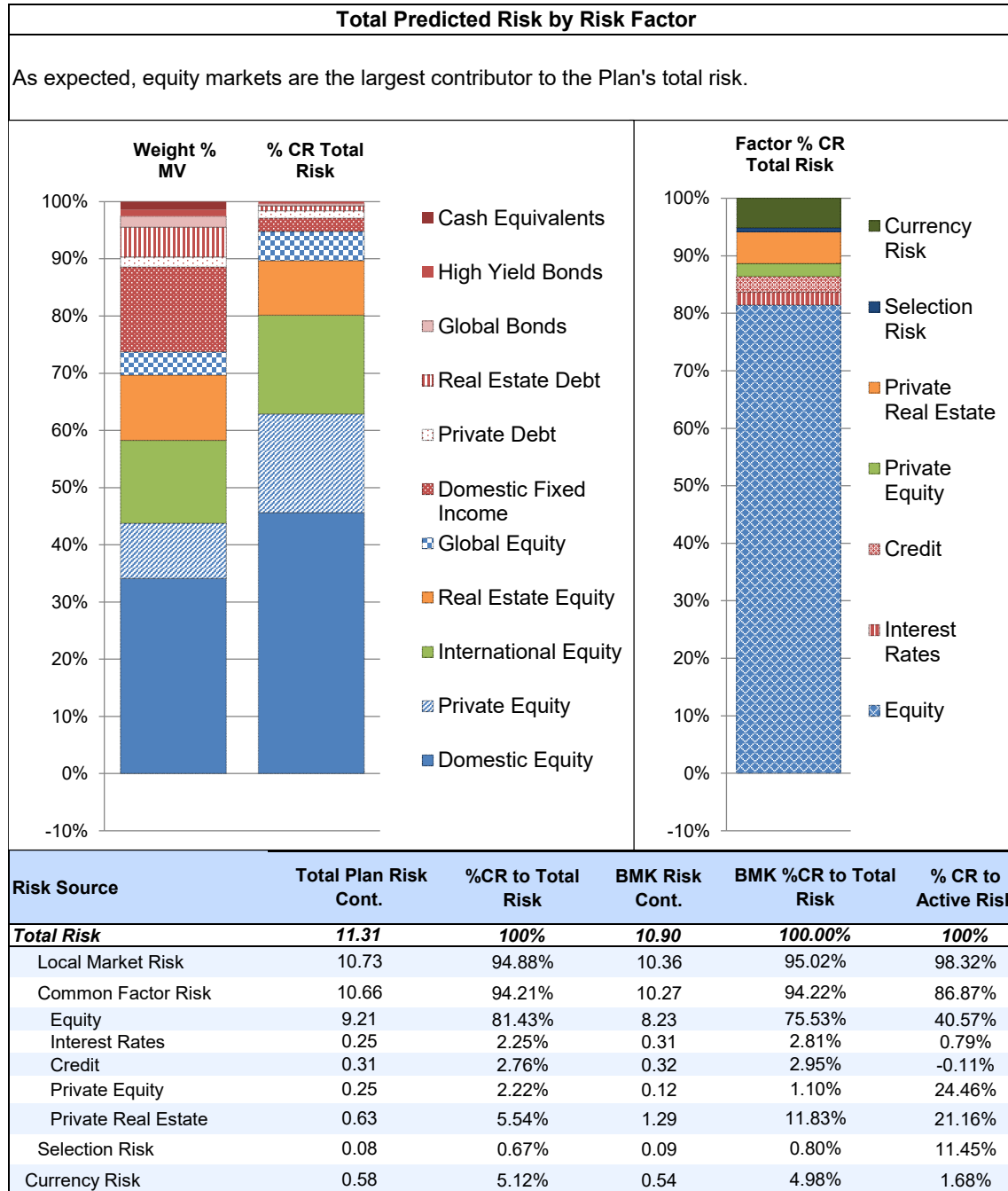
Funding Liquidity:

The middle chart depicts how each historical scenario would impact funding liquidity after a one-time rebalance to target policy weights. Cash and Domestic Fixed Income coverage represents how much of each asset could be used to make payroll before lower asset allocation bounds were breached and additional rebalancing was required. The attribution of each payroll coverage asset and cash flow component (in months coverage) is as follows:

Funding Liquidity Assumptions	Months Coverage	
	5/31/2023	5/31/2024
Cash + Domestic Fixed Income	5.8 to 9	6.1 to 9.5
Portfolio Income/Maturities	6.4	5.8
Employer Contributions	3.1	2.9
Capital Calls	-8.8	-8.3
Total Payroll Coverage	6 to 10	7 to 10

Net Benefit Payments as % of Assets:

The bottom chart depicts how each historical scenario would impact net benefit payments as a percentage of assets. Figures are representative of each scenario market bottom and do not incorporate expected cash flows or market recovery. (*Net Benefit Payments=Annual Benefit Payments-Employer & Employee Contributions)



Risk Factors:

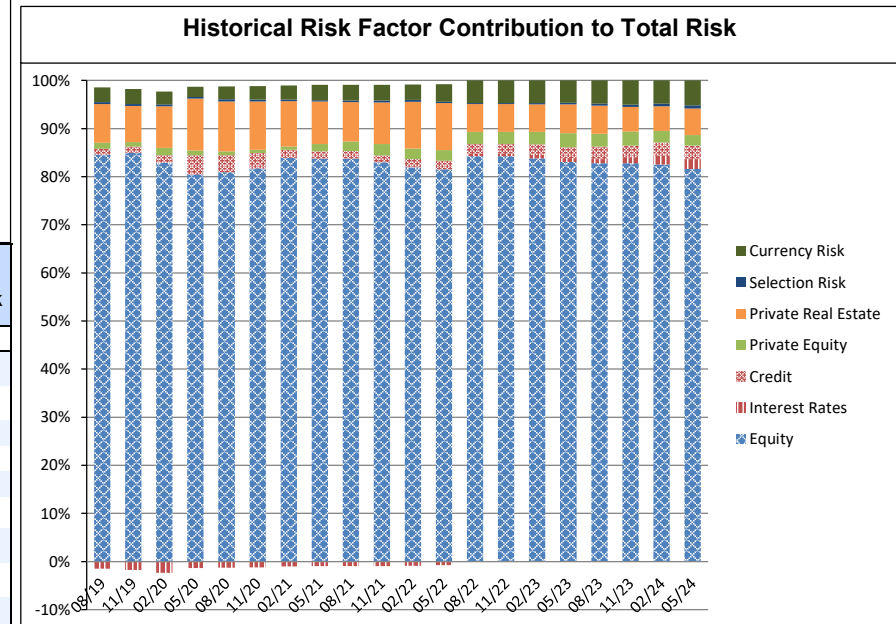
Risk factors are characteristics shared by a group of securities that influence their risk and return as well as their correlations.

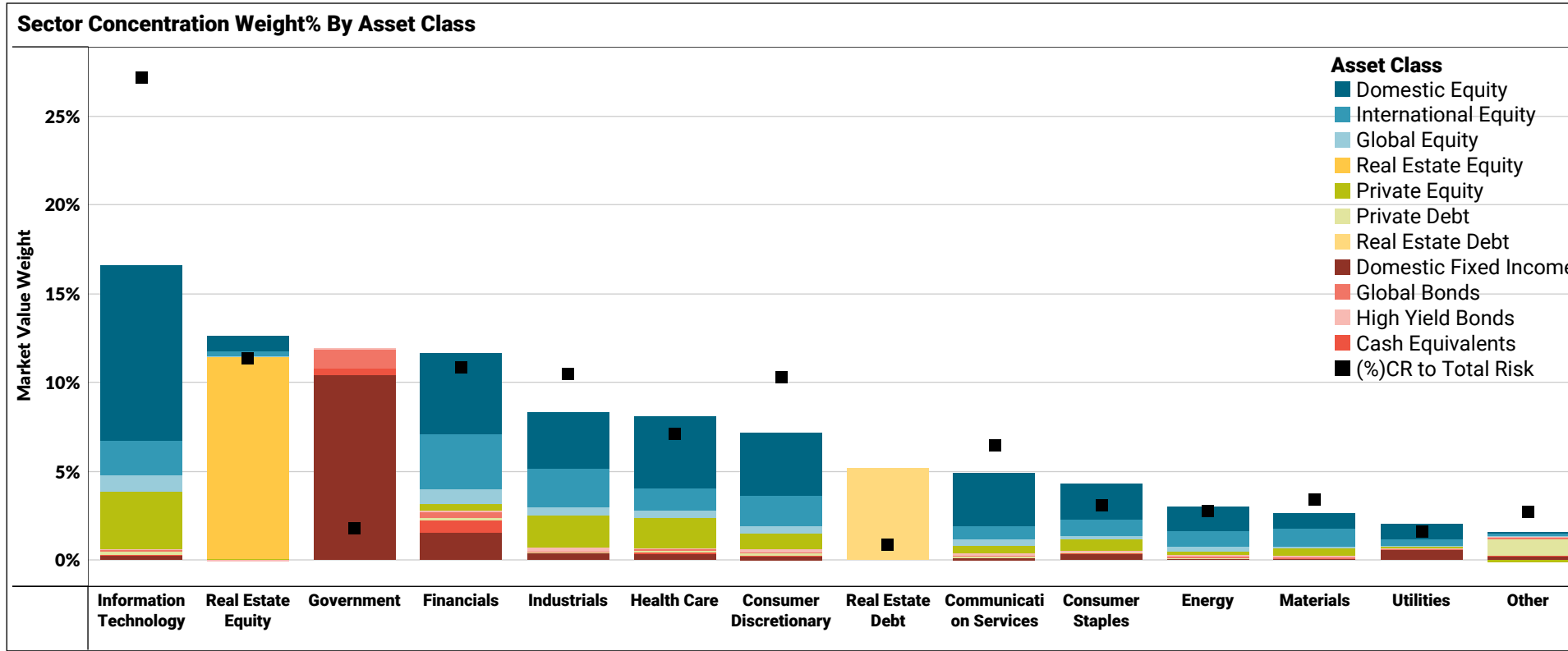
The five risk factor groups used for this analysis (equity, interest rates, credit, private equity, and private real estate) can be further decomposed into underlying factors such as industry, style, interest rate term structure, and geography. Each factor has an expected volatility and correlation with the other risk factors.

All of NYSTRS holdings are modeled according to their exposures to individual risk factors.

Observations:

As expected, Total Plan risk is primarily driven by the equity markets.





NYSTRS Sectors	Market Value(\$M)	Weight(%)	Portfolio Risk Contribution	(%)CR to Total Risk	Total Risk
Total Plan	\$142,123	100.00%	11.31	100.00%	11.31
Information Technology	\$23,624	16.62%	3.08	27.20%	20.75
Real Estate Equity	\$17,925	12.61%	1.28	11.33%	12.45
Government	\$17,005	11.97%	0.20	1.80%	5.97
Financials	\$16,515	11.62%	1.23	10.83%	11.98
Industrials	\$11,887	8.36%	1.19	10.50%	15.05
Health Care	\$11,475	8.07%	0.81	7.13%	12.68
Consumer Discretionary	\$10,142	7.14%	1.17	10.32%	17.77
Real Estate Debt	\$7,395	5.20%	0.10	0.85%	3.42
Communication Services	\$6,996	4.92%	0.73	6.45%	17.67
Consumer Staples	\$6,156	4.33%	0.35	3.11%	10.35
Energy	\$4,222	2.97%	0.31	2.76%	18.11
Materials	\$3,737	2.63%	0.38	3.39%	16.31
Utilities	\$2,909	2.05%	0.18	1.60%	11.80
Other	\$2,123	1.49%	0.31	2.73%	24.26

Observations:
Sector contribution to risk is in line with expectations. Information Technology continues to drive an outsized contribution to total risk relative to its weight in the portfolio.

Sectors:
In developing the sector schedule, NYSTRS began with industry recognized sectors used by MSCI and S&P. Five custom sectors were added to this base to accommodate the Fund’s allocation to Government, Real Estate Debt, Real Estate Equity, Cash and “Other” investments.

The bar chart representing weight for each sector was then further divided by asset class; with shades of blue denoting public equity asset classes, red denoting public fixed income asset classes, green denoting private equity and debt, and orange denoting real estate equity and debt.

Defensive sectors such as Utilities, and Consumer Staples tend to be more stable and less volatile regardless of the condition of the overall financial markets. Because these sectors are not highly correlated with the business cycle, they are also known as "non-cyclical". Cyclical sectors such as Consumer Discretionary and Materials tend to be correlated with the business cycle and can be more volatile than defensive sectors.

These characteristics can be seen in the chart. The risk contribution by the defensive sectors is less than their market value allocation and the risk contribution by the cyclical sectors is higher than their market value allocation.

Glossary:

%CR to Active Risk: Percent of Plan's Active Predicted Risk contributed by each component. This column sums to 100%.

%CR to Total Risk: Percent of Plan's Total Predicted Risk contributed by each component. Negative numbers imply a diversification benefit. This column sums to 100%.

Active Predicted Risk: Asset class portfolios' Active Predicted Risk compared to its respective benchmark.

Active Risk Cont.: Absolute contribution to Plan's Active Predicted Risk from each asset class portfolio. This column sums to the Plan's Active Predicted Risk.

Active Weight (%): Difference between the Plan's current weight and the Plan's benchmark policy weight.

BMK %CR to Total Risk: Percent of Total Predicted Risk for the Plan's Policy Benchmark contributed by each component. This column sums to 100%.

BMK Risk Cont.: Absolute contribution to Total Predicted Risk for Plan's Policy Benchmark from each Risk Factor group.

Total Predicted Risk: Individual components' distinct Total Predicted Risk.

Total Plan Risk Cont.: Absolute contribution to Plan's Total Predicted Risk from each component. Negative numbers imply a diversification benefit. This column sums to the Plan's Total Predicted Risk.

Total Portfolio VaR: The expected loss to a specified degree of confidence (99%) when subjected to a historical stress simulation. Also could be stated as there is a 99% chance that the total portfolio or individual asset classes' market value will not lose more than the [VaR amount] over the next year.

Diversification Benefit: The benefit achieved by owning a diversified portfolio comprised of assets with correlations < 1.

Notes:

BNY Mellon Peer Median; >\$10B: BNY Mellon Total Public Fund > \$10B median allocation.

- 41 public pension funds with an average plan size of \$41.6B. Aggregate assets of \$1,706.1B.

NYSTRS Custom Peer Group Median: NYSTRS' custom peer group used during annual asset allocation study. Allocation data provided by Pension Fund Date Exchange, Ltd. (PFDE).

- 5 public pension funds with an average plan size of \$160B and median plan size of \$99B.

- California State Teacher' Retirement System
- New Jersey Division of Investment
- Oregon Public Employees' Retirement Fund
- State Board of Administration of Florida
- State Teachers Retirement System of Ohio

Appendix:

MSCI ACWI & FRONTIER MARKETS INDEX									
MSCI ACWI INDEX					MSCI EMERGING & FRONTIER MARKETS INDEX				
MSCI WORLD INDEX			MSCI EMERGING MARKETS INDEX			MSCI FRONTIER MARKETS INDEX			
DEVELOPED MARKETS			EMERGING MARKETS			FRONTIER MARKETS			
Americas	Europe & Middle East	Pacific	Americas	Europe, Middle East & Africa	Asia	Europe	Africa	Middle East	Asia
Canada	Austria	Australia	Brazil	Czech Republic	China	Croatia	Kenya	Bahrain	Bangladesh
United States	Belgium	Hong Kong	Chile	Egypt	India	Estonia	Mauritius	Jordan	Pakistan
	Denmark	Japan	Colombia	Greece	Indonesia	Iceland	Morocco	Oman	Sri Lanka
	Finland	New Zealand	Mexico	Hungary	Korea	Lithuania	Nigeria		Vietnam
	France	Singapore	Peru	Kuwait	Malaysia	Kazakhstan	Tunisia		
	Germany			Poland	Philippines	Romania	WAEMU ²		
	Ireland			Qatar	Taiwan	Serbia			
	Israel			Saudi Arabia	Thailand	Slovenia			
	Italy			South Africa					
	Netherlands			Turkey					
	Norway			United Arab Emirates					
	Portugal								
	Spain								
	Sweden								
	Switzerland								
	United Kingdom								
MSCI STANDALONE MARKET INDEXES ¹									
						Americas	Europe	Africa	Middle East
						Argentina	Bosnia Herzegovina	Botswana	Lebanon
						Jamaica	Bulgaria	Zimbabwe	Palestine
						Panama	Malta		
						Trinidad & Tobago	Ukraine		

*MSCI.com/market-classification

**NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
INVESTMENT COMMITTEE MEETING
July 31, 2024**

INVESTMENT COMMITTEE MEETING
NEW YORK STATE TEACHERS' RETIREMENT SYSTEM

A meeting of the Investment Committee of the Retirement Board of the New York State Teachers' Retirement System was held at the System on July 31, 2024. Nicholas Smirensky, Chair, called the meeting to order at 8:51 a.m.

ATTENDANCE:

Investment Committee Members

Juliet Benaquisto, Eric Iberger, David Keefe (via WebEx), Ruth Mahoney (via WebEx), Nicholas Smirensky

Board Members

Phyllis Harrington, Oliver Robinson

Staff

Thomas Lee, Margaret Andriola, Gerald Yahoudy, Don Ampansiri, Kathy Ebert, Richard Young, Beth Dellea, Miriam Dixon, Michael Federici, Vijay Madala, Paul Cummins, Danny Malavé, Matt Albano, Emily Ekland, Han Yik, Melody Prangle, Kevin Maloney, Aaron VanDerwiel, Binoop Uni, Sarah Garrand, Matt Pinchinat, Brad Woolworth, Rebecca Kannan, Jeff Shubert, Sheiliesh Hylton, Sameer Modasra, Ben Keezer, Justin Milanese, Wanette Alston, Stacey Lesser Meehan

System Consultants

Callan – Tom Shingler, Jay Kloepfer

Via WebEx: Carlo Stadlinger, Angel Haddad, Dario Buechi, Kevin Machez

StepStone – Jose Fernandez, Scott Schwind

Via WebEx: Dev Subhash

Meketa - Orianna Grillo, Colin Hill

Visitors

Anin-Kofi Addo, Omni Research Associates

Via WebEx: Cyril Espanol, WithIntelligence, Alexandra Paradowski, Wisconsin Legislative Bureau, Mitchell King, Alvaro Carrillo, Christopher Albanese-BlackRock, Justin Mitchell, Financial Times

Approval of Minutes

A. Approval of Minutes of April 24, 2024 Investment Committee Meeting

There being no changes or corrections and upon motion of J. Benaquisto, seconded by E. Iberger and unanimously carried, the minutes of the April 24, 2024 Investment Committee meeting were approved.

Presentations

A. Private Equity/Private Debt Annual Review

S. Schwind and J. Fernandez from StepStone presented the annual review of the private equity and debt portfolios.

B. Internally Managed International Equity Portfolio

P. Cummins, Jennifer Wilcox, David Tessitore and Gwen Genovesi reviewed the proposal that was brought before the Investment Committee at its April 24th meeting, to create an internally managed International Equity portfolio by bringing one billion dollars of passive assets in-house, using a multi-year implementation timeline (Appendix A pp.9-16).

Upon motion of J. Benaquisto, seconded by E. Iberger and unanimously carried, the Committee went into Executive Session at 9:46 am to hear a Fixed Income Manager presentation.

C. High Yield Manager

M. Federici and Danielle Bondi recommended hiring Advent Capital Management to manage a new broad High Yield portfolio. Tracy Maitland, Marc Aylett, Christina Oh from Advent gave a presentation to the Committee.

Upon motion of J. Benaquisto, seconded by E. Iberger and unanimously carried, the Committee came out of Executive Session at 10:32 am.

Staff Updates

1. Investment Committee Executive Summary (Appendix B, pp.17-23)
2. Public Equities Update (Appendix C, pp. 24-25)
3. Fixed Income Update (Appendix D, p.26)
4. Real Estate Update (Appendix E, pp. 27-30)
5. Private Equity/Debt Update (Appendix F, pp. 31-42)
6. Callan Update

T. Shingler and J. Kloepfer from Callan reviewed Callan's recommendation for no changes to the NYSTRS' asset allocation at the present time (Appendix G, pp. 43-64).

7. Stewardship Update

H. Yik gave a Stewardship update (Appendix H, pp.65-68)

Policy Review and Action

- A. Consent Agenda Item #1a-i (Appendix I, pp.69-70)

N. Smirensky asked the Committee members if any of the consent agenda items should be moved to regular discussion items. Hearing no objections, the Committee proceeded to move Consent Agenda Recommendation items #1a-i together, with one motion:

Upon motion of E. Iberger, seconded by J. Benaquisto and unanimously carried, the Committee voted to recommend the following resolutions (consent agenda items # 1a-i) to the Board:

1. Renew Agreements

- Baillie Gifford Overseas Limited

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the agreement with Baillie Gifford Overseas Limited to manage a portion of the System's assets as an active ACWI ex-US international equity manager for a period of one year, effective September 15, 2024

- BlackRock Carbon Transitions

RESOLVED, That the Executive Director and Chief Investment Officer, or designee, is authorized to renew the agreement with BlackRock Financial Management, Inc. for a period of one year, effective October 6th, 2024 to manage a portion of the System's fixed income portfolio as an active Global Carbon Transition Bond Portfolio fixed income mandate, benchmarked to the Bloomberg Global Aggregate Corporate Bond Index (hedged to USD) (H03435US).

- Blue Owl Real Estate Debt Advisors (Successor-in-Interest to Prima Capital Advisors)

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the System's contract with Blue Owl Real Estate Debt Advisors, LLC to manage a portion of the System's real estate portfolio, as a manager of US CMBS and private real estate debt, for a period of one year, commencing on August 13, 2024.

- Global REIT Managers

RESOLVED, That the Executive Director and Chief Investment Officer, or his designees, is authorized to renew the agreements with the entities below to manage a portion of the System's assets as Global Real Estate Public Securities managers benchmarked to the FTSE EPRA/NAREIT Developed unhedged index for a period of one year:

Entity:	Renew for a period of one year effective as of:
Heitman, L.L.C.	August 7, 2024
AEW Capital Management, L.P.	September 12, 2024
Dimensional Fund Advisors, L.P.	September 22, 2024

- Heitman US Total Return Strategy

RESOLVED, That the System's Executive Director and Chief Investment Officer, or designee, is authorized to renew the agreement with Heitman, LLC to manage a portion of the System's portfolio to be actively invested in the securities of U.S. real estate investment trusts ("REITs") and real estate operating companies ("REOCs") for a period of one year, effective August 7, 2024.

- Leading Edge

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the agreement with Leading Edge Investment Advisors to manage a portion of the System's equity portfolio as a manager of managers for a global equity strategy, for a period of one year, effective November 22, 2024.

- PIMCO

RESOLVED, That the Executive Director and Chief Investment Officer, or designee, is authorized to renew the agreement with Pacific Investment Management Company LLC. for a period of one year, effective October 6th, 2024 to manage a portion of the System's fixed income portfolio as an active Global Carbon Transition Bond Portfolio fixed income mandate, benchmarked to the Bloomberg Global Aggregate Corporate Bond Index (hedged to USD) (H03435US).

- T. Rowe Associates, Inc.

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the System's agreement with T. Rowe Price Associates, Inc. to manage a portion of the System's equity portfolio as a domestic equity enhanced index manager for a period of one year, effective October 30, 2024.

- William Blair and Company

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the System's contract with William Blair & Company, LLC to manage a portion of the System's equity portfolio as an active ACWI ex US international manager for a period of one year commencing September 22, 2024.

2. Resolution on Investment Discretion

Upon motion of E. Iberger, seconded by J. Benaquisto and unanimously carried, the Committee voted to recommend the following resolution to the Board:

WHEREAS, The Retirement Board approved the delegations of investment authority set forth in the section of the Investment Policy Manual entitled “Delegation of Investment Authority” at its October 2023 meeting; and

WHEREAS, Said section shall be subject to annual review and renewal at the regular meeting of the Retirement Board in July of each calendar year; be it

RESOLVED, That the delegations of investment authority set forth in said section of the Investment Policy Manual are reauthorized and reconfirmed as the principal items of investment authority delegated to the Executive Director and Chief Investment Officer.

3. Resolution on Asset Allocation

Upon motion of J. Benaquisto, seconded by E. Iberger and unanimously carried, the Committee voted to recommend the following resolution to the Board:

RESOLVED, That the System’s asset allocation targets and rebalancing ranges in the System’s Asset Allocation shall continue as follows, effective immediately:

<u>Asset Class</u>	<u>Range</u>	<u>Target</u>
Domestic Equity	29 – 37%	33%
International Equity	11 – 19%	15%
Global Equity	0 – 8%	4%
Domestic Fixed Income	12 – 20%	16%
Real Estate Equity	6 – 16%	11%
Real Estate Debt	2 – 10%	6%
Private Equity	4 – 14%	9%

Private Debt	0.5 – 5%	2%
Global Bonds	0 – 4%	2%
High Yield Bonds	0 – 3%	1%
Short Term Investments (Cash Equivalents)	0 – 4%	1%

4. Resolution on Advent Capital Management

Upon motion of E. Iberger, seconded by J. Benaquisto and unanimously carried, the Committee voted to recommend the following resolution to the Board:

RESOLVED, That, subject to the satisfactory completion of due diligence, the Executive Director and Chief Investment Officer, or designee, is authorized to contract with Advent Capital Management, LLC to manage a portion of the System's fixed income portfolio in a US Broad Market High Yield Portfolio fixed income mandate benchmarked to the ICE BofA US High Yield Constrained Index (HUC0) and to allocate an initial funding of up to \$75 million to such manager in one or more tranches; and be it further

RESOLVED That the Executive Director and Chief Investment Officer, or designee, is authorized to execute such documents and to take such actions as may be necessary or required to implement the foregoing resolution.

5. Resolution to Establish USD EMD Internally Managed Portfolio

Upon motion of E. Iberger, seconded by J. Benaquisto and unanimously carried, the Committee voted to recommend the following resolution to the Board:

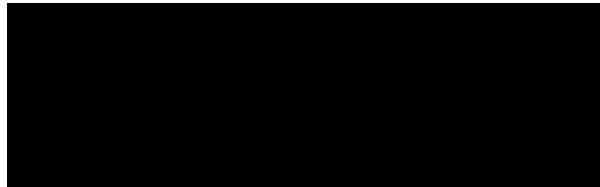
RESOLVED, That the Executive Director and Chief Investment Officer, or designee, is authorized to establish an internally managed US dollar emerging market debt active portfolio to be benchmarked against the Bloomberg Emerging Markets USD Aggregate Investment Grade 10% Country Capped custom index with an initial allocation of up to \$500 million in one or more tranches.

Informational reports

- The Committee reviewed the following informational reports: EDCIO Investment Discretion Report (Appendix J, pp. 71-73) and Mail Vote Quarterly Board Report (Appendix K, p.74).

There being no further business and with unanimous consent, the Committee adjourned at 12:10 p.m.

Respectfully submitted,

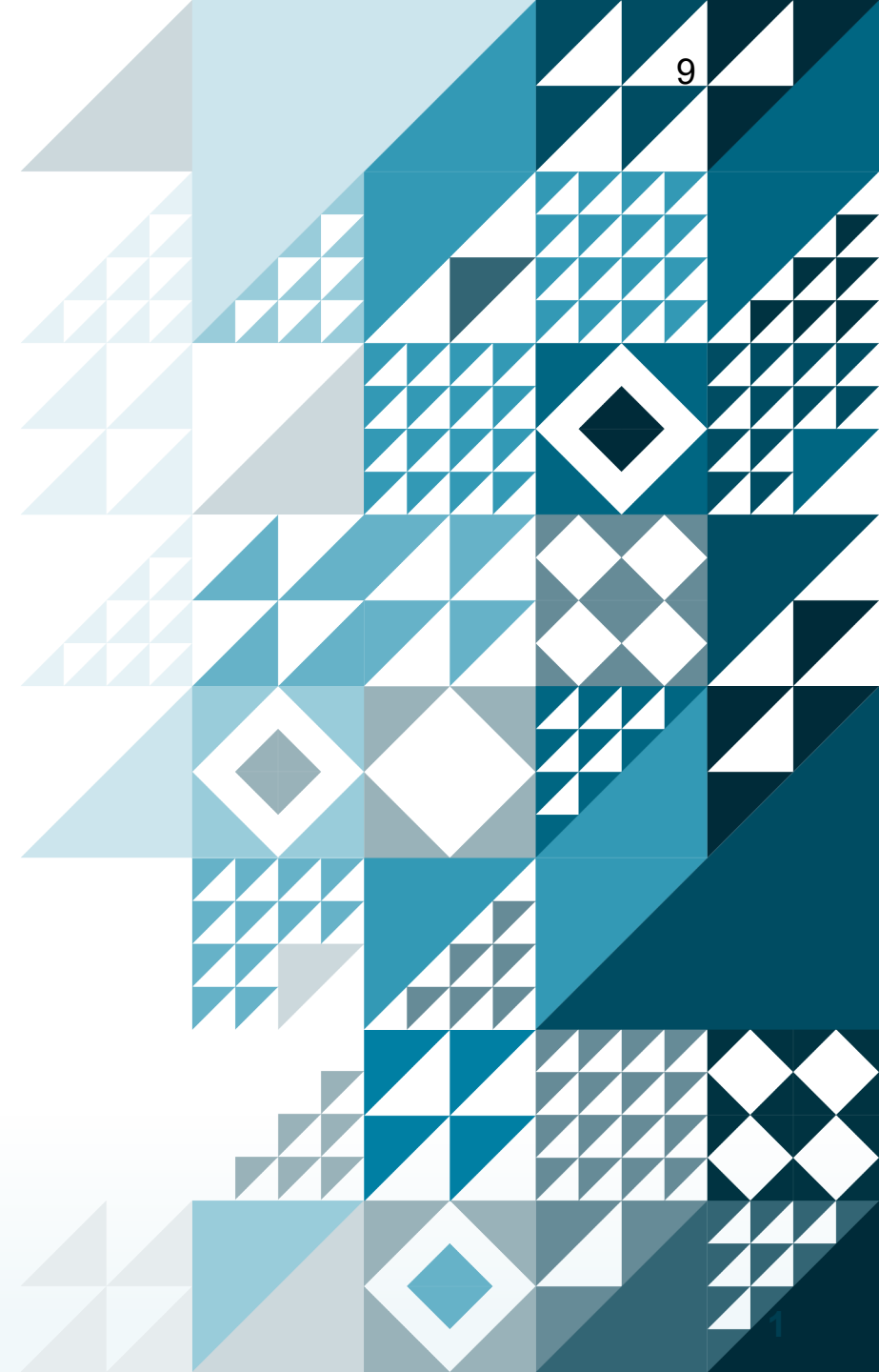


Thomas K. Lee



Internally Managed International Equity Portfolio

Public Equities



International Equity Allocation Overview

	PASSIVE						ACTIVE								
Allocation	75%						25%								
Benchmark	ACWI ex-US						ACWI ex-US								
ACWI ex-US Components	State Street ACWI ex-US		BlackRock ACWI ex-US		Internal International Portfolio / BlackRock Completer Fund		Rhumbline	Baillie Gifford	LSV Asset Management	Ariel	Arrowstreet	William Blair	AQR	Xponance	Marathon
Canada ~7%															Canada
Emerging Mkt ~28%															DFA
															GSAM

- The asset allocation target for international equities is 15%.
- Almost all international equity assets are currently managed externally.
- A significant portion of the portfolio is passively managed by State Street, BlackRock, and RhumbLine.

Executive Summary

- We are proposing to bring a portion (\$1 billion) of the passive assets in-house.
- Internal management would reduce manager concentration, provide NYSTRS with operational benefits, and further enhance staff's expertise and capabilities.
- International markets are complex. The System's policy benchmark for International Equities contains over 2,000 stocks in 46 countries, including developed and emerging markets.
- Therefore, to mitigate risk, staff is proposing a multi-year implementation timeline, starting with approximately \$170 million of externally managed passive Canadian and UK securities, before progressing to other countries and regions.

Implementation Timeline

Time	2024	2024	2025	2026	2027	2028	2028
Region	Canada	UK	Europe	Japan	Pacific Rim	EAFE + Canada	EM
AUM	\$70m	\$100m	\$330m	\$150m	\$70m	\$720m	\$280m
# countries	1	1	14	1	4	22	24
# currencies	1	1	5	1	4	13	24
# stocks	87	83	337	217	115	853	1375
% of ACWI ex US	7%	10%	33%	15%	7%	72%	28%

Note: Israel is a standalone component of the MSCI EAFE + Canada index

As of April 30, 2024

- In 2024, transfer the Canadian assets to the existing internally managed Canadian portfolio.
- Incept a new internally managed UK passive portfolio.
- From 2025-2027, incept internally managed passive portfolios for Europe, Japan, and Pacific Rim.
- Consolidate developed markets into a \$720 million portfolio by 2028, then consider emerging markets.
- The timeline can be adjusted depending on the successful completion of each phase of the implementation.
- Upon successful implementation, the internally managed passive international portfolio can be scaled up.

Implementation (2028)

NYSTRS Internally Managed					BlackRock Completer Fund
Canada	UK	Europe	Japan	Pac Rim	Emerging Markets
\$70M	\$100M	\$330M	\$150M	\$70M	\$280M

↓

NYSTRS Developed Markets Portfolio**

\$720M

- From 2025-2027, shares for Europe, Japan and Pacific Rim regions are transferred from the Completer Fund to NYSTRS.
- By 2028, the Completer Fund consists of Emerging Markets.

** Israeli securities transferred from Completer Fund

As of April 30, 2024

Risks & Mitigants

Risk	Mitigants
Staff has limited experience internally managing international assets.	<ul style="list-style-type: none"> • Staff has managed a passive Canadian strategy since 2012. • Staff has experience using the BlackRock Aladdin platform. • We are recommending moving only a portion of the passive assets in-house.
Some markets operate outside NYSTRS office hours.	<ul style="list-style-type: none"> • Trade lists will be prepared during normal office hours. • Staff will utilize approved brokers with global trading desks to execute trades in the local markets. • FX trades will be executed during normal office hours.
Staff anticipates operational challenges in emerging markets.	<ul style="list-style-type: none"> • The experience gained managing developed markets will prepare the team for emerging markets. • Staff has access to the expertise of our external passive managers, global trading partners, and custodian.

Risks & Mitigants (continued)

Risk	Mitigants
<p>The multi-year implementation timeline creates tracking error risk.</p>	<ul style="list-style-type: none"> • The implementation plan covers the transfer of existing passive assets from external to internal management and does not change the overall allocation to international equities. • The assets, whether managed internally or in the Completer Fund, will still closely track the System's policy benchmark. • Staff will monitor the tracking error of the combined portfolio and coordinate any necessary portfolio rebalancing with BlackRock.
<p>In-kind transfers from the Completer Fund will include shares subject to stewardship policy.</p>	<ul style="list-style-type: none"> • Any shares subject to divestment and/or restriction criteria will be managed per the stewardship policy.
<p>Key person risk / staff resources.</p>	<ul style="list-style-type: none"> • The strategy is not dependent on any one individual. • The Public Equities team is adequately staffed.

Appendix B



Investment Committee Executive Summary

Investment Committee July 31, 2024

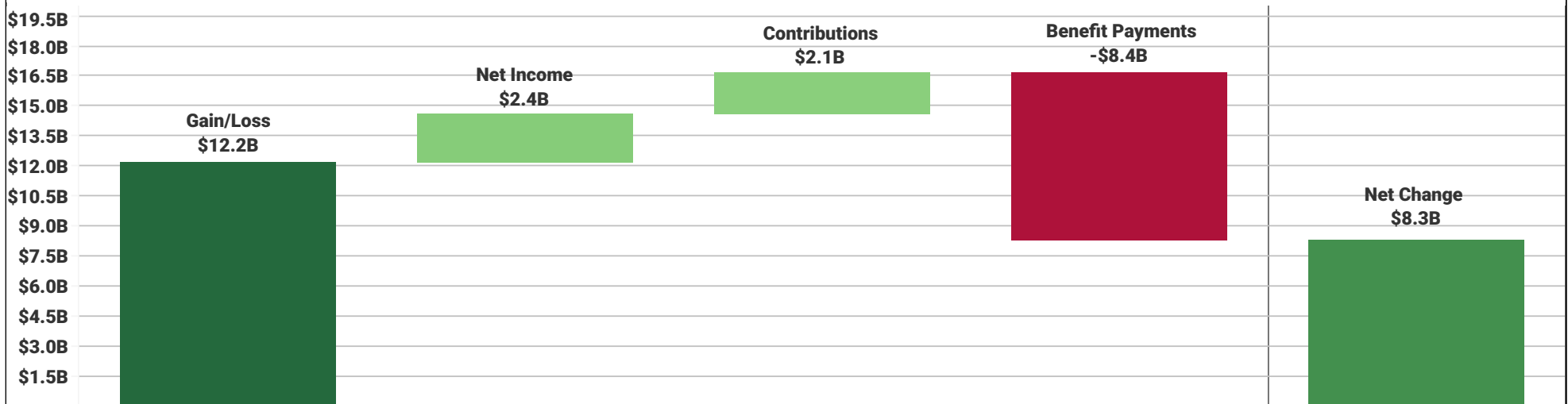
*Margaret Andriola, CIPM, CPA
Chief Financial Officer*

Investment Committee Executive Summary 18

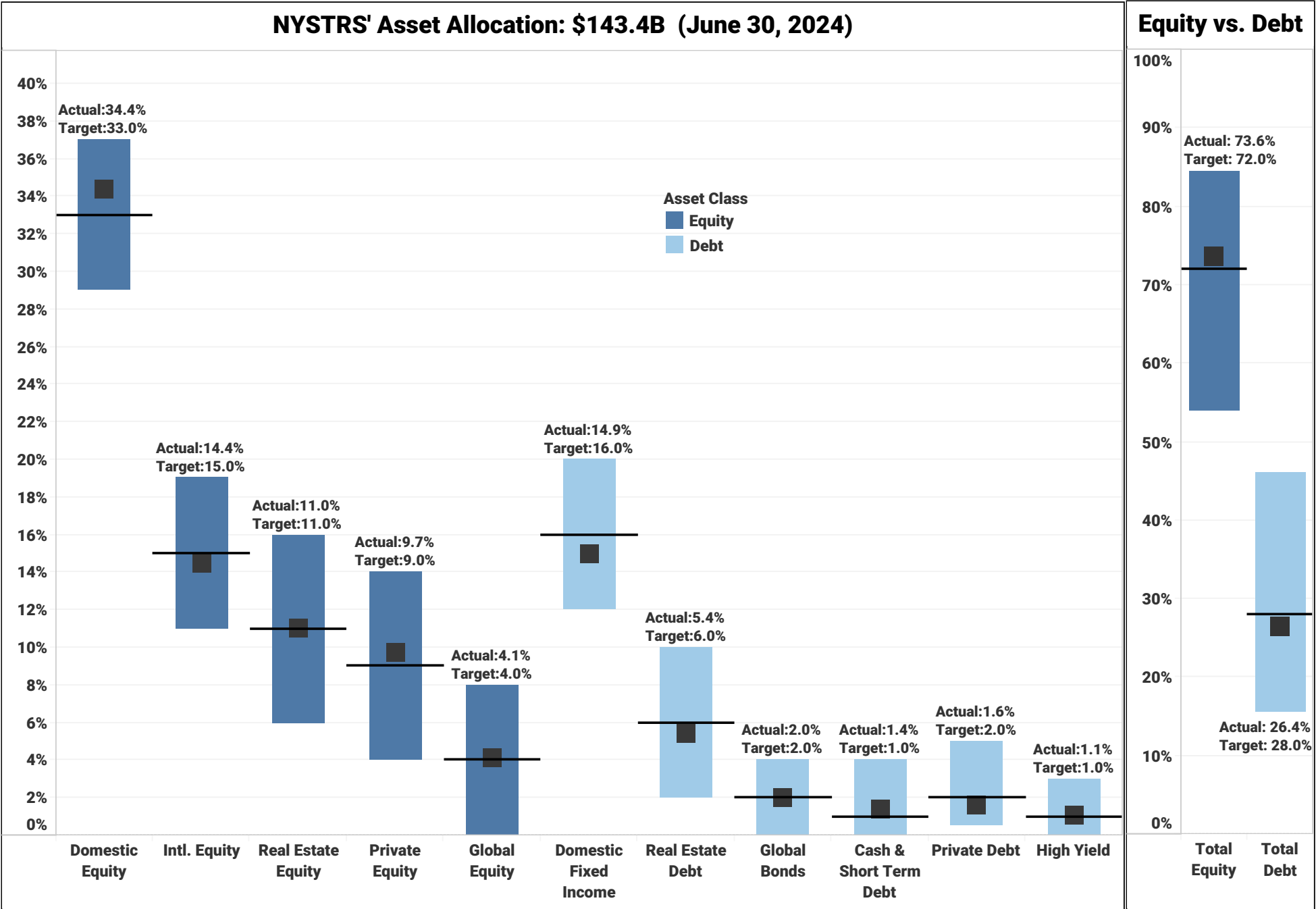
Market Value Summary ('000s)							
Asset Category	Asset Class	June 30, 2024		March 31, 2024		June 30, 2023	
		Net Asset Value	% Net Asset Value	Net Asset Value	% Net Asset Value	Net Asset Value	% Net Asset Value
Equity	Domestic Equity	\$49,261,025	34.4%	\$49,670,401	34.7%	\$45,854,870	33.9%
	International Equity	\$20,672,950	14.4%	\$20,437,198	14.3%	\$18,812,576	13.9%
	Global Equity	\$5,911,435	4.1%	\$5,790,704	4.0%	\$4,926,176	3.6%
	Real Estate Equity	\$15,768,383	11.0%	\$16,170,578	11.3%	\$16,482,638	12.2%
	Private Equity	\$13,954,925	9.7%	\$13,739,987	9.6%	\$15,416,611	11.4%
	Asset Category Subtotal	\$105,568,717	73.6%	\$105,808,868	73.9%	\$101,492,872	75.1%
Debt	Domestic Fixed Income	\$21,416,890	14.9%	\$20,612,335	14.4%	\$18,194,259	13.5%
	Global Bonds	\$2,807,362	2.0%	\$2,807,653	2.0%	\$2,697,024	2.0%
	High Yield	\$1,522,105	1.1%	\$1,502,090	1.0%	\$1,381,448	1.0%
	Real Estate Debt	\$7,738,935	5.4%	\$7,465,361	5.2%	\$7,532,011	5.6%
	Private Debt	\$2,315,922	1.6%	\$2,273,279	1.6%	\$2,045,645	1.5%
	Cash & Short Term Debt	\$2,032,704	1.4%	\$2,634,037	1.8%	\$1,750,709	1.3%
	Asset Category Subtotal	\$37,833,917	26.4%	\$37,294,755	26.1%	\$33,601,095	24.9%
Total Plan	\$143,402,635	100.0%	\$143,103,623	100.0%	\$135,093,967	100.0%	

Due to rounding, numbers may not sum to 100%.

Components of Change in Total Investments FYTD: 7/1/2023 to 6/30/2024 \$135.1B to \$143.4B

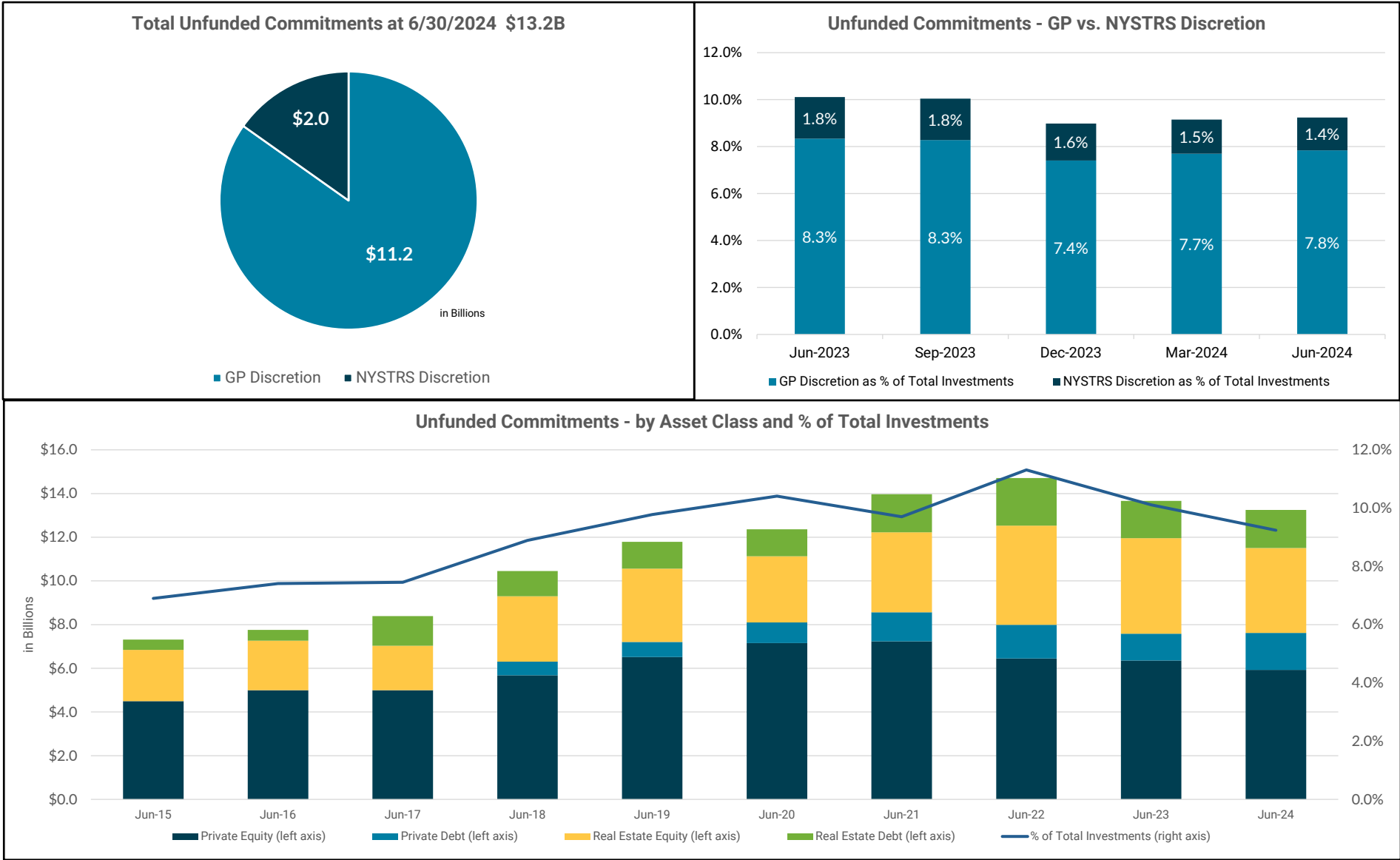


Investment Committee Executive Summary 19



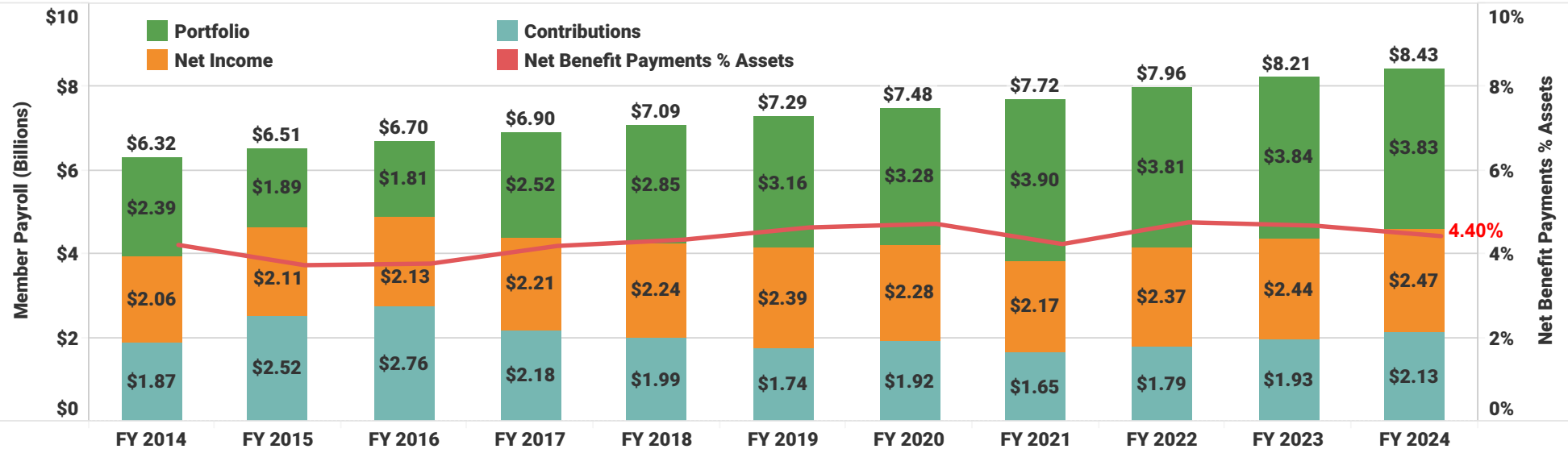
Investment Committee Executive Summary ²⁰

Unfunded Commitments - Private Assets

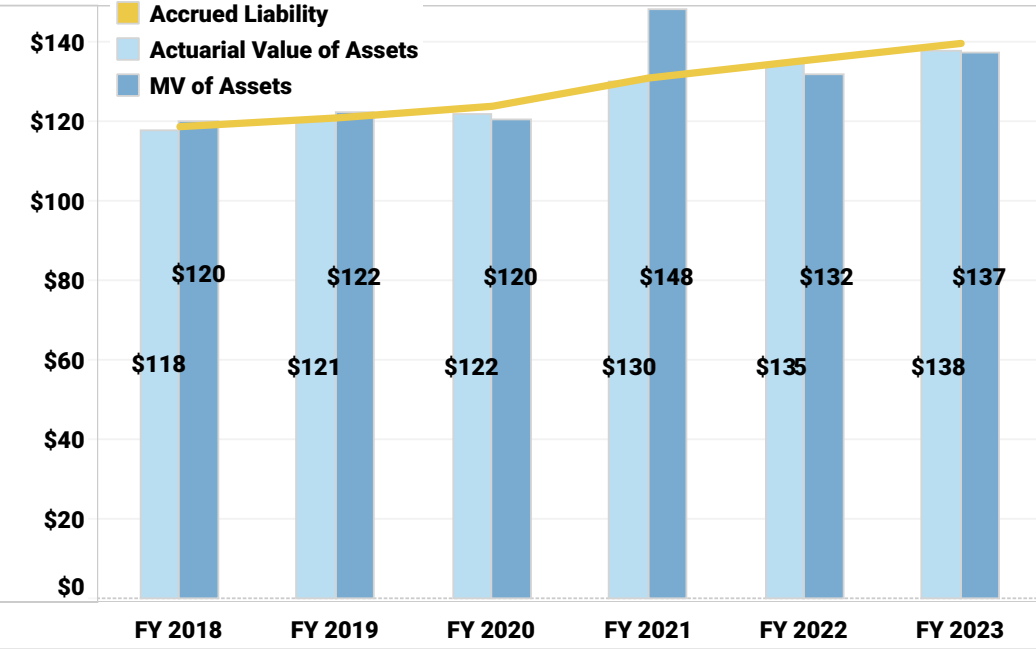


Investment Committee Executive Summary ²¹

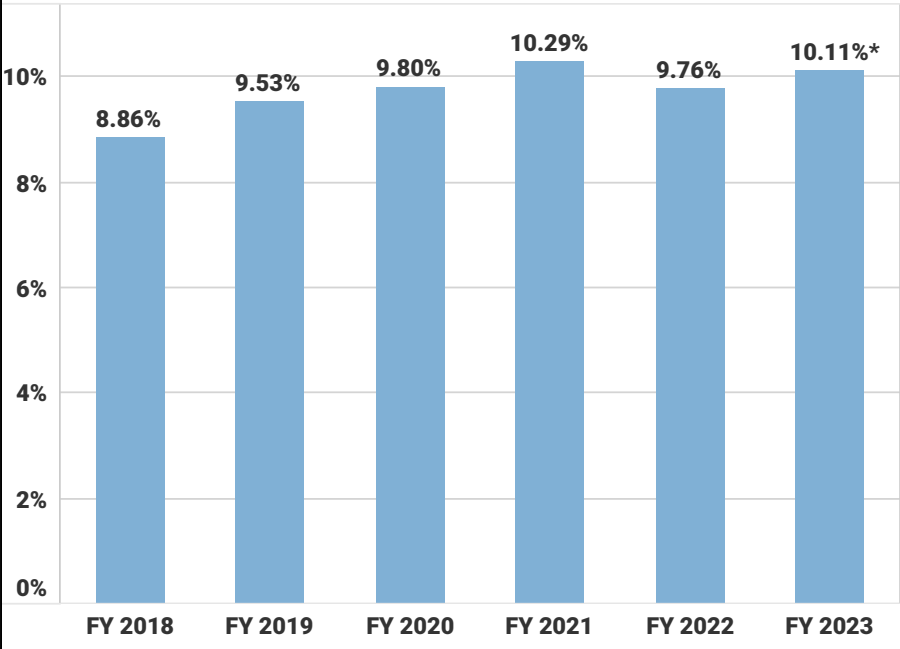
Member Payroll Funding Sources



Assets & Actuarial Accrued Liability (Billions)



Employer Contribution Rate

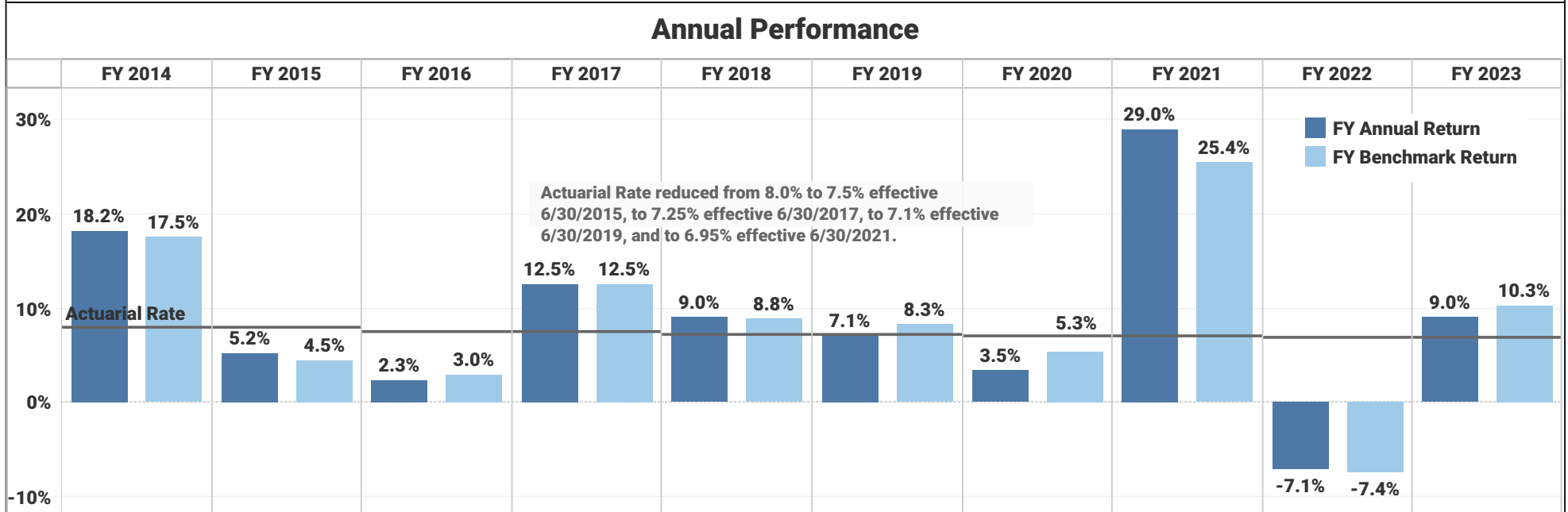


* FY 2023 Rate of 10.11% is pending Board approval in July 2024.

Investment Committee Executive Summary ²²

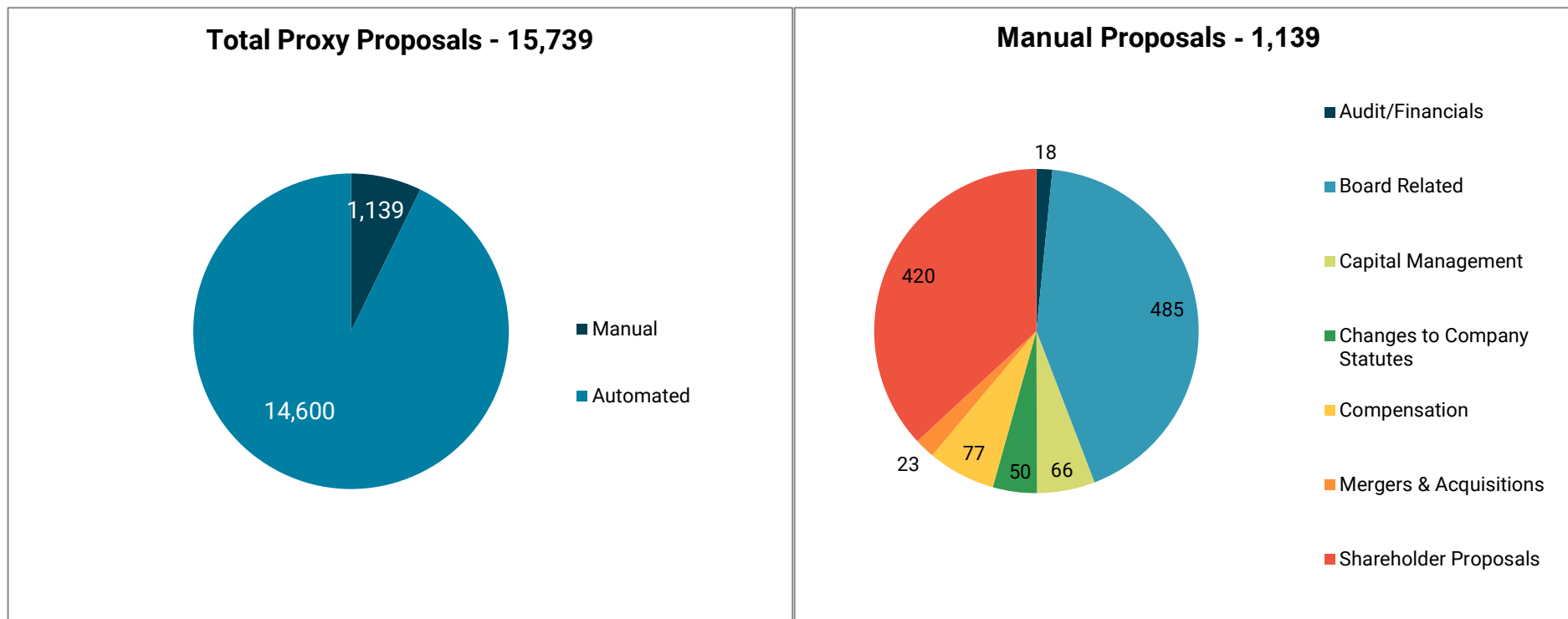
Public Market Performance as of June 30, 2024			Total Fund Performance as of March 31, 2024					
Asset Class	Current QTR		QTR		FYTD		10YR	
	Net Return	Excess Return	Net Return	Excess Return	Net Return	Excess Return	Net Return	Excess Return
Domestic Equity	3.7%	0.1%	10.5%	0.2%	19.4%	0.3%	12.6%	-0.1%
International Equity	1.1%	0.2%	5.2%	0.5%	11.4%	0.9%	4.8%	0.5%
Global Equity	2.0%	-0.9%	9.1%	0.9%	17.2%	1.2%	N/A	N/A
Private Equity	N/A	N/A	1.4%	-10.4%	3.1%	-20.0%	14.4%	-3.5%
Real Estate Equity	0.2%	1.0%	-1.0%	1.5%	-3.1%	6.2%	7.6%	1.5%
Domestic Fixed Income	0.3%	0.2%	-0.5%	0.2%	3.0%	0.4%	1.5%	-0.1%
Global Bonds	-0.1%	0.1%	-0.3%	0.0%	4.2%	0.2%	2.3%	0.3%
High Yield Bonds	1.3%	0.0%	1.3%	0.0%	8.5%	-0.3%	N/A	N/A
Private Debt	N/A	N/A	2.3%	-0.9%	8.0%	-3.3%	N/A	N/A
Real Estate Debt	1.4%	0.6%	2.2%	1.9%	4.3%	0.6%	3.7%	0.6%
Short Term	1.3%	0.1%	1.3%	0.1%	4.2%	0.3%	1.5%	0.3%
Total Public Markets	2.1%	0.1%	4.7%	-0.5%	9.4%	-1.1%	8.1%	-0.2%

RE Equity is REITs only and RE Debt is CMBS only.
For additional performance information see Supplemental Materials.



Investment Committee Executive Summary

Proxy Voting Summary: 4/1/2024 - 6/30/2024



The System has implemented automated voting for those issues that can reliably be voted according to NYSTRS' Stock Proxy Voting policy without review. Those requiring review are voted manually utilizing research provided by our proxy advisory service to support the decision. In general, the System supports corporate management if management's position appears reasonable, is not detrimental to the long range economic prospects of the company, and does not tend to diminish shareholder rights. Should a sensitive issue arise which is not included in the Stock Proxy Voting policy, the Executive Director and Chief Investment Officer or his designee is authorized to exercise best judgment in voting such issue.

Audit/Financials - The System may oppose auditor selection if there are concerns about objectivity.

Board Related - The System supports independent and diverse directors.

Capital Management - The System generally supports proposals that provide the company with flexibility provided they do not limit shareholder rights.

Changes to Company Statutes - The System generally supports proposals relating to bylaw or organizational changes provided they do not limit shareholder rights.

Compensation - The System generally supports reasonable compensation plans which are tied to objective performance measures. Stock option plans should be used to motivate corporate personnel.

Mergers & Acquisitions - Proposals are reviewed on a case by case basis.

Shareholder Proposals (type & number) - Compensation: 30, Environment: 84, Governance: 107, Social: 168, and Other: 31

Appendix C



Public Equities Managing Director Update

Investment Committee July 31, 2024

Paul Cummins, CFA, CAIA
Public Equities

Public Equity MD Update

	Mkt Val	Asset Allocation %			Portfolio Net Returns %					Excess Returns %				
	\$B*	Actual	Target	Range	Qtr	FYTD	1Y	3Y Ann	5Y Ann	Qtr	FYTD	1Y	3Y Ann	5Y Ann
Public Equities	\$ 75.8				2.85	20.42	20.42	6.70	11.93	0.02	0.71	0.71	0.19	0.31
Domestic Equities	\$ 49.3	34.4	33	29-37	3.71	23.89	23.89	9.54	14.67	0.05	0.37	0.37	0.10	0.08
<i>Domestic Passive</i>	\$ 42.9				3.68	23.63	23.63	9.47	14.67	0.02	0.11	0.11	0.04	0.08
<i>Domestic Active</i>	\$ 6.3				3.94	25.79	25.79	10.10	14.82	0.28	2.27	2.27	0.66	0.23
International Equities	\$ 20.7	14.4	15	11-19	1.12	12.68	12.68	0.94	6.28	0.16	1.06	1.06	0.48	0.74
<i>International Passive</i>	\$ 13.9				1.18	11.80	11.80	0.68	5.78	0.22	0.17	0.17	0.22	0.23
<i>International Active</i>	\$ 6.7				0.99	14.56	14.56	1.41	7.58	0.03	2.94	2.94	0.95	2.03
Global Equities	\$ 5.9	4.1	4	0-8	1.99	19.53	19.53	4.90	11.43	-0.88	0.15	0.15	-0.53	0.68

* Due to rounding, market values may not sum .

Market Commentary:

- Global equity markets rose 2.9% during the quarter. U.S. equities returned 3.7% led by large-cap technology stocks. For the fiscal year, U.S. equities returned 23.5% as growth stocks outperformed value stocks
- International markets rose 1% for the quarter and 11.6% for the fiscal year. Emerging markets rallied 5% in the fourth fiscal quarter to narrowly outperform developed markets for the fiscal year. In contrast to U.S. equities, value stocks outperformed growth stocks.

Portfolio Activity & Asset Allocation:

- Driven by strong market returns, the portfolio ended the quarter at \$75.8B, an increase of \$6.9B from June 2023.
- The public equities asset classes remain close to their respective targets and well within their asset allocation ranges.
- \$1.95B was raised from domestic equities during the quarter.

Portfolio Performance & Positioning:

- The portfolio has generated strong absolute and relative performance over 1/3/5-year time horizons.
- Domestic and international active strategies have overall performed exceptionally well for the fiscal year. Global strategies have been mixed in the short-term but have collectively generated positive excess returns longer-term.
- Staff continues to closely monitor Ariel Investments for the change in lead portfolio manager.
- Staff visited with Baillie Gifford, Marathon, and William Blair in May.

Team/Other Updates:

- General Consultant RFP 24-38 was issued in June.
- Two new investment fellows joined the team in July.

	<u>Mkt Val</u>	<u>Asset Allocation %</u>			<u>Yield &</u>	<u>Portfolio Net Returns %</u>					<u>Excess Returns %</u>				
	<u>\$B</u>	<u>Actual</u>	<u>Target</u>	<u>Range</u>	<u>Duration</u>	<u>Qtr</u>	<u>FYTD</u>	<u>1Y</u>	<u>3Y Ann</u>	<u>5Y Ann</u>	<u>Qtr</u>	<u>FYTD</u>	<u>1Y</u>	<u>3Y Ann</u>	<u>5Y Ann</u>
Internally Managed		16.3	17												
<i>Domestic Fixed Income</i>	\$ 21.4	14.9	16	12-20	5.00% 6.1y	0.25	3.28	3.28	-1.89	0.27	0.18	0.54	0.54	1.11	0.45
<i>Short-Term Bond</i>	\$ 2.0	1.4	1	0-4	5.25% 0.1y	1.34	5.55	5.55	3.22	2.29	0.09	0.41	0.41	0.33	0.33
Externally Managed		3.1	3												
<i>Global Bonds</i>	\$ 2.8	2.0	2	0-4	5.24% 6.4y	-0.05	4.12	4.12	-2.27	0.29	0.08	0.33	0.33	0.16	0.47
<i>High Yield</i>	\$ 1.5	1.1	1	0-3	7.59% 3.2y	1.25	9.82	9.82	1.83	3.56	0.04	-0.26	-0.26	0.21	-0.10

Note: Yield and duration measures are for general sector indices as of 6/30/24, except for Short-Term Bond figures based on NYSTRS portfolio

Qtr. Market Commentary:

- **US investment grade:** up slightly as income outpaced higher Treasury yields and credit spreads
- **Short-term:** continued to yield 5.5% annualized on high Fed Funds rate and min. credit risk
- Dollar hedged **global bond** returns slightly negative due to higher yields in Japan/Eurozone
- **High yield:** income returns outweighed small sell-off

Asset Allocation & Positioning:

- All Fixed Income within asset allocation ranges
- Added a net \$908 million to Domestic to continue move towards 16% target
- Domestic bond buys of securitized and Treasuries vs. corporates and govt-related based on relative value views
- Domestic duration is now flat versus benchmark; positioned for some yield curve steepening

Performance:

- Positive excess returns in Qtr.
- **FY Domestic:** +54bp over the benchmark; 3-year excess returns are top quartile
- **FY Short-Term:** 5.5% return likely to decline in a rate cutting cycle
- **FY Global:** +33bp excess returns from curve trades, credit overweight, & security selection
- **FY High Yield:** -26bp excess as managers were cautious about credit conditions

Macro and Team Updates:

- **Policy:** Fed likely Fed cut in Sept; balance sheet reduction slowed
- **Inflation:** slowed in Q2 after Q1 spike; housing CPI now slowing
- **Growth:** first half '24 strong; slower consumption likely to weigh on next several quarters
- **Credit:** spreads near record lows in May and increased in June
- 2 new investment fellows on team; 1 Girls Who Invest Intern; Search underway for Inv Off I



Appendix E

Real Estate Managing Director Update

Investment Committee July 31, 2024

David Gillan, CPA
Real Estate

CRE Equity Portfolio	6/30/24 Value	Target	Range	Actual	w/Commitments	
	\$15,768	11%	6%-16%	11.0%	13.3%	
Performance for Periods Ended March 31, 2024						
Strategy (Inception Date)	Net Asset Value	Current Quarter	1 Year	5 Year	10 Year	Since Inception
Direct Properties (2/90)	\$6,345	-1.9%	-8.4%	4.6%	7.7%	9.1%
Core Funds (7/85)	\$1,477	-1.6%	-11.1%	-0.7%	3.3%	5.9%
Value Added (12/89)	\$1,652	-0.2%	-8.0%	11.5%	15.2%	11.6%
Opportunistic (3/99)	\$3,173	-0.5%	-2.4%	7.5%	8.7%	10.6%
U.S. RE Securities (7/95)	\$2,124	0.0%	11.8%	5.5%	7.5%	10.9%
Global RE Securities (9/17)	\$934	-1.6%	8.2%	1.1%	-	2.5%
Timber (12/98)	\$243	9.0%	35.1%	12.3%	8.1%	5.6%
Total CRE Equity Portfolio	\$15,948	-1.0%	-3.5%	4.8%	7.6%	8.0%
NCREIF-ODCE (Spliced)	-	-2.6%	-12.0%	2.8%	6.1%	6.1%

Portfolio Return Drivers:

- Over the past twelve months NYSTRS' portfolio was down 3.5% vs. the NCREIF ODCE index which was down 12%.
- Primary drivers of the 3.5% negative return included continued markdowns of office assets in the major US gateway markets; primarily San Francisco, Seattle, Los Angeles, NYC and Washington DC. The West Coast tech markets have fared considerably worse than the East Coast markets as vacancy levels are at record levels (> 30%).
- Headline office rents in NYC have shown increases, however, increased costs to build-out tenant space and rent concessions have net effective rents still at flat to lower levels.
- Public REITs had been arguably oversold due to rate increases, but have bounced back this past year due to stable earnings and multiples inching back towards historic levels.
- NYSTRS Southeast US Timberland asset values increased significantly over the past 12 months driven by large opportunistic sales with multiples significantly above carry values.

Market Conditions:

- Green Street's Commercial Property Price Index (est. of unlevered US commercial property values) is down 20.3% from its March 2022 peak and down 5.2% over the last 12 months driven primarily by the office sector where values dropped another 16.5% over the past year.
- Transaction volume was down 37% year over year through May, off an already anemic May 2023 number as a wide bid/ask spreads remain between owners and buyers.

Portfolio Focus:

- Deal flow has increased, and staff are actively reviewing multifamily and industrial opportunities in locations with strong long term demand profiles.
- Staff are also focused on fund strategies with robust demand drivers such as data centers and digital infrastructure as well as opportunistic strategies with partners that have proven track records of capitalizing on distressed assets.
- The era of extremely cheap credit is gone (for now) and the System is reducing its leverage level in earnest by not borrowing on acquisitions nor refinancing existing assets at current rate levels that are not accretive to current property yields.

- **Investment Activity:** No new commitments were made during the quarter ending 6/30/24.

CRE Debt Portfolio	6/30/24 Value	Target	Range	Actual	w/Commitments	
	\$7,739	6%	2%-10%	5.4%	6.5%	
Performance for Periods Ended March 31, 2024						
Strategy (Inception Date)	Net Asset Value	Current Quarter	1 Year	5 Years	10 Years	Since Inception
First Mortgages (7/85)	\$1,986	2.0%	3.4%	2.9%	3.5%	7.7%
Commercial MBS (4/01)	\$2,823	2.8%	7.8%	1.7%	2.8%	4.4%
Core Plus Strategies (8/04)	\$1,987	1.8%	-0.1%	2.8%	4.6%	3.4%
Opportunistic Debt (9/01)	\$720	1.9%	6.4%	5.4%	7.6%	1.4%
Total CRE Debt Portfolio	\$7,516	2.2%	4.1%	2.8%	3.7%	7.6%
GL Custom Index (Spliced)	-	0.3%	2.9%	2.1%	3.1%	7.7%

29

Portfolio Return Drivers:

- For the 12 months ended 3/31/24, five-year US Treasury yields moved up materially (63 bps) to 4.21%, while the monthly SOFR rate also moved significantly (up 46bps) over the same period. This has put downward pricing pressure on all debt strategies in the System's portfolio.
- The System's CMBS portfolio has fared the best over the past year as market pricing came in due to the dearth of CMBS issuance relative to the supply of capital seeking CMBS. This caused most new issuances to be generally 3-5X over-subscribed resulting in a significant tightening of credit spreads and all-in rates in the market.
- Core plus strategies continue to be affected by pre covid office loans which continue to be written down as spreads for office product continue to increase.

Market Conditions:

- Recent economic data indicates that inflation is moderating, and the Federal Reserve's commentary has pivoted to a more accommodative policy with potential rate cuts over the next several quarters, which should provide upward pricing for our exiting debt portfolio.
- Competition for stabilized first mortgage investments increased during 2024 resulting in lenders offering lower spreads and more prepayment flexibility.
- Mortgage investments currently provide yields in the 5.50%-6.00% range, CMBS in the 5.50% -7.00% range and mezzanine/bridge product above 8.00%.

Portfolio Focus:

- Staff continue to focus on fixed rate debt product with longer durations in light of a potential near to mid-term rate cuts.

Investment Activity:

- During the 2nd quarter, the System closed on a \$70 million first mortgage on a stabilized industrial asset in West Palm Beach, and a \$300 million upsize to the FCP Freddie Mac K-Series targeting fixed/floating rate subordinate loans at generally 60% - 65% LTV levels.

Equity Real Estate Performance for Periods Ended March 31, 2024						
Strategy (Inception Date)	Net Asset Value	Current Quarter	1 Year	5 Year	10 Year	Since Inception
Direct Properties (2/90)	\$6,345	-1.9%	-8.4%	4.6%	7.7%	9.1%
Core Funds (7/85)	\$1,477	-1.6%	-11.1%	-0.7%	3.3%	5.9%
Value Added (12/89)	\$1,652	-0.2%	-8.0%	11.5%	15.2%	11.6%
Opportunistic (3/99)	\$3,173	-0.5%	-2.4%	7.5%	8.7%	10.6%
U.S. RE Securities (7/95)	\$2,124	0.0%	11.8%	5.5%	7.5%	10.9%
Global RE Securities (9/17)	\$934	-1.6%	8.2%	1.1%	-	2.5%
Timber (12/98)	\$243	9.0%	35.1%	12.3%	8.1%	5.6%
Total CRE Equity Portfolio	\$15,948	-1.0%	-3.5%	4.8%	7.6%	8.0%
Blended Benchmark*	-	-1.9%	-6.8%	1.7%	5.5%	6.0%

Debt Real Estate Performance for Periods Ended March 31, 2024						
Strategy (Inception Date)	Net Asset Value	Current Quarter	1 Year	5 Years	10 Years	Since Inception
First Mortgages (7/85)	\$1,986	2.0%	3.4%	2.9%	3.5%	7.7%
Commercial MBS (4/01)	\$2,823	2.8%	7.8%	1.7%	2.8%	4.4%
Core Plus Strategies (8/04)	\$1,987	1.8%	-0.1%	2.8%	4.6%	3.4%
Opportunistic Debt (9/01)	\$720	1.9%	6.4%	5.4%	7.6%	1.4%
Total CRE Debt Portfolio	\$7,516	2.2%	4.1%	2.8%	3.7%	7.6%
Blended Benchmark*	-	0.8%	3.4%	2.0%	3.0%	7.7%

* The Blended Benchmarks used here represent the market-value weighted average of the underlying benchmarks for each of the strategies. The System's Real Estate Policy benchmark is the NCREIF-ODCE for the Real Estate Equity Portfolio, and the Gilberto-Levy Custom Index for the Real Estate Debt Portfolio.



Appendix F

Private Equity & Private Debt Managing Director Update

Investment Committee July 31, 2024

*Gerald J. Yahoudy II, CAIA, FDP
Private Equity & Private Debt*

	Mkt Val	Asset Allocation %			Benchmark	Net Returns % (as of 3/31/24)						Excess Returns %					
	\$B	Actual	Target	Range		1Y	3Y	5Y	10Y	20Y	30Y	1Y	3Y	5Y	10Y	20Y	30Y
Private Equity	\$13.90	9.7	9	4-14	S&P 500 + 5%	5.4	9.0	14.6	14.4	14.3	13.6	-29.5	-7.5	-5.4	-3.6	-0.9	-2.1
Private Debt	\$ 2.30	1.6	2	0.5-5	Morningstar LSTA + 3%	10.7	10.0	9.2	-	-	-	-4.8	1.0	0.7	-	-	-

Market Commentary:

- Market activity remains below long-term averages due to continued buyer/seller pricing expectations.
- All the ingredients to strengthening M&A markets are in place.
- Private credit continues to be the dominate source for buyouts and M&A. However, recent bank lending activity has had an impact on lending terms.

Portfolio Activity & Asset Allocation:

- Quarterly valuations for both Private Equity and Private debt increased 1.4% and 2.3% respectively from 12/31/23.
- During the quarter, five new commitments were made (all in PE and all with exiting relationships).
- Cash flows for the fiscal year were negative but given a pickup in distributions in Q423, cash flows for both PE and PD were close to breakeven in the second half of the fiscal year.

Portfolio Performance & Positioning:

- Overall, absolute performance remains strong. PE has outperformed the public markets over the long run but underperformed relative to the benchmark. PD outperformed the benchmark over the three-year and five-year periods.
- Exploring the addition of new PD relationships focused on opportunistic credit for diversification purposes.

Team/Other Updates:

- Deputy MD – Brad Woolworth promoted effective July 4th.
- Investment Fellow Rotation - Matt Hernandez joined PE on July 5th.
- Girls Who Invest Intern – Adrienne Usher joined July 8th.
- Secondary Sales – see attached presentation.



New York State
Teachers'
Retirement
System

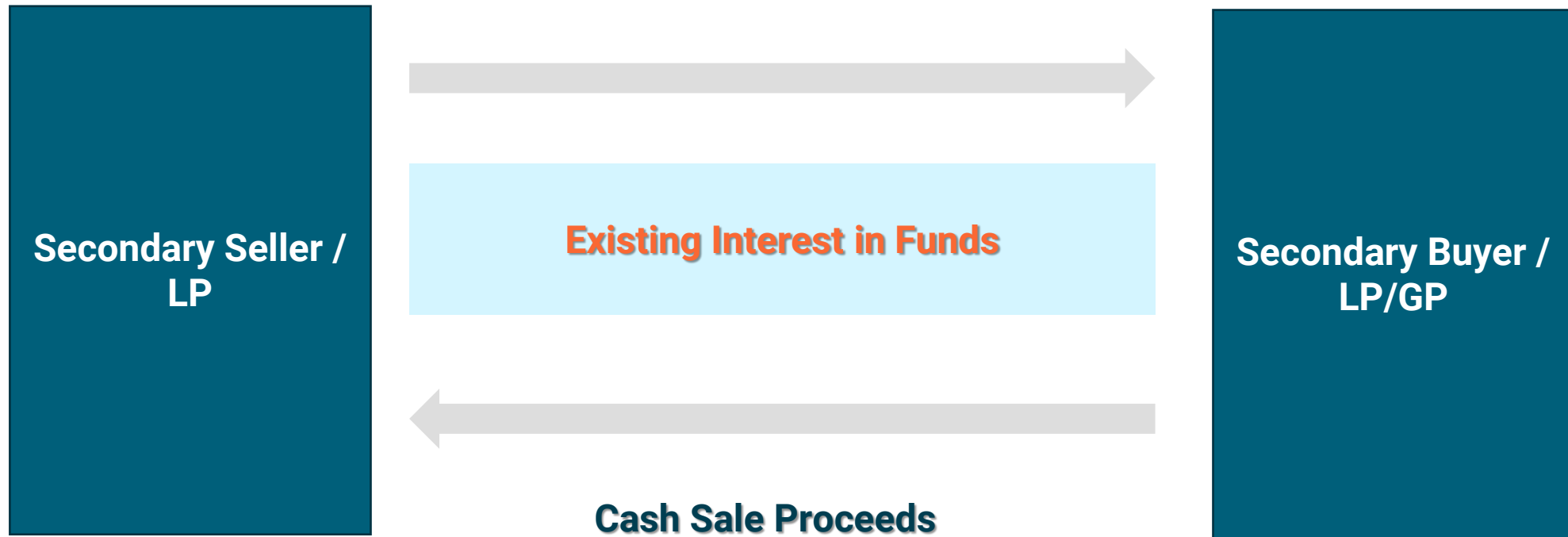
Secondary Sales

***NYSTRS' Investment Committee
July 31, 2024***

Outline

- Secondary Transactions
- History of the Secondary Market
- NYSTRS'
 - Approach
 - Process
 - Sales History

What are LP Secondary Sales?



Why Utilize the Secondary Market?

1

PORTFOLIO MANAGEMENT

Reduce Certain Exposures

Reduce # of GP relationships

2

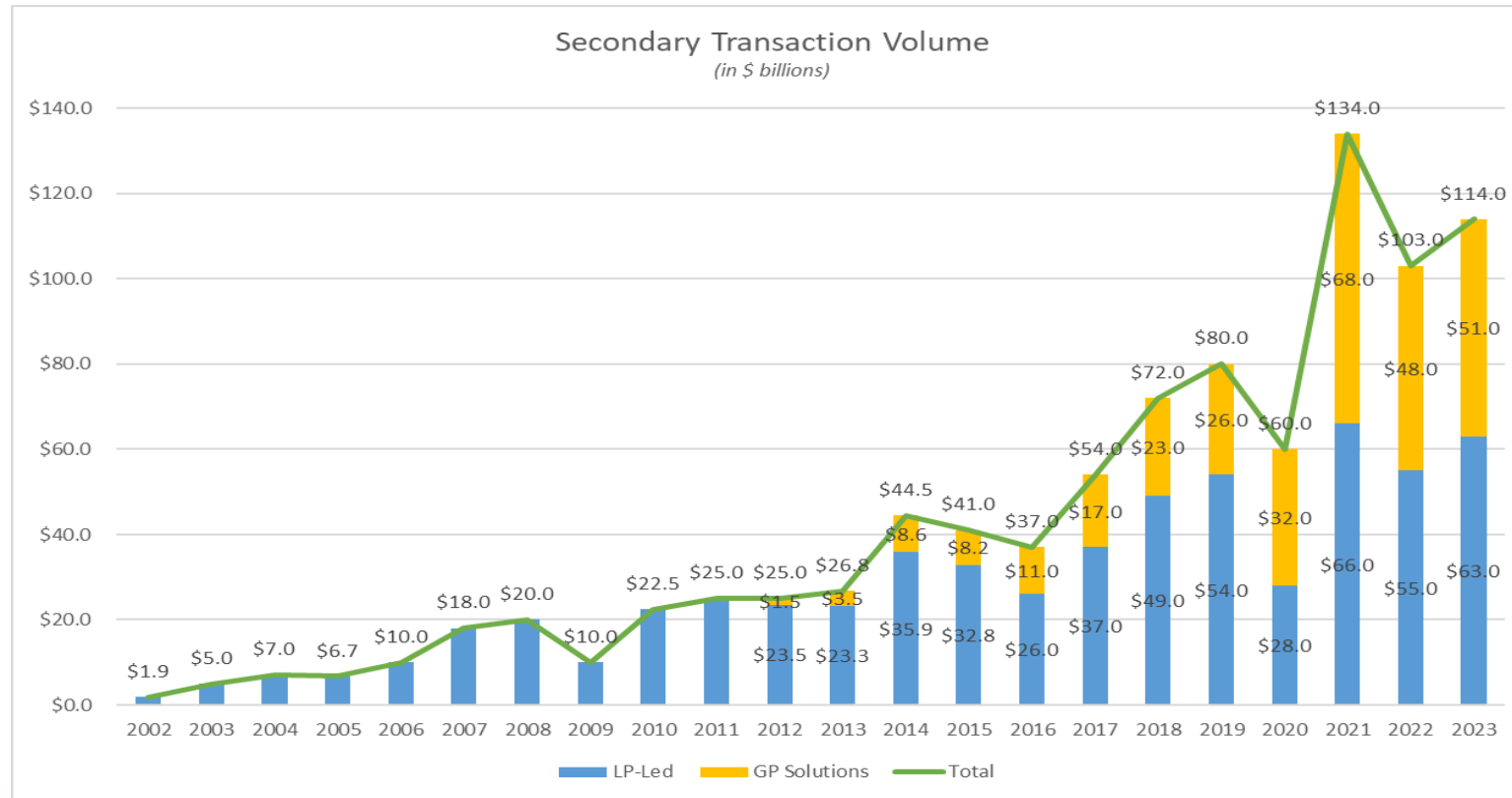
RAISING CASH / LIQUIDITY

Asset Class is illiquid:

Enables LPs to raise
cash & liquidity +
Rebalance

Secondary Market History

... From Cottage Industry to Large, Viable Market



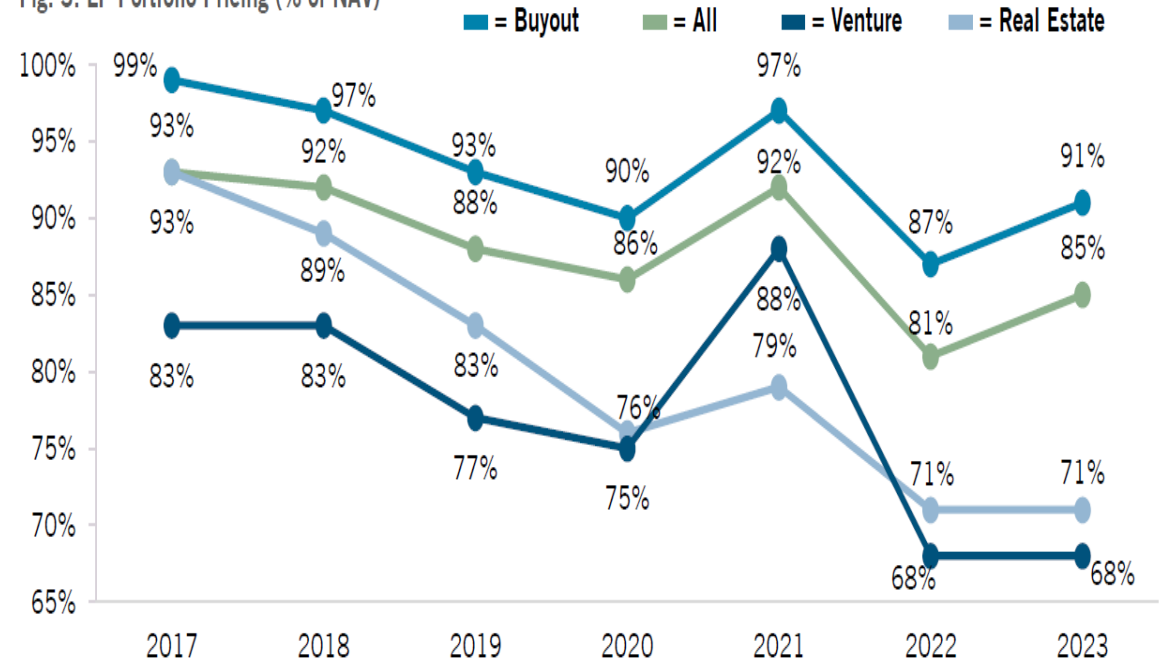
Sources: Greenhill Cogent & Evercore

- **Started in the 90s as:**
 - A cottage industry
 - Dominated by distressed sellers
 - Minimal broker/market coverage
- **Today: Large, more mature & viable market:**
 - Predominantly used by LPs & GPs for portfolio management
 - 2013 (~\$27bn) to 2023 (\$114bn)

Current Market Pricing

- Older Assets receive lower price / higher discount
 - *Less upside remaining for buyer*
- Buyouts generally command highest price, followed by Venture and Real Estate

Fig. 3. LP Portfolio Pricing (% of NAV)



*Jeffries, Global Secondary Market Review, January 2024

NYSTRS' Approach:

Used for Portfolio Management Purposes

Proactive Rebalancing

- Move away from legacy relationships
- Re-invest in high conviction managers

Reduce # of Relationships

- Allows staff to focus on continuing relationships
- Streamline portfolio mgmt. & oversight

Sale Process Summary

IPM allows ED/CIO discretion

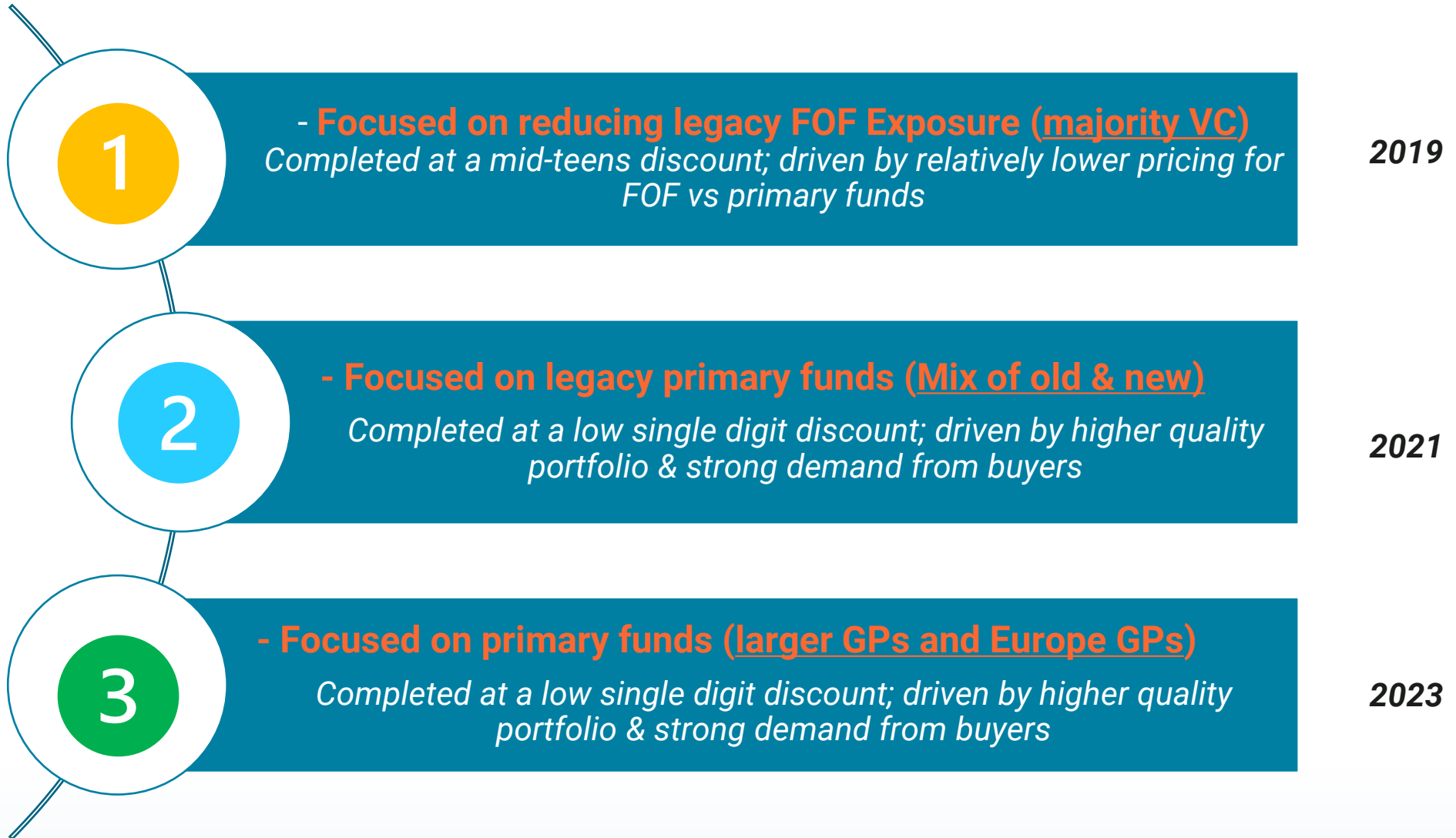
Considered as part of total investment portfolio rebalancing with IIC	Iterative process with multiple “go”, “no go” decision points with IIC	Utilize broker to ensure robust process & price maximization
---	--	--

Sale Process Steps

- Decision made at IIC to explore sale
 - Staff develops sale portfolio, focused on legacy relationships
-
- Discuss & seek approval from IIC for price discovery
 - Engage Broker, obtain initial pricing, revise portfolio
-
- Discuss/seek IIC approval to begin formal marketing
 - Receive 1st round bids, discuss/seek approval from IIC
 - Receive final bids, discuss/seek approval from IIC, finalize sale
-

History of NYSTRS' Secondary Sales

NYSTRS
completed 3
portfolio
secondary sales



July 31, 2024



**New York State Teachers'
Retirement System**

2024 Asset Allocation Review

Thomas H. Shingler
Fund Sponsor Consulting

Angel Haddad
Fund Sponsor Consulting

Jay Kloepfer
Capital Market Research

Kevin Machiz, CFA, FRM
Capital Market Research

Important Disclosures regarding the use of this document are included at the end of this document. These disclosures are an integral part of this document and should be considered by the user.

Setting Strategic Asset Allocation Policy

The cornerstone of a prudent process for pension plan fiduciaries is a careful and thorough examination of their long-term strategic plan

- Asset allocation is the single most important decision fiduciaries make with regard to investment policy
 - AA is the primary determinant of the expected level of return, and AA defines the range of potential results or volatility of the investment program. This evaluation of volatility includes the potential to experience drawdowns in the capital markets
- Asset allocation policy acknowledges the goals and risk tolerance for the investor and aligns these goals to potential outcomes for both the policy target and potential alternative asset mixes

AA process:

- Explicitly acknowledge change and uncertainty in the capital markets
- Establish reasonable rate-of-return and risk expectations for individual investments
- Establish reasonable rate-of-return and risk expectations for investment portfolios
- Confirm an investment policy to meet return and risk objectives in relation to goals

Callan and NYSTRS Staff began the annual asset allocation review process in January and are not recommending any changes to the target asset allocation this year. NYSTRS' IPM States:

NYSTRS' asset allocation and underlying asset class policy benchmarks are reviewed and recommended by the Executive Director and Chief Investment Officer to the Retirement Board for approval annually.

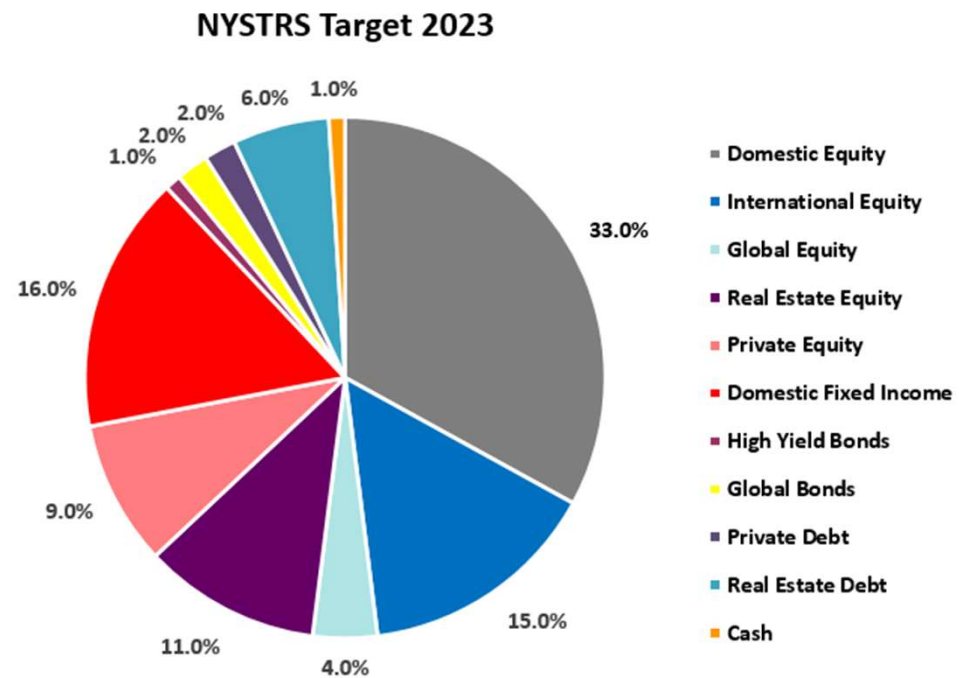
No Changes Recommended For the Current Target after AA Review

Callan and NYSTRS Staff considered whether to recommend asset allocation changes with a focus on scenarios exploring incremental derisking, that reduce public equity and add to debt asset classes; these changes could reduce expected volatility, increase portfolio efficiency, and increase yield but would also reduce the overall portfolio expected return

Callan does not recommend any change to the Current Target asset allocation

- Current actual allocation is not at policy target; focus on rebalancing to policy target in liquid asset classes, including specifically bringing core fixed income up to target

Callan supports the adjustment to the implementation of global fixed income with a portion of emerging market debt managed internally

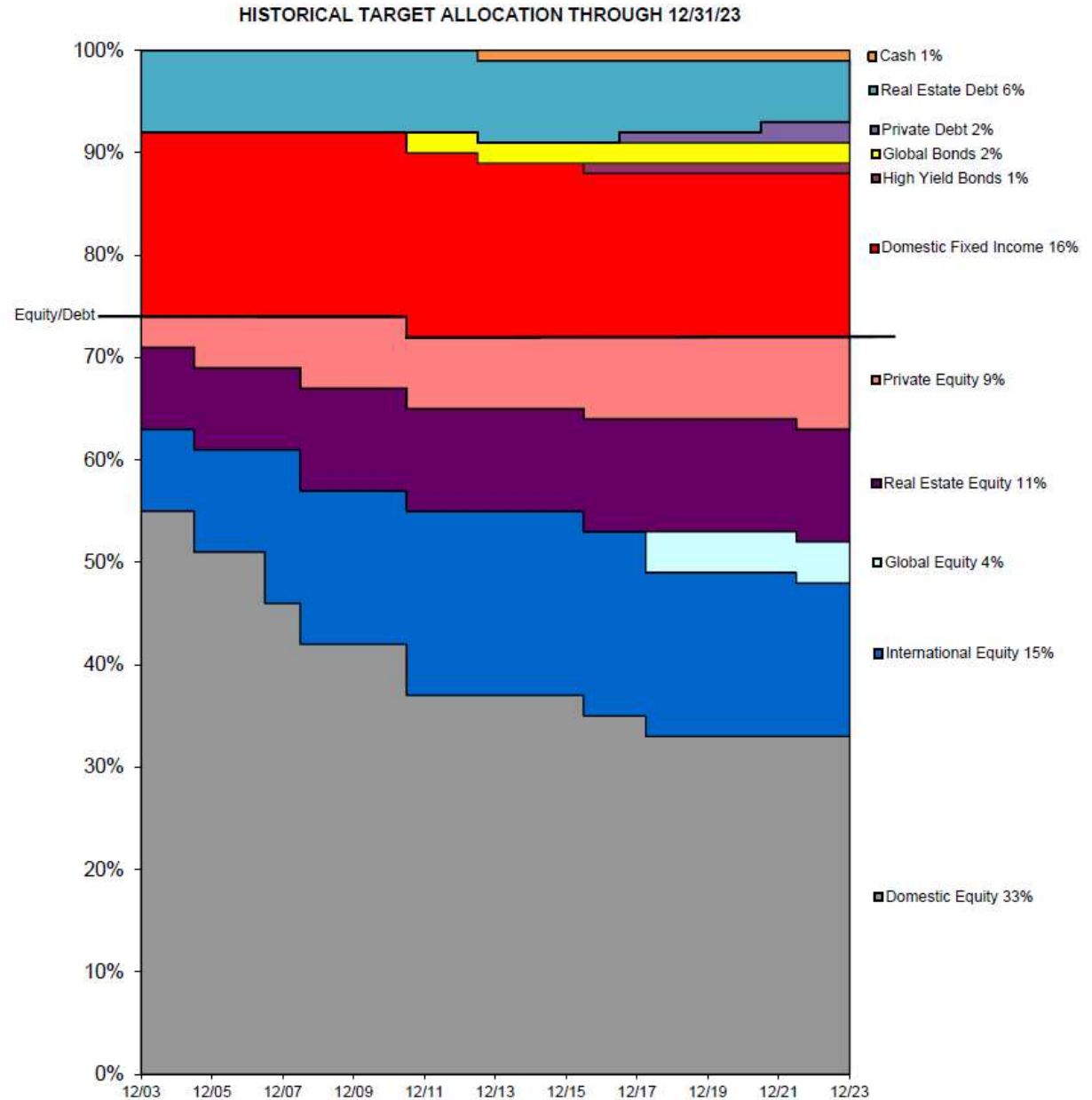


NYSTRS Asset Allocation Target Over Time

NYSTRS' target asset allocation has evolved steadily over the past two decades

- Diversifying strategies have been added or increased, funded primarily from domestic equity
 - International equity
 - Private equity
 - Real estate equity
 - Global equity
 - Global fixed income
 - Private credit
 - High Yield bonds

NYSTRS has maintained a deliberate allocation to high-quality fixed income over time



Source: Office of the CFO/Investment Operations Department

Callan

Callan Update

Introducing CODE: Callan On-Demand Education

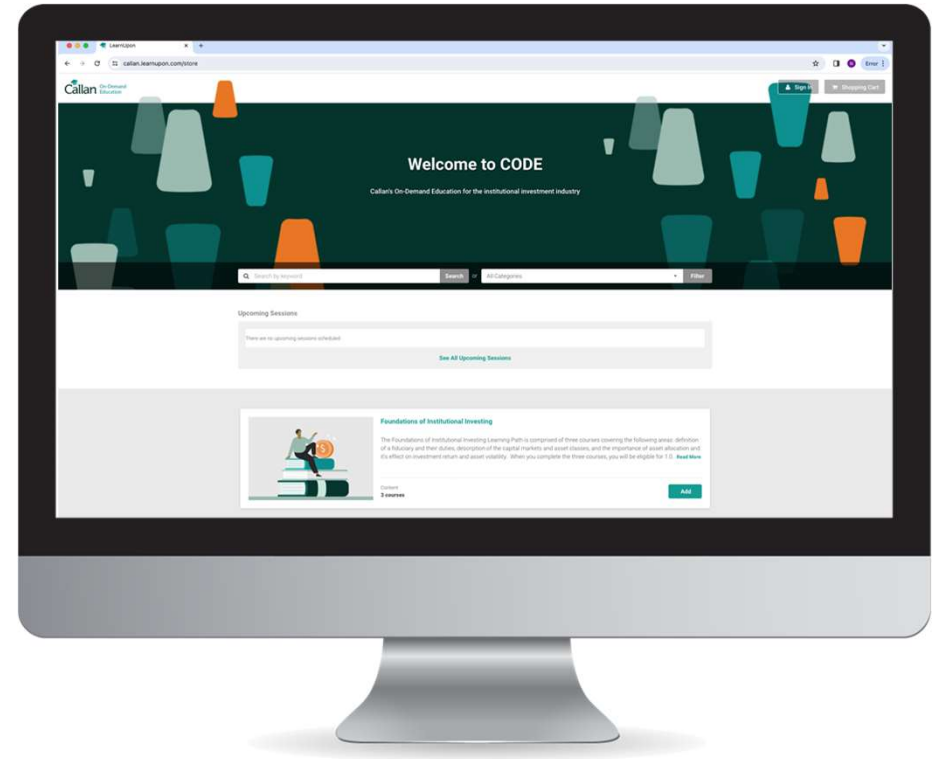


- ▶ Variety of educational courses
- ▶ Interactive and engaging
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- ▶ Learning at your own pace

CODE courses are designed for investment professionals of all levels—and they're self-guided. Access them anytime, from anywhere, and get continuing education credits for each completed course.

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callan.com/code



3 Reasons to Take CODE Courses

- 1 Become a better fiduciary
- 2 Showcase your skills and knowledge
- 3 Learn from Callan's investment experts

Published Research Highlights: 2Q24

Quantifying Sequence-of-Returns Risk



Sector-Specialist Strategies and Large LPs' Portfolios



2024 Asset Manager DEI Study



Recent Blog Posts

Commercial Real Estate Capital Markets and Institutional Investors

Christine Mays

A Look at How We Did With Our Capital Markets Assumptions

Greg Allen and Julia Moriarty

Is This a Time for Active Managers to Shine?

Tony Lissuzzo

Additional Reading

Active vs. Passive quarterly charts
Capital Markets Review quarterly newsletter
 Monthly Updates to the Periodic Table
Market Pulse Flipbook quarterly markets update
 Market Intelligence (clients-only)
Real Estate Indicators market outlook

Callan Institute Events

Upcoming conferences, workshops, and webinars

Callan College

Intro to Investments—Learn the Fundamentals

This course is for institutional investors, including trustees and staff members of public plans, corporate plans, and nonprofits. This session familiarizes trustees and staff with basic investment theory, terminology, and practices.

– September 24-26, 2024 – Virtual Session via Zoom

Intro to Alternatives

This course is for institutional investors, including trustees and staff members of public plans, corporate plans, and nonprofits. This session familiarizes trustees and staff with alternative investments like private equity, hedge funds, and real estate, and how they can play a key role in any portfolio. You will learn about the importance of allocations to alternatives and how to consider integrating, evaluating, and monitoring them.

– August 21-22, 2024 – Virtual Session via Zoom

Please visit our website at callan.com/events-education as we add dates to our 2024 calendar!

Mark Your Calendar

2024 Regional Workshops

October 22, 2024 – Denver

October 23, 2024 – Chicago

2025 National Conference

April 27-29, 2025 – Scottsdale

Watch your email for further details and an invitation.

Webinars & Research Café Sessions

Webinar: Market Intelligence

July 26, 2024 – Virtual Session via Zoom

Webinar: Real Estate and Alternatives in a Turbulent Environment (June Workshop)

July 31, 2024 – Virtual Session via Zoom

Callan Updates

Firm updates by the numbers, as of June 30, 2024

Total Associates: ~210

Company Ownership:

- ▶ 100% employees
- ▶ ~70% of employees are equity owners
- ▶ ~55% of shareholders identify as women or minority

Total General and Investment Consultants: 50+

Total Specialty and Research Consultants: 60+

Total CFA/CAIA/FRMs: 55+

Total Institutional Investor Clients: 475+

Provides advisory services to institutional investor clients with assets over \$4+ trillion

COMING SOON: Callan's First Diversity, Equity & Belonging (DEB) Advancement Report

Our inaugural report will highlight Callan's commitment to advancing diversity, equity, and belonging (DEB) within the institutional investment community. While we've achieved many milestones in this area since the firm's founding over five decades ago, our recent work is a testament to our steadfast dedication to promoting DEB in all aspects of our business.

“Not only is our DEB initiative critical to Callan’s success, but we hope it will ultimately influence our entire industry. Supporting this initiative from the position of CEO is the best way for me to ensure its success. As the executive sponsor, I can make sure our team has the support and resources to effect real change.”

— Greg Allen, CEO, Chief Research Officer and the executive sponsor of Callan’s DEB program

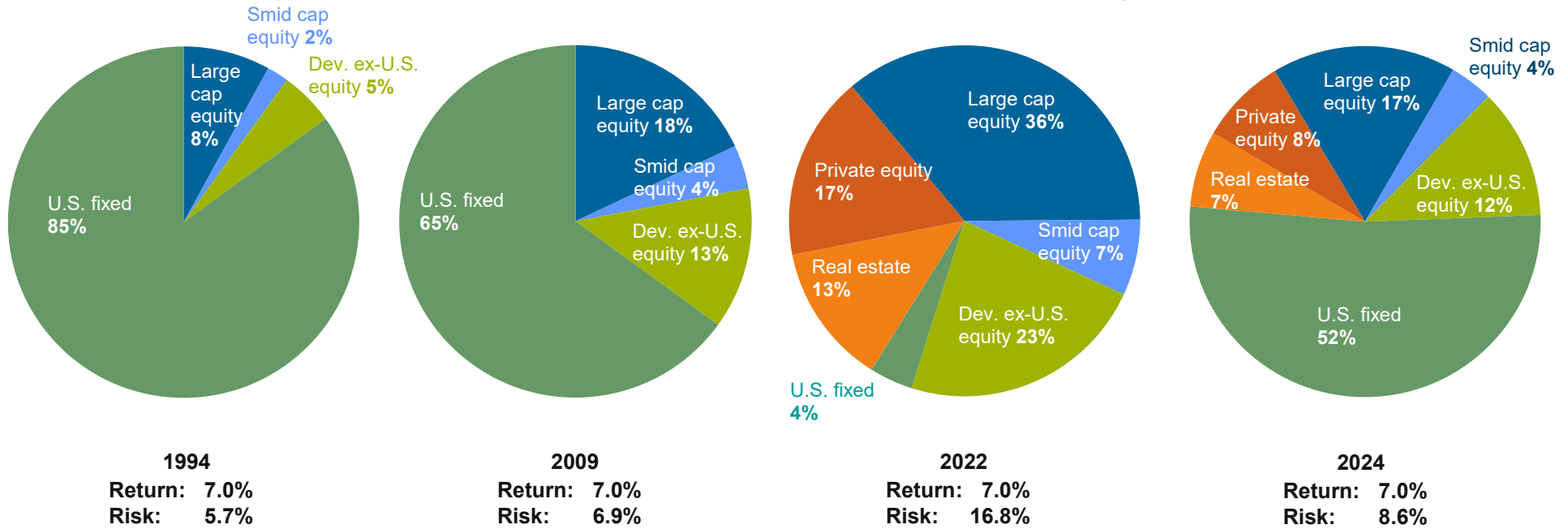


Callan

Appendix

7% Expected Returns Over Past 30 Years

Increasing Complexity



Increasing Risk

In 1994, our return expectation for broad U.S. fixed income was 6.2%.
Just 15% in return-seeking assets was required to earn a 7% projected return.

15 years later, an institutional investor would have needed an additional 20% of the portfolio in public equities for a total of 35% to achieve a 7% projected return.

In 2022 an investor was required to include 96% in return-seeking assets (including 30% in private markets investments) to earn a 7% projected return at almost 3x the volatility compared to 1994.

Today's 7% expected return portfolio is much more reasonable than it was just two years ago. The allocation to fixed income jumps to 52%, while risk is essentially cut in half. Private markets investments are also cut in half.

2024 Callan Capital Market Projections – Standard Set, 10 Year Horizon

Risk and return: 2024–2033

Asset Class	Index	PROJECTED RETURN			PROJECTED RISK		2023 - 2032			vs 2023	
		1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation	Projected Yield	1-Year Arithmetic	10-Year Geometric*	Standard Deviation	Geometric* Delta	Std Dev Delta
Equities											
Broad U.S. Equity	Russell 3000	8.85%	7.65%	5.15%	17.40%	1.95%	8.75%	7.35%	18.05%	0.30%	-0.65%
Large Cap U.S. Equity	S&P 500	8.70%	7.50%	5.00%	17.00%	2.00%	8.60%	7.25%	17.75%	0.25%	-0.75%
Small/Mid Cap U.S. Equity	Russell 2500	9.80%	7.70%	5.20%	22.00%	1.75%	9.60%	7.45%	22.15%	0.25%	-0.15%
Global ex-U.S. Equity	MSCI ACWI ex USA	9.65%	7.65%	5.15%	21.40%	3.70%	9.45%	7.45%	21.25%	0.20%	0.15%
Developed ex-U.S. Equity	MSCI World ex USA	9.25%	7.50%	5.00%	20.15%	3.75%	9.00%	7.25%	20.15%	0.25%	0.00%
Emerging Market Equity	MSCI Emerging Markets	10.65%	7.70%	5.20%	25.60%	3.55%	10.45%	7.45%	25.70%	0.25%	-0.10%
Fixed Income											
Short Duration Gov't/Credit	Bloomberg 1-3 Yr G/C	4.25%	4.25%	1.75%	2.40%	3.70%	3.75%	3.80%	2.30%	0.45%	0.10%
Core U.S. Fixed	Bloomberg Aggregate	5.25%	5.25%	2.75%	4.25%	4.70%	4.25%	4.25%	4.10%	1.00%	0.15%
Long Government	Bloomberg Long Gov	6.20%	5.40%	2.90%	13.75%	4.80%	4.55%	3.70%	13.50%	1.70%	0.25%
Long Credit	Bloomberg Long Cred	6.85%	6.30%	3.80%	11.90%	6.20%	5.75%	5.20%	11.75%	1.10%	0.15%
Long Government/Credit	Bloomberg Long G/C	6.55%	6.00%	3.50%	11.70%	5.55%	5.20%	4.65%	11.40%	1.35%	0.30%
TIPS	Bloomberg TIPS	5.10%	5.05%	2.55%	5.40%	4.30%	4.10%	4.00%	5.30%	1.05%	0.10%
High Yield	Bloomberg High Yield	7.30%	6.80%	4.30%	11.75%	8.45%	6.75%	6.25%	11.75%	0.55%	0.00%
Global ex-U.S. Fixed	Bloomberg GI Agg xUSD	3.60%	3.15%	0.65%	9.80%	2.70%	2.70%	2.25%	9.80%	0.90%	0.00%
Emerging Market Sovereign Debt	EMBI Global Diversified	6.75%	6.35%	3.85%	10.65%	7.70%	6.25%	5.85%	10.65%	0.50%	0.00%
Alternatives											
Core Real Estate Equity	NCREIF ODCE	6.85%	6.00%	3.50%	14.00%	4.00%	6.60%	5.75%	14.20%	0.25%	-0.20%
Private Infrastructure	MSCI Glb Infra/FTSE Dev Core 50/50	7.30%	6.35%	3.85%	15.20%	4.80%	7.15%	6.15%	15.45%	0.20%	-0.25%
Private Equity	Cambridge Private Equity	12.15%	8.75%	6.25%	27.60%	0.00%	11.95%	8.50%	27.60%	0.25%	0.00%
Private Credit	Cambridge Senior Debt Index	8.40%	7.40%	4.90%	15.70%	7.40%	8.00%	7.00%	15.50%	0.40%	0.20%
Hedge Funds	Callan Hedge FoF Database	6.25%	6.05%	3.55%	8.20%	0.00%	5.80%	5.55%	8.45%	0.50%	-0.25%
Commodities	Bloomberg Commodity	5.45%	3.90%	1.40%	18.05%	3.00%	5.05%	3.50%	18.00%	0.40%	0.05%
Cash Equivalents											
	90-Day T-Bill	3.00%	3.00%	0.50%	0.90%	3.00%	2.75%	2.75%	0.90%	0.25%	0.00%
Inflation											
	CPI-U		2.50%		1.60%			2.50%	1.60%	0.00%	0.00%

Note that return projections for public markets assume index returns with no premium for active management.

* Geometric returns are derived from arithmetic returns and the associated risk (standard deviation).

Source: Callan LLC

2024–2033 Callan Capital Markets Assumptions Correlations

Correlation Matrix		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1	Broad U.S. Equity	1.00																					
2	Large Cap U.S. Equity	1.00	1.00																				
3	Small/Mid Cap U.S. Equity	0.91	0.87	1.00																			
4	Global ex-US Equity	0.79	0.75	0.86	1.00																		
5	Developed ex-U.S. Equity	0.73	0.70	0.81	0.99	1.00																	
6	Emerging Market Equity	0.84	0.81	0.88	0.97	0.92	1.00																
7	Short Duration G/C	0.04	0.05	0.01	0.02	0.04	-0.01	1.00															
8	Core U.S. Fixed	0.08	0.09	0.03	0.04	0.06	0.00	0.78	1.00														
9	Long Government/Credit	0.22	0.23	0.19	0.21	0.21	0.19	0.69	0.88	1.00													
10	TIPS	-0.03	-0.02	-0.05	-0.05	-0.04	-0.07	0.55	0.70	0.58	1.00												
11	High Yield	0.75	0.74	0.74	0.73	0.71	0.74	0.13	0.15	0.26	0.06	1.00											
12	Global ex-U.S. Fixed	0.12	0.12	0.11	0.13	0.14	0.10	0.50	0.50	0.52	0.40	0.16	1.00										
13	EM Sovereign Debt	0.61	0.59	0.60	0.63	0.61	0.65	0.17	0.23	0.32	0.11	0.62	0.17	1.00									
14	Core Real Estate Equity	0.34	0.33	0.33	0.34	0.33	0.33	0.17	0.22	0.22	0.12	0.30	0.14	0.22	1.00								
15	Private Infrastructure	0.47	0.47	0.47	0.46	0.45	0.47	0.14	0.18	0.24	0.08	0.34	0.18	0.32	0.65	1.00							
16	Private Equity	0.80	0.79	0.77	0.78	0.76	0.76	-0.04	-0.04	0.11	-0.12	0.55	0.07	0.44	0.46	0.52	1.00						
17	Private Credit	0.68	0.67	0.67	0.67	0.64	0.68	0.04	0.06	0.17	-0.05	0.55	0.11	0.47	0.26	0.27	0.65	1.00					
18	Hedge Funds	0.59	0.60	0.50	0.50	0.50	0.50	0.28	0.39	0.42	0.23	0.50	0.24	0.47	0.24	0.31	0.34	0.47	1.00				
19	Commodities	0.20	0.20	0.20	0.20	0.20	0.20	-0.04	-0.05	-0.03	0.00	0.18	0.05	0.15	0.16	0.15	0.16	0.14	0.17	1.00			
20	Cash Equivalents	-0.03	-0.02	-0.07	-0.08	-0.08	-0.08	0.27	0.16	0.09	0.14	-0.03	0.10	-0.02	0.02	-0.04	-0.04	-0.04	0.00	-0.02	1.00		
21	Inflation	0.00	0.00	0.02	0.01	0.00	0.02	-0.20	-0.22	-0.27	0.25	-0.03	-0.12	-0.04	0.20	0.10	0.04	-0.04	-0.01	0.35	0.02	1.00	

Source: Callan

Customized NYSTRS Capital Market Projections – 30-Year Time Horizon

NYSTRS Correlation Matrix

Correlation Matrix	Broad US	Glb ex US	Glbl Eq	RE Eq	Priv Eq	Priv Cred	Core Fix	Glbl Fix	EMD	RE Debt	Hi Yield	Cash	Infl	New GFI
Broad US Equity	1.00													
Global ex-US Equity (NYSTRS)	0.78	1.00												
Global Equity	0.95	0.93	1.00											
Real Estate Equity	0.56	0.57	0.60	1.00										
Private Equity	0.80	0.77	0.83	0.68	1.00									
Private Credit	0.68	0.66	0.71	0.46	0.65	1.00								
Core US Fixed	0.08	0.04	0.07	0.09	-0.04	0.06	1.00							
Global Fixed Income	0.12	0.11	0.12	0.11	0.03	0.10	0.80	1.00						
EMD	0.61	0.63	0.65	0.35	0.44	0.47	0.23	0.22	1.00					
Real Estate Debt	0.76	0.74	0.80	0.68	0.86	0.60	0.38	0.39	0.52	1.00				
High Yield	0.75	0.73	0.79	0.49	0.55	0.55	0.15	0.18	0.62	0.63	1.00			
Cash Equivalents	-0.03	-0.08	-0.06	-0.03	-0.04	-0.04	0.16	0.14	-0.02	0.04	-0.03	1.00		
Inflation	0.00	0.01	0.01	0.18	0.04	-0.04	-0.22	-0.18	-0.04	-0.05	-0.03	0.02	1.00	
New Global FI	0.34	0.33	0.35	0.24	0.20	0.27	0.80	0.93	0.54	0.55	0.40	0.11	-0.18	1.00

Projection set customized to reflect specific NYSTRS strategies:

- Real estate equity, real estate debt, global fixed income

New Global FI = 70% global aggregate, 10% global corporate, 20% emerging debt USD IG

Source: Callan LLC

NYSTRS Target, Actual and Alternative Asset Mixes – 10-Year Time Horizon

Asset Class	Target Weight	Actual 12/31/2023	Current Target w/Proposed Global FI	PROJECTED RETURN		PROJECTED RISK	
				Single-Period Arithmetic Return	10-Year Geometric Return	Annualized Standard Deviation	Projected Yield
Public Equity	52.0%	51.3%	52.0%				
Broad US Equity (1)	33.0%	33.5%	33.0%	8.85%	7.65%	17.40%	2.00%
Global Ex-US Equity (2)	15.0%	14.0%	15.0%	9.60%	7.65%	21.15%	3.70%
Global Equity (3)	4.0%	3.8%	4.0%	9.15%	7.85%	17.85%	2.65%
Private Market Equity	20.0%	21.6%	20.0%				
Real Estate Equity (4)	11.0%	12.1%	11.0%	8.20%	7.15%	16.15%	2.90%
Private Equity	9.0%	9.5%	9.0%	12.15%	8.75%	27.60%	0.00%
Private Debt	2.0%	1.6%	2.0%				
Private Debt	2.0%	1.6%	2.0%	8.40%	7.40%	15.70%	7.40%
Fixed Income	25.0%	22.6%	25.0%				
Core U.S. Fixed Income	16.0%	14.1%	16.0%	5.25%	5.25%	4.25%	4.70%
Global Fixed Income (5)	2.0%	2.0%	0.0%	4.30%	4.30%	3.70%	3.50%
Real Estate Debt (6)	6.0%	5.4%	6.0%	6.45%	6.45%	5.00%	4.00%
High Yield	1.0%	1.1%	1.0%	7.30%	6.80%	11.75%	8.45%
New Global Fixed Income (7)	0.0%	0.0%	2.0%	4.75%	4.75%	3.95%	4.15%
Cash Equivalents	1.0%	2.9%	1.0%				
Cash Equivalents	1.0%	2.9%	1.0%	3.00%	3.00%	0.90%	3.00%
Inflation					2.50%	1.60%	
Total Equity (% of Portfolio)	72.0%	72.9%	72.0%				
Total Debt (% of Portfolio)	28.0%	27.1%	28.0%				
US Equity (% of Public Equity)	68.1%		68.1%				
Total Fund	100.0%	100.0%	100.0%				
Single-Period Arithmetic Return	8.31%	8.29%	8.32%				
10-Year Geometric Return	7.70%	7.66%	7.70%				
Annualized Standard Deviation	13.15%	13.19%	13.17%				
Projected Yield	2.95%	2.88%	2.97%				
Sharpe Ratio	0.36	0.35	0.36				

(1) Broad US equity = 85% large cap, 15% mid and small cap
(2) Global ex-US equity = 75% developed markets, 25% emerging markets
(3) Global Equity = 60% broad US, 40% global ex-US
(4) Real Estate Equity = 55% core, 30% non-core, 15% REITs
(5) Global fixed income = 60% non-US developed market, 40% core US
(6) Real estate debt = 80% commercial mortgages/20% private mezzanine debt
(7) New GFI = 70% global, 10% global corporate, 20% emerging debt USD IG

Non-US dollar fixed income currency exposure hedged to US dollar in Callan assumption.

Source: Callan LLC

NYSTRS Target, Actual and Alternative Asset Mixes – 20-Year Time Horizon

Asset Class	Target Weight	Actual 12/31/2023	Current Target w/Proposed Global FI	PROJECTED RETURN		PROJECTED RISK	
				Single-Period Arithmetic Return	20-Year Geometric Return	Annualized Standard Deviation	Projected Yield
Public Equity	52.0%	51.3%	52.0%				
Broad US Equity (1)	33.0%	33.5%	33.0%	9.00%	7.75%	17.40%	2.00%
Global Ex-US Equity (2)	15.0%	14.0%	15.0%	9.80%	7.80%	21.15%	3.70%
Global Equity (3)	4.0%	3.8%	4.0%	9.35%	8.00%	17.85%	2.65%
Private Market Equity	20.0%	21.6%	20.0%				
Real Estate Equity (4)	11.0%	12.1%	11.0%	8.50%	7.40%	16.15%	2.90%
Private Equity	9.0%	9.5%	9.0%	12.35%	8.90%	27.60%	0.00%
Private Debt	2.0%	1.6%	2.0%				
Private Debt	2.0%	1.6%	2.0%	8.40%	7.40%	15.70%	7.40%
Fixed Income	25.0%	22.6%	25.0%				
Core U.S. Fixed Income	16.0%	14.1%	16.0%	5.20%	5.20%	4.25%	4.70%
Global Fixed Income (5)	2.0%	2.0%	0.0%	4.45%	4.45%	3.70%	3.50%
Real Estate Debt (6)	6.0%	5.4%	6.0%	6.40%	6.40%	5.00%	4.00%
High Yield	1.0%	1.1%	1.0%	7.30%	6.80%	11.75%	8.45%
New Global Fixed Income (7)	0.0%	0.0%	2.0%	4.80%	4.80%	3.95%	4.15%
Cash Equivalents	1.0%	2.9%	1.0%				
Cash Equivalents	1.0%	2.9%	1.0%	3.00%	3.00%	0.90%	3.00%
Inflation					2.50%	1.60%	
Total Equity (% of Portfolio)	72.0%	72.9%	72.0%				
Total Debt (% of Portfolio)	28.0%	27.1%	28.0%				
US Equity (% of Public Equity)	68.1%		68.1%				
Total Fund	100.0%	100.0%	100.0%				
Single-Period Arithmetic Return	8.44%	8.41%	8.44%				
20-Year Geometric Return	7.82%	7.79%	7.82%				
Annualized Standard Deviation	13.15%	13.19%	13.17%				
Projected Yield	2.95%	2.88%	2.97%				
Sharpe Ratio	0.37	0.36	0.37				

(1) Broad US equity = 85% large cap, 15% mid and small cap

(2) Global ex-US equity = 75% developed markets, 25% emerging markets

(3) Global Equity = 60% broad US, 40% global ex-US

(4) Real Estate Equity = 55% core, 30% non-core, 15% REITs

(5) Global fixed income = 60% non-US developed market, 40% core US

(6) Real estate debt = 80% commercial mortgages/20% private mezzanine debt

(7) New GFI = 70% global, 10% global corporate, 20% emerging debt USD IG

Non-US dollar fixed income currency exposure hedged to US dollar in Callan assumption.

Source: Callan LLC

NYSTRS Target, Actual and Alternative Asset Mixes – 30-Year Time Horizon

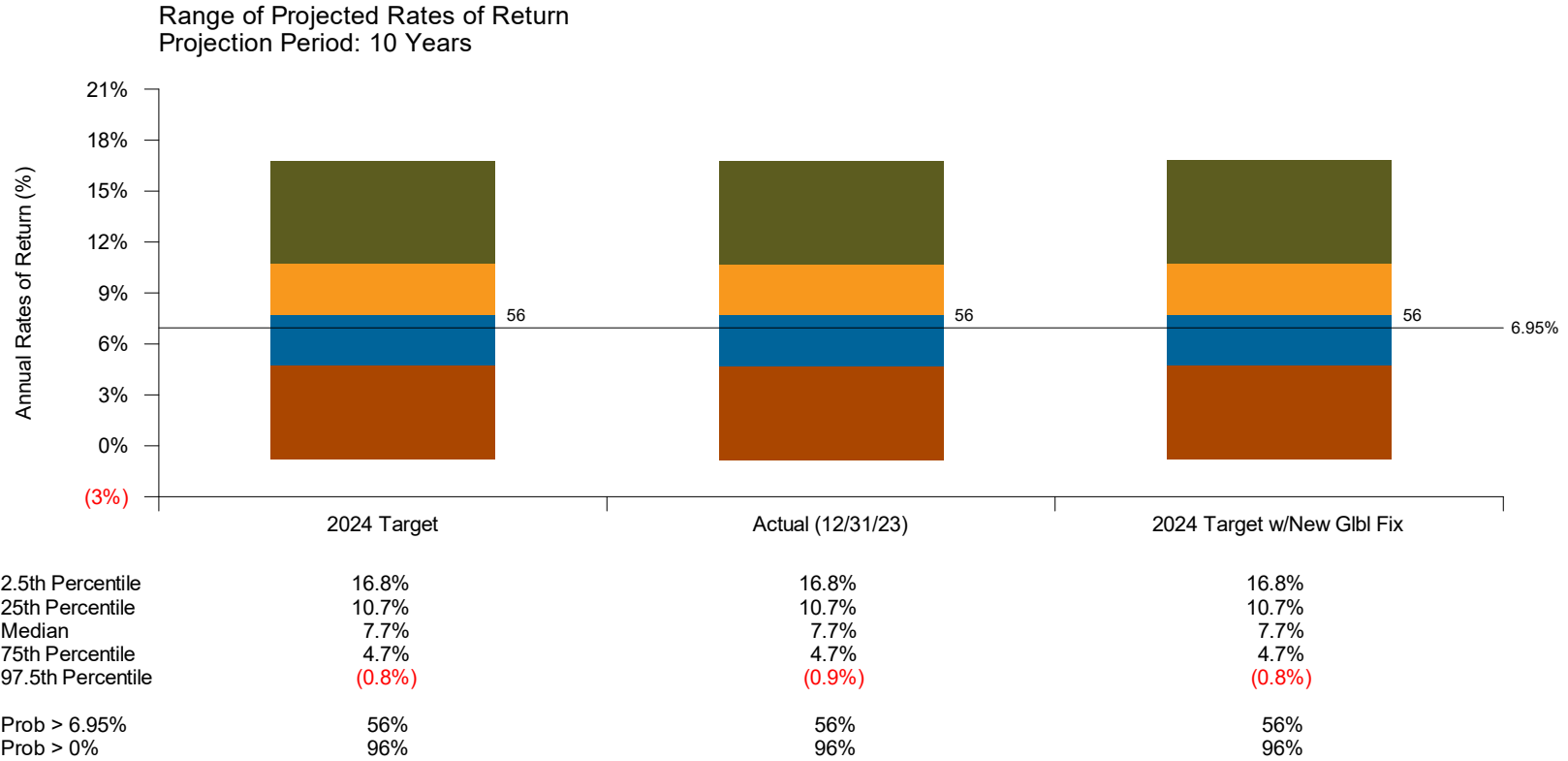
Asset Class	Target Weight	Actual 12/31/2023	Current Target w/Proposed Global FI	PROJECTED RETURN		PROJECTED RISK	
				Single-Period Arithmetic Return	30-Year Geometric Return	Annualized Standard Deviation	Projected Yield
Public Equity	52.0%	51.3%	52.0%				
Broad US Equity (1)	33.0%	33.5%	33.0%	9.10%	7.85%	17.40%	2.00%
Global Ex-US Equity (2)	15.0%	14.0%	15.0%	9.90%	7.90%	21.15%	3.70%
Global Equity (3)	4.0%	3.8%	4.0%	9.40%	8.10%	17.85%	2.65%
Private Market Equity	20.0%	21.6%	20.0%				
Real Estate Equity (4)	11.0%	12.1%	11.0%	8.75%	7.65%	16.15%	2.90%
Private Equity	9.0%	9.5%	9.0%	12.45%	9.00%	27.60%	0.00%
Private Debt	2.0%	1.6%	2.0%				
Private Debt	2.0%	1.6%	2.0%	8.40%	7.40%	15.70%	7.40%
Fixed Income	25.0%	22.6%	25.0%				
Core U.S. Fixed Income	16.0%	14.1%	16.0%	5.10%	5.15%	4.25%	4.70%
Global Fixed Income (5)	2.0%	2.0%	0.0%	4.55%	4.60%	3.50%	3.50%
Real Estate Debt (6)	6.0%	5.4%	6.0%	6.35%	6.40%	5.00%	4.00%
High Yield	1.0%	1.1%	1.0%	7.30%	6.80%	11.75%	8.45%
New Global Fixed Income (7)	0.0%	0.0%	2.0%	4.95%	4.95%	3.95%	4.15%
Cash Equivalents	1.0%	2.9%	1.0%				
Cash Equivalents	1.0%	2.9%	1.0%	3.00%	3.00%	0.90%	3.00%
Inflation					2.50%	1.60%	
Total Equity (% of Portfolio)	72.0%	72.9%	72.0%				
Total Debt (% of Portfolio)	28.0%	27.1%	28.0%				
US Equity (% of Public Equity)	68.1%		68.1%				
Total Fund	100.0%	100.0%	100.0%				
Single-Period Arithmetic Return	8.52%	8.50%	8.52%				
30-Year Geometric Return	7.90%	7.87%	7.90%				
Annualized Standard Deviation	13.15%	13.19%	13.17%				
Projected Yield	2.95%	2.88%	2.97%				
Sharpe Ratio	0.37	0.37	0.37				

(1) Broad US equity = 85% large cap, 15% mid and small cap
(2) Global ex-US equity = 75% developed markets, 25% emerging markets
(3) Global Equity = 60% broad US, 40% global ex-US
(4) Real Estate Equity = 55% core, 30% non-core, 15% REITs
(5) Global fixed income = 60% non-US developed market, 40% core US
(6) Real estate debt = 80% commercial mortgages/20% private mezzanine debt
(7) New GFI = 70% global, 10% global corporate, 20% emerging debt USD IG

Non-US dollar fixed income currency exposure hedged to US dollar in Callan assumption.

Source: Callan LLC

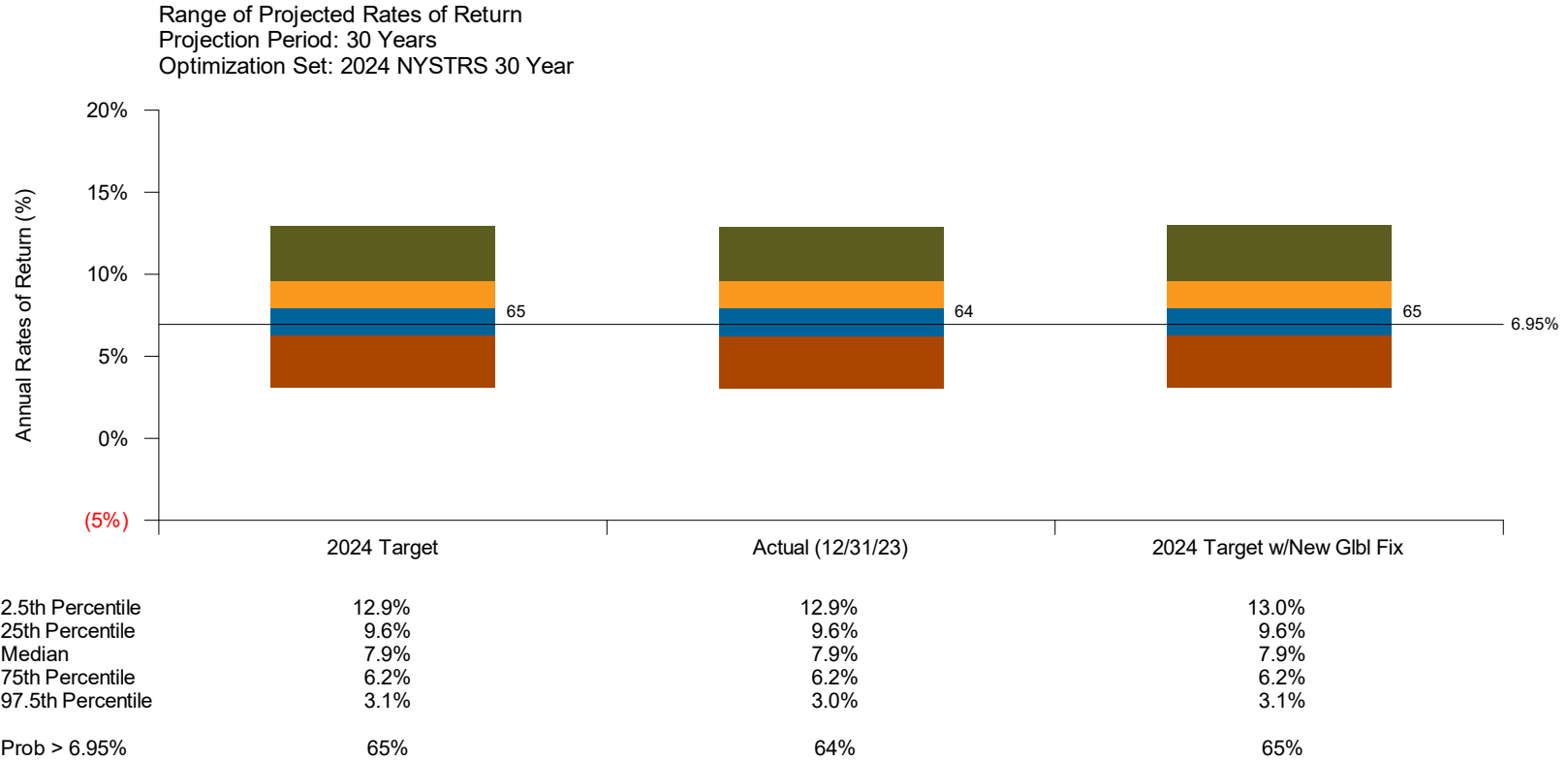
Range of Return Comparison – 10-Year Time Horizon



- Over a 10-Year horizon, results are similar across mixes

Source: Callan LLC

Range of Return Comparison – 30-Year Time Horizon



- Over a 30-Year horizon, results are similar across mixes

Source: Callan LLC

Leeway Clause Estimate

<i>Current Policy Target</i>	<i>Allocation</i>	<i>Estimated Leeway</i>
Domestic Equity	33%	0.00%
International Equity	15%	6.00%
Global Equity (1)	4%	0.67%
Real Estate Equity (2)	11%	0.85%
Private Equity	9%	9.00%
	72%	16.52%
Domestic Fixed Income	16%	0.00%
High Yield Bonds (3)	1%	1.00%
Global Bonds (4)	2%	1.50%
Real Estate Debt (2)	6%	0.20%
Private Debt	2%	2.00%
Cash Equivalents	1%	0.00%
	28%	4.70%
	100%	21.22%
Other (5)		2.04%
Leeway Assets (6)		23.26%
Available Leeway		11.74%
Leeway at 3/31/24		22.63%

Notes:

(1) Assumes Global Equity is split 58% domestic 42% international.

(2) Only a portion of the Real Estate Equity and Debt asset classes --- Directly Owned Properties and Real Estate Funds --- contribute to the 10% limit for Real Estate. Estimated Leeway was calculated with 81% of the Real Estate Equity asset class and 35% of the Real Estate Debt asset class contributing to the 10% limit based on actual amounts as of 3/31/2024.

(3) Assumes 100% of High Yield Bonds are below investment grade.

(4) Assumes 75% of Global Bonds are foreign or below investment grade.

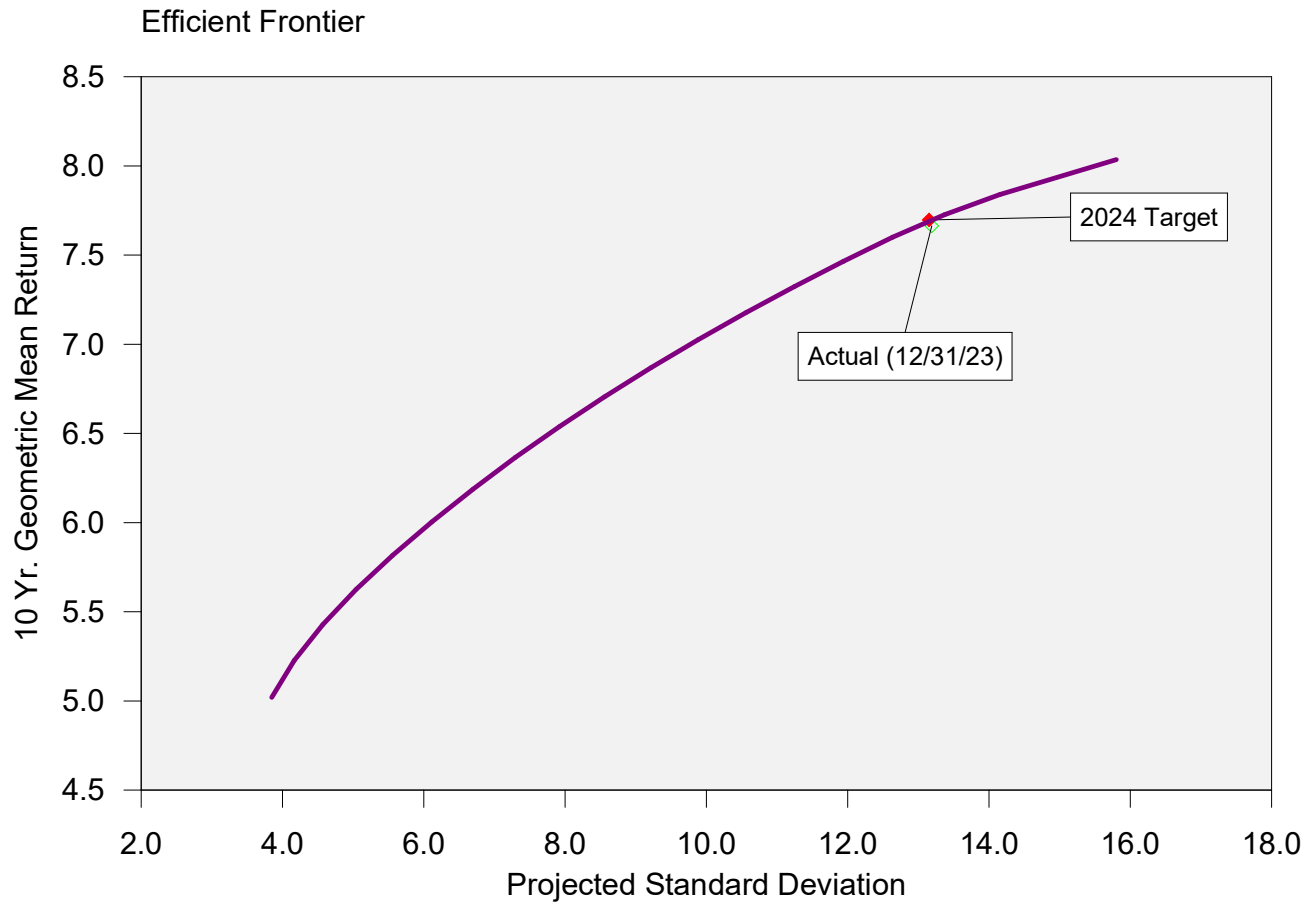
(5) Includes securities with a market capitalization less than \$1B, foreign securities held in domestic portfolios, equity holdings more than 2% of fund assets, domestic fixed income securities below investment grade, and applicable securities lending collateral as of 3/31/2024.

(6) Estimated Leeway percentages are based on assumptions and historical data, and are not intended to precisely predict future percentages.

Actual Leeway was 22.6% as of 3/31/24.

Source: NYSTRS

Efficient Frontier Analysis



- The Current Target is on the constrained efficient frontier. The actual asset allocation, as of 12/31/23, is slightly below the constrained efficient frontier

Constrained efficient frontier shown. Constraints include current 28% total exposure to illiquid asset classes, 5% maximum Private Debt, 6% maximum Real Estate Debt, and 25% maximum Private Equity relative to total Public Equity.

Source: Callan LLC

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Past performance is no guarantee of future results.

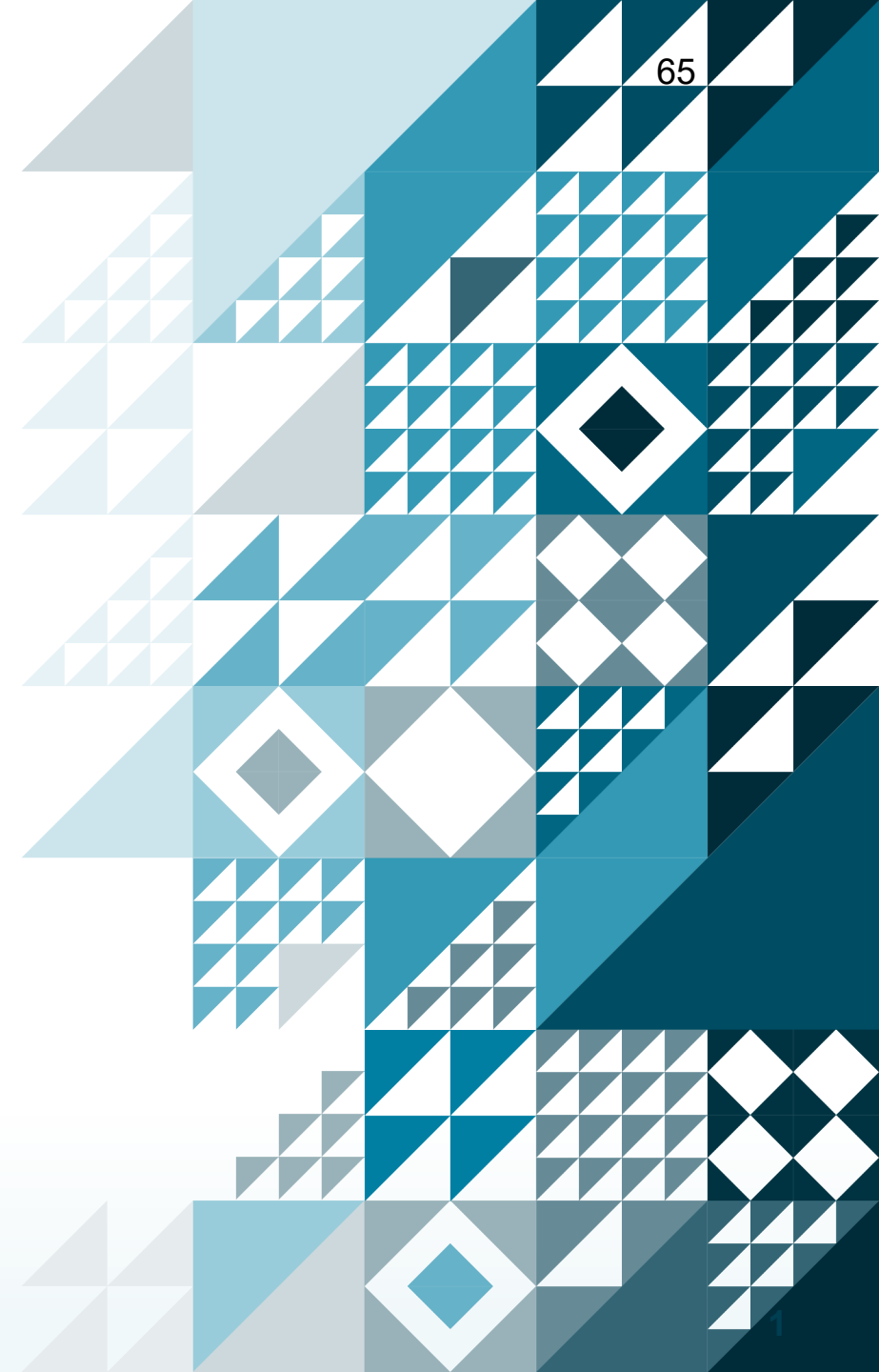


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Appendix H

Stewardship Update

A Review of the Climate Action Plan Process



Restriction Criteria from 2021 Climate Action Plan

- 10 largest positions that have more than 0.3 gigaton of potential CO₂ emissions from thermal coal reserves;
- 10 largest positions that (i) derive more than 20% of their revenue from oil and gas, or (ii) have more than 0.1 gigaton of potential CO₂ emissions from oil and gas reserves;
- Companies that derive more than 10% of their revenue from oil sands

Cannot add to positions of companies that fall under the Restriction Criteria in internally managed portfolios and directly held externally managed passive strategies

We will review on an annual basis the companies within our portfolio using the Restriction Criteria at fiscal year end (June 30)

Divestment Criteria from 2021 Climate Action Plan

- Companies that derive more than 10% of their revenue from thermal coal

Must sell positions of companies that fall under the Divestment Criteria in internally managed portfolios and directly held externally managed passive strategies

We review the companies within our portfolio on a quarterly basis, when the passive indices are updated



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Appendix I

Investment Committee Meeting

July 31, 2024

COMMITTEE MEMBERS

N. Smirensky, Chair

Juliet Benaquisto, Eric Iberger, David Keefe, Jennifer Longtin, Ruth Mahoney,

AGENDA pp. 18-19

Approval of Minutes

- A. Approval of Minutes of April 24, 2024 Investment Committee Meeting pp. 20-25

PRESENTATIONS

- A. StepStone Annual Private Equity/Debt Review pp. 26-46
 B. Internally Managed International Equity Portfolio - Public Equities pp. 47-54
 C. High Yield Manager - Fixed Income (**motion for Executive Session** pursuant to Open Meetings Law Section 105 (1) (f) to discuss financial history and matters leading to the appointment/employment of a particular person or corporation) pp. 55-111

UPDATES

- A. Investment Committee Executive Summary – M. Andriola pp. 112-118
 B. Managing Director Updates
 1. Public Equities Update – P. Cummins p. 119-120
 2. Fixed Income Update – M. Federici p. 121-122
 3. Real Estate Update – D. Gillan pp. 123-126
 4. Private Equity/Debt Update – G. Yahoudy pp. 127-138
 C. Callan – Asset Allocation Review pp. 139-160
 D. Stewardship – Han Yik pp. 161-164

INVESTMENT COMMITTEE ACTION REQUIRED

- A. **Consent Agenda Recommendation Items 1 a-i** pp. 165-173
 1. Renew Agreements
 a. Baillie Gifford Overseas Limited p. 165
 b. BlackRock Carbon Transition p. 166
 c. Blue Owl Real Estate Debt Advisors (Successor-in-Interest to Prima Capital Advisors) p. 167
 d. Global REIT Managers (AEW, DFA, Heitman) p. 168
 e. Heitman US Total Return Strategy p. 169
 f. Leading Edge p. 170
 g. PIMCO p. 171
 h. T. Rowe Associates, Inc. p. 172
 i. William Blair and Company p. 173

2. Annual Review & ReAuthorization of Delegated Investment Authority
 - a. Investment Discretion section of IPM (Redline and Final) pp. 174-187
 - b. Resolution on Investment Discretion p. 188
3. Resolution on Asset Allocation p. 189
4. Resolution on Advent Capital Management p. 190
5. Resolution to Establish USD EMD Internally Managed Portfolio p. 191

Informational Reports

1. EDCIO Investment Discretion Report pp. 192-194
2. Mail Vote Quarterly Board Report p. 195



Appendix J

TO: Retirement Board

FROM: T. Lee

SUBJECT: Quarterly Report of Executive Director and Chief Investment Officer Investment Discretion Exercised April - June 2024

Fixed Income

Period	Action Taken	Amount
Q/E 6/30/24	Net cash reallocated into internally managed Long-Term Bonds	\$908.3 M

Public Equities

Period	Action Taken	Amount
Q/E 6/30/2024	Net cash reallocated out of internally managed domestic equity portfolios	\$1.95B



TO: Retirement Board
FROM: T. Lee
SUBJECT: Quarterly Report of Executive Director and Chief Investment Officer Investment Discretion Exercised April - June 2024

Real Estate - New Commitments

Date of Internal Inv. Comm. Approval	Investment Name	Amount	New or Renew
April 9 2024	Amazon Park of Commerce Mortgage	\$70M	New
May 8 2024	FCP Freddie Mac K Series Debt Sep Acct	\$300M	Renew

Real Estate

Period	Action Taken	Amount
Q/E 6/30/2024	Net cash reallocated out of externally managed Domestic and Global REIT portfolios	\$300M



TO: Retirement Board
FROM: T. Lee
SUBJECT: Quarterly Report of Executive Director and Chief Investment Officer Investment Discretion Exercised April - June 2024

Private Equity/Debt – New Commitments

Date of Internal Inv. Comm. Approval	Investment Name	Amount	New or Renew
May 14 2024	Monomoy Capital Partners V	\$150M	Renew
May 28 2024	Phoenix 2022 Fund	£75M	Renew
May 28 2024	Tenex Capital Mgt IV	\$150M	Renew
May 29 2024	JFL Fund VI	\$150M	Renew
May 30 2024	Nautic XI	\$300M	Renew



**New York State
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Memorandum

Appendix K

TO: Retirement Board
FROM: T. Lee
SUBJECT: Quarterly Board Report of Mail Votesⁱ for the period April – June 2024

Date	Type (Full Board Vote or Investment Committee Vote)	Transaction
	NONE	

ⁱ "...The Board may act by a unanimous vote of its members taken by mail and/or e-mail and other electronic means approved by the System, or by telephone confirmed by mail and/or other electronic means approved by the System, on occasional matters determined by the President to be non-controversial in nature so as not to require a special meeting of the Board but having circumstances which make it impractical to delay action until the next annual or stated meeting of the Board..." from NYSTRS' Bylaws

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
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Disability Review Committee Meeting

A meeting of the Disability Review Committee of the Retirement Board was held at the System on July 31, 2024. The meeting was called to order at 1:17 p.m. by Eric Iberger, Chair.

The following individuals were in attendance:

Committee Members: Juliet Benaquisto, Eric Iberger, David Keefe (via WebEx), Oliver Robinson

Board Members: Phyllis Harrington, Nicholas Smirensky

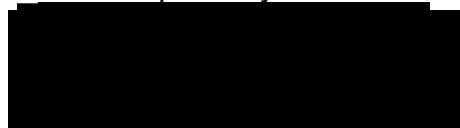
Visitors: Anin Kofi-Addo, Omni Research Associates
Via WebEx: Cyril Espanol; Alexandra Paradowski, Wisconsin
Legislative Bureau; Mitchell King, Alvaro Carrillo and
Christopher Albanese - Black Rock

Upon motion of J. Benaquisto, seconded by O. Robinson and unanimously carried, the meeting minutes of April 24, 2024 were approved.

E. Iberger, Chair, reported that the System's Medical Board had met monthly over the prior three months and that a disability rescission resolution would be brought to the Board at the Board meeting on July 31, 2024.

There being no further business, the Committee unanimously adjourned at 1:18 p.m.

Respectfully submitted,

A large black rectangular redaction box covering the signature of Thomas K. Lee.

Thomas K. Lee

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
10 Corporate Woods Drive, Albany NY

Ethics Committee Meeting

A meeting of the Ethics Committee of the Retirement Board was held at the System on July 31, 2024. The meeting was called to order by Eric Iberger, acting Chair, at 1:19 p.m.

The following individuals were in attendance:

Committee Members: Phyllis Harrington, Eric Iberger, Thomas Lee,
Don Ampansiri

Board Members: Juliet Benaquisto, Oliver Robinson, Nicholas Smirensky

NYSTRS Staff: Matt Albano, Matt Tice

Visitors: Anin Kofi-Addo, Omni Research Associates
Via WebEx: Cyril Espanol; Alexandra Paradowski, Wisconsin
Legislative Bureau; Mitchell King, Alvaro Carrillo and
Christopher Albanese - Black Rock

Upon motion of P. Harrington, seconded by E. Iberger and unanimously carried, the minutes from the April 3, 2024 meeting were approved.

There being no further business, and with unanimous consent, the meeting adjourned at 1:19 p.m.

Respectfully submitted,

A large black rectangular redaction box covering the signature of the submitter.

Thomas K. Lee

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
10 CORPORATE WOODS DRIVE, ALBANY NY

Executive Committee Meeting

A meeting of the Executive Committee of the Retirement Board of the New York State Teachers' Retirement System was held at the System on July 31, 2024.

The following individuals were in attendance:

Committee Members: Phyllis Harrington, Oliver Robinson, Nicholas Smirensky

Board Members: Juliet Benaquisto, Eric Iberger

NYSTRS Staff: Thomas Lee, Don Ampansiri

Visitor via WebEx: Pete Savage, NYSUT; Cyril Espanol, WithIntelligence; Robert Steyer, P&I; Donna Martin

Visitor: Anin-Kofi Addo, Omni Research Associates

The meeting was called to order by O. Robinson, acting Chair, at 1:19 p.m. The following items were discussed:

1. Approval of minutes from April 25, 2024 meeting

Upon motion of P. Harrington, seconded by N. Smirensky and unanimously carried, the minutes of the April 25, 2024 meeting were approved.

2. Legislative Program

D. Ampansiri provided a review of the System's 2024 Legislative Program together with legislation of significant interest to the System and a look at the proposed 2025 Legislative Program (Appendix A, pp. 4-20). The 2025 Legislative Program will be presented for recommendation to the Committee and to the Board at the October 2024 meeting.

3. Signatory Authority

A. Resolution Identifying Financial and Legal Document Signatories

Upon motion of P. Harrington, seconded by N. Smirensky and unanimously carried, the Committee voted to recommend the following resolution to the Board:

WHEREAS, The Retirement Board has by resolution amended and

restated the resolution of January 27, 2022 entitled Delegation Resolution - Financial and Legal Document Execution, providing for the delegation by the Executive Director and Chief Investment Officer of the authority to approve and execute financial and legal documents to other employees of the Retirement System; and

WHEREAS, The Retirement Board has by resolution adopted at its regular meeting on October 26, 1995, amended and restated periodically thereafter, and most recently on July 26, 2023, identifying those employees of the Retirement System that have been delegated such authority; and

WHEREAS, It is necessary to periodically update said resolution by identifying those employees of the Retirement System to whom such authority may be delegated; now therefore be it

RESOLVED, That the employees authorized to approve and execute financial and legal documents of said resolution are identified by department, management level within the organization and by name in the attachment entitled Signatory Authorization Grid- Financial and Legal Documents (Appendix B, pp. 21-22); and be it

RESOLVED, the attachment entitled Signatory Authorization Grid- Financial and Legal Documents sets forth the approvals and signatures needed to approve and execute financial and legal documents; and be it

RESOLVED, That this authorization shall remain in effect for individuals who are promoted within their department; and be it

RESOLVED, That the Executive Director and Chief Investment Officer shall have the authority to designate in writing any such additional employees as may be required by business necessity to serve on an interim basis until the regular meeting of the Retirement Board following the quarter ending June 30; and be it

RESOLVED, That this delegation shall be reviewed by the Retirement Board no less than annually; and be it further

RESOLVED, That this resolution shall take effect July 31, 2024 and, upon taking effect, shall supersede the identifying resolution previously adopted by the Retirement Board on July 26, 2023.

B. Resolution Identifying Warrant Signatories

Upon motion of N. Smirensky, seconded by P. Harrington and unanimously carried, the Committee voted to recommend the following resolution to the Board:

WHEREAS, The Retirement Board has by resolution adopted at its regular meeting on October 26, 1995, amended and restated periodically thereafter, and most recently on July 26, 2023, and as further amended concurrent with this resolution, provided for the delegation by the Executive Director and Chief Investment Officer of the authority to execute warrants to other employees of the Retirement System; and

WHEREAS, It is necessary to implement said resolution by identifying those employees of the Retirement System to whom such authority may be delegated; be it

RESOLVED, That the signatories authorized to execute administrative, real estate investment, and fixed income, equity security and alternative investment warrants as provided in Parts II, III, IV, V and VI respectively of said resolution are identified by signatory group, organizational level within the organization and by name in the attached Signatory Authorization Grid (Appendix C, p. 23) dated July 31, 2024; and be it further

RESOLVED, That this authorization shall remain in effect for individuals that are promoted within or move among the designated signatory groups, and be it further

RESOLVED, That the Executive Director and Chief Investment Officer shall have the authority to designate any such additional "A", "B", "C", "D", "E", "F", and "G" signatories as may be required by business necessity to serve on an interim basis until the regular meeting of the Retirement Board following the quarter ending June 30; and be it further

RESOLVED, That this delegation shall be reviewed by the Retirement Board no less than annually; and be it further

RESOLVED, That this resolution shall take effect July 31, 2024 and, upon taking effect, shall supersede the identifying resolution previously adopted on July 26, 2023.

4. Finance Report

The Committee members reviewed the Statement of Fiduciary Net Position, Statement of Changes in Fiduciary Net Position and Administrative Fund (Appendix D. pp. 24-28).

There being no further business, the Committee adjourned at 1:29 p.m.

Respectfully submitted,

A large black rectangular redaction box covering the signature of Thomas K. Lee.

Thomas K. Lee



**New York State
Teachers'
Retirement
System**

Memo

To: Retirement Board
From: D. Ampansiri, Jr./ K. Vrbanac
CC: T. Lee
Date: July 23, 2024
Re: 2024 Legislative Update

Annually at the July meeting of the Retirement Board, staff provides a summary of legislation of significant interest for the Legislative Session ending in June of the current year and a first look at the System's Legislative Program for the following year. Together with this Memorandum is a first look at the 2025 Proposed Legislative Program, the 2024 Legislation of Interest to NYSTRS chart and the NYSTRS 2024 Legislative Program grid.

2024 Legislative Session

As of this writing, the following program bill 24-2 (2-year Benefit Recalculation) has passed both houses and, depending on the Governor's action, staff will provide a recommendation at the October Retirement Board meeting:

- 24-2 Allows retirees of the New York State Teachers' Retirement System who suspend retirement the option of a benefit recalculation after 2 years of service.

Proposed 2025 Legislative Program

The 2025 legislative session will be the first year of a new two year cycle. As such, staff recommends two new bill proposals for the NYSTRS 2025 Legislative Program, program bill 25-1 (MWBE Report) and program bill 25-2 (NYSTRS Membership).

- 25-1 To amend the date in which NYSTRS is required to submit the MWBE report to on or before December 31st of the current year.
 - Education Law Section 508-a subdivision 2(b) currently requires NYSTRS to submit the MWBE report to the Governor, Legislature and Chief Diversity Officer of NYS within 60 days of NYSTRS fiscal year end (on or before September 1st).
 - The MWBE report information is not received or finalized until after September 1 and is published with NYSTRS' Annual Comprehensive Financial Report (ACFR) on or about November 10.



- To meet the requirement under the current statute, NYSTRS must submit a preliminary report by September 1st and then submit a final report once the MWBE report information is complete and finalized, customarily after the ACFR is published in November.
 - This proposal would address and eliminate the redundancy of the current two-step process of submitting two reports and allow NYSTRS to submit one final report on or before December 31st of the current year.
 - There is no cost to NYSTRS. Rather, there would be expected cost savings from the elimination of the redundancy in preparing the two substantially similar and near identical reports.
- 25-2 To grant part-time teachers automatic enrollment and membership in NYSTRS, with the choice to opt out within 90 days from the date of enrollment.
- Education Law Section 503 Section 2 provides that the retirement board may deny the right of any class of teachers whose compensation is only partly paid by the employer or who serve on a temporary or any other than a per annual basis and, at the retirement board's discretion, may make membership optional. As such, automatic enrollment and membership applies to only full-time teachers.
 - Membership for part-time teachers is optional and they must affirmatively apply. They may file for NYSTRS membership at any time during their career. However, their date of membership is the first day of the month in which they filed their membership application (and/or contributions were withheld), rather than the first date of their employment.
 - Any service rendered prior to their date of membership may be purchased as prior service, but they cannot be reinstated to the tier of their first date of employment and be afforded the benefits of the earlier tier of membership. In addition, the cost to purchase prior service (6% plus interest) is often far greater than the contribution rate for part-time employment (as low as 3%).
 - This proposal would provide automatic enrollment in NYSTRS for part-time teachers. The accompanying 90 day opt out window provides a reasonable time period for part-time teachers to educate themselves on NYSTRS membership, and thereafter make an informed decision whether to opt out or stay in. Ultimately, and in the event any members wish to no longer participate and be members of NYSTRS, they may withdraw their membership and receive a refund of their contributions at any time irrespective of this 90 day window.
 - There would be no cost to NYSTRS, except for the increase in the administrative cost to process additional members and those who may wish to opt out thereafter.



2024 Legislation of Interest

The 2024 Legislation of Interest to NYSTRS chart reflects bills that have either been taken up by the Legislature and/or signed into law. We will provide an updated chart at the October Board meeting. Below please find some bills captured on the chart that have been signed into law by the Governor as a part of the New York State Budget:

Chapter 55 of the Laws of 2024, Part M Amends Labor Law Section 196-b to require employers to provide employees twenty hours of paid prenatal personal leave for health care services related to the employee's pregnancy during any fifty-two week calendar period which may be taken in hourly increments. Effective January 1, 2025.

Chapter 55 of the Laws of 2024, Part GG Amends Retirement and Social Security Law to waive the §211 and §212 income limitations allowing NYSTRS retirees to be employed in school districts and BOCES and earn compensation without suspension or diminution of their retirement allowance until June 30, 2025. Part GG is a one-year extension of Chapter 55 of the Laws of 2023 (Part V).

Chapter 55 of the Laws of 2024, Part KK Amends Retirement and Social Security Law to extend the period during which the calculation of the employee contribution rate for Tier 6 members is to be calculated using only a member's annual base wages for contributions to be made during fiscal years ending June 30, 2025 and June 30, 2026. Compensation earned for extracurricular programs, or any other pensionable earnings paid in addition to the annual base wages, will not be included in the employee contribution rate determination. Implementation date: school year July 1, 2024. Effective April 20, 2024.

Chapter 56 of the Laws of 2024, Part J Amends Labor Law Section 206-c to require employers to provide employees thirty minutes of paid break time to express breast milk for such employee's nursing child each time employee has a reasonable need for up to three years following childbirth. Effective the sixtieth day after it becomes law, that being June 18, 2024.

Chapter 56 of the Laws of 2024, Part M Amends Chapter 25 of the Laws of 2020 to provide sick leave for employees when such employee is subject to a mandatory or precautionary order of quarantine or isolation due to COVID-19. Effective immediately and shall expire and be deemed repealed July 31, 2025.

Chapter 56 of the Laws of 2024, Part QQ Amends Retirement and Social Security Law to change the definition of the final average salary for Tier 6 members to be based on the wages earned during any three consecutive years which provide the highest average wages. It also reduces the lookback to the same as Tiers 3, 4 and 5; if the salary for any year used in the period exceeds that of the average of the prior two years by more than 10%, the amount in excess of 10% shall be excluded from the computation. Effective April 20, 2024.

Chapter 58 of the Laws of 2024, Part KK Amends Public Officers Law to permit a public body, in their discretion, to use videoconferencing and remote participation in public meetings, regardless of emergency. Effective April 20, 2024 and shall expire and deemed repealed July 1, 2026. Part KK is a two-year extension of Part WW of Chapter 56 of the Laws of 2022.



**New York State
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Retirement Board

David P. Keefe <i>President, Hempstead</i>	L. Oliver Robinson <i>Vice President, Clifton Park</i>
Juliet C. Benaquisto <i>Schenectady</i>	Jennifer J. Longtin <i>Ballston Lake</i>
Paul J. Farfaglia <i>North Syracuse</i>	Ruth Mahoney <i>Albany</i>
Phyllis S. Harrington <i>Oceanside</i>	Nicholas Smirensky <i>Delmar</i>
Eric J. Iberger <i>Bayport-Blue Point</i>	

PROPOSED 2025 LEGISLATIVE PROGRAM

Bill No.	Bill Purpose
25-1	To amend the date in which the New York State Teachers' Retirement System is required to submit the MWBE report to on or before December 31 st of the current year.
25-2	To grant part-time teachers automatic enrollment and membership in in the New York State Teachers' Retirement System, with the choice to opt out within 90 days from the date of enrollment.
(S7462B/A10529) Awaiting Governor's action.	Allows retirees of the New York State Teachers' Retirement System who suspend retirement the option of a benefit recalculation after 2 years of service. [Passed both houses during the 2024 Legislative Session. Will be carried forward as program 25-3 if not signed into law by the Governor.]



New York State
Teachers'
Retirement
System

2024 Budget Legislation Highlights

July 31, 2024

Tier 6 Legislation

Chapter 55 of the Laws of 2024 (Part KK)

- ❑ Amends Retirement and Social Security Law Section 613.
- ❑ Extends the period during which the calculation of the employee contribution rate for Tier 6 members is to be calculated using only a member's annual base wages for contributions to be made during fiscal years ending June 30, 2025 and June 30, 2026.
- ❑ Compensation earned for extracurricular programs, or any other pensionable earnings paid in addition to the annual base wages, will not be included in the employee contribution rate determination.
- ❑ Implementation date: school year July 1, 2024.

❑ Extends the period during which the calculation of the employee contribution rate for Tier 6 members is to be calculated using only a member's annual base wages for contributions to be made during fiscal years ending June 30/June 30, 2026.

Tier 6 Legislation

Chapter 56 of the Laws of 2024 (Part QQ)

- ❑ Amends Retirement and Social Security Law Section 608.
- ❑ Changes the definition of the final average salary for Tier 6 members to be based on the wages earned during any three consecutive years which provide the highest average wages.
- ❑ Reduces the lookback to the same as Tiers 3, 4 and 5; if the salary for any year used in the period exceeds that of the average of the prior two years by more than 10%, the amount in excess of 10% shall be excluded from the computation.
- ❑ Effective April 20, 2024.

Earnings After Chapter 55 of the Laws of 2024 (Part GG)

- ❑ Amends Retirement and Social Security Law to waive the §211 and §212 income limitations.
- ❑ Allows NYSTRS retirees to be employed in school districts and BOCES and earn compensation without suspension or diminution of their retirement allowance until June 30, 2025.
- ❑ Part GG is a one-year extension of Chapter 55 of the Laws of 2023 (Part V).

2024 LEGISLATION OF INTEREST TO NYSTRS

Senate No. Assembly No.	Subject	Introduced By
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I. BUDGET

S8305C A8805C (Part M)	<p>Amends Labor Law Section 196-b to require employers to provide employees twenty hours of paid prenatal personal leave for health care services related to the employee's pregnancy during any fifty-two week calendar period which may be taken in hourly increments. Effective January 1, 2025.</p> <p>Last Action: 04/18/24 Passed Senate 04/18/24 Passed Assembly 04/19/24 Delivered to the Governor 04/20/24 Signed by the Governor [Chapter 55 of the Laws of 2024]</p>	Article VII (PPGG)
S8305C A8805C (Part GG)	<p>Amends Retirement and Social Security Law to waive the §211 and §212 income limitations allowing NYSTRS retirees to be employed in school districts and BOCES and earn compensation without suspension or diminution of their retirement allowance until June 30, 2025. Part GG is a one-year extension of Chapter 55 of the Laws of 2023 (Part V).</p> <p>Last Action: 04/18/24 Passed Senate 04/18/24 Passed Assembly 04/19/24 Delivered to the Governor 04/20/24 Signed by the Governor [Chapter 55 of the Laws of 2024]</p>	Article VII (PPGG)
S8305C A8805C (Part KK)	<p>Amends Retirement and Social Security Law to extend the period during which the calculation of the employee contribution rate for Tier 6 members is to be calculated using only a member's annual base wages for contributions to be made during fiscal years ending June 30, 2025 and June 30, 2026. Compensation earned for extracurricular programs, or any other pensionable earnings paid in addition to the annual base wages, will not be included in the employee contribution rate determination. Implementation date: school year July 1, 2024.</p> <p>Last Action: 04/18/24 Passed Senate 04/18/24 Passed Assembly 04/19/24 Delivered to the Governor 04/20/24 Signed by the Governor [Chapter 55 of the Laws of 2024]</p>	Article VII (PPGG)

July 23, 2024

Committees: GE = Assembly Governmental Employees;
W&M = Ways and Means; CS = Senate Civil Service and Pensions

<p>S8308C A8808C (Part KK)</p>	<p>Amends Public Officers Law to permit a public body, in their discretion, to use videoconferencing and remote participation in public meetings, regardless of emergency. Effective immediately and shall expire and deemed repealed July 1, 2026. Part KK is a two-year extension of Part WW of Chapter 56 of the Laws of 2022.</p> <p>Last Action: 04/18/24 Passed Senate 04/18/24 Passed Assembly 04/19/24 Delivered to the Governor 04/20/24 Signed by the Governor [Chapter 58 of the Laws of 2024]</p>	<p>Article VII (Part TED)</p>
<p>S8306C A8806C (Part J)</p>	<p>Amends Labor Law Section 206-c to require employers to provide employees thirty minutes of paid break time to express breast milk for such employee's nursing child each time employee has a reasonable need for up to three years following child birth. Effective the sixtieth day after it becomes law.</p> <p>Last Action: 04/19/24 Passed Senate 04/19/24 Passed Assembly 04/20/24 Delivered to the Governor 04/20/24 Signed by the Governor [Chapter 56 of the Laws of 2024]</p>	<p>Article VII (ELFA)</p>
<p>S8306C A8806C (Part M)</p>	<p>Amends Chapter 25 of the Laws of 2020 to provide sick leave for employees when such employee is subject to a mandatory or precautionary order of quarantine or isolation due to COVID-19. Effective immediately and shall expire and be deemed repealed July 31, 2025.</p> <p>Last Action: 04/19/24 Passed Senate 04/19/24 Passed Assembly 04/20/24 Delivered to the Governor 04/20/24 Signed by the Governor [Chapter 56 of the Laws of 2024]</p>	<p>Article VII (ELFA)</p>
<p>S8306C A8806C (Part QQ)</p>	<p>Amends Retirement and Social Security Law to change the definition of the final average salary for Tier 6 members to be based on the wages earned during any three consecutive years which provide the highest average wages. It also reduces the lookback to the same as Tiers 3, 4 and 5; if the salary for any year used in the period exceeds that of the average of the prior two years by more than 10%, the amount in excess of 10% shall be excluded from the computation. Effective immediately.</p> <p>Last Action: 04/19/24 Passed Senate 04/19/24 Passed Assembly 04/20/24 Delivered to the Governor 04/20/24 Signed by the Governor [Chapter 56 of the Laws of 2024]</p>	<p>Article VII (ELFA)</p>

July 23, 2024

Committees: GE = Governmental Employees;
W&M = Ways and Means; CS = Civil Service and Pensions

II. AMENDMENTS TO THE RETIREMENT AND SOCIAL SECURITY LAW

S5131 A5629	<p>Allows a retired member of a public retirement system to change their option election or beneficiary designation where the beneficiary has been convicted of domestic violence against the retired member.</p> <p>Last Action: 01/03/24 Referred to GE (Assembly) 05/14/24 Passed Senate 05/14/24 Delivered to Assembly and Referred to GE</p>	Webb Reyes
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III. AMENDMENTS TO THE EDUCATION LAW

S6361A A556A	<p>Requires employees of a New York state public retirement system, who are employed by their district to work for a not-for-profit, to provide written acknowledgement of membership termination in the retirement system.</p> <p>Last Action: 01/03/24 Referred to GE (Assembly) 03/01/24 Amend and Recommit to GE, Print# 556A (Assembly) 05/29/24 Passed Senate 05/29/24 Delivered to Assembly and Referred to GE (Assembly)</p>	Brouk Bronson
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IV. AMENDMENTS TO THE CIVIL SERVICE LAW

S8079 A8514	<p>Clarifies that an employee's time working in a provisional title shall count towards any required probationary period when the permanent appointment immediately follows the provisional appointment.</p> <p>Last Action: 01/16/24 Passed Assembly 01/16/24 Passed Senate 01/26/24 Delivered to the Governor 01/26/24 Signed by the Governor [Chapter 5 of the Laws of 2024]</p>	Pheffer Amato Jackson
S8216A A8876	<p>Allows individuals that are within 12 months of meeting the minimum age or education requirements for a competitive class civil service position to take the exam.</p> <p>Last Action: 03/04/24 Passed Assembly 03/13/24 Passed Senate 03/13/24 Returned to Assembly</p>	Jackson Pheffer Amato

July 23, 2024

Committees: GE = Governmental Employees;
W&M = Ways and Means; CS = Civil Service and Pensions

S8557 A9386	Requires time spent as a provisional employee count towards any required term to qualify an employee to take a competitive examination accessible in their title. Last Action: 03/13/24 Passed Senate 05/06/24 Passed Assembly 05/06/24 Returned to Senate	Jackson Pheffer Amato
S8948 A9935	Requires employers to disclose all information to an employee relating to allegations that such employee is unable to perform their duties due to a non-work related disability. Last Action: 05/30/24 Passed Assembly 06/04/24 Passed Senate 06/04/24 Returned to Assembly	Jackson Pheffer Amato
S2394B A3767B	Requires public employers to notify the organization advocating for managerial or confidential (M/C) employees the contact information for newly hired, promoted and transferred employees within 30 days from their date of employment, and provide them the ability to attend employee orientations. Last Action: 05/30/24 Passed Assembly 06/03/24 Passed Senate 06/03/24 Returned to Assembly	Jackson Pheffer Amato

V. PUBLIC OFFICERS LAW

S5500B A6146B	Provides public employees notice when their personnel record has been released to the public under the Freedom of Information Law. Last Action: 06/04/24 Passed Assembly 06/05/24 Passed Senate 06/05/24 Returned to Assembly	Skoufis Buttenschon
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VI. STATE TECHNOLOGY LAW

S5007B A5736B	Establishes the "Secure Our Data Act" to ensure the New York state government is taking necessary steps to protect the personal information that it collects and maintains. Last Action: 01/03/24 Referred to GE (Assembly) 03/18/24 Passed Senate 03/18/24 Referred to Governmental Operations (Assembly)	Gonzalez Solages
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July 23, 2024

Committees: GE = Governmental Employees;
W&M = Ways and Means; CS = Civil Service and Pensions

S8090 A8549	Requires all state agencies to use gender neutral terminology for website content, including forms and documents accessible through the website. Effective the one hundred eightieth day after it becomes law. Last Action: 01/16/24 Passed Senate 01/23/24 Passed Assembly 01/26/24 Delivered to Governor 01/26/24 Signed by the Governor [Chapter 21 of the Laws of 2024]	Cleare Rosenthal
S8021 A8564	Requires state agency websites be made mobile friendly if and when changes to the form and function of such websites are being made until January 1, 2027, after which point, all state agencies should be made mobile friendly. Last Action: 01/23/24 Passed Assembly 01/30/24 Passed Senate 02/07/24 Delivered to Governor 02/07/24 Signed by the Governor [Chapter 45 of the Laws of 2024]	Fernandez Otis

VII. OTHERS

S5615 A2833	Amends State Finance Law to require all state agencies to procure all "end point devices" that meet the National Institute of Standards and Technology guidelines for computer security. Effective the ninetieth day after it becomes law. Last Action: 05/30/24 Passed Assembly 06/03/24 Passed Senate 06/03/24 Returned to Assembly	Thomas Otis
S1424A A7810A	Amends Executive Law to direct contracting state agencies to develop a three-year growth plan to increase MWBE participation. Last Action: 05/16/24 Passed Senate 05/16/24 Delivered to Assembly 05/16/24 Referred to Governmental Operations (Assembly) 05/17/24 Amend and Recommit to Governmental Operations, Print#7810A (Assembly)	Baily Cruz

July 23, 2024

Committees: GE = Governmental Employees;
W&M = Ways and Means; CS = Civil Service and Pensions

S2449 A5178	<p>Amends Executive Law to prohibit any employer or licensing agency from requiring a prospective employee to disclose their age, date of birth or date of graduation from an educational institution on an initial employment application or during an interview, unless it is for an occupational qualification or need.</p> <p>Last Action: 01/03/24 Referred to Governmental Operations (Assembly) 02/12/24 Passed Senate 02/12/24 Referred to Governmental Operations (Assembly)</p>	Krueger Kim
S99A	<p>Amends Labor Law to provide all private and public employees access to their personnel records and notification when a negative report is filed against them.</p> <p>Last Action: 04/16/24 Amend and Recommit to Labor, Print# 1959A (Assembly) 05/13/24 Passed Senate 05/13/24 Delivered to Assembly and Referred to Labor (Assembly)</p>	Gounardes Gonzalez- Rojas
S3260 A10019	<p>Amends Estates, Powers and Trusts Law to disqualify a surviving spouse in the event a decree or judgment of annulment or nullity or dissolving of a marriage is issued after the deceased spouse died; the marriage is then deemed a nullity immediately prior to the death of such spouse.</p> <p>Last Action: 04/17/24 Passed Senate 04/17/24 Delivered to Assembly and Referred to Judiciary (Assembly) 05/01/24 Referred to Judiciary (Assembly)</p>	Hoylman- Sigal Braunstein
S1860	<p>Amends Labor Law to require employers to provide employees with information on mental health issues and resources and to destigmatize mental health in the workplace.</p> <p>Last Action: 05/14/24 Passed Senate 05/14/24 Delivery to Assembly and Referred to labor (Assembly)</p>	Brouck
S9369 A9768	<p>Amends Labor Law to extend the provisions of Chapter 301 of 2022 for an additional two years to allow an employer, with consent of employee, to deduct wages from employee's paycheck to cover specified goods and services.</p> <p>Last Action: 04/16/24 Passed Assembly 05/28/24 Passed Senate 06/26/24 Delivered to Governor 06/28/24 Signed by the Governor [Chapter 142 of the Laws of 2024]</p>	Ramos Raga

July 23, 2024

Committees: GE = Governmental Employees;
W&M = Ways and Means; CS = Civil Service and Pensions

S8663 A7241A	Amends Executive Law to exclude non-electronic notarial acts from the record-keeping rules and regulations set forth by the Department of State. Last Action: 05/06/24 Passed Assembly 06/05/24 Passed Senate 06/05/24 Returned to Assembly	Hoylman- Sigal Lavine
S8979 A7091	Amends Public Authorities Law to require electric charging stations and electric vehicle capable parking spaces to accommodate wheelchair accessible vehicles. Effective the sixtieth date after it becomes law. Last Action: 04/02/24 Passed Assembly 06/04/24 Passed Senate 06/04/24 Returned to Assembly	Persaud Simon
S3065B A8934A	Amends Labor Law to require all employers to develop and implement programs to prevent workplace violence and bullying. Last Action: 05/30/24 Passed Senate 06/03/24 Passed Assembly 06/03/24 Returned to Senate	Ramos Bronson
S6635 A5745	Amends Workers' Compensation Law to expand the ability to all workers to receive PTSD coverage for mental injury premised upon work-related stress under NYS Workers' Compensation Coverage. Last Action: 04/04/24 Passed Senate 06/05/24 Passed Senate 06/05/24 Returned to Senate	Ramos Reyes

VIII. SPECIAL INTEREST BILLS

S5235A	Grants James Demarco retroactive membership in the NYSTRS from Tier 2 to Tier 1 based on time he was a non-member for seasonal employment in July 1969. Last Action: 01/03/24 Referred to CS (Senate) 03/11/24 Amend and Recommit to CS, Print#5235A	Gallivan
A9494	Grants Susan Ruscitto additional service credit in NYSTRS to recalculate her retirement benefit with 20 years and 2 months, which was the original service credit reported by her employer; her actual verified service credit was 19 years and 8 months. Last Action: 03/14/24 Referred to GE	Santabarbara

July 23, 2024

Committees: GE = Governmental Employees;
W&M = Ways and Means; CS = Civil Service and Pensions

S5290A A5110A	<p>Grants Eileen Saumell service credit based on her employment for the period of August 8, 1994 to August 27, 2004 with the Nassau County Demonstration Project, a non-participating employer.</p> <p>Last Action: 01/03/24 Referred to CS 03/28/24 Amend and Recommit to CS, Print#5290A 04/02/24 Amend and Recommit to GE, Print#5110A</p>	Weik Gandolfo
S5318A A5111A	<p>Allows Carl Spatola to receive a refund of his accumulated 3% contributions paid to NYSTRS for the period in which the transfer from NYCTRS to NYSTRS was not initiated and the cessation date was not established.</p> <p>Last Action: 01/03/24 Referred to CS (Senate) 03/28/24 Amend and Recommit to CS, Print#5318A (Senate) 04/02/24 Amend and Recommit to GE, Print#5111A (Assembly)</p>	Weik Gandolfo
S5361A A5887A	<p>Allows Peter Guarino to be reclassified as a Tier 4 member with a date of membership of June 13, 2008, based on time he was a non-member but employed as a substitute teacher with the Lansing Central School District, Newfield City School District and Ithaca City School District.</p> <p>Last Action: 01/03/24 Referred to GE (Assembly) 04/29/24 Amend and Recommit not GE, Print#5887A (Assembly) 05/22/24 Passed Senate 05/22/24 Delivered to Assembly and Referred to GE (Assembly)</p>	Manion
S9129	<p>Allows Christine Hasseler, retired Tier 1 member of NYSTRS, to have her retirement benefit recalculated to include retirement incentive payments that her employer failed to pay her within the required timeframe, before the end of her retirement year.</p> <p>Last Action: 04/29/24 Referred to CS (Senate) 05/17/24 Referred to GE (Assembly)</p>	Helming
S9803 A10547	<p>Allows Jeffrey Alva Beall, who retired as a Tier 4 from NYSTRS before Chapter 41 of the Laws of 2016 was signed into law, to purchase 3 years of military service for the period of active duty service between April 17, 1984 to February 27, 1987, retroactive to his effective date of retirement.</p> <p>Last Action: 05/30/24 Referred to CS (Senate) 06/03/24 Referred to GE (Assembly)</p>	Helming

July 23, 2024

Committees: GE = Governmental Employees;
W&M = Ways and Means; CS = Civil Service and Pensions

NYSTRS 2024 LEGISLATIVE PROGRAM GRID

Subject	2024 Bill No.	Sponsor	Com. Ref.	Report 1 st /2 nd	3 RD Reading	Passed	To Gov.	Gov.'s Action
24-2 Allows retirees of the New York State Teachers' Retirement System who suspend retirement the option of a benefit recalculation after 2 years of service. Cost - Negligible	S7462B	Ryan	CS 01/03/24 05/01/24 05/07/24 Finance 06/03/24 Finance 06/04/24	06/04/24 Ordered to Third Reading	06/04/24 CAL. 1703	06/06/24		
	-----	-----	Rules 06/04/24	-----	-----	-----		
	A10529	Burke	----- GE 06/06/24 W&M	06/06/24 Ordered to Third Reading	06/06/24 CAL. 519	06/06/24		

Legal & Financial Document Signatories

As of June 30, 2024

Appendix B

Name	Position	Division
Miriam Dixon	Executive	Administration
Rebecca Kannan	Deputy Executive	Administration
Jason Freeman	Manager/Director	Administration
Danny Malavé	Executive	Diversity, Equity, & Inclusion
Emily Ekland	Executive	Executive
Heidi Brennan	Manager/Director	Executive
Timothy Mack	Assistant Manager/Assistant Director	Executive
Joseph Wood	Assistant Manager/Assistant Director	Fixed Income
Michael Federici	Executive	Fixed Income
Aaron VanDerwiel	Deputy Executive	Fixed Income
Vijay Madala	Executive	Information Technology
Sarah Garrand	Deputy Executive	Information Technology
Kathy Ebert	Executive	Internal Audit
Bruce Woolley	Assistant Manager/Assistant Director	Internal Audit
Lei Zhang	Assistant Manager/Assistant Director	Internal Audit
Beth Dellea	Executive	Member Relations
Michael Contento	Manager/Director	Member Relations
Erica Mortimore	Manager/Director	Member Relations
Shannon Bonesteel	Manager/Director	Member Relations
Heidi Travis	Manager/Director	Member Relations
Colleen Laven	Assistant Manager/Assistant Director	Member Relations
Andrew Whitney	Assistant Manager/Assistant Director	Member Relations
Cori Bicteman	Assistant Manager/Assistant Director	Member Relations
Richard Young	Executive	Office of the Actuary
Melody Prangley	Deputy Executive	Office of the Actuary
Gwendolyn Genovesi	Assistant Manager/Assistant Director	Office of the Chief Financial Officer
Margaret Andriola	Executive	Office of the Chief Financial Officer
Christopher O'Grady	Manager/Director	Office of the Chief Financial Officer
Christopher Brown	Manager/Director	Office of the Chief Financial Officer
Tedd Johnson	Assistant Manager/Assistant Director	Office of the Chief Financial Officer
David Robertson	Assistant Manager/Assistant Director	Office of the Chief Financial Officer
Don Ampansiri	Deputy Executive	Office of the General Counsel
Benjamin Lee	Managing Counsel	Office of the General Counsel
Janet Graham	Managing Counsel	Office of the General Counsel
Adam Kinney	Assistant/Associate Counsel	Office of the General Counsel
Morgan Anderson	Assistant/Associate Counsel	Office of the General Counsel
Gerald Yahoudy	Executive	Private Equity
Brad Woolworth	Deputy Executive	Private Equity
Nicholas Chladek	Manager/Director	Private Equity
Paul Cummins	Executive	Public Equities
David Tessitore	Manager/Director	Public Equities
Jennifer Wilcox	Manager/Director	Public Equities
Nathan Lee	Manager/Director	Public Equities
David Maye	Assistant Manager/Assistant Director	Real Estate
David Gillan	Executive	Real Estate

Name	Position	Division
Kevin Maloney	Deputy Executive	Real Estate
Michael Morrell	Manager/Director	Real Estate
Adrean Kreig	Manager/Director	Real Estate
Jason Kearney	Manager/Director	Real Estate
Andrew Bartell	Assistant Manager/Assistant Director	Real Estate
Matthew Albano	Executive	Risk Management
Matthew Tice	Manager/Director	Risk Management

Disbursement Warrant Signatories

Appendix C

As of June 30, 2024

Division	Name	Position
Administration	Miriam Dixon	Executive
Administration	Rebecca Kannan	Deputy Executive
Fixed Income	Joseph Wood	Assistant Manager/Assistant Director
Fixed Income	Michael Federici	Executive
Fixed Income	Aaron VanDerwiel	Deputy Executive
Fixed Income	Dawn Sherman	Professional Staff
Fixed Income	Mark Wood	Professional Staff
Fixed Income	Michael Wollner	Professional Staff
Fixed Income	Christina Vasto	Professional Staff
Office of the Actuary	Richard Young	Executive
Office of the Actuary	Melody Prangley	Deputy Executive
Office of the Chief Financial Officer	Gwendolyn Genovesi	Assistant Manager/Assistant Director
Office of the Chief Financial Officer	Margaret Andriola	Executive
Office of the Chief Financial Officer	Christopher O'Grady	Manager/Director
Office of the Chief Financial Officer	Christopher Brown	Manager/Director
Office of the Chief Financial Officer	Tedd Johnson	Assistant Manager/Assistant Director
Office of the Chief Financial Officer	David Robertson	Assistant Manager/Assistant Director
Office of the General Counsel	Don Ampansiri	Deputy Executive
Office of the General Counsel	Benjamin Lee	Managing Counsel
Office of the General Counsel	Janet Graham	Managing Counsel
Office of the General Counsel	Adam Kinney	Assistant/Associate Counsel
Office of the General Counsel	Morgan Anderson	Assistant/Associate Counsel
Private Equity	Hope Bailey-Reed	Professional Staff
Private Equity	Gerald Yahoudy	Executive
Private Equity	Brad Woolworth	Deputy Executive
Private Equity	Nicholas Chladek	Manager/Director
Public Equities	Paul Cummins	Executive
Public Equities	David Tessitore	Manager/Director
Public Equities	Jennifer Wilcox	Manager/Director
Public Equities	Nathan Lee	Manager/Director
Real Estate	David Maye	Assistant Manager/Assistant Director
Real Estate	David Gillan	Executive
Real Estate	Kevin Maloney	Deputy Executive
Real Estate	Michael Morrell	Manager/Director
Real Estate	Adrean Kreig	Manager/Director
Real Estate	Jason Kearney	Manager/Director
Real Estate	Andrew Bartell	Assistant Manager/Assistant Director
Risk Management	Matthew Albano	Executive
Risk Management	Matthew Tice	Manager/Director

Appendix D

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM

MEMORANDUM

TO: T. Lee

FROM: Office of the CFO / Finance Department

DATE: July 31, 2024

SUBJECT: Retirement Board Package

Attached are the System's annual financial statements and related schedules for the years ended June 30, 2024 and 2023.

The following is a list of the documents included:

1. Statements of Fiduciary Net Position (Unaudited)^{1,2}
2. Statements of Changes in Fiduciary Net Position (Unaudited)^{1,2}
3. Schedules of Income, Expenses and Changes in Fund Balance-Administrative Fund (Unaudited)

¹Based on estimated 6/30/24 final quarter Real Estate and Private Equity values.

²Excludes current year amounts to be determined under GASB 68 for Net Pension Liability, Deferred In-flows of Resources, Deferred Out-flows of Resources, and Pension Expense.



NEW YORK STATE TEACHERS' RETIREMENT SYSTEM
Statements of Fiduciary Net Position (Unaudited)

25

June 30, 2024 and 2023

Assets	2024	2023
Investments at fair value:		
Domestic equity	\$ 49,233,791,607	\$ 45,821,764,524
International equity	20,560,969,690	18,712,088,289
Global equity	5,905,053,666	4,904,669,810
Real estate equity ¹	15,748,837,251	16,469,246,737
Private equity ¹	13,954,924,855	15,416,611,290
Domestic fixed income	21,263,250,233	18,091,466,052
High-yield bonds	1,500,237,509	1,359,382,664
Global bonds	2,819,074,693	2,712,084,776
Real estate debt ¹	7,749,319,350	7,531,061,036
Private debt ¹	2,315,921,913	2,045,645,055
Cash equivalents	2,065,003,738	1,762,023,837
Total investments ¹	<u>143,116,384,505</u>	<u>134,826,044,070</u>
Receivables:		
Employer	1,805,632,157	1,855,257,288
Member	197,849,371	197,849,373
Investment income	395,280,068	332,407,976
Investment sales	263,557,770	133,503,942
Total receivables	<u>2,662,319,366</u>	<u>2,519,018,579</u>
Other assets:		
Securities lending collateral, invested	324,026,183	352,050,044
Member loans	275,962,812	251,102,722
Net investment in capital assets	23,190,812	19,658,929
Miscellaneous assets	14,544,508	5,945,095
Total other assets	<u>637,724,315</u>	<u>628,756,790</u>
Total assets ¹	<u>146,416,428,186</u>	<u>137,973,819,439</u>
Deferred outflows of resources:		
Changes in net OPEB liability	15,718,775	15,103,133
Changes in net pension liability ²	15,366,904	15,366,904
Total deferred outflows of resources	<u>31,085,679</u>	<u>30,470,037</u>
Liabilities		
Securities lending collateral, due to borrowers	322,506,575	350,248,637
Investment purchases payable	364,702,234	188,765,245
Mortgage escrows and deposits, net of investments	1,500	6,269,489
Net OPEB liability	50,667,926	48,846,994
Other liabilities ²	218,409,170	185,067,499
Total liabilities ²	<u>956,287,405</u>	<u>779,197,864</u>
Deferred inflows of resources:		
Changes in net OPEB liability	1,280,285	2,249,463
Changes in net pension liability ²	1,305,207	1,305,207
Total deferred inflows of resources	<u>2,585,492</u>	<u>3,554,670</u>
Net position restricted for pensions	\$ 145,488,640,968	\$ 137,221,536,942

¹ Based on estimated 6/30/24 final quarter Real Estate and Private Equity values

² Excludes current year amounts under GASB 68 for Net Pension Liability, Deferred In-Flows of Resources and Deferred Out-Flows of Resources.



NEW YORK STATE TEACHERS' RETIREMENT SYSTEM
 Statements of Changes in Fiduciary Net Position (Unaudited)

26

For the Years Ended June 30, 2024 and 2023

Additions:	<u>2024</u>	<u>2023</u>
Investment income:		
Net appreciation in fair value of investments ¹	\$ 12,276,594,761	\$ 9,004,903,582
Interest	1,085,544,000	882,703,050
Dividends	1,336,633,815	1,412,283,356
Real estate, net operating income	504,559,268	540,404,132
Securities lending, gross earnings	22,692,492	21,813,453
Other (net)	9,078,205	2,682,706
	<u>15,235,102,541</u>	<u>11,864,790,279</u>
Less: Investment expenses	472,468,436	408,761,603
Securities lending:		
Broker rebates	17,789,968	15,752,582
Management fees	709,365	851,300
Depreciation on collateral	281,799	138,735
Net investment income ¹	<u>14,743,852,973</u>	<u>11,439,286,059</u>
Contributions:		
Employer	1,813,516,703	1,899,884,915
Member	224,499,483	221,152,285
Transfers	17,130,678	10,841,010
Total contributions	<u>2,055,146,864</u>	<u>2,131,878,210</u>
Net additions ¹	<u>16,798,999,837</u>	<u>13,571,164,269</u>
Deductions:		
Retirement benefit payments, periodic	8,352,451,995	8,135,345,612
Beneficiary payments	73,260,710	79,352,984
Return of contributions	20,444,241	20,212,723
Administrative expenses ²	85,738,865	79,298,115
Total deductions	<u>8,531,895,811</u>	<u>8,314,209,434</u>
Net increase in net position ¹	8,267,104,026	5,256,954,835
Net position restricted for pensions, beginning of year	<u>137,221,536,942</u>	<u>131,964,582,107</u>
Net position restricted for pensions, end of year	<u>\$ 145,488,640,968</u>	<u>\$ 137,221,536,942</u>

¹ Based on estimated 6/30/24 final quarter Real Estate and Private Equity values

² Excludes current year amounts to be determined under GASB 68 for Pension Expense



NEW YORK STATE TEACHERS' RETIREMENT SYSTEM
Administrative Fund
Schedules of Income, Expenses and Changes in Fund Balance (Unaudited)

Years Ended June 30, 2024 and 2023

	2024	2023	Increase (Decrease)
Administrative Income:			
Contributions from employers	\$ 57,655,086	\$ 46,093,182	\$ 11,561,904
Allocation of investment income	29,582,666	25,981,646	3,601,020
Loan delinquency charges	25,160	24,700	460
Loan service charges	333,455	320,280	13,175
Loan Insurance Expense	131,823	113,164	18,659
Other (net)	399,876	18,894	380,982
Total income	<u>88,128,066</u>	<u>72,551,866</u>	<u>15,576,200</u>
Administrative Expenses:			
Salaries and benefits:			
Salaries	42,492,481	37,245,253	5,247,228
Civil service	59,413	63,342	(3,929)
Employees' retirement	5,951,705	5,285,873	665,832
Health and dental insurance	8,145,600	7,122,366	1,023,234
OPEB contribution	6,910,000	6,394,396	515,604
Overtime salaries	85,002	58,453	26,549
Social Security	3,004,025	2,594,077	409,948
Total salaries and benefits	<u>66,648,226</u>	<u>58,763,760</u>	<u>7,884,466</u>
Building occupancy expenses:			
Building, grounds and equipment	2,495,022	2,659,790	(164,768)
Depreciation - building and improvement	1,964,214	1,953,926	10,288
Depreciation - equipment	108,760	126,366	(17,606)
Office supplies and expenses	176,180	185,022	(8,842)
Utilities and municipal assessments	983,155	1,100,573	(117,418)
Total building occupancy expenses	<u>5,727,331</u>	<u>6,025,677</u>	<u>(298,346)</u>
Computer expenses:			
Depreciation - computer micro	1,051,875	905,980	145,895
Computer hardware and software	6,291,639	4,908,253	1,383,386
Computer maintenance and supplies	—	144	(144)
Total computer expenses	<u>7,343,514</u>	<u>5,814,377</u>	<u>1,529,137</u>
Personnel and meeting expenses:			
Board - meetings, travel and education	70,555	82,802	(12,247)
Delegates' meeting	101,033	632,118	(531,085)
Pre-retirement seminars	57,712	4,500	53,212
Professional development	1,119,436	854,808	264,628
Travel	304,269	211,357	92,912
Other personnel expenses	198,289	170,496	27,793
Total personnel and meeting expenses	<u>1,851,294</u>	<u>1,956,081</u>	<u>(104,787)</u>



Administrative Fund

Schedules of Income, Expenses and Changes in Fund Balance (Unaudited) (Continued)

Years Ended June 30, 2024 and 2023

	2024	2023	Increase (Decrease)
Professional and governmental services:			
Auditors - financial	\$ 259,410	460,832	\$ (201,422)
Auditors - insurance department	—	—	—
Medical examinations	80,204	80,015	189
Postage	1,034,899	862,903	171,996
Professional fees and services	1,218,763	1,322,017	(103,254)
Publications	214,629	254,611	(39,982)
Statutory custodian charges	146,341	141,250	5,091
Project Costs - Professional Fees	978,142	—	978,142
Total professional and governmental services	<u>3,932,388</u>	<u>3,121,628</u>	<u>810,760</u>
Total administrative expenses ¹	<u>85,502,753</u>	<u>75,681,523</u>	<u>9,821,230</u>
Net increase (decrease)	2,625,313	(3,129,657)	5,754,970
Administrative fund balance, beginning of year	<u>58,922,915</u>	<u>62,052,572</u>	<u>(3,129,657)</u>
Administrative fund balance, end of year	<u>\$ 61,548,228</u>	<u>\$ 58,922,915</u>	<u>\$ 2,625,313</u>

¹ Administrative expenses on the Statements of Changes in Fiduciary Net Position for the years ended June 30, 2024 and 2023 include a reconciliation of other postemployment contribution expense to OPEB expense and employees retirement contribution expense to pension expense for (\$1,207,409) and (\$3,616,592), respectively.



**NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM**

**BOARD MEETING
July 31, 2024**

TABLE OF CONTENTS

	<u>PAGE</u>
A. Introduction of Visitors	1
B. Correspondence - none	1
C. Approval of Meeting Minutes of April 25, 2024	1
COMMITTEE REPORTS & ACTION ITEMS	1
A. Disability Committee	1
1. Disability Rescission Resolution (R1)	1
B. Ethics Committee	2
1. Chairman's Report	2
C. Executive Committee	3
1. Resolution Identifying Warrant Signatories (R2)	2,11
2. Resolution Identifying Financial & Legal Document Signatories (R3)	3,12
D. Investment Committee	4
1. Consent Agenda Items 1A	4,14
A. Renew Agreements	4
1. Baillie Gifford Overseas Limited (R4)	4
2. Black Rock Carbon Transition (R5)	4
3. Blue Owl Real Estate Debt Advisors (Successor in Interest to Prima Capital Advisors (R6)	5
4. Global REIT Managers (R7) (AEW, DFA, Heitman)	5
5. Heitman US Total Return Strategy (R8)	5
6. Leading Edge (R9)	5
7. PIMCO (R10)	5
8. T. Rowe Price Associates (R11)	6
9. William Blair Company (R12)	6
2. Resolution on Investment Discretion (R13)	6
3. Resolution on Asset Allocation (R14)	6
4. Resolution on Advent Capital Management (R15)	7
5. Resolution to Establish USD EMD Internally Managed Portfolio (R16)	8
E. Risk Committee	8
1. Chairman's Report	8
STAFF REPORTS	8
A. Old Business - None	8
B. New Business	8
1. Litigation Report	8,16
2. Members Relations Update	8,18
a. Quality Insurance Update	8, 22
3. DEI Update	9,31
4. Staffing Update	9
5. Actuarial Valuation Report	9,35
6. Employer Contribution Rate Presentation	9,124
a. Resolution on Employer Contribution Rate (R17)	9
C. Appointment of General Counsel (R18)	10

NEW YORK STATE TEACHERS' RETIREMENT SYSTEM
ALBANY, NEW YORK

A MEETING OF THE NEW YORK STATE TEACHERS' RETIREMENT BOARD was held at the System on July 31, 2024. Oliver Robinson, Vice President, called the meeting to order (David Keefe, President, was on WebEx) at 1:30 p.m. and led the group in the Pledge of Allegiance.

ATTENDANCE

Present: Juliet Benaquisto, Phyllis Harrington, Eric Iberger, David Keefe (via WebEx), Oliver Robinson, Nicholas Smirensky and Thomas K. Lee

A. Introduction of Visitors

T. Lee introduced the following visitors: Pete Savage, NYSUT (via WebEx); Robert Steyer, Pensions & Investments (via WebEx); Donna Martin (via WebEx); Anin-Kofi Addo, Omni Research Associates.

B. Correspondence

None.

C. Approval of April 25, 2024 Board Meeting Minutes

There being no changes or corrections and upon motion of J. Benaquisto, seconded by E. Iberger and unanimously carried, the minutes of the April 25, 2024 Board meeting were approved.

Committee Reports/Action Items

A. Disability Review Committee

1. Disability Rescission Resolution (R1)

J. Benaquisto offered the following resolution, seconded by P. Harrington and unanimously carried by the Board:

WHEREAS, After reviewing the physician's report of the following annuitants who have retired for disability, the Medical Board believes they are improved and no longer incapacitated for the performance of all gainful employment, and recommended they be restored to active membership, therefore, be it

RESOLVED, That upon recommendation of the Medical Board, the action taken in retiring the following members for disability be rescinded and they be restored to active membership on the date indicated:

<u>EmpIID</u>	<u>Date Retired</u>	<u>Date Restored</u>
[REDACTED]	11/25/2009	06/14/2024
[REDACTED]	06/09/2022	08/01/2024

B. Ethics Committee

E. Iberger, acting Chair, reported that the Committee had met earlier in the day and had previously reviewed a report on the ED&CIO quarterly disclosures.

C. Executive Committee

1. Resolution Identifying Warrant Signatories (R2)

N. Smirensky the following resolution, seconded by P. Harrington

and unanimously carried by the Board:

WHEREAS, The Retirement Board has by resolution adopted at its regular meeting on October 26, 1995, amended and restated periodically thereafter, and most recently on July 26, 2023, and as further amended concurrent with this resolution, provided for the delegation by the Executive Director and Chief Investment Officer of the authority to execute warrants to other employees of the Retirement System; and

WHEREAS, It is necessary to implement said resolution by identifying those employees of the Retirement System to whom such authority may be delegated; be it

RESOLVED, That the signatories authorized to execute administrative, real estate investment, and fixed income, equity security and alternative investment warrants as provided in Parts II, III, IV, V and VI respectively of said resolution are identified by signatory group, organizational level within the organization and by name in the attached Signatory Authorization Grid (Appendix A, p.11) dated July 31, 2024; and be it further

RESOLVED, That this authorization shall remain in effect for individuals that are promoted within or move among the designated signatory groups, and be it further

RESOLVED, That the Executive Director and Chief Investment Officer shall have the authority to designate any such additional “A”, “B”, “C”, “D”, “E”, “F”, and “G” signatories as may be required by business necessity to serve on an interim basis until the regular meeting of the Retirement Board following the quarter ending June 30; and be it further

RESOLVED, That this delegation shall be reviewed by the Retirement Board no less than annually; and be it further

RESOLVED, That this resolution shall take effect July 31, 2024 and, upon taking effect, shall supersede the identifying resolution previously adopted on July 26, 2023.

2. Resolution Identifying Financial and Legal Document Signatories (R3)

N. Smirensky offered the following resolution, seconded by J. Benaquisto and unanimously carried by the Board:

WHEREAS, The Retirement Board has by resolution amended and restated the resolution of January 27, 2022 entitled Delegation Resolution - Financial and Legal Document Execution, providing for the delegation by the Executive Director and Chief Investment Officer of the authority to approve and execute financial and legal documents to other employees of the Retirement System; and

WHEREAS, The Retirement Board has by resolution adopted at its regular meeting on October 26, 1995, amended and restated periodically thereafter, and most recently on July 26, 2023, identifying those employees of the Retirement System that have been delegated such authority; and

WHEREAS, It is necessary to periodically update said resolution by identifying those employees of the Retirement System to whom such authority may be delegated; now therefore be it

RESOLVED, That the employees authorized to approve and execute financial and legal documents of said resolution are identified by department, management level within the organization and by name in the attachment entitled Signatory Authorization Grid-Financial and Legal Documents (Appendix B, p.12-13); and be it

RESOLVED, the attachment entitled Signatory Authorization Grid-Financial and Legal Documents sets forth the approvals and

signatures needed to approve and execute financial and legal documents; and be it

RESOLVED, That this authorization shall remain in effect for individuals who are promoted within their department; and be it

RESOLVED, That the Executive Director and Chief Investment Officer shall have the authority to designate in writing any such additional employees as may be required by business necessity to serve on an interim basis until the regular meeting of the Retirement Board following the quarter ending June 30; and be it

RESOLVED, That this delegation shall be reviewed by the Retirement Board no less than annually; and be it further

RESOLVED, That this resolution shall take effect July 31, 2024 and, upon taking effect, shall supersede the identifying resolution previously adopted by the Retirement Board on July 26, 2023.

D. Investment Committee

1. Consent Agenda Items 1A (Appendix C, pp.14-15)

O. Robinson asked the Board members if any of the consent agenda items should be moved to regular discussion items. Hearing no objections, the Board proceeded to move the Consent Agenda items (items 1A) with one motion.

Upon motion J. Benaquisto, seconded by P. Harrington and unanimously carried, the following resolutions were moved and approved together as consent agenda items:

A. Renew Agreements

- Baillie Gifford Overseas Limited (R4)

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the agreement with Baillie Gifford Overseas Limited to manage a portion of the System's assets as an active ACWI ex-US international equity manager for a period of one year, effective September 15, 2024.

- BlackRock Carbon Transitions (R5)

RESOLVED, That the Executive Director and Chief Investment Officer, or designee, is authorized to renew the agreement with BlackRock Financial Management, Inc. for a period of one year, effective October 6th, 2024 to

manage a portion of the System’s fixed income portfolio as an active Global Carbon Transition Bond Portfolio fixed income mandate, benchmarked to the Bloomberg Global Aggregate Corporate Bond Index (hedged to USD) (H03435US).

- Blue Owl Real Estate Debt Advisors (Successor-in-Interest to Prima Capital Advisors) (R6)

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the System’s contract with Blue Owl Real Estate Debt Advisors, LLC to manage a portion of the System’s real estate portfolio, as a manager of US CMBS and private real estate debt, for a period of one year, commencing on August 13, 2024.

- Global REIT Managers (R7)

RESOLVED, That the Executive Director and Chief Investment Officer, or his designees, is authorized to renew the agreements with the entities below to manage a portion of the System’s assets as Global Real Estate Public Securities managers benchmarked to the FTSE EPRA/NAREIT Developed unhedged index for a period of one year:

Entity:	Renew for a period of one year effective as of:
Heitman, L.L.C.	August 7, 2024
AEW Capital Management, L.P.	September 12, 2024
Dimensional Fund Advisors, L.P.	September 22, 2024

- Heitman US Total Return Strategy (R8)

RESOLVED, That the System’s Executive Director and Chief Investment Officer, or designee, is authorized to renew the agreement with Heitman, LLC to manage a portion of the System’s portfolio to be actively invested in the securities of U.S. real estate investment trusts (“REITs”) and real estate operating companies (“REOCs”) for a period of one year, effective August 7, 2024.

- Leading Edge (R9)

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the agreement with Leading Edge Investment Advisors to manage a portion of the System’s equity portfolio as a manager of managers for a global equity strategy, for a period of one year, effective November 22, 2024.

- PIMCO (R10)

RESOLVED, That the Executive Director and Chief Investment Officer, or designee, is authorized to renew the agreement with Pacific Investment Management Company LLC. for a period of one year, effective October 6th, 2024 to manage a portion of the System's fixed income portfolio as an active Global Carbon Transition Bond Portfolio fixed income mandate, benchmarked to the Bloomberg Global Aggregate Corporate Bond Index (hedged to USD) (H03435US).

- T. Rowe Price Associates, Inc. (R11)

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the System's agreement with T. Rowe Price Associates, Inc. to manage a portion of the System's equity portfolio as a domestic equity enhanced index manager for a period of one year, effective October 30, 2024.

- William Blair and Company (R12)

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the System's contract with William Blair & Company, LLC to manage a portion of the System's equity portfolio as an active ACWI ex US international manager for a period of one year commencing September 22, 2024.

2. Resolution on Investment Discretion (R13)

E. Iberger offered the following resolution, seconded by J. Benaquisto and unanimously carried by the Board:

WHEREAS, The Retirement Board approved the delegations of investment authority set forth in the section of the Investment Policy Manual entitled "Delegation of Investment Authority" at its October 2023 meeting; and

WHEREAS, Said section shall be subject to annual review and renewal at the regular meeting of the Retirement Board in July of each calendar year; be it

RESOLVED, That the delegations of investment authority set forth in said section of the Investment Policy Manual are reauthorized and reconfirmed as the principal items of investment authority delegated to the Executive Director and Chief Investment Officer.

3. Resolution on Asset Allocation (R14)

P. Harrington offered the following resolution, seconded by J. Benaquisto

and unanimously carried by the Board:

RESOLVED, That the System's asset allocation targets and rebalancing ranges in the System's Asset Allocation shall continue as follows, effective immediately:

<u>Asset Class</u>	<u>Range</u>	<u>Target</u>
Domestic Equity	29 – 37%	33%
International Equity	11 – 19%	15%
Global Equity	0 – 8%	4%
Domestic Fixed Income	12 – 20%	16%
Real Estate Equity	6 – 16%	11%
Real Estate Debt	2 – 10%	6%
Private Equity	4 – 14%	9%
Private Debt	0.5 – 5%	2%
Global Bonds	0 – 4%	2%
High Yield Bonds	0 – 3%	1%
Short Term Investments (Cash Equivalents)	0 – 4%	1%

4. Resolution on Advent Capital Management (R15)

E. Iberger offered the following resolution, seconded by O. Robinson and unanimously carried by the Board:

RESOLVED, That, subject to the satisfactory completion of due diligence, the Executive Director and Chief Investment Officer, or designee, is authorized to contract with Advent Capital Management, LLC to manage a portion of the System's fixed income portfolio in a US Broad Market High Yield Portfolio fixed income mandate benchmarked to the ICE BofA US High Yield Constrained Index (HUC0) and to allocate an initial funding of up to \$75 million to such manager in one or more tranches; and be it further

RESOLVED That the Executive Director and Chief Investment Officer, or designee, is authorized to execute such documents and to take such actions as may be necessary or required to implement the foregoing resolution.

5. Resolution to Establish USD EMD internally managed portfolio (R16)

J. Benaquisto offered the following resolution, seconded by E. Iberger and unanimously carried by the Board:

RESOLVED, That the Executive Director and Chief Investment Officer, or designee, is authorized to establish an internally managed US dollar emerging market debt active portfolio to be benchmarked against the Bloomberg Emerging Markets USD Aggregate Investment Grade 10% Country Capped custom index with an initial allocation of up to \$500 million in one or more tranches.

E. Risk Committee

N. Smirensky, acting Chair, reported that the Committee had met earlier and had heard reports on compliance, investment risk update, the KRI dashboard and had met in Executive Session to discuss personnel issues.

Staff Reports

A. Old Business

None.

B. New Business

1. Litigation Report

D. Ampansiri discussed the Litigation report, a copy of which is annexed hereto and made a part hereof (Appendix D, pp.16-17).

2. Member Relations

B. Dellea reported that the Delegates' Meeting will be held November 3-4 in Saratoga, New York. B. Dellea also reviewed the annual loan board report (Appendix E, pp.18-21). S. Bonesteel

provided a quality assurance update of the monthly retirement file reviews. (Appendix F, pp. 22-30).

3. DEI Update

D Malavé and M. Pinchinat provided an update on NYSTRS' DEI program, accomplishments to date and next steps (Appendix G, pp.31-34).

4. Staffing Update

M. Dixon provided a staffing update.

5. Actuarial Valuation Report

This report was made available to Board members prior to the meeting and is attached hereto as Appendix H, pp. 35-123.

6. Employer Contribution Rate Update

R. Young and M. Prangle gave a presentation to the Board on the employer contribution rate, attached hereto as Appendix I, pp. 124-154.

a. Resolution on Employer Contribution Rate (R17)

J. Benaquisto offered the following resolution, seconded by E. Iberger and unanimously carried by the Board:

WHEREAS, The Actuary has presented to the Board the calculations based upon the June 30, 2023 actuarial valuation of the Retirement System's assets and liabilities, therefore, be it

RESOLVED, That the employer rate of contribution levied in the school year 2025-26 shall be 10.11% of the 2024-25 member payroll and shall be comprised as follows:

Normal Rate, 9.63% of payroll, credited to the Pension Accumulation Fund

Group Life Insurance Rate, 0.13% of payroll, credited to the Group Life Insurance Fund

Expense Rate, 0.35% of payroll, credited to the Expense Fund

Excess Benefit Plan Rate, 0.00% of payroll, credited to the Excess Benefit Plan Fund

C. Executive Session

Upon motion of J. Benaquisto seconded by E. Iberger and unanimously carried the Board went into Executive Session, at 2:58 pm, to discuss personnel matters.

Upon motion of O. Robinson, seconded by J. Benaquisto and unanimously carried the Board came out of Executive Session, at 3:44 pm.

1. Resolution on Appointment of General Counsel (R18)

J. Benaquisto offered the following resolution, seconded by N. Smirensky and passed by the Board, with P. Harrington abstaining from the vote:

WHEREAS, The Retirement Board has conducted a nationwide search for the System's General Counsel;

WHEREAS, The General Counsel of the New York State Teachers' Retirement System serves at the pleasure of the Retirement Board;

RESOLVED, That Don Ampansiri, Jr. is appointed General Counsel, effective immediately, at the annual compensation set forth in Appendix J, p

There being no further business, the meeting unanimously adjourned at 3:46 p.m.

Respectfully submitted,

A large black rectangular redaction box covering the signature of the official.

Thomas K. Lee

Disbursement Warrant Signatories

As of June 30, 2024

Division	Name	Position
Administration	Miriam Dixon	Executive
Administration	Rebecca Kannan	Deputy Executive
Fixed Income	Joseph Wood	Assistant Manager/Assistant Director
Fixed Income	Michael Federici	Executive
Fixed Income	Aaron VanDerwiel	Deputy Executive
Fixed Income	Dawn Sherman	Professional Staff
Fixed Income	Mark Wood	Professional Staff
Fixed Income	Michael Wollner	Professional Staff
Fixed Income	Christina Vasto	Professional Staff
Office of the Actuary	Richard Young	Executive
Office of the Actuary	Melody Prangley	Deputy Executive
Office of the Chief Financial Officer	Gwendolyn Genovesi	Assistant Manager/Assistant Director
Office of the Chief Financial Officer	Margaret Andriola	Executive
Office of the Chief Financial Officer	Christopher O'Grady	Manager/Director
Office of the Chief Financial Officer	Christopher Brown	Manager/Director
Office of the Chief Financial Officer	Tedd Johnson	Assistant Manager/Assistant Director
Office of the Chief Financial Officer	David Robertson	Assistant Manager/Assistant Director
Office of the General Counsel	Don Ampansiri	Deputy Executive
Office of the General Counsel	Benjamin Lee	Managing Counsel
Office of the General Counsel	Janet Graham	Managing Counsel
Office of the General Counsel	Adam Kinney	Assistant/Associate Counsel
Office of the General Counsel	Morgan Anderson	Assistant/Associate Counsel
Private Equity	Hope Bailey-Reed	Professional Staff
Private Equity	Gerald Yahoudy	Executive
Private Equity	Brad Woolworth	Deputy Executive
Private Equity	Nicholas Chladek	Manager/Director
Public Equities	Paul Cummins	Executive
Public Equities	David Tessitore	Manager/Director
Public Equities	Jennifer Wilcox	Manager/Director
Public Equities	Nathan Lee	Manager/Director
Real Estate	David Maye	Assistant Manager/Assistant Director
Real Estate	David Gillan	Executive
Real Estate	Kevin Maloney	Deputy Executive
Real Estate	Michael Morrell	Manager/Director
Real Estate	Adrean Kreig	Manager/Director
Real Estate	Jason Kearney	Manager/Director
Real Estate	Andrew Bartell	Assistant Manager/Assistant Director
Risk Management	Matthew Albano	Executive
Risk Management	Matthew Tice	Manager/Director

Legal & Financial Document Signatories

As of June 30, 2024

Name	Position	Division
Miriam Dixon	Executive	Administration
Rebecca Kannan	Deputy Executive	Administration
Jason Freeman	Manager/Director	Administration
Danny Malavé	Executive	Diversity, Equity, & Inclusion
Emily Ekland	Executive	Executive
Heidi Brennan	Manager/Director	Executive
Timothy Mack	Assistant Manager/Assistant Director	Executive
Joseph Wood	Assistant Manager/Assistant Director	Fixed Income
Michael Federici	Executive	Fixed Income
Aaron VanDerwiell	Deputy Executive	Fixed Income
Vijay Madala	Executive	Information Technology
Sarah Garrand	Deputy Executive	Information Technology
Kathy Ebert	Executive	Internal Audit
Bruce Woolley	Assistant Manager/Assistant Director	Internal Audit
Lei Zhang	Assistant Manager/Assistant Director	Internal Audit
Beth Dellea	Executive	Member Relations
Michael Contento	Manager/Director	Member Relations
Erica Mortimore	Manager/Director	Member Relations
Shannon Bonesteel	Manager/Director	Member Relations
Heidi Travis	Manager/Director	Member Relations
Colleen Laven	Assistant Manager/Assistant Director	Member Relations
Andrew Whitney	Assistant Manager/Assistant Director	Member Relations
Cori Bicteman	Assistant Manager/Assistant Director	Member Relations
Richard Young	Executive	Office of the Actuary
Melody Prangley	Deputy Executive	Office of the Actuary
Gwendolyn Genovesi	Assistant Manager/Assistant Director	Office of the Chief Financial Officer
Margaret Andriola	Executive	Office of the Chief Financial Officer
Christopher O'Grady	Manager/Director	Office of the Chief Financial Officer
Christopher Brown	Manager/Director	Office of the Chief Financial Officer
Tedd Johnson	Assistant Manager/Assistant Director	Office of the Chief Financial Officer
David Robertson	Assistant Manager/Assistant Director	Office of the Chief Financial Officer
Don Ampansiri	Deputy Executive	Office of the General Counsel
Benjamin Lee	Managing Counsel	Office of the General Counsel
Janet Graham	Managing Counsel	Office of the General Counsel
Adam Kinney	Assistant/Associate Counsel	Office of the General Counsel
Morgan Anderson	Assistant/Associate Counsel	Office of the General Counsel
Gerald Yahoudy	Executive	Private Equity
Brad Woolworth	Deputy Executive	Private Equity
Nicholas Chladek	Manager/Director	Private Equity
Paul Cummins	Executive	Public Equities
David Tessitore	Manager/Director	Public Equities
Jennifer Wilcox	Manager/Director	Public Equities
Nathan Lee	Manager/Director	Public Equities
David Maye	Assistant Manager/Assistant Director	Real Estate
David Gillan	Executive	Real Estate

Name	Position	Division
Kevin Maloney	Deputy Executive	Real Estate
Michael Morrell	Manager/Director	Real Estate
Adrean Kreig	Manager/Director	Real Estate
Jason Kearney	Manager/Director	Real Estate
Andrew Bartell	Assistant Manager/Assistant Director	Real Estate
Matthew Albano	Executive	Risk Management
Matthew Tice	Manager/Director	Risk Management



Quarterly Retirement Board Meeting

July 31, 2024

Call to Order by President

Agenda pp. 228-229

- A. Introduction of Visitors
- B. Correspondence - none
- C. Approval of Minutes of April 25, 2024 pp. 230-239

Committee Reports & Action Items

- A. Disability Review Committee
 - 1. Disability Rescission Resolution (R1, p. 240)
- B. Ethics Committee
 - 1. Chair's report
- C. Executive Committee
 - 1. Resolution Identifying Warrant Signatory (R2, p. 241)
 - 2. Resolution Identifying Financial & Legal Document Signatories (R3, p.242)
- D. Investment Committee
 - 1. **Consent Agenda Item 1A** pp. 243-251
 - A. Renew Agreements:
 - 1. Baillie Gifford Overseas Limited (R4, p. 243)
 - 2. BlackRock Carbon Transition (R5, p. 244)
 - 3. Blue Owl Real Estate Debt Advisors (Successor-in-Interest to Prima Capital Advisors) (R6, p.245)
 - 4. Global REIT Managers (AEW, DFA, Heitman) (R7, p. 246)
 - 5. Heitman US Total Return Strategy (R8, p. 247)
 - 6. Leading Edge (R9, p. 248)
 - 7. PIMCO (R10, p. 249)
 - 8. T. Rowe Associates, Inc. (R11, p. 250)
 - 9. William Blair and Company (R12, p. 251)
 - 2. Resolution on Investment Discretion (R13, p. 252)
 - 3. Resolution on Asset Allocation (R14, p. 253)
 - 4. Resolution on Advent Capital Management (R15, p. 254)
 - 5. Resolution to Establish USD EMD Internally Managed Portfolio (R16, p. 255)
- E. Risk Committee
 - 1. Chair's report

Staff Reports

- A. Old Business
- B. New Business
 - 1. Litigation Report – D. Ampansiri pp. 256-257
 - 2. Member Relations Update – B. Dellea pp. 258-261
 - a. Quality Assurance Update – S. Bonesteel pp. 262-270
 - 3. DEI Update – D. Malavé pp. 271-274
 - 4. Staffing Update – M. Dixon pp. 275-279
 - 5. Actuarial Valuation Report – R. Young, M. Prangle pp. 280-368
 - 6. Employer Contribution Rate Presentation – R. Young, M. Prangle pp. 369-399
 - a. Resolution on Employer Contribution Rate (R17, p. 400)
- C. Executive Session-Motion for **Executive Session** pursuant to Open Meetings Law §105(1)(f) to discuss personnel matters

**NEW YORK STATE TEACHERS' RETIREMENT SYSTEM
Memorandum**

TO: Retirement Board
FROM: D. Ampansiri, Jr., J. Graham
RE: Status of System Litigation as of July 23, 2024
DATE: July 23, 2024
CC: T. Lee

UPDATE ON PENDING LAWSUITS SINCE THE LAST REPORT

Michael Bellarosa v. New York State Teachers' Retirement System

Action commenced: 9/8/2022

Favorable Article 78 decision: 5/12/2023

Favorable Appellate Division decision issued 7/18/2024

UPDATE: On July 18, 2024, the Appellate Division (Third Department), in a unanimous 5-0 decision, affirmed the Supreme Court's May 12, 2023, favorable ruling regarding the System's determination to exclude certain payments from inclusion in his pension calculation as well as the application of the 10% cap on increases to his earnings in the FAS period. Petitioner has 35 days from service of the decision (August 23, 2024) to move for leave to appeal to the Court of Appeals.

Summary of the case/background information:

Petitioner, a Tier 4 member, is challenging the System's determination excluding for pension purposes payments made to Petitioner for a Technology/ Wellness/ Transportation Allowance and Vacation by the Valley Central School District (the District). The District converted the Technology/ Wellness/Transportation Allowance and unused vacation days into salary. The conversion of these benefits into salary on the eve of retirement has the effect of artificially inflating the pension benefit. As such, these payments are not considered regular salary and NYSTRS contends the payments are excluded from the pension calculation. Petitioner also challenged the application of the

statutory requirement that we cap the increases in petitioner's salary for the 3 years used to calculate the FAS at 10% of the average salary for the preceding 2 years.

LAWSUITS COMMENCED SINCE THE LAST REPORT

None

**Appendix E**

To: T. Lee
From: C. Laven
CC: B. Dellea
Date: July 31, 2024
Re: Member & Employer Services
Materials for the July 31, 2024, Retirement Board Meeting

I have attached the summary of member loan information for the July 31, 2024, Retirement Board meeting.

If you need any further information, please let me know.



Colleen Laven, Manager

Member & Employer Services

New York State Teachers' Retirement System

MEMORANDUM

TO: Retirement Board

FROM: Thomas K. Lee

SUBJECT: Member Loans

DATE: July 31, 2024

<u>Total Loans Outstanding</u>	<u>June 30, 2024</u>	<u>June 30, 2023</u>	<u>Increase(Decrease)</u>
Direct Payments	2,824	2,990	(166)
Payroll Deductions	<u>19,322</u>	<u>18,694</u>	<u>628</u>
Total	22,146	21,684	462

Direct Payments	\$ 35,127,270	\$ 35,603,466	(\$ 476,196)
Payroll Deductions	<u>241,428,901</u>	<u>216,059,594</u>	<u>25,369,307</u>
Total	\$276,556,171	\$251,663,060	\$24,893,111

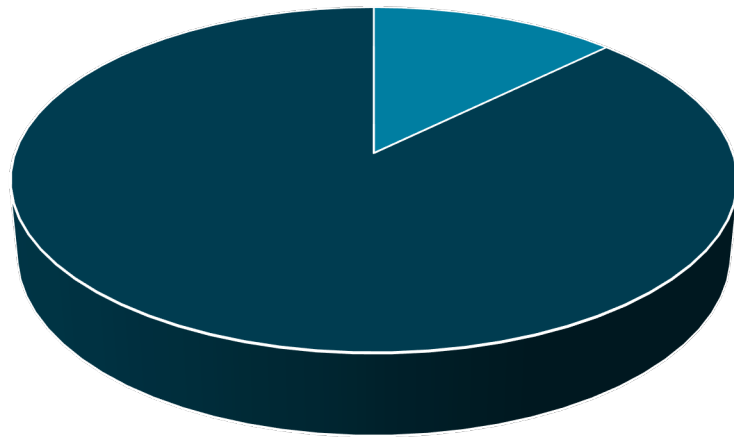
<u>Delinquent Loans</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
One Month	74	0.3	64	0.3
Two Months	40	0.2	45	0.2
Three Months	<u>33</u>	<u>0.1</u>	<u>35</u>	<u>0.2</u>
Total	147	0.6	144	0.7

<u>Loans Issued Annually</u>	<u>June 30, 2024</u>	<u>June 30, 2023</u>	<u>Increase(Decrease)</u>
Direct Payments	242	274	(32)
Payroll Deductions	<u>11,032</u>	<u>10,490</u>	<u>542</u>
Total	11,274	10,764	510

Direct Payments	\$ 2,323,536	\$ 2,644,795	(\$ 321,259)
Payroll Deductions	<u>104,351,990</u>	<u>93,708,930</u>	<u>10,643,060</u>
Total	\$106,675,526	\$96,353,725	\$10,321,801

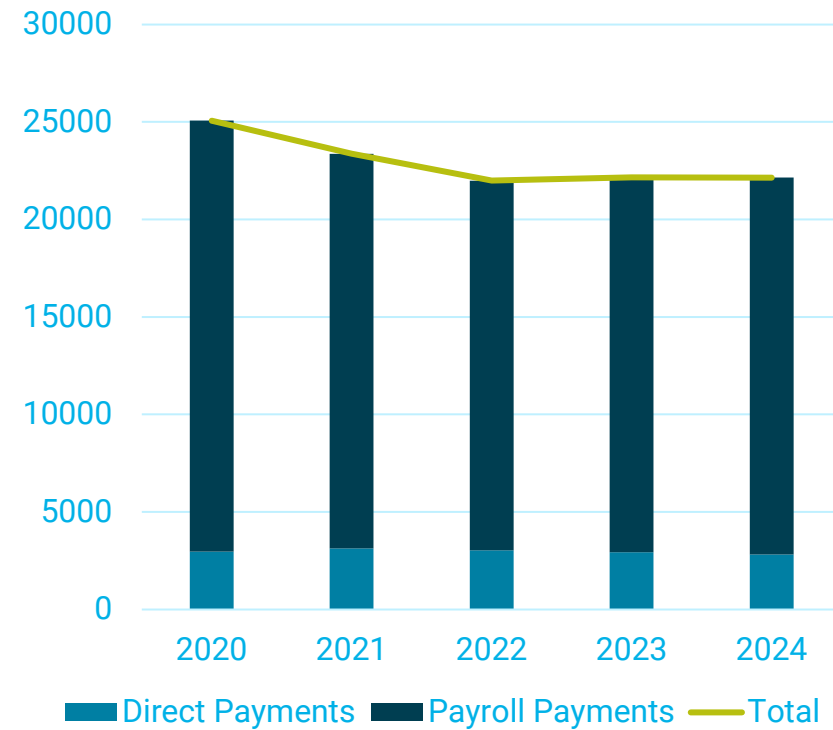
Member Loans June 30, 2024

Member Loans Outstanding as of 6/30/2024 (\$276,556,171)

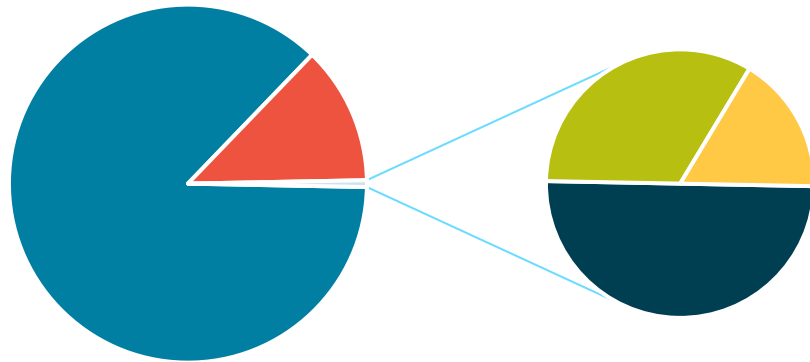


- Direct Payments (\$35,127,270)
- Payroll Deduction (\$241,428,901)

Member Loans Outstanding 2020-2024

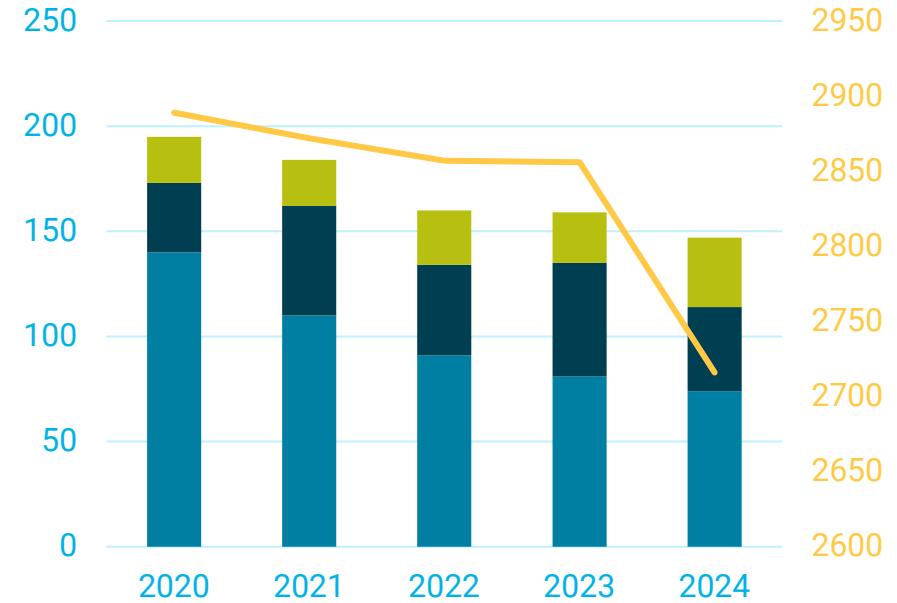


Member Loan Repayment Status as of 6/30/2024



- Current (18,907)
- One Month Delinquent (74)
- Two Months Delinquent (40)
- Three Months Delinquent (33)
- Defaulted (2,716)

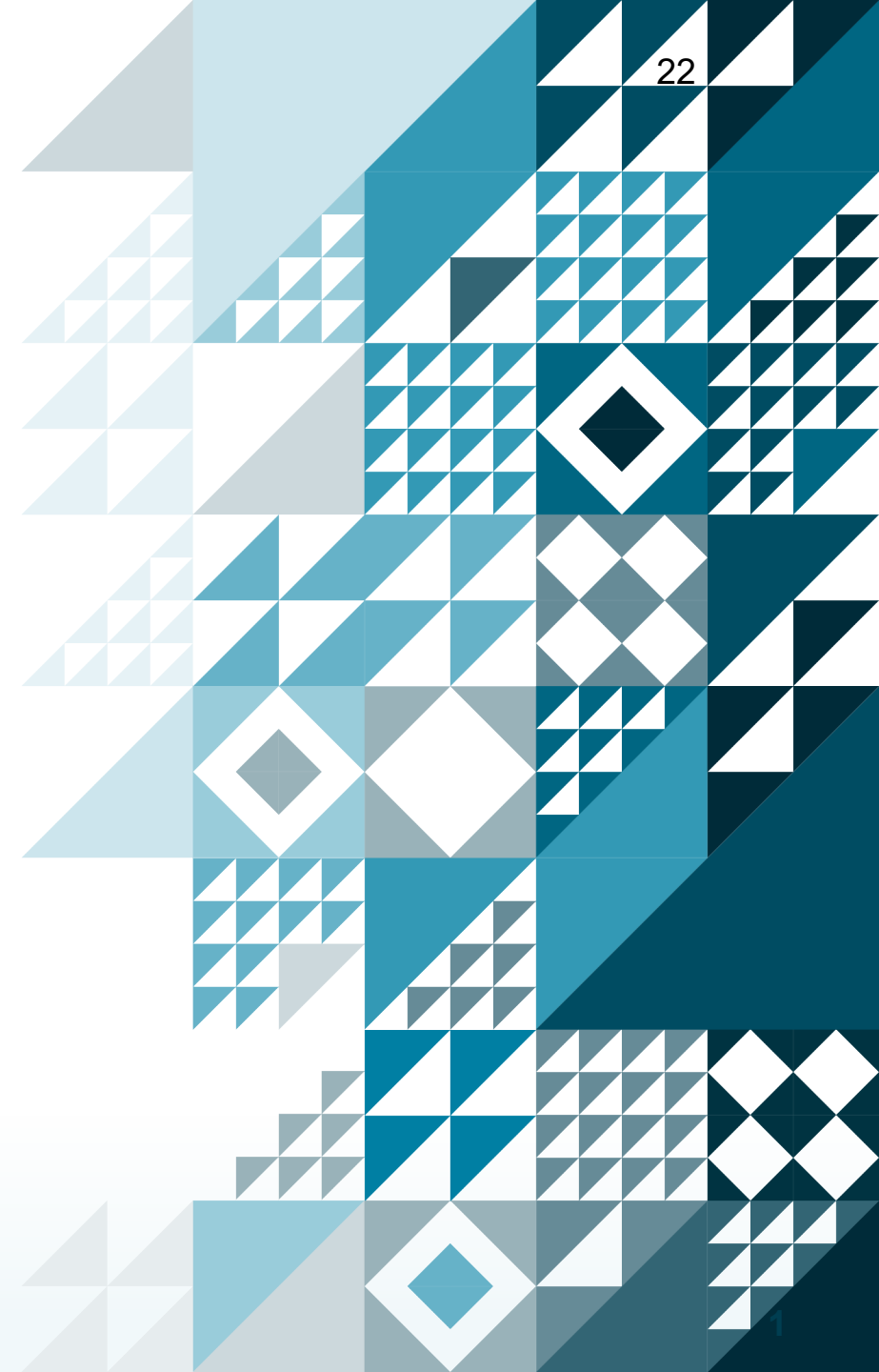
Delinquent Member Loans 2020-2024



- Three Months Delinquent
- Two Months Delinquent
- One Month Delinquent
- Defaulted

Quality Assurance & Support (QAS) Update

Board presentation July 2024



Agenda



What's new in QAS



Results of QAS Service Retirement Monthly Review



Items reported to NYS Department of Financial Services (DFS)

QAS Accomplishments

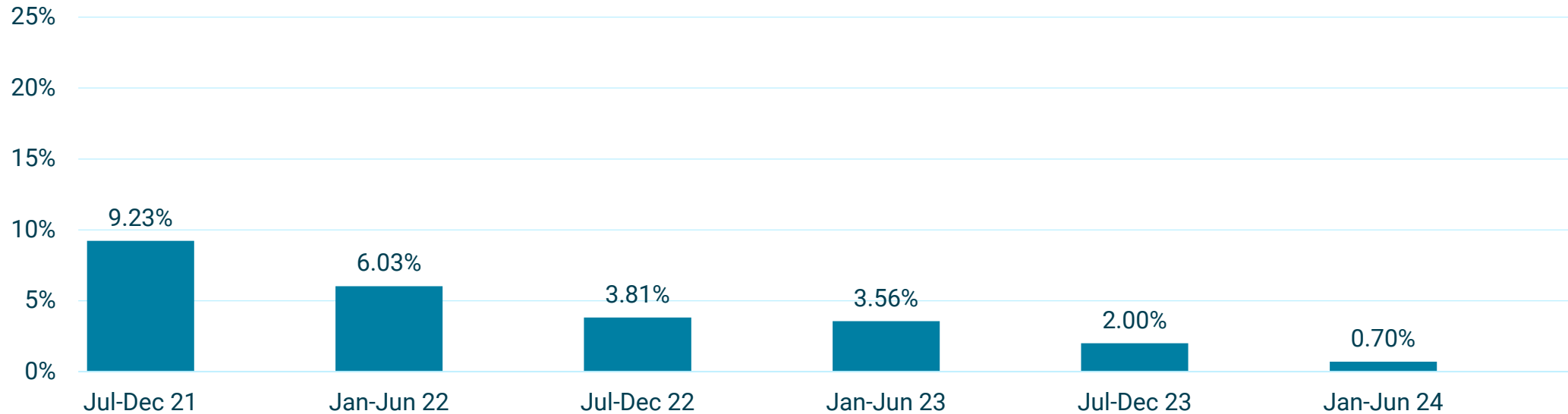
- Completed QAS review of calc consolidation “mismatch” files.
- Began developing processes and procedures for the review of part-time service credit.
- Completed two topic-specific knowledge articles.
- Began developing new trainings focused on service credit and file reviews.
- Completed reviews on 211 service retirement closeout files.

QAS Service Retirement Monthly Review

Review a total of 10% of final service retirement benefits created in a month:

- High risk areas discussed with management from Member Benefits
 - ✓ 100% of Tier 1 members
 - ✓ 100% of Lump-sum distributions
 - ✓ After training period for new staff to ensure understanding of the process to create a benefit
- Random sample

Percentage of Completed Files Resulting in Revision, Change in Benefits*²⁶



	Jul-Dec 21	Jan-Jun 22	Jul-Dec 22	Jan-Jun 23	Jul-Dec 23	Jan-Jun 24
Service Retirement Closeouts	4,218	3,594	3,637	4,171	3,105	2,825
Selected for QAS Review	455	365	368	425	416	475
Percent QAS Review Complete	100.00%	100.00%	99.73%	99.06%	96.15%	90.11%
Revised, Change in Benefit	42	22	14	15	8	3

*As of June 30, 2024

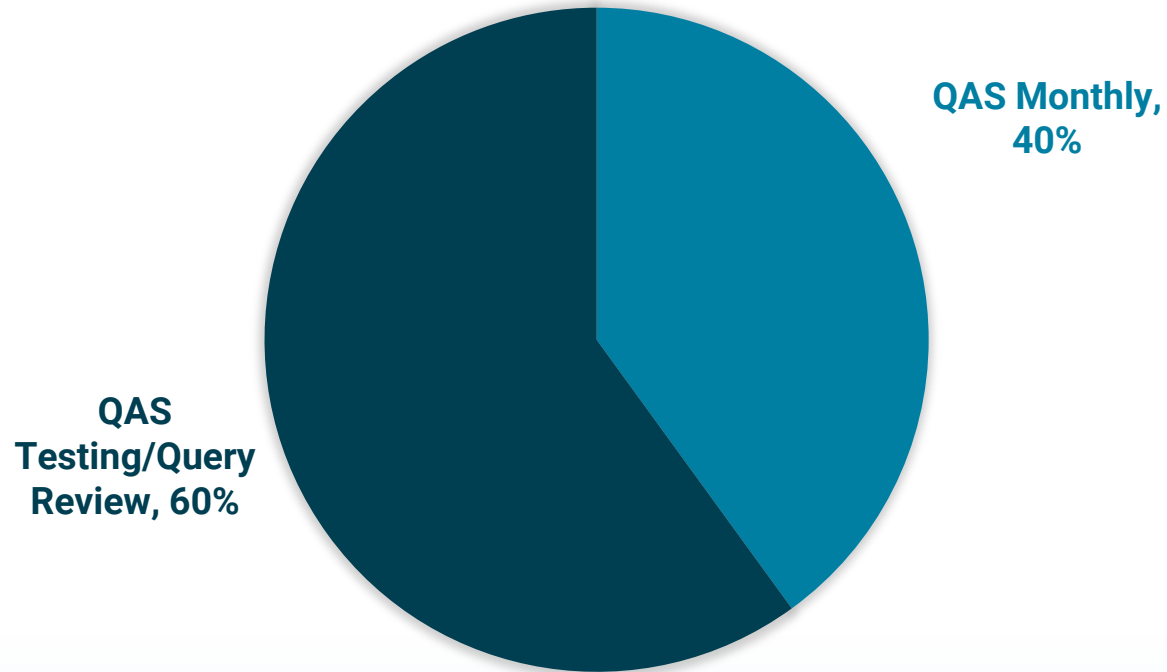
Items Reported to DFS January-June 2024

Administrative error – An error by the System (either manual or automated) that requires revision to finalized benefit payments. This would not include revisions to estimated benefits, errors or revisions made by participating employers, members or other parties.

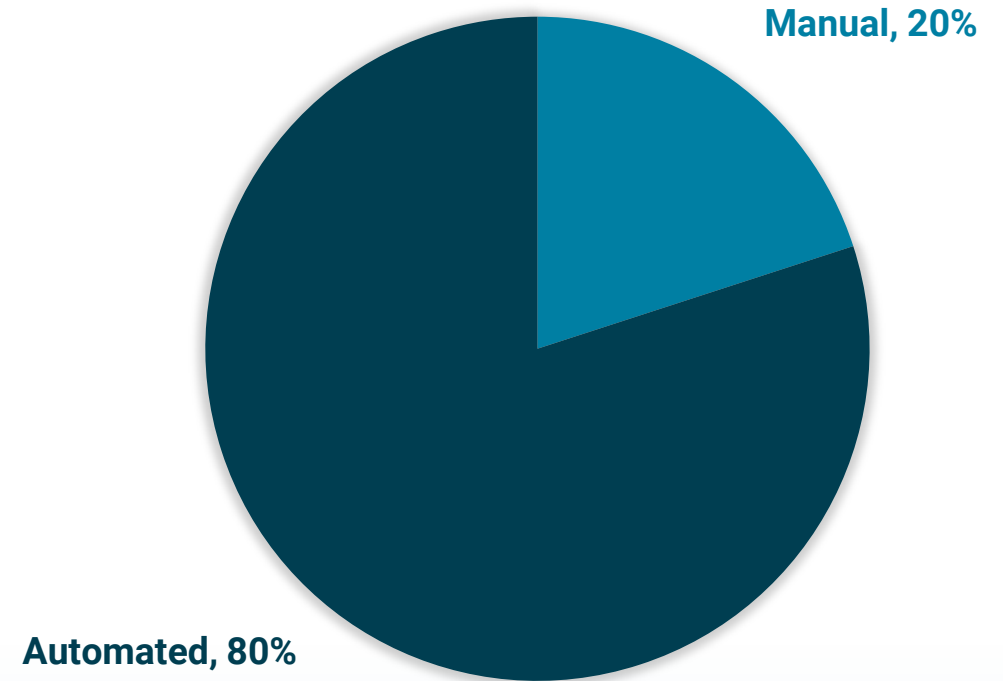
January 2024	2
February 2024	0
March 2024	0
April 2024	3
May 2024	0
June 2024	0
<hr/> Total	5

January-June 2024 DFS Items

REPORTING DEPARTMENT

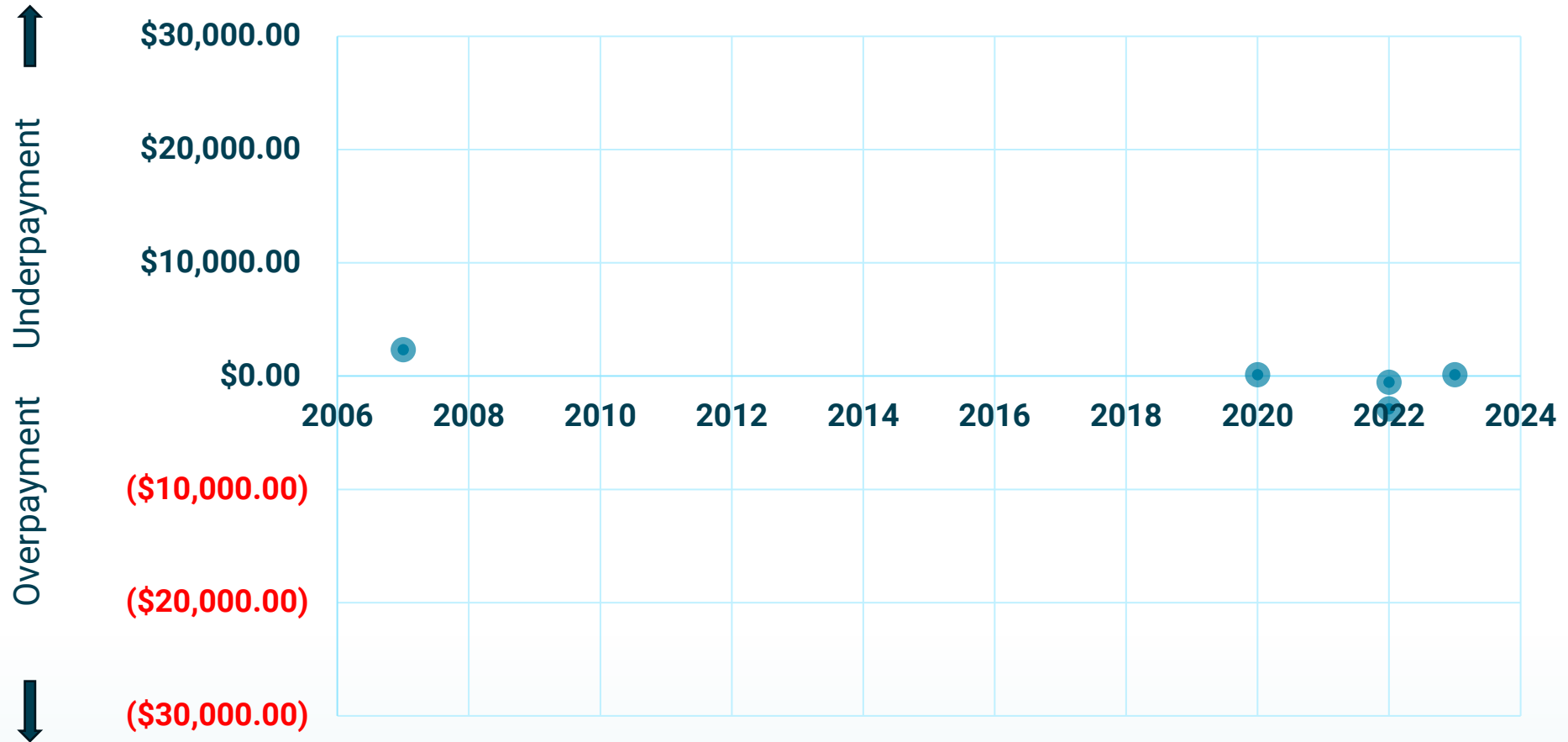


ERROR TYPE



January-June 2024 DFS Items

Amount Underpaid/Overpaid by Calendar Year of Retirement



Questions?



Appendix G

Diversity, Equity, & Inclusion Division Update

July 31, 2024

Danny Malavé, Managing Director, Diversity, Equity, & Inclusion

Matthew Pinchinat, Deputy Managing Director, Diversity, Equity, & Inclusion

DEI: Year-in-Review

Workforce DEI Culture & Learning

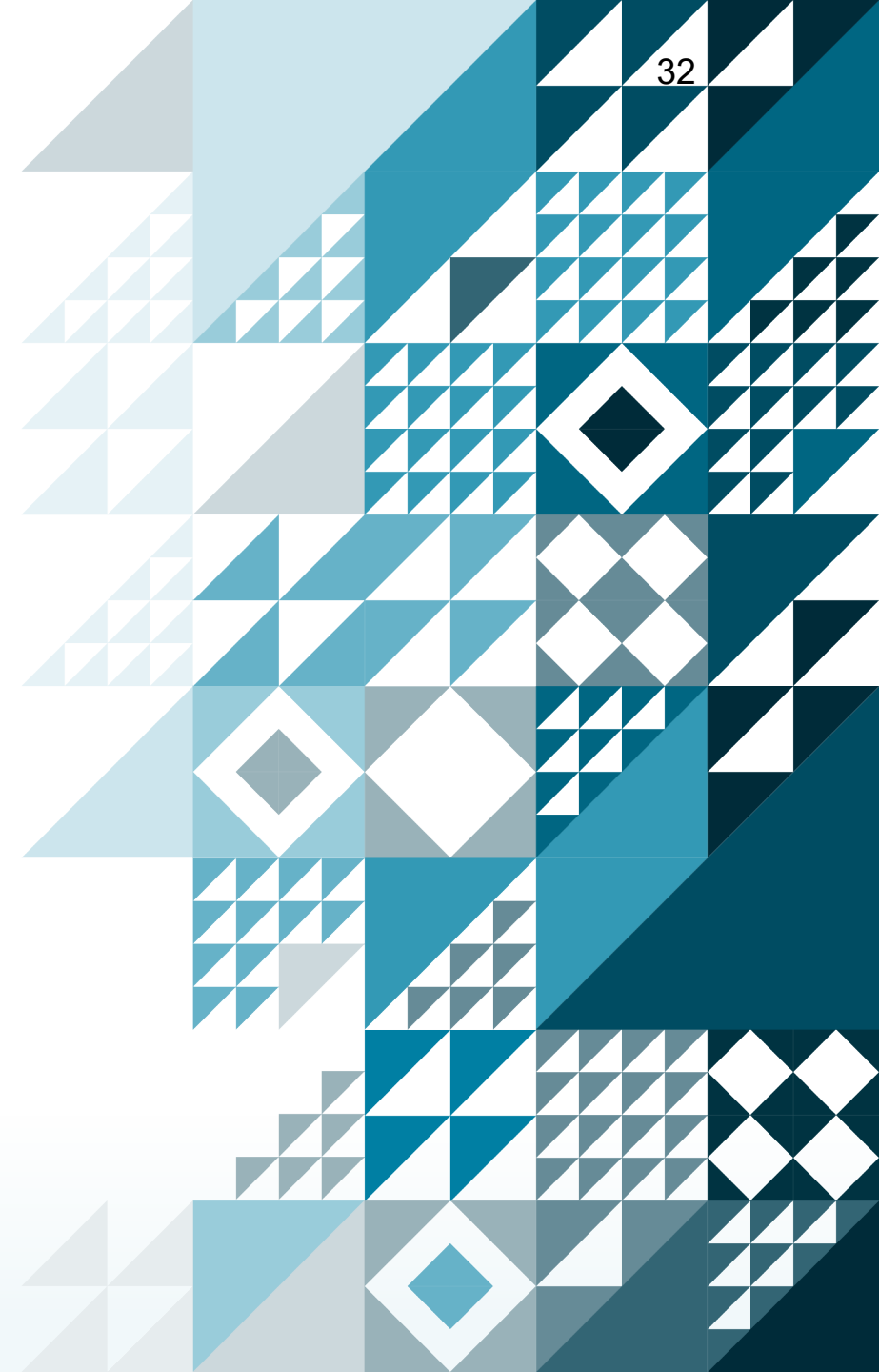
- All-Employee DEI Training Program, FY23-24
- Employee Networking Group (ENG) Program Update
- Dept./Division Collaborations
- I&E Survey (2024)
- Voluntary Training Highlights

External/Partner Engagement

- Expanded Vendor/Manager Outreach
- Pipeline & Career Pathway Strategy
- Industry Peer Engagement

DEI Division/Team

- Community Resource Enhancements
- Staffing Update



Quick Overview

- Survey administered March 2024
- 21 Likert scale items (1-5 Agreement scale)
- One open-ended general feedback item
- 183 employee responses
- All Response Avg. – **4.05**

Demographic Trends

- Populations w/ less than 4.0 Agreement:
 - Veteran employees (3.72)
 - Employees with disabilities (3.89)
 - Some College and/or 2-Year Degree (3.84)

Ongoing Initiatives

- Increase Staff Engagement & Internal Learnings
- Leadership Skill-building & Coaching
- Topical Focus Groups
- Pilot Collaboration – IT Division

Future Considerations & Timeline

- All Staff Summary Programs (Aug./Sept. 2024)
- Survey Enhancements & Resurvey (Winter 2025)
- Year-over-year trend analysis (Spring 2025)

Agreement Scale (1-5)

Survey Response Highlight Examples

The following statement was rated on a 1-5, strongly disagree to strongly agree, scale

4.54

When I need help, my team willingly supports me.

4.41

I am respected by my colleagues in my unit/department.

4.32

I can share ideas and opinions openly.

4.29

I have, or can easily access, the knowledge, and training necessary to perform my role.

Agreement Scale (1-5)

Survey Response Lowlight Examples

The following statement was rated on a 1-5, strongly disagree to strongly agree, scale

3.06

I do not believe there are workplace divides present between different units/departments in the organization.

3.71

Leaders in my division outline clear expectations for all division staff.

3.76

I believe promotion and/or advancement are accessible to me if I choose to pursue them.

System-wide Recommendations

- Celebrate & learn from positive outcomes
- Enhance leadership training and support structures
- Improve employee connections & collaborative opportunities
- Direct support for career-focused employee programming & resources

DEI: 2024-25 Priorities & Planning

Workforce DEI Culture & Learning Strategy

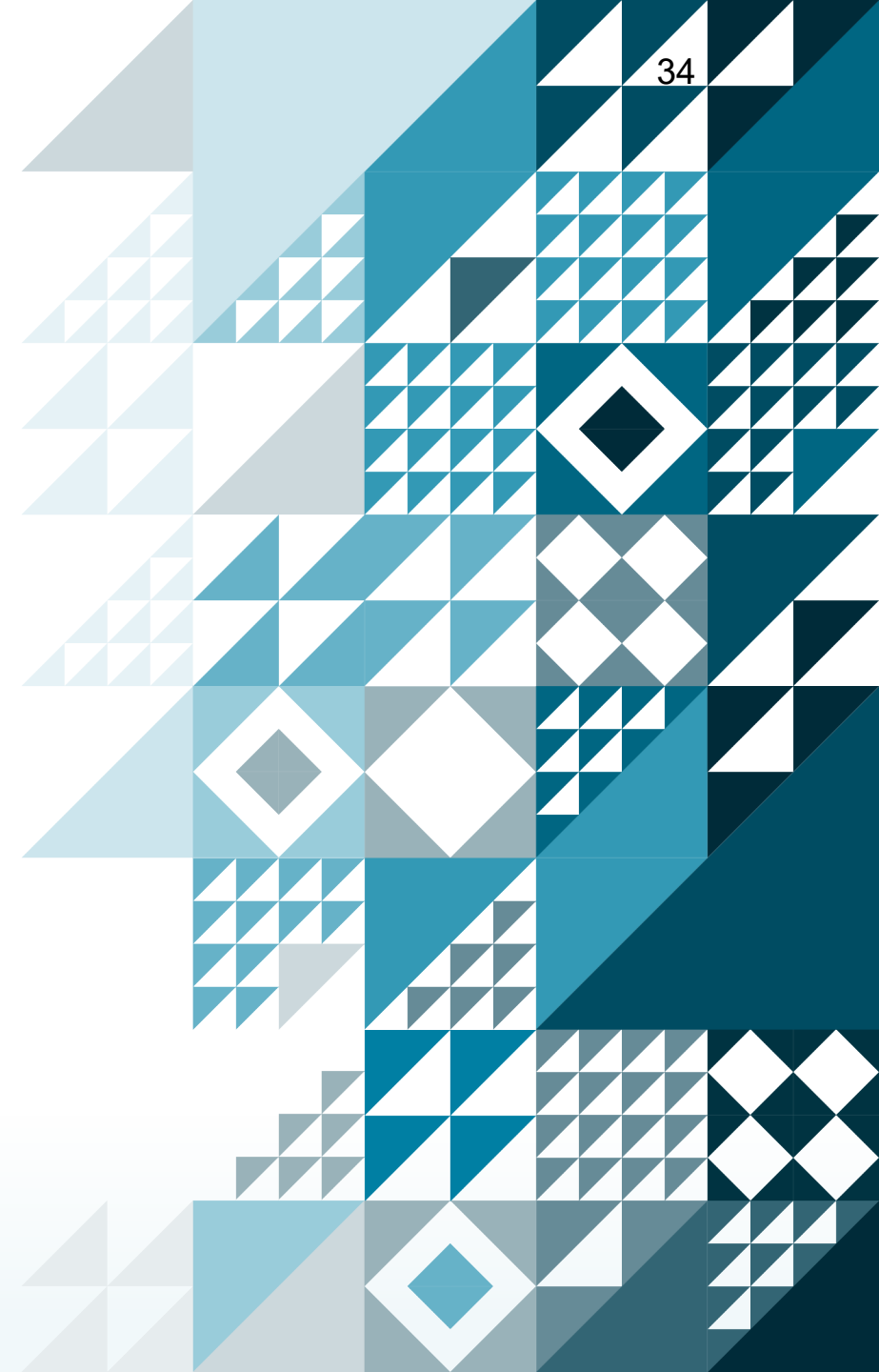
- Review & Update – DEI Strategic Plan
- Annual Training/Initiative Curricular Updates
- Pilot Program Assessment

External/Partner Engagement

- 2024 MWBE Certification Process
- NYSTRS MWBE Report Update
- Educational Institution Engagement
- 2025 MWBE Investments & Professional Services Conference

DEI Division/Team

- Workforce Planning – Specialization



ACTUARIAL VALUATION REPORT

as of

JUNE 30, 2023



**New York State
Teachers'
Retirement
System**

Office of the Actuary

July 23, 2024

NEW YORK STATE TEACHERS' RETIREMENT SYSTEM

**Actuarial Valuation Report
as of June 30, 2023**

TABLE OF CONTENTS

A. INTRODUCTION	1
B. EMPLOYER CONTRIBUTION RATE.....	1
C. EMPLOYER CONTRIBUTION RATE HISTORY.....	3
D. EMPLOYER CONTRIBUTION RATE CHANGE.....	3
E. FUNDED STATUS.....	3
F. GAIN/LOSS IN THE EMPLOYER CONTRIBUTION RATE AND FUNDED STATUS.....	4
G. MEMBER DATA	6
H. ACTUARIAL EXPERIENCE	7
I. ASSET ALLOCATION	7
J. NEW LEGISLATION	8
K. ASSESSMENT OF RISK	9
L. FUTURE EXPECTATIONS	9
M. CERTIFICATION	9

APPENDICES

1. RECONCILIATION OF THE MARKET VALUE OF ASSETS.....	11
2. COMPARISON OF MARKET VALUE TO ACTUARIAL VALUE OF ASSETS	12
3. ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS	13
4. FUNDING PROGRESS.....	14
5. EMPLOYER CONTRIBUTION RATE	15
6. HYPOTHETICAL LONG-TERM NORMAL RATE	26
7. MEMBER RECONCILIATION	27
8. DISTRIBUTION OF ACTIVE MEMBERS.....	28
9. HISTORICAL MEMBER STATISTICS.....	31
10. RETIREMENT STATISTICS.....	32
11. 2019 – 2023 EXPERIENCE STUDY.....	35
12. RATES OF RETURN AND COLA.....	40
13. ASSET ALLOCATION	43
14. ASSESSMENT OF RISK.....	44
15. HISTORY OF THE EMPLOYER CONTRIBUTION RATE.....	54
16. HISTORY OF THE MEMBER CONTRIBUTION RATE	55
17. ACTUARIAL VALUATION INFORMATION.....	57
18. PRESENT ACTUARIAL ASSUMPTIONS.....	59
19. SUMMARY OF BENEFIT PROVISIONS.....	81

NEW YORK STATE TEACHERS' RETIREMENT SYSTEM

**Actuarial Valuation Report
as of June 30, 2023****A. INTRODUCTION**

This report presents to the New York State Teachers' Retirement System ("NYSTRS" or "the Retirement System") Retirement Board the results of the annual actuarial valuation of assets and liabilities of the Retirement System as of June 30, 2023. Employer contributions are made by participating employers in accordance with an actuarially determined employer contribution rate. The rate is determined by an actuarial valuation made each June 30. Members contribute in accordance with a fixed-rate schedule, as required by statute. NYSTRS' funding objective is to ensure that sufficient assets are being accumulated to pay all current and future benefits as they become due.

The purpose of this report is to summarize the determination of the Employer Contribution Rate which will be applied to member salaries earned during the July 1, 2024 to June 30, 2025 fiscal year and to review the funded status of the Retirement System. Use of the valuation results contained herein for purposes other than those stated above may not be appropriate.

B. EMPLOYER CONTRIBUTION RATE

The Employer Contribution Rate to be applied to member salaries for the July 1, 2024 to June 30, 2025 fiscal year and collected in the fiscal year ending June 30, 2026 consists of four components. These components may be described as follows:

The **Normal Rate** represents the annual cost of accruing active member benefits as well as actuarial gains and losses. The active member component includes the cost of benefits accruing on account of retirement, withdrawal, disability, death (except for the first \$50,000 of death benefits which are funded by the group life insurance rate) and the cost-of-living benefit provided during retirement. The Normal Rate is calculated in accordance with the Aggregate Actuarial Cost Method. The Aggregate Method is a reasonable and appropriate actuarial funding method for an ongoing plan and is designed to provide that sufficient assets are accumulated to pay current benefits as well as accrue assets that will be needed to pay future benefits.

The **Expense Rate** is a pay-as-you-go rate representing the administrative cost of the Retirement System for the fiscal year July 1, 2024 to June 30, 2025 and is set during the budget process.

The **Group Life Insurance Rate** is a pay-as-you-go rate representing the expected benefit payments on account of the first \$50,000 of member death benefits for the fiscal year July 1, 2024 to June 30, 2025. Contributions collected have been more than sufficient to cover payments over the past several years, resulting in an accumulated Group Life Insurance Fund balance of approximately \$448 million as of June 30, 2023.

The **Excess Benefit Plan Rate** is a pay-as-you-go rate representing the Excess Benefit Fund's need for contributions to cover expected benefit payments in excess of the Internal Revenue Code Section 415 limits for the fiscal year July 1, 2024 to June 30, 2025. These payments are made exclusively from the Excess Benefit Plan. This fund was established in accordance with the Excess Benefit Plan which received final IRS approval in August 2001. The fund has accumulated assets of approximately \$2.5 million as of June 30, 2023.

The actuarially computed Employer Contribution Rate to be applied to the member salaries for the fiscal year ending June 30, 2025 is **10.11%**. The Employer Contribution Rates determined by the actuarial valuations as of June 30, 2023 and June 30, 2022 and the changes between the two are summarized below:

	<u>As of 6/30/2023</u>	<u>As of 6/30/2022</u>	<u>Change</u>
Normal Rate	9.63%	9.37%	0.26%
Expense Rate	0.35	0.26	0.09
Group Life Insurance Rate	0.13	0.13	0.00
Excess Benefit Plan Rate	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
Employer Contribution Rate	10.11%	9.76%	0.35%

The actuarial assumptions in use for the June 30, 2023 actuarial valuation were developed based upon Retirement System experience and established tables. New demographic and economic assumptions were adopted by the Retirement Board on October 28, 2021 and were first used in the actuarial valuation as of June 30, 2021. In addition, the mortality improvement scale was updated from the MP-2020 table to MP-2021 starting with the June 30, 2022 valuation and was adopted on October 27, 2022. The Society of Actuaries has not developed a new mortality improvement scale since MP-2021 and its continued use is appropriate for the System's population.

In accordance with Sections 501, 508 and 517 of the Education Law, the Retirement Board has the authority to adopt the actuarial assumptions as recommended by the Actuary.

The actual employer contributions made by participating employers during the fiscal year ending June 30, 2023 were equal to the employer contributions determined in accordance with the applicable annual actuarial valuation.

C. EMPLOYER CONTRIBUTION RATE HISTORY

The following chart summarizes the Employer Contribution Rate for the last 20 years. The complete Employer Contribution Rate history is presented in Appendix 15.

Salary Year	Employer Contribution Rate	Salary Year	Employer Contribution Rate
2005-2006	7.97 %	2015-2016	13.26 %
2006-2007	8.60	2016-2017	11.72
2007-2008	8.73	2017-2018	9.80
2008-2009	7.63	2018-2019	10.62
2009-2010	6.19	2019-2020	8.86
2010-2011	8.62	2020-2021	9.53
2011-2012	11.11	2021-2022	9.80
2012-2013	11.84	2022-2023	10.29
2013-2014	16.25	2023-2024	9.76
2014-2015	17.53	2024-2025	10.11 *

* Pending adoption by the Retirement Board at its July 2024 Board Meeting.

D. EMPLOYER CONTRIBUTION RATE CHANGE

The Employer Contribution Rate has increased this year from 9.76% to 10.11%, representing an increase of 3.6%, primarily attributable to the increase in the Normal Rate component which increased from 9.37% to 9.63%. The rate of return on the System's market value of assets for the fiscal year ending June 30, 2023 was 9.0%. The System's current five-year market value rate of return decreased to 7.6%, from last year's 7.7%. The June 30, 2023 actuarial valuation resulted in an increase in the normal rate primarily due to salary increases higher than expected and the COLA amount higher than expected.

E. FUNDED STATUS

As of June 30, 2023, the actuarial value of plan assets, including GLIF assets, was equal to \$137.8 billion. The accrued pension benefit liability calculated in accordance with the Entry Age Cost Method

with level percentage of pay, including GLIF liabilities, was equal to \$139.8 billion. These two values produced a funded ratio of 98.6% as of June 30, 2023. If the market value of plan assets is used instead of the actuarial value of plan assets, the funded ratio as of June 30, 2023 would be equal to 98.2%.

The Retirement System is funded in accordance with the Aggregate Cost Method. Government Accounting Standards Board (GASB) Statement No. 67 requires that the Entry Age Normal Cost Method be used to calculate the accrued liability for purposes of presenting the funded ratio calculation for all plans, regardless of the cost method being used for funding purposes.

The funded ratios provided here are an appropriate measurement of the System's funded status. While the funded ratios will fluctuate from year to year, a funded ratio of 100% is desirable and indicative of a well-funded System. The primary reason for this healthy funded ratio is that the Retirement System has collected the full actuarially required contribution annually from employers. This is the primary feature that separates well-funded Systems from poorly funded ones. A funded ratio of 100% does not, however, imply that future contributions will not be required. It indicates that the System currently has assets equal to the present value of its liabilities accrued to date.

The funded status measurement provided here is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the System's benefit obligations such as in a plan termination situation.

A history of the Retirement System's funded status is provided in Appendix 4 of this report.

F. GAIN/LOSS IN THE EMPLOYER CONTRIBUTION RATE AND FUNDED STATUS

The Employer Contribution Rate of 10.11% represents a 35-basis point increase from the prior year's rate of 9.76%.

NORMAL RATE

The Normal Rate component of the Employer Contribution Rate (ECR) of 9.63% represents a 26-basis point increase over the prior year's rate of 9.37%. This change can be broken down as follows in the chart below. Note that a positive entry represents an actuarial loss, which is an increase in the ECR. A negative entry represents an actuarial gain, which is a decrease in the ECR.

Salary/Service:	This loss is due to actual salary and service higher than expected.	+0.36
Investment Experience	The recognition of prior investment gains and losses over a five-year period in accordance with the asset valuation method resulted in a net investment gain on the <u>actuarial</u> value of assets.	-0.45
New Entrants:	New entrants join the Retirement System as Tier 6 members with a long-term expected normal rate of approximately 4.9% which results in downward pressure on the Normal Rate.	-0.12
Withdrawal:	Withdrawal experience produced a gain.	-0.02
Mortality:	Members are living slightly less than expected and receiving benefits for a slightly shorter period.	-0.01
Retirement:	Retirement benefit amount and retirement age was as expected.	0.00
Cost of Living Adjustment:	The actual COLA increase of 2.5% was higher than the expected increase of 1.3%.	+0.17
Plan and Assumption Changes:	Plan Changes: None Assumption Changes: None	0.00
Miscellaneous:	Net increase due to miscellaneous sources (e.g. data updates, tier reinstatements, transfers in/out)	+0.33
TOTAL CHANGE IN THE NORMAL RATE		+0.26%

OTHER COMPONENTS

The **Expense Rate** was set during the budget process at 0.35%, a 9-basis point increase over the prior year's rate of 0.26%.

The **Group Life Insurance Fund Rate** is unchanged from the previous year in anticipation of rising payouts in the future due to the growth in the number of retirees eligible for the post-retirement death benefit (Tiers 2 through 6) and the inactive member death benefit (Tiers 2 through 6).

The **Excess Benefit Plan Rate** remains at 0.00% as additional contributions are not needed currently.

FUNDED STATUS

The Funded Status using a Market Value of Assets improved from 97.4% as of June 30, 2022 to 98.2% as of June 30, 2023. This change can be broken down as follows in the chart below.

(in \$ millions)	Market Value of Assets	Accrued Liability	Funded Status
Actual June 30, 2022	\$131,964.6	\$135,530.9	97.4%
Expected Increase/(Decrease) due to Normal Progression*	\$2,805.0	\$2,833.6	
Increase/(Decrease) due to Assumption Changes		\$0.0	
Increase/(Decrease) due to Plan Changes		\$0.0	
Increase/(Decrease) due to Investment Experience Greater Than Expected	\$2,451.9		
Increase/(Decrease) due to Demographic Experience Different Than Expected		\$1,436.3	
Actual June 30, 2023	\$137,221.5	\$139,800.8	98.2%

* Normal Progression of liabilities and assets reflect the Normal Cost, actual benefit payments, expenses, employee and employer contributions, interest on liabilities, and expected investment returns

Note: Totals may not sum due to rounding

G. MEMBER DATA

The member data for the annual actuarial valuation was determined as of June 30, 2023.

	June 30, 2023	June 30, 2022
Active Members and Members not yet receiving benefits	268,058	263,475
Retired Members receiving monthly benefits	173,567	171,616
Beneficiaries receiving monthly benefits	7,160	6,953
Total	448,785	442,044

The number of retirements over each of the last ten years is as follows:

Fiscal Year	Number of Retirements	Fiscal Year	Number of Retirements
2013-2014	6,547	2018-2019	6,890
2014-2015	6,161	2019-2020	7,642
2015-2016	6,245	2020-2021	7,617
2016-2017	6,396	2021-2022	7,135
2017-2018	6,416	2022-2023	6,680

Historical member statistics, including statistics specific to retired members, appear in the appendices to this report. Additional member statistics may also be found in the Retirement System's most recent Annual Report.

H. ACTUARIAL EXPERIENCE

Each year the Office of the Actuary completes an experience study to regularly monitor the reasonableness and appropriateness of the actuarial assumptions used in the actuarial valuation. Changes are recommended when warranted. Assumptions are typically revised every five years. These assumptions are used to estimate the probability a member will cease teaching due to retirement, withdrawal, disability, or death. In addition, the assumptions are used to estimate future salary increases, future investment earnings, future projected COLA's, and the probability of death for retired members and beneficiaries. A listing of the actuarial assumptions is provided in Appendix 18. A summary of the results of the most recent five-year experience study is contained in Appendix 11. The actuarial assumptions used for this valuation were adopted by the Retirement Board on October 28, 2021 and were effective with the actuarial valuation of the Retirement System's assets and liabilities as of June 30, 2021. The mortality improvement scale was updated as of the June 30, 2022 valuation to MP-2021 and was adopted on October 27, 2022. Specific details regarding the development of these actuarial assumptions can be found in the report entitled "*Recommended Actuarial Assumptions 2021 Report*".

I. ASSET ALLOCATION

The Retirement Board, in consultation with Retirement System staff and the System's external investment consultant Callan, annually reviews the asset allocation to determine if any changes are warranted. The target asset allocation has remained unchanged between June 30, 2023 and the time of this report and therefore the asset allocation target equity-fixed income split remains at 72/28. System asset values are frequently reviewed, and assets are periodically rebalanced in line with the asset allocation targets and ranges. Projected cash flow needs are regularly monitored so that sufficient cash is available to pay benefits.

The Callan first quarter 2024 long-term capital market projections analysis estimates that the system's asset allocation will produce a long-term expected annual geometric rate of return of 7.90% on a 30-year time horizon, and a geometric annual rate of return of 7.82% on a 20-year time horizon.

The Retirement System's asset allocation, including targets and ranges, can be found in Appendix 13. Historical rate of return information can be found in Appendix 12. Detailed investment information is available in the System's Annual Report.

J. NEW LEGISLATION

The following legislation affecting the Retirement System was signed into law during the second half of 2023 or first half of 2024. The cost due to these changes will first be reflected beginning with the June 30, 2024 ECR. The estimated annual cost of these changes is 0.13% of pay or \$24.4 million.

Transfer of Employer Reserves Between Retirement Systems:

Chapter 717 of the Laws of 2023 amended various provisions of law to require the transfer of employer pension reserves between New York state public retirement systems for members with 10 or more years of credited service. This law requires the retirement systems to calculate the actuarial reserve to fund each covered membership being transferred.

Three-Year Final Average Salary for Tier 6:

Chapter 56 of the Laws of 2024 amended Section 512 of Retirement and Social Security Law to change the definition of final average salary (FAS) for Tier 6 members to be based on the wages earned during any three consecutive years which provide the highest average wages, instead of five years. This legislation also reduced the lookback to the same requirements as applicable to Tier 4; namely, the FAS calculation will exclude any yearly increases in salary that exceeds 10% of the average of the previous two years' salaries.

Extension of the Temporary Waiver of the Earnings-After-Retirement Limit:

Chapter 55 of the Laws of 2024 extended the waiver of the earnings-after-retirement limit of \$35,000 to June 30, 2025. A retiree may be employed and earn compensation in a position at a school district or a board of cooperative educational services (BOCES) without suspension or diminution of their retirement benefit. Earnings received through June 30, 2025 will not be applied to the standard Section 212 earnings-after-retirement limit of \$35,000 for New York State public employment per calendar year. Post-retirement employment with a charter school, community college, SUNY, or any other NYS public employment is not covered by this law and is still subject to the \$35,000 calendar year earnings limitation. Retirees who are age 65 or greater are not subject to any earnings-after-retirement limit.

Extension of the Temporary Change in Calculation of Tier 6 Member Contribution Rate:

Chapter 55 of the Laws of 2024 amended Retirement and Social Security Law to permit the employee contribution rate for Tier 6 members to be calculated using a member's annual base wages for contributions to be made during fiscal years ending June 30, 2025 and June 30, 2026. Compensation earned for extracurricular programs, or any other pensionable earnings paid in addition to the annual base wages, will not be included in the employee contribution rate determination.

K. ASSESSMENT OF RISK

Included in Appendix 14 is an Assessment of Risk. The purpose of this exhibit is to provide various plan maturity measures, as well as to illustrate the hypothetical Employer Contribution Rate based on varying the actuarial assumptions. The charts also illustrate the significance of the assumptions on the valuation results, and the potential impact of modifying them. The Low-Default-Risk Obligation Measure (LDROM) has been added to Appendix 14 this year as required by revisions to Actuarial Standard of Practice (ASOP) No. 4.

L. FUTURE EXPECTATIONS

The next employer contribution rate will be based upon the actuarial valuation as of June 30, 2024. The equity markets performed well for the fiscal year ending June 30, 2024. The System's domestic equity index, the S&P1500, returned 23.52% for the fiscal year. The System's international equity index, the ACWI ex-US, returned 11.62% for the fiscal year. The System's fixed income index, the Barclay's US Aggregate Float Adjusted Bond index, returned 2.73% for the fiscal year. The System's finalized investment rate of return for the fiscal year ending June 30, 2024 will not be available until October of 2024. Based on the performance of these benchmarks, however, the System will have a positive rate of return on investments for the fiscal year.

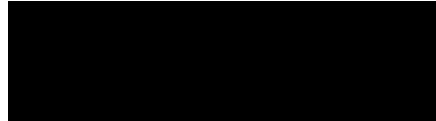
M. CERTIFICATION

This actuarial valuation relies on member data provided by the participating employers to the Retirement System's administrative staff. The administrative and actuarial staff review this data for reasonability and completeness as well as reconcile it against prior data. In addition, the valuation relies on financial data provided by the Retirement System's Finance Department. Data is reviewed by the Retirement System's independent auditors as part of the annual audit. We believe the data to be reasonable and appropriate for purposes of this valuation.

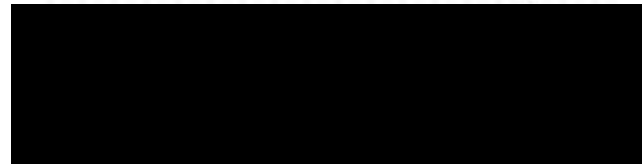
The benefits recognized in this actuarial valuation are prescribed by New York State statute (Article 11 of the Education Law and Articles 11, 14, 15, 18, 19, and 20 of the Retirement and Social Security Law) and are summarized in Appendix 19. All benefits are included in the actuarial valuation.

Future actuarial measurements such as the funded ratio and employer contribution rate may differ significantly from the current measurements presented in this report due to such factors as: future experience that differs significantly from that predicted by the actuarial assumptions; changes in the actuarial assumptions or methods; and changes in plan provisions or applicable law.

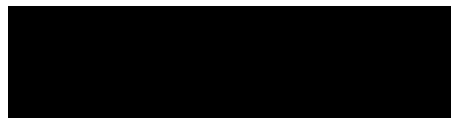
The actuarial methods, calculations, and actuarial assumptions are in accordance with standards of practice prescribed by the Actuarial Standards Board and generally accepted actuarial principles and procedures. The actuarial assumptions, as adopted by the Retirement Board and used in determining the liabilities and costs, are internally consistent and reasonably related to actual and anticipated future experience of the Retirement System. The undersigned are members of the American Academy of Actuaries and the Society of Actuaries and meet the qualification standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.



Richard A. Young, ASA, EA, MAAA, FCA
Chief Actuary



Melody Prangle, FSA, EA, MAAA, FCA
Deputy Chief Actuary



Heather Marks, FSA, EA, MAAA
Manager of Actuary - Valuation



Office of the Actuary
July 23, 2024

RECONCILIATION OF THE MARKET VALUE OF ASSETS

From June 30, 2022 to June 30, 2023

	Market Value (in thousands)	
1	Market Value of Assets as of June 30, 2022	\$131,964,582
2	Contributions and Transfers	
	Employer Contributions	1,899,885
	Member Contributions	221,152
	Net Transfers in/(out)	10,841
		<u>2,131,878</u>
3	Net Investment Income/(Loss)	11,439,286
4	Distributions	
	Benefit Payments	(8,234,911)
	Administrative Expenses	(79,298)
		<u>(8,314,209)</u>
5	Market Value of Assets as of June 30, 2023	<u><u>\$137,221,536</u></u>

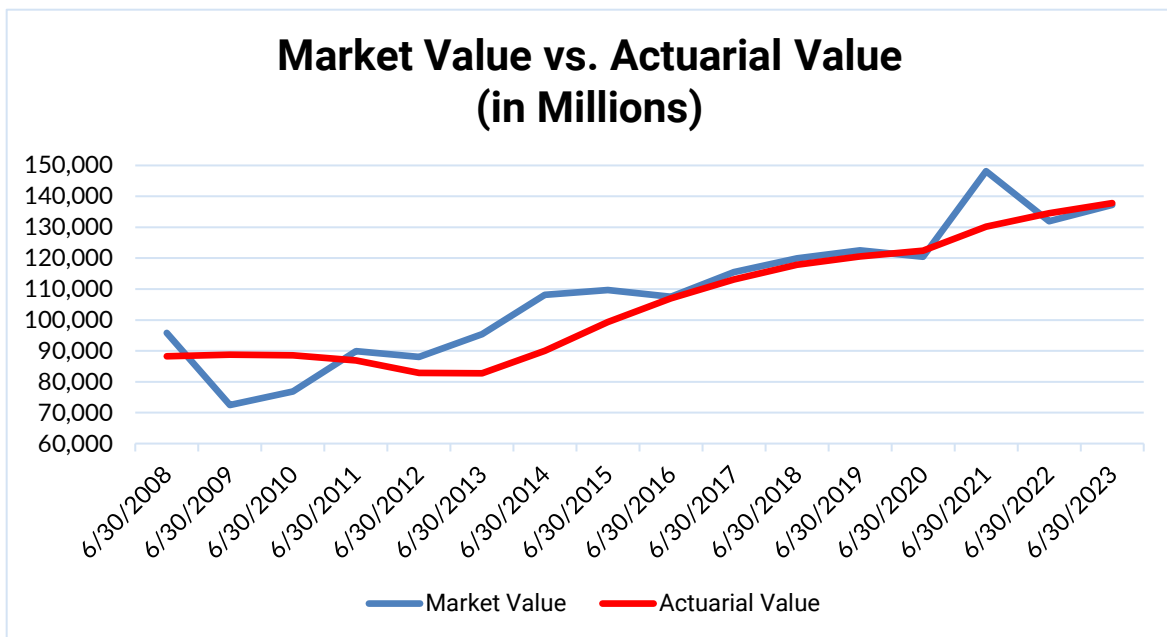
Note: Totals may not sum due to rounding

COMPARISON OF MARKET VALUE TO ACTUARIAL VALUE OF ASSETS

(In Millions)

Assets include GLIF assets. The Retirement System’s actuarial asset valuation method was changed effective with the June 30, 2015 actuarial valuation.

Fiscal Year Ending	Market Value	Actuarial Value	Fiscal Year Ending	Market Value	Actuarial Value
6/30/2008	95,769.3	88,254.7	6/30/2016	107,506.1	107,039.2
6/30/2009	72,471.8	88,805.5	6/30/2017	115,468.4	113,059.7
6/30/2010	76,844.9	88,544.4	6/30/2018	119,915.5	117,859.5
6/30/2011	89,889.7	86,892.2	6/30/2019	122,477.5	120,586.9
6/30/2012	88,056.3	82,871.4	6/30/2020	120,479.5	122,400.5
6/30/2013	95,367.0	82,742.5	6/30/2021	148,148.5	130,173.8
6/30/2014	108,155.1	90,007.1	6/30/2022	131,964.6	134,527.0
6/30/2015	109,718.9	99,301.8	6/30/2023	137,221.5	137,814.2



ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS

(In Thousands)

The actuarial present value of future benefits (PVB) is the present value of retirement and ancillary benefit payments, excluding group life insurance benefits. The PVB is the present value of the benefit payments that the Retirement System is expected to pay in the future to current retirees and active and inactive (vested) members. The PVB is based upon both service and salary projected to retirement.

	June 30, 2023	June 30, 2022
Present Value of Benefits Currently Being Paid:		
Service Retirement Benefits	\$71,434,025	\$70,199,316
Disability Retirement Benefits	434,201	422,523
Death Benefits	2,865	2,485
Survivor Benefits	1,318,359	1,248,183
Cost-of-Living Allowance	<u>5,773,246</u>	<u>5,464,928</u>
Total Present Value of Benefits Presently Being Paid	78,962,695	77,337,435
Present Value of Benefits Payable in the Future to Current Active Members:		
Service Retirement Benefits	70,917,847	68,190,109
Disability Retirement Benefits	676,630	655,807
Termination Benefits	1,868,165	1,817,728
Death and Survivor Benefits	535,261	514,797
Cost-of-Living Allowance	<u>1,551,476</u>	<u>1,521,282</u>
Total Active Member Liabilities	75,549,379	72,699,722
Present Value of Benefits Payable in the Future to Current Inactive (Vested) Members:		
Retirement Benefits	583,067	537,273
Death Benefits	297	283
Cost-of-Living Allowance	<u>48,818</u>	<u>45,055</u>
Total Vested Liabilities	632,183	582,611
Unclaimed Funds	27,587	26,678
Total Actuarial Present Value of Future Benefits		\$150,646,447

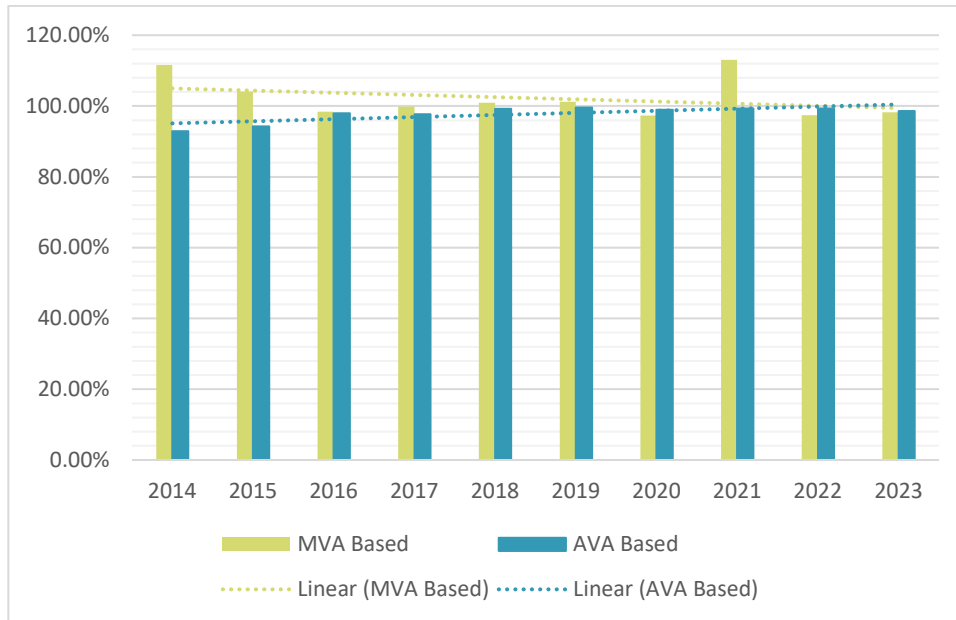
Note: Totals may not sum due to rounding

FUNDING PROGRESS

The actuarial accrued liability is the portion of the actuarial present value of future benefits that is attributable to service rendered as of the valuation date. To assess the funding progress of a retirement system, a comparison between the actuarial value of assets and the actuarial accrued liabilities is made over time.

Funding Progress (In Millions)

Fiscal Year Ended	Market Value of Assets (MVA)	Actuarial Value of Assets (AVA) ¹	Actuarial Accrued Liability	Percent Funded Based on:	
				MVA	AVA
2014	\$108,155.1	\$90,007.1	\$96,904.5	111.6%	92.9%
2015	109,718.9	99,301.8	105,401.8	104.1	94.2
2016	107,506.1	107,039.2	109,305.1	98.4	97.9
2017	115,468.4	113,059.7	115,672.5	99.8	97.7
2018	119,915.5	117,859.5	118,861.1	100.9	99.2
2019	122,477.5	120,586.9	121,049.3	101.2	99.6
2020	120,479.5	122,400.4	123,801.7	97.3	98.9
2021	148,148.5	130,173.8	131,077.4	113.0	99.3
2022	131,964.6	134,527.0	135,530.9	97.4	99.3
2023	137,221.5	137,814.2	139,800.8	98.2	98.6



¹ The Retirement System’s asset valuation method was changed effective with the June 30, 2015 actuarial valuation.

EMPLOYER CONTRIBUTION RATE

2023 Valuation

6.95% Interest

Normal Rate	9.63%
Group Life Insurance Rate	0.13
Excess Benefit Plan Rate	0.00
Expense Rate	0.35
Computed Contribution Rate as of June 30, 2023	<u>10.11%</u>

NORMAL RATE CALCULATION

2023 Valuation

6.95% Interest

Liabilities**Active Tier 1**

Service Pension		\$46,249,942
Disability Pension		2,589
Vested Pension		222,572
Active Death over \$50,000		819,928
Annuity Savings Fund		1,688,900
COLA		264,884
	Total	<u>\$49,248,815</u>

Active Tier 2

Service Pension		\$43,562,259
Post Retired Death over \$50,000		59,099
Disability Pension		9,973
Post Disabled Death over \$50,000		32
Vested Pension		300,929
Active Death over \$50,000		246,376
COLA		437,038
	Total	<u>\$44,615,706</u>

Active Tier 3

Service Pension		\$310,839,968
Post Retired Death over \$50,000		221,580
Disability Pension		201,274
Post Disabled Death over \$50,000		905
Refund on Active Death		419,871
Active Death over \$50,000		1,035,575
Refund on Quit		13,051
Vested Pension		1,991,999
COLA		4,748,575
	Total	<u>\$319,472,798</u>

NORMAL RATE CALCULATION (Cont'd)

2023 Valuation

6.95% Interest

Liabilities (Cont'd)**Active Tier 4**

Service Pension	\$62,356,581,167
Post Retired Death over \$50,000	42,732,363
Disability Pension	518,724,169
Post Disabled Death over \$50,000	2,563,403
Refund on Active Death	39,766,429
Active Death over \$50,000	287,024,874
Refund on Quit	5,502,097
Vested Pension	1,186,146,193
Death Benefit After 10-Yr Withdrawal over \$50,000	1,091,151
Refund on Death after Vested Withdrawal	301,837
COLA	1,249,497,544
Total	<u>\$65,689,931,227</u>

Active Tier 5

Service Pension	\$1,721,089,080
Post Retired Death over \$50,000	1,646,128
Disability Pension	30,542,279
Post Disabled Death over \$50,000	137,360
Refund on Active Death	5,847,192
Active Death over \$50,000	16,446,384
Refund on Quit	4,139,065
Vested Pension	84,123,110
Death Benefit After 10-Yr Withdrawal over \$50,000	239,530
Refund on Death after Vested Withdrawal	143,673
COLA	45,582,199
Total	<u>\$1,909,936,000</u>

Active Tier 6

Service Pension	\$5,744,567,643
Post Retired Death over \$50,000	7,931,270
Disability Pension	127,137,383
Post Disabled Death over \$50,000	579,985
Refund on Active Death	35,541,746
Active Death over \$50,000	84,228,176
Refund on Quit	155,843,697
Vested Pension	424,592,152
Death Benefit After 10-Yr Withdrawal over \$50,000	1,232,787
Refund on Death after Vested Withdrawal	1,317,585
COLA	204,469,941
Total	<u>\$6,787,442,365</u>

NORMAL RATE CALCULATION (Cont'd)

2023 Valuation

6.95% Interest

Liabilities (Cont'd)**Retirees**

Retired Pension	\$71,370,085,106
Retired Annuity	63,939,912
Disability Pension	433,893,082
Disability Annuity	307,464
Beneficiary Pension	1,303,306,106
Beneficiary Annuity	5,775,018
DBA Pension	9,102,532
DBA Annuity	175,085
Post Retired Death over \$50,000	2,372,154
COLA	5,654,999,671
Catch-Up, Prior §532 Supp & Escalation	118,246,179
Total	\$78,962,202,309

Vesteds

Inactive Vested	\$583,067,159
Death Benefit After 10-Yr Withdrawal over \$50,000	297,081
Active Vested	692,068,631
Death Benefit After 10-Yr Withdrawal over \$50,000	939,664
COLA	95,223,555
Total	\$1,371,596,090

TIAA

Service Pension	\$1,199,454
Disability Pension	12,066
Vested Pension	23,850
Active Death over \$50,000	15,609
COLA	71,063
Total	\$1,322,042

Miscellaneous

Incurred Death but not Paid	\$8,489,165
Unclaimed Non-Member Funds	27,587,313
Total	\$36,076,478

Total Liabilities

\$155,171,843,830

APPENDIX 5 (Cont'd)
NORMAL RATE CALCULATION (Cont'd)

2023 Valuation
6.95% Interest

Assets for Valuation

Current Total Assets (excluding contributions receivable)	\$135,168,430,281
Less: Expense Fund	58,922,915
Less: Group Life Insurance Fund	448,276,604
Plus: (Employer Contributions Receivable as of June 30, 2023 ¹) x (1.0695) ^{-7/24} = (1,855,257,288) x (1.0695) ^{-7/24}	1,819,252,929
Plus: (Member Contributions Receivable as of June 30, 2023 ¹) x (1.0695) ^{-7/24} = (197,849,373) x (1.0695) ^{-7/24}	194,009,776
Adjusted Market Value of Assets for Normal Rate	\$136,674,493,467
Plus: 5 Year Smoothing Adjustment	691,457,891
Actuarial Value of Assets for Normal Rate Valuation Purposes	\$137,365,951,358

Receivables

Employer Contributions Receivable from Normal Rate in 2024-2025 Fiscal Year ² (2023-2024 Salaries) x (2022 Valuation Normal Rate) x (1.0695) ^{-(1+7/24)} = (17,902,816,721) x (0.0937) x (1.0695) ^{-(1+7/24)}	\$1,538,045,219
Present Value of Future Member Contributions ³ (Tier 5 Present Value of Future Employee Contributions) x (1.0695) ^{-7/24} = (298,139,998) x (1.0695) ^{-7/24}	292,354,095
(Tier 6 Present Value of Future Employee Contributions) x (1.0695) ^{-7/24} = (2,826,922,290) x (1.0695) ^{-7/24}	2,772,061,153
(Adjustment due to Section 613 of RSS Law amendment for Tier 6 member contribution rates) x (1.0695) ^{-7/24} = (-3,900,000) x (1.0695) ^{-7/24}	(3,824,314)
Total Receivables	\$4,598,636,153

¹ Employer and Member Contributions Receivables are based on the 2022-2023 Member Paybase and are collected in 3 installments on September 15, October 15, and November 15 of 2023. The discount represents the time value of money to the measurement date.

² Employer Contributions Receivable is estimated based on projected 2023-2024 Member Salaries for the closed group population used to value the plan's liabilities and is collected in 3 installments on September 15, October 15, and November 15 of 2024. The discount represents the time value of money to the measurement date.

³ The Present Values of Future Member Contributions are estimated for the closed group population used to value the plan's liabilities. These member contributions are collected in the years 2024-2025 and beyond and have an additional discount factor applied to adjust for the timing of the actual payments on September 15, October 15, and November 15 of each prospective year.

APPENDIX 5 (Cont'd)
NORMAL RATE CALCULATION (Cont'd)

2023 Valuation
 6.95% Interest

Present Value of Future Salaries (PVFS)

	Total PVFS ¹			
Tier 1	\$13,781,821			
Tier 2	18,496,499			
Tier 3	102,328,964			
Tier 4	94,888,745,307			
Tier 5	8,518,285,662			
Tier 6	53,104,517,644			
	\$156,646,155,897			
2023-2024 Discounted Salary	16,739,426,574			
Net PVFS	\$139,906,729,323	$\times (1.0695)^{-7/24}$	=	\$137,191,606,140

Normal Rate

$$\begin{aligned}
 & \frac{\text{Total Liabilities} - (\text{Assets} + \text{Receivables})}{\text{Present Value of Future Salaries}} \\
 = & \frac{\$13,207,256,319}{\$137,191,606,140} \\
 = & 9.626869\% \\
 = & 9.63\% \quad \text{(rounded)}
 \end{aligned}$$

¹ The Present Value of Future Salaries includes billable salaries starting with the 2024-2025 salary year. The billable salaries for the years 2022-2023 and 2023-2024 are excluded from the PVFS because a Normal Rate applicable to the 2022-2023 and 2023-2024 billable salary years has already been determined. The expected contributions thereon are included in the assets as receivables. Contributions are expected to be received on September 15, October 15, and November 15 of 2023 and 2024, respectively. Therefore, the total PVFS is discounted 3.5 months to the measurement date.

**GROUP LIFE INSURANCE FUND
(GLIF)**

2023 Valuation

6.95% Interest

GLIF Balance as of June 30, 2022	\$418,104,808
Benefit Payments During 2022-2023	30,590,181
Contributions During 2022-2023	23,029,855
GLIF Net Investment Income During 2022-2023	37,732,121
(Based on 2022-2023 Market Value of Assets Rate of Return of 9.0%)	
 GLIF Balance as of June 30, 2023	 \$448,276,604
Benefit Payments During 2023-2024	31,000,000
Contributions During 2023-2024	24,009,869
GLIF Net Investment Income During 2023-2024	31,266,418
(Based on estimated Market Value of Assets Rate of Return of 6.95%)	
 Estimated GLIF Balance as of June 30, 2024	 \$472,552,892

Calculation of the GLIF Rate for the June 30, 2023 Actuarial Valuation:

Expected Salaries for the 2023-2024 Fiscal Year	\$18,903,708,923
GLIF Rate	0.13%
Expected Contributions for the 2024-2025 Fiscal Year	\$24,574,822

Note that the GLIF Rate is currently maintained at 0.13%. This contribution rate, along with investment income, is expected to cover the expected GLIF benefit payment for the current year. In future years, when the expected GLIF benefit payments are larger than the GLIF Rate of 0.13%, the GLIF Balance will begin to be used.

EXCESS BENEFIT PLAN FUND

2023 Valuation

Excess Benefit Plan Balance as of June 30, 2022	\$2,726,051
Final Adjustment for the Fiscal Year Ending June 30, 2022	94,561
Benefit Payments During 2022-2023	300,000
Contributions During 2022-2023	1,371
Net Investment Income During 2022-2023 ¹ (Including miscellaneous adjustments)	0
Excess Benefit Plan Balance as of June 30, 2023	\$2,521,983
Final Adjustment for the Fiscal Year Ending June 30, 2023	53,372
Benefit Payments During 2023-2024	300,000
Contributions During 2023-2024	1,846,913
Net Investment Income During 2023-2024 ¹ (Including miscellaneous adjustments)	0
Estimated Excess Benefit Plan Balance as of June 30, 2024	\$4,122,268

Calculation of the Excess Benefit Plan Rate for the June 30, 2023 Actuarial Valuation:

Set the Excess Benefit Plan Rate at 0.00% to use up the balance that has built up in the fund.

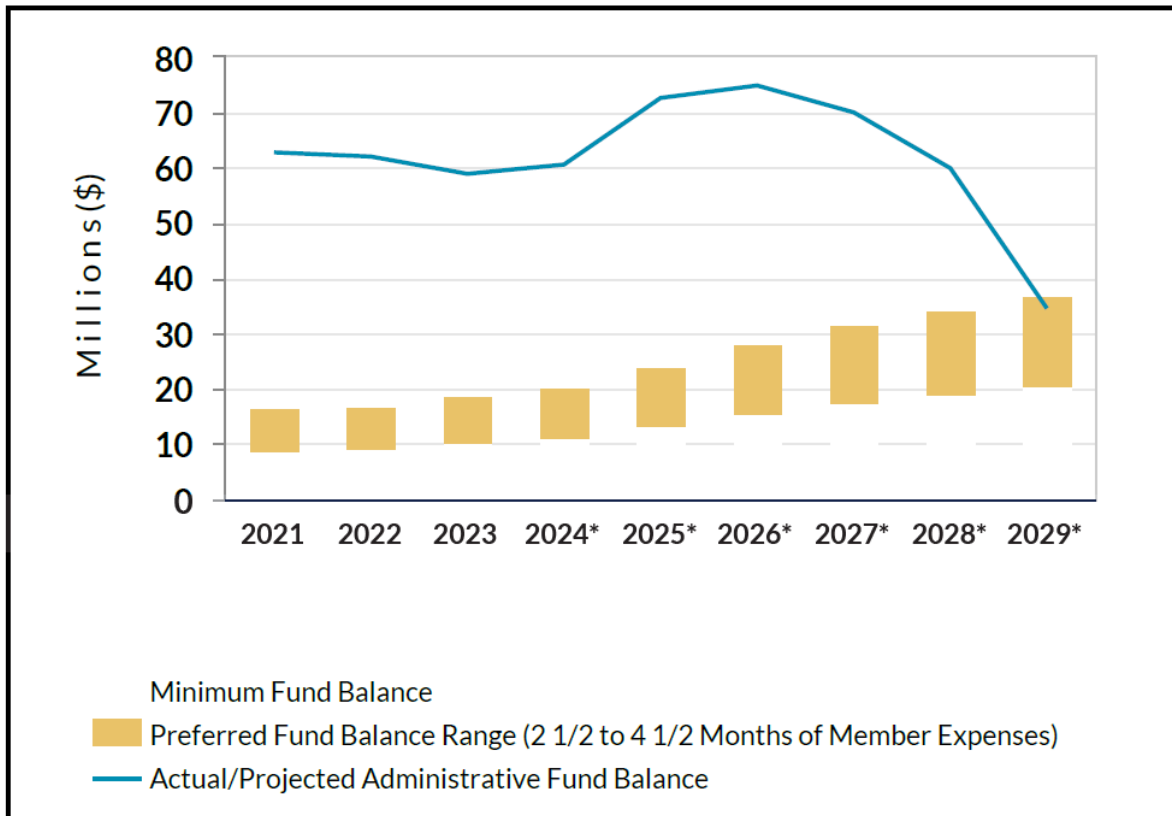
¹ Fund is in a zero-interest checking account.

Administrative Rate and Fund Balance¹

Beginning with the 2018-2019 fiscal year, the System set the administrative rate at .26% and held it there for the subsequent six years with the goal of bringing the fund balance gradually back down within the preferred range. For the 2024-2025 fiscal year, the administrative rate was increased to .35% to reflect increases in salary expense and upcoming significant projects.

A forecast analysis of expenses was performed. This forecast projects maintaining the Administrative Rate at 0.35% through 2029. The administrative fund balance projection includes long-term projections, and therefore is likely to change over time. The Board will be kept informed as balances and rates become more accurate. The forecast also reflects the change in accounting for contribution revenue from cash to accrual discussed in the Retirement Administration Operating Budget section of this book.

Administrative Fund Balance Five-Year Projection



**Projected fund balance.*

Collections Based on Member Payroll – Fiscal Years 2019 - 2026

Contribution revenue is determined by applying the administrative portion of the ECR to member payroll as reported by each of NYSTRS employers at the close of the school year. School districts are billed for their ECR in the fall after the close of the school year. The member salary base increases as new members join the System and as members receive pay increases from their employers. Annual retirements and other forms of separation from service lessen this increase.

The tables below have been updated from the previous year presentation to reflect NYSTRS transition to the accrual basis of accounting for contribution revenue. Prior to June 30, 2024, NYSTRS recognized contribution revenue when the amounts were collected. Beginning with fiscal year 2023-2024, the System will recognize contribution revenue when it is earned (realized). During the transition period, the System will amortize contribution revenue from the 2023-2024 member payroll, over five years, beginning with the June 30, 2024 fiscal year.

<i>(dollars in thousands)</i>			
Employer Contributions			
Annual Member Payroll		Employer Contribution Rate (%)	Amount
Salary Year	Base Salary		
<i>2025-26</i>	<i>\$ 19,804,000</i>	<i>0.35%</i>	<i>\$ 69,314</i>
<i>2024-25</i>	<i>19,349,000</i>	<i>0.35</i>	<i>67,722</i>
<i>2023-24*</i>	<i>18,904,000</i>	<i>0.26</i>	<i>49,150</i>
2022-23	18,469,100	0.26	48,020
2021-22	17,715,273	0.26	46,093
2020-21	16,973,207	0.26	44,155
2019-20	16,973,171	0.26	44,146
2018-19	16,691,626	0.26	43,421

Contribution Revenue Recognized				
Fiscal Year	Amount	Transition Period Amortization*	Total Contribution Revenue	% Increase (Decrease) in Contributions
<i>2025-26</i>	<i>\$ 69,314</i>	<i>\$ 9,830</i>	<i>\$ 79,144</i>	<i>2.05 %</i>
<i>2024-25</i>	<i>67,722</i>	<i>9,830</i>	<i>77,552</i>	<i>34.06</i>
<i>2023-24*</i>	<i>48,020</i>	<i>9,830</i>	<i>57,850</i>	<i>25.51</i>
2022-23	46,093	—	46,093	4.39
2021-22	44,155	—	44,155	0.02
2020-21	44,146	—	44,146	1.67
2019-20	43,421	—	43,421	2.76

Note: All amounts presented in italics reflect estimates.

**2023-24 Contribution revenue of \$49,150 amortized over 5 years (fiscal years 2024 through 2028), fiscal years 2027 & 2028 are not displayed.*

¹ This section comes from the NYSTRS 2024-2025 Operating Budget Report

ASSET VALUATION METHOD**Development of Smoothing Adjustment**

FYE	Market Value	Contributions	Benefit Payments	Average Market Value ¹
6/30/2018	118,230,310,625	1,994,973,683	7,169,609,705	
6/30/2019	120,617,512,667	1,738,012,513	7,381,558,565	115,770,623,539
6/30/2020	118,887,889,173	1,920,343,091	7,575,286,123	118,190,112,628
6/30/2021	146,431,272,296	1,653,676,471	7,787,392,208	116,165,557,236
6/30/2022	130,102,288,446	1,788,335,695	8,039,853,405	143,678,083,377
6/30/2023	135,168,430,281	1,934,792,667	8,314,209,434	127,315,661,868

FYE	Actual Gain/(Loss) ²	Expected Gain/(Loss) ³	Unexpected Gain/(Loss) ⁴	Smoothing Adjustment ⁵
6/30/2018	9,928,010,678			
6/30/2019	8,023,178,506	8,393,370,207	(370,191,701)	
6/30/2020	3,923,634,378	8,391,497,997	(4,467,863,619)	
6/30/2021	33,668,008,496	8,247,754,564	25,420,253,932	
6/30/2022	(10,078,814,518)	9,985,626,795	(20,064,441,313)	
6/30/2023	11,439,286,059	8,848,438,500	2,590,847,559	(691,457,891)

¹ Average Market Value = Market Value _(previous yr.) - (.5 x Benefit Payments) + ((8.5/12) x Contributions)

² Actual Gain/(Loss) = Net Investment Income

³ Expected Gain/(Loss) = 7.25% x Average Market Value for fiscal year ending 6/30/2019

Expected Gain/(Loss) = 7.10% x Average Market Value for fiscal years ending 6/30/2020 and 6/30/2021

Expected Gain/(Loss) = 6.95% x Average Market Value for fiscal years ending on or after 6/30/2022

⁴ Unexpected Gain/(Loss) = Actual Gain/(Loss) - Expected Gain/(Loss)

⁵ Smoothing Adjustment = (.20 x Unexpected Gain/(Loss) 6/30/2020)

+ (.40 x Unexpected Gain/(Loss) 6/30/2021)

+ (.60 x Unexpected Gain/(Loss) 6/30/2022)

+ (.80 x Unexpected Gain/(Loss) 6/30/2023)

**HYPOTHETICAL LONG-TERM NORMAL RATE CALCULATION
BASED ON NEW ENTRANT NORMAL RATE AS OF JUNE 30, 2023**

The long-term expected normal rate is based on the new entrant population for the year ending June 30, 2023. The new entrant population of **15,254 Tier 6 members** is defined to be members with the following characteristics:

1. date of membership between 7/1/2022 and 6/30/2023,
2. active as of 6/30/2023, and
3. no more than 1 year of NYS service as of 6/30/2023.

New Entrant Normal Rate as of June 30, 2023

The New Entrant Normal Rates determined under the benefit structures of Tiers 4, 5 and 6 using the member data for the current class of new entrants and the actuarial assumptions in the **June 30, 2023** actuarial valuation are as follows:

Valuation Rate of Interest: 6.95%	Valued as Tier 4 Benefit Structure	Valued as Tier 5 Benefit Structure	Valued as Tier 6 Benefit Structure
(1) Present Value of Future Benefits (PVB)	\$ 690,199,687	\$ 620,966,515	\$ 523,632,793
(2) Present Value of Future Member Contributions (PVFC)	90,455,159	189,240,598	257,497,457
(3) Present Value of Future Salaries (PVFS)	5,406,874,242	5,406,874,242	5,406,874,242
(4) Long Term Normal Cost of Benefit Structure as a Percent of Salary: (1) / (3)	12.8%	11.5%	9.7%
(5) Member's Share of the Normal Cost: (2) / (3)	1.7%	3.5%	4.8%
(6) Employer's Share of the Normal Cost: (4) - (5)	11.1%	8.0%	4.9%
Sensitivity Analysis ¹ Valuation Rate of Interest: 5.95%	Valued as Tier 4 Benefit Structure	Valued as Tier 5 Benefit Structure	Valued as Tier 6 Benefit Structure
(1) Present Value of Future Benefits (PVB)	\$ 865,854,375	\$ 776,862,723	\$ 732,209,369
(2) Present Value of Future Member Contributions (PVFC)	92,390,436	198,881,612	287,585,158
(3) Present Value of Future Salaries (PVFS)	5,682,331,785	5,682,331,785	5,682,331,785
(4) Long Term Normal Cost of Benefit Structure as a Percent of Salary: (1) / (3)	15.2%	13.7%	11.6%
(5) Member's Share of the Normal Cost: (2) / (3)	1.6%	3.5%	4.7%
(6) Employer's Share of the Normal Cost: (4) - (5)	13.6%	10.2%	6.9%

History

As of June 30, 2023, and the 4 prior years, the long-term expected normal rates for new entrants determined under the benefit structures for Tiers 4, 5 and 6 are as follows:

Valuation Year	Employer Normal Rate from the Valuation	New Entrant Employer Normal Rate			Sensitivity Analysis ¹			Number of New Entrants ²
		Tier 4	Tier 5	Tier 6	Tier 4	Tier 5	Tier 6	
2019 ³	9.14%	9.6%	6.9%	4.4%	11.8%	9.0%	6.1%	11,529
2020	9.41%	9.7%	7.1%	4.4%	11.9%	9.1%	6.2%	9,797
2021 ⁴	9.89%	10.9%	7.4%	4.3%	13.3%	9.5%	6.1%	9,582
2022	9.37%	11.0%	7.9%	4.7%	13.6%	10.1%	6.7%	14,971
2023	9.63%	11.1%	8.0%	4.9%	13.6%	10.2%	6.9%	15,254

These rates represent the employers' costs only, not the total cost of the benefit structure which is in part funded by member contributions and excludes the Expense, GLIF and Excess Benefit Fund rates.

¹ New Entrant Normal Rate determined using an interest rate that is 1.0% below the actuarial assumed rate of return and the valuation salary scale arithmetically reduced by 0.50%.

² Number of new entrants processed through the valuation.

³ Actuarial assumed rate of return revised from 7.25% to 7.10%.

⁴ Actuarial assumed rate of return revised from 7.10% to 6.95%.

MEMBER RECONCILIATION⁵**ACTIVE MEMBERS:**

	Male	Female	Total
June 30, 2022	61,368	202,107	263,475
Changes During Year:			
Added	3,656	12,563	16,219
Withdrawn	1,191	3,554	4,745
Retired	1,510	5,170	6,680
Died	67	144	211
June 30, 2023	62,256	205,802	268,058

MEMBERS RETIRED FOR:

	Service*			Disability**			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
June 30, 2022	48,637	120,931	169,568	408	1,640	2,048	49,045	122,571	171,616
Changes During Year:									
Retired	1,492	5,095	6,587	18	75	93	1,510	5,170	6,680
Died	1,852	2,674	4,526	27	62	89	1,879	2,736	4,615
Lump Sum	14	99	113	0	0	0	14	99	113
Restored to Active Membership	0	0	0	0	1	1	0	1	1
June 30, 2023	48,263	123,253	171,516	399	1,652	2,051	48,662	124,905	173,567

*Also includes vested retirees.

**Includes 12 males and 32 females retired for disability who receive a service benefit.

BENEFICIARIES OF DECEASED:

	Service Annuitants			Disability Annuitants			Active Members			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
June 30, 2022	1,648	4,938	6,586	109	157	266	22	79	101	1,779	5,174	6,953
Changes During Year:												
Added	182	447	629	3	3	6	2	1	3	187	451	638
Died	111	305	416	3	5	8	1	6	7	115	316	431
June 30, 2023	1,719	5,080	6,799	109	155	264	23	74	97	1,851	5,309	7,160

SUMMARY:

	Male	Female	Total
Active Members	62,256	205,802	268,058
Retired Members	48,662	124,905	173,567
Beneficiaries	1,851	5,309	7,160
Total	112,769	336,016	448,785

⁵ As of January 1, 2023, Section 79-Q of the New York Civil Rights Law requires the collection of gender or sex data provide a separate field with the option of marking gender or sex as "X". NYSTRS updated its physical and online forms to provide an additional write-in option. When the data collected becomes statistically credible, NYSTRS will begin reporting gender or sex expansive data information.

DISTRIBUTION OF ACTIVE MEMBERS

Distribution by Age as of June 30, 2023

Age as of Last Birthday	Male	Female	Total
15-19	72	218	290
20-24	2,332	7,713	10,045
25-29	5,363	17,628	22,991
30-34	6,453	21,852	28,305
35-39	6,993	24,726	31,719
40-44	9,134	30,774	39,908
45-49	10,361	31,397	41,758
50-54	10,305	32,253	42,558
55-59	6,574	21,936	28,510
60-64	3,037	12,084	15,121
65-69	1,124	3,858	4,982
70-74	350	1,047	1,397
75-79	119	236	355
80-84	32	64	96
85 or older	7	16	23
Total	62,256	205,802	268,058
 Average Age (Years – Months)	 44-1	 44-1	 44-1

Distribution by Age and Tier of Membership as of June 30, 2023

Age as of Last Birthday	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Total
15-19	0	0	0	0	0	290	290
20-24	0	0	0	0	0	10,045	10,045
25-29	0	0	0	5	42	22,944	22,991
30-34	0	0	0	863	1,689	25,753	28,305
35-39	0	0	0	12,351	4,809	14,559	31,719
40-44	0	0	0	27,582	1,556	10,770	39,908
45-49	0	0	0	32,960	842	7,956	41,758
50-54	0	0	0	35,137	794	6,627	42,558
55-59	0	0	5	23,512	597	4,396	28,510
60-64	0	1	177	12,065	342	2,536	15,121
65-69	0	14	294	3,493	149	1,032	4,982
70-74	22	80	67	839	70	319	1,397
75-79	46	12	13	200	11	73	355
80-84	18	4	5	42	5	22	96
85 or older	7	1	0	12	0	3	23
Total	93	112	561	149,061	10,906	107,325	268,058
 Average Age (Years – Months)	 77-7	 72-1	 66-4	 49-10	 41-3	 36-3	 44-1

Distribution of Active Members by Age and New York State Service as of June 30, 2023

Age as of Last Birthday	Male		Total
	< 10 Years NYS	10+ Years NYS	
15-19	72	0	72
20-24	2,332	0	2,332
25-29	5,363	0	5,363
30-34	6,033	420	6,453
35-39	3,906	3,087	6,993
40-44	2,768	6,366	9,134
45-49	2,142	8,219	10,361
50-54	1,620	8,685	10,305
55-59	1,187	5,387	6,574
60-64	811	2,226	3,037
65-69	457	667	1,124
70-74	183	167	350
75-79	54	65	119
80-84	21	11	32
85 or older	6	1	7
Total	26,955	35,301	62,256

Age as of Last Birthday	Female		Total
	< 10 Years NYS	10+ Years NYS	
15-19	218	0	218
20-24	7,713	0	7,713
25-29	17,627	1	17,628
30-34	20,274	1,578	21,852
35-39	14,169	10,557	24,726
40-44	11,615	19,159	30,774
45-49	9,019	22,378	31,397
50-54	8,382	23,871	32,253
55-59	5,613	16,323	21,936
60-64	2,958	9,126	12,084
65-69	1,098	2,760	3,858
70-74	376	671	1,047
75-79	96	140	236
80-84	23	41	64
85 or older	6	10	16
Total	99,187	106,615	205,802

APPENDIX 8 (Cont'd)

Distribution of Active Members by Total Service as of June 30, 2023

Years of Service	Male	Female	Total
0-5	19,415	67,816	87,231
6-10	8,493	34,875	43,368
11-15	6,411	23,922	30,333
16-20	9,153	29,545	38,698
21-25	10,300	29,046	39,346
26-30	6,380	15,280	21,660
31-35	1,702	4,342	6,044
36-40	312	809	1,121
41-45	60	120	180
46-50	19	35	54
51+	11	12	23
Total	62,256	205,802	268,058

Average Service
(Years – Months)

13-5

12-3

12-6

Distribution of Active Members by Total Service and Tier of Membership as of June 30, 2023

Years of Service	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Total
0-5	19	17	17	4,788	1,578	80,812	87,231
6-10	6	13	34	14,693	3,726	24,896	43,368
11-15	2	14	56	23,183	5,535	1,543	30,333
16-20	8	9	41	38,523	58	59	38,698
21-25	5	3	75	39,244	7	12	39,346
26-30	3	8	78	21,568	2	1	21,660
31-35	8	5	41	5,989	0	1	6,044
36-40	3	8	60	1,049	0	1	1,121
41-45	6	10	140	24	0	0	180
46-50	11	24	19	0	0	0	54
51+	22	1	0	0	0	0	23
Total	93	112	561	149,061	10,906	107,325	268,058

Average Service
(Years – Months)

30-1

25-11

28-11

19-3

9-7

3-4

12-6

Total and Average Earnings by Tier of Membership for Active Members as of June 30, 2023

	Total Earnings	Average Earnings*	Average Earnings* of Full-Time Members
Tier 1	\$8,576,885	\$120,801	\$135,036
Tier 2	\$7,881,630	\$102,359	\$122,102
Tier 3	\$49,418,523	\$104,039	\$111,329
Tier 4	\$13,310,105,718	\$101,643	\$104,600
Tier 5	\$693,045,709	\$74,633	\$80,284
Tier 6	\$4,161,570,162	\$50,274	\$63,009
Total	\$18,230,598,627	\$81,519	\$90,633

*Average earnings calculated using only those active members with earnings during the 2022– 23 school year.

HISTORICAL MEMBER STATISTICS**Active Members and Annuitants 1922-2023**

As of June 30	Active Members	Retirees & Beneficiaries	As of June 30	Active Members	Retirees & Beneficiaries
1922	18,412	1,296	1975	227,038	35,252
1925	29,057	1,815	1980	203,330	46,812
1930	39,663	2,732	1985	178,516	57,366
1935	45,031	3,919	1990	195,194	69,127
1940	48,193	4,771	1995	199,398	82,459
1945	52,359	5,637	2000	224,986	100,839
1950	56,504	6,374	2005	260,356	125,325
1955	71,273	7,897	2010	285,774	141,716
1960	99,555	10,796	2015	267,715	158,458
1965	129,543	16,043	2020	261,232	172,569
1970	186,914	22,700	2023	268,058	180,727

Number of Active Members by Tier

As of June 30	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Total
2004	22,986	13,947	18,835	198,747	-	-	254,515
2005	17,901	13,210	18,535	210,710	-	-	260,356
2006	13,621	12,084	18,173	220,532	-	-	264,410
2007	10,838	10,178	17,743	231,286	-	-	270,045
2008	8,630	8,171	17,007	241,093	-	-	274,901
2009	6,943	6,752	16,111	250,532	-	-	280,338
2010	5,582	5,706	14,942	255,966	3,578	-	285,774
2011	3,814	4,137	12,690	247,530	12,264	-	280,435
2012	2,756	3,253	11,180	239,199	19,969	916	277,273
2013	1,968	2,447	9,450	231,258	19,452	8,753	273,328
2014	1,439	1,810	7,753	222,545	19,124	17,368	270,039
2015	1,116	1,348	6,222	214,020	18,878	26,131	267,715
2016	832	974	4,920	204,912	18,540	36,172	266,350
2017	607	720	3,881	195,226	17,722	46,605	264,761
2018	446	546	2,993	186,581	16,499	57,525	264,590
2019	349	403	2,276	178,516	14,595	67,378	263,517
2020	249	282	1,638	170,306	13,040	75,717	261,232
2021	169	202	1,106	162,627	12,061	82,993	259,158
2022	121	160	771	155,480	11,369	95,574	263,475
2023	93	112	561	149,061	10,906	107,325	268,058

RETIREMENT STATISTICS

Members Retired in 2022-2023 for:

	Service*	Disability
Number Retired	6,587	93
Age at Retirement:		
Average	61 yrs. 0 mos.	51 yrs. 3 mos.
Median	60 yrs. 10 mos.	52 yrs. 3 mos.
Years of Service:		
Average	25 yrs. 5 mos.	20 yrs. 4 mos.
Median	27 yrs. 6 mos.	20 yrs. 5 mos.
Benefit**:		
Average	\$49,794	\$37,113
Median	\$50,998	\$36,752
Final Average Salary (FAS):		
Average	\$94,394	\$99,180
Median	\$94,249	\$98,519
Benefit as % of FAS***:		
Average	47.98%	36.49%
Median	52.42%	34.44%

Members Retired in 2022-2023 for Service* with:

	Less Than 10 Yrs. Svc.	10 or More Yrs. and Less Than 20 Yrs. Svc.	20 or More Yrs. and Less Than 30 Yrs. Svc.	30 or More Yrs. Svc.
Number Retired	411	938	2,282	2,956
Age at Retirement:				
Average	62 yrs. 9 mos.	62 yrs. 2 mos.	62 yrs. 7 mos.	59 yrs. 2 mos.
Median	62 yrs. 5 mos.	62 yrs. 1 mo.	62 yrs. 5 mos.	57 yrs. 11 mos.
Years of Service:				
Average	6 yrs. 8 mos.	14 yrs. 7 mos.	24 yrs. 0 mos.	33 yrs. 8 mos.
Median	6 yrs. 7 mos.	15 yrs. 0 mos.	23 yrs. 8 mos.	32 yrs. 0 mos.
Benefit**:				
Average	\$3,924	\$13,342	\$41,698	\$73,988
Median	\$3,243	\$10,198	\$40,285	\$69,003
Final Average Salary (FAS):				
Average	\$37,865	\$58,798	\$91,517	\$115,771
Median	\$32,902	\$50,617	\$88,764	\$107,705
Benefit as % of FAS***:				
Average	10.24%	22.20%	45.02%	63.69%
Median	10.00%	22.04%	44.67%	62.83%

*Also includes vested retirees.

**The Maximum, even though the member may have chosen an option.

***The average and median of individual benefits as percentages of final average salary.

All Retirees as of June 30, 2023 Retired for:

	Service*	Disability
Number Retired	171,560	2,007
Age at Retirement:		
Average	59 yrs. 3 mos.	49 yrs. 7 mos.
Median	58 yrs. 3 mos.	50 yrs. 4 mos.
Age Attained as of June 30, 2023:		
Average	73 yrs.11 mos.	66 yrs. 5 mos.
Median	73 yrs. 11 mos.	66 yrs. 10 mos.
Years of Service:		
Average	27 yrs. 6 mos.	18 yrs. 4 mos.
Median	30 yrs. 0 mo.	17 yrs. 7 mos.
Benefit**:		
Average	\$45,023	\$23,117
Median	\$45,506	\$21,007
Final Average Salary (FAS):		
Average	\$78,681	\$63,844
Median	\$76,443	\$60,256
Benefit as % of FAS***:		
Average	53.18%	35.41%
Median	60.00%	33.33%

All Retirees as of June 30, 2023 Retired for Service* with:

	Less Than 10 Yrs. Svc.	10 or More Yrs. and Less Than 20 Yrs. Svc.	20 or More Yrs. and Less Than 30 Yrs. Svc.	30 or More Yrs. Svc.
Number Retired	5,424	24,385	51,388	90,363
Age at Retirement:				
Average	60 yrs. 6 mos.	59 yrs. 6 mos.	60 yrs. 8 mos.	58 yrs. 3 mos.
Median	59 yrs. 9 mos.	58 yrs. 3 mos.	61 yrs. 2 mos.	57 yrs. 2 mos.
Years of Service:				
Average	7 yrs. 4 mos.	14 yrs. 5 mos.	24 yrs. 6 mos.	34 yrs. 2 mos.
Median	7 yrs. 5 mos.	14 yrs. 5 mos.	24 yrs. 7 mos.	33 yrs. 7 mos.
Benefit**:				
Average	\$4,321	\$10,267	\$35,824	\$62,077
Median	\$3,720	\$7,973	\$33,372	\$58,149
Final Average Salary (FAS):				
Average	\$41,177	\$45,787	\$75,313	\$91,725
Median	\$37,548	\$38,674	\$71,107	\$86,269
Benefit as % of FAS***:				
Average	10.55%	21.75%	47.26%	67.59%
Median	10.19%	21.00%	47.56%	66.67%

*Also includes vested retirees.

**The Maximum, even though the member may have chosen an option.

***The average and median of individual benefits as percentages of final average salary.

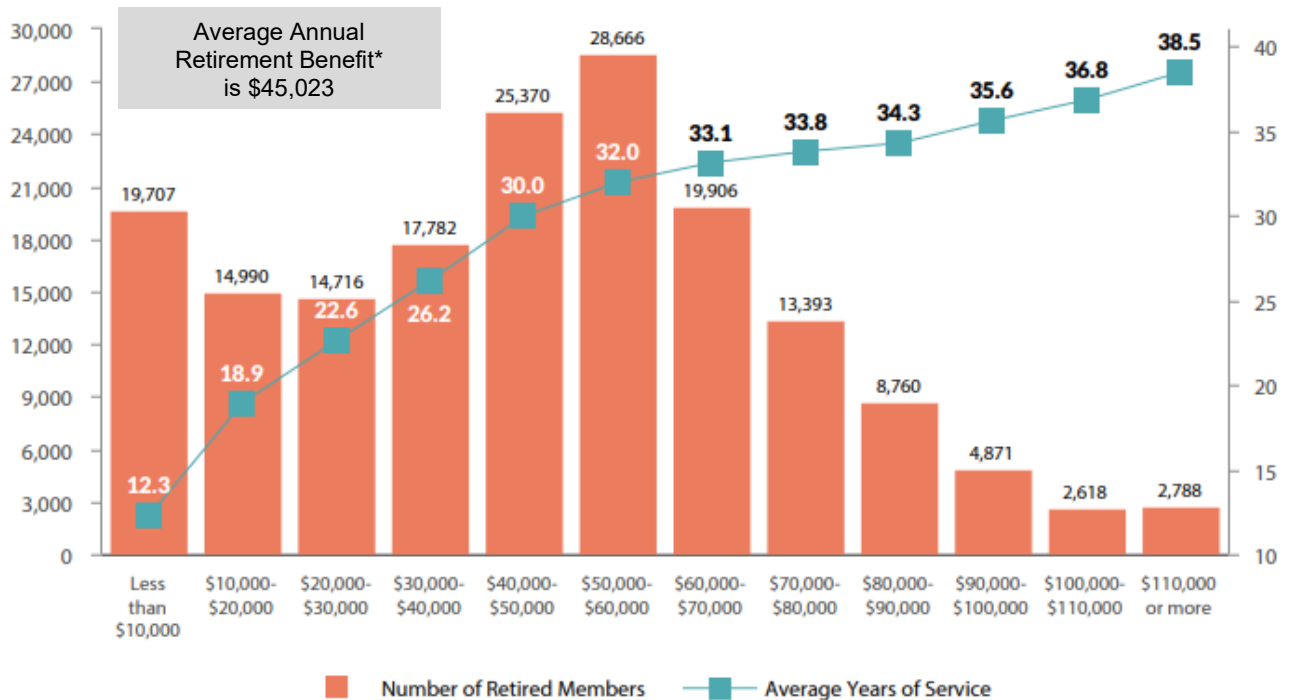
Retired Members' Characteristics* by Year of Retirement

Retired in Fiscal Year Ended	Number of Retired Members	Average Age at Retirement (yrs. – mos.)	Average Service at Retirement (yrs. – mos.)	Average Final Average Salary	Average Maximum Annual Benefit
2014	6,547	61-0	25-4	84,545	44,978
2015	6,161	60-11	25-4	84,362	44,487
2016	6,245	61-2	25-0	84,308	44,215
2017	6,396	61-3	25-0	85,242	45,049
2018	6,416	61-1	25-1	86,910	45,725
2019	6,890	61-0	25-1	87,085	45,713
2020	7,642	61-4	25-8	90,228	48,273
2021	7,617	61-5	26-3	91,713	49,145
2022	7,135	61-3	25-7	92,434	48,724
2023	6,680	61-0	25-5	94,394	49,794

*Averages are for service and vested retirees

DISTRIBUTION OF THE ANNUAL BENEFIT* OF ALL RETIRED MEMBERS

— as of June 30, 2023



*Maximum annual retirement benefit including supplementation and COLA.

2019 – 2023 Experience Study (Based on Appendix 18 Assumptions)**I. Active Member Mortality Rates**

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
20 – 24	0	1.37	0.00	1	2.33	0.43
25 – 29	7	3.81	1.84	8	7.75	1.03
30 – 34	5	7.60	0.66	11	16.95	0.65
35 – 39	11	13.89	0.79	33	30.20	1.09
40 – 44	28	22.45	1.25	44	47.29	0.93
45 – 49	51	33.75	1.51	77	68.70	1.12
50 – 54	44	49.05	0.90	81	100.43	0.81
55 – 59	40	50.53	0.79	91	116.18	0.78
60 – 64	40	40.70	0.98	102	104.54	0.98
65 – 69	16	23.04	0.69	58	51.80	1.12
70 – 74	10	9.75	1.03	18	20.52	0.88
75 – 79	1	3.96	0.25	6	8.81	0.68
	253	259.90	0.973	530	575.50	0.921

II. Disability Retirement Rates

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
30 – 34	0	0.35	0.00	0	1.84	0.00
35 – 39	0	4.93	0.00	5	14.08	0.36
40 – 44	9	14.32	0.63	20	48.24	0.41
45 – 49	17	29.09	0.58	53	94.22	0.56
50 – 54	27	48.30	0.56	118	156.65	0.75
55 – 59	8	22.50	0.36	54	94.35	0.57
60 – 64	1	6.56	0.15	11	34.82	0.32
65 – 69	0	1.27	0.00	1	4.50	0.22
70 – 74	0	0.12	0.00	0	0.32	0.00
75 – 79	0	0.00	0.00	0	0.01	0.00
	62	127.44	0.487	262	449.03	0.583

III. Withdrawal Rates

Service	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
0 - 4	6,591	6,460.89	1.02	21,862	21,007.19	1.04
5 - 9	1,147	1,096.79	1.05	5,030	4,921.85	1.02
10 - 14	588	442.88	1.33	2,766	2,292.60	1.21
15 - 19	399	346.63	1.15	1,347	1,059.28	1.27
20 - 24	236	209.60	1.13	616	536.25	1.15
25 - 29	93	81.04	1.15	142	135.16	1.05
30+	12	22.05	0.54	54	29.43	1.83
	9,066	8,659.88	1.047	31,817	29,981.76	1.061

IV. Retirement Rates

With at Least 5 Years of Service and Less Than 20 Years of Service

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
55 - 59	129	125.67	1.03	947	810.71	1.17
60 - 64	273	262.85	1.04	1,759	1,542.91	1.14
65 - 69	294	285.41	1.03	1,154	1,005.09	1.15
70 - 74	92	104.19	0.88	222	219.99	1.01
75 - 79	19	29.47	0.64	38	45.15	0.84
	807	807.59	0.999	4,120	3,623.85	1.137

With at Least 20 Years of Service and Less Than 30 Years of Service

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
55 - 59	629	494.92	1.27	2,204	1,829.93	1.20
60 - 64	956	949.27	1.01	5,241	4,873.09	1.08
65 - 69	426	402.18	1.06	2,501	2,295.76	1.09
70 - 74	69	70.74	0.98	404	339.03	1.19
75 - 79	16	14.72	1.09	61	52.35	1.17
	2,096	1,931.83	1.085	10,411	9,390.16	1.109

With at Least 30 Years of Service

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
55 - 59	2,135	1,971.83	1.08	5,780	5,388.24	1.07
60 - 64	1,087	973.19	1.12	3,023	2,841.48	1.06
65 - 69	358	316.70	1.13	1,017	898.05	1.13
70 - 74	79	71.42	1.11	277	214.14	1.29
75 - 79	13	16.18	0.80	60	51.47	1.17
	3,672	3,349.32	1.096	10,157	9,393.38	1.081

V. Healthy Annuitant Mortality Rates

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
54 & Under	0	0.00	0.00	0	0.00	0.00
55 - 59	32	30.01	1.07	63	77.38	0.81
60 - 64	100	92.46	1.08	218	232.65	0.94
65 - 69	293	267.45	1.10	587	589.62	1.00
70 - 74	813	797.20	1.02	1,277	1,198.88	1.07
75 - 79	1,344	1,404.17	0.96	1,672	1,687.56	0.99
80 - 84	1,649	1,571.90	1.05	1,891	1,827.24	1.03
85 - 89	2,144	1,942.32	1.10	2,418	2,194.79	1.10
90 - 94	1,663	1,472.16	1.13	2,611	2,612.98	1.00
95 - 99	578	524.62	1.10	1,397	1,382.08	1.01
100 - 104	50	50.73	0.99	344	339.65	1.01
105 +	3	1.36	2.21	33	27.55	1.20
	8,669	8,154.38	1.063	12,511	12,170.38	1.028

VI. Survivor and Beneficiary Mortality Rates

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
54 & Under	1	0.29	3.45	3	0.23	13.04
55 - 59	2	0.90	2.22	1	1.29	0.78
60 - 64	2	3.43	0.58	3	3.95	0.76
65 - 69	15	10.46	1.43	16	15.22	1.05
70 - 74	40	33.54	1.19	42	52.24	0.80
75 - 79	49	56.83	0.86	111	123.44	0.90
80 - 84	73	77.47	0.94	211	226.37	0.93
85 - 89	140	121.81	1.15	344	341.19	1.01
90 - 94	131	118.56	1.11	395	385.47	1.02
95 - 99	72	69.13	1.04	292	270.23	1.08
100 - 104	18	14.53	1.24	64	65.30	0.98
105 +	2	0.98	2.04	7	8.44	0.83
	545	507.93	1.073	1,489	1,493.37	0.997

VII. Disability Mortality Rates

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
44 & Under	3	0.28	10.71	3	1.66	1.81
45 - 49	6	1.40	4.29	14	5.45	2.57
50 - 54	4	3.68	1.09	20	13.90	1.44
55 - 59	11	6.12	1.80	33	24.39	1.35
60 - 64	3	5.63	0.53	36	28.80	1.25
65 - 69	7	9.29	0.75	29	34.21	0.85
70 - 74	23	18.11	1.27	35	45.66	0.77
75 - 79	31	19.38	1.60	42	36.24	1.16
80 - 84	14	12.24	1.14	29	22.77	1.27
85 - 89	13	10.04	1.29	19	17.63	1.08
90 - 94	9	5.51	1.63	17	13.15	1.29
95+	0	0.00	0.00	10	8.76	1.14
	124	91.68	1.353	287	252.62	1.136

VIII. Salary Scale (Dollars in Thousands)¹ – Males and Females

Duration	Previous Year's Salaries	Actual Salaries	Expected Salaries	Actual/Expected
1	\$1,877,448	\$2,647,808	\$2,080,025	1.273
2	1,851,999	1,991,786	2,002,752	0.995
3	1,918,973	2,034,138	2,050,039	0.992
4	1,916,551	2,018,160	2,028,094	0.995
5	1,876,113	1,969,517	1,973,296	0.998
6	1,805,898	1,895,753	1,892,581	1.002
7	1,730,317	1,811,493	1,809,739	1.001
8	1,671,954	1,752,314	1,746,690	1.003
9	1,689,887	1,768,319	1,763,904	1.003
10	1,805,015	1,881,720	1,882,631	1.000
11	2,041,019	2,132,426	2,126,945	1.003
12	2,372,158	2,473,079	2,469,179	1.002
13	2,674,355	2,785,282	2,780,260	1.002
14	3,013,409	3,131,921	3,127,918	1.001
15	3,285,795	3,414,869	3,405,398	1.003
16	3,537,253	3,666,091	3,659,995	1.002
17	3,769,615	3,902,004	3,894,767	1.002
18	4,069,641	4,208,279	4,198,648	1.002
19	4,240,947	4,384,753	4,370,295	1.003
20	4,231,509	4,346,431	4,355,492	0.998
21	4,037,356	4,152,077	4,151,613	1.000
22	3,781,255	3,881,292	3,884,861	0.999
23	3,370,983	3,459,369	3,460,314	1.000
24	3,000,881	3,077,745	3,078,004	1.000
25	2,627,066	2,687,051	2,692,743	0.998
26	2,297,926	2,348,081	2,353,766	0.998
27	2,001,679	2,045,871	2,049,119	0.998
28	1,826,394	1,864,039	1,868,401	0.998
29	1,678,327	1,709,022	1,716,089	0.996
30	1,331,178	1,299,903	1,360,331	0.956
31	979,114	971,735	1,000,067	0.972
32	781,333	771,776	797,741	0.967
33	567,717	555,472	579,299	0.959
34	407,203	401,150	415,347	0.966
35	292,135	289,458	297,831	0.972
36	205,851	201,386	209,782	0.960
37	140,457	136,930	143,070	0.957
38	95,897	94,372	97,652	0.966
39	67,946	64,953	69,189	0.939
40	240,658	231,461	245,086	0.944
Total	\$81,111,213	\$84,459,287	\$84,088,955	1.004

¹ Totals may not sum due to rounding.

RATES OF RETURN AND COLAInvestment Rate of Return on
Market and Actuarial Value of Assets as of June 30, 2023

Annualized Rates of Return over the Last	Based Upon Market Value of Assets	Based Upon Actuarial Value of Assets ¹
1 Year	9.0%	7.3%
3 Years	9.3%	9.2%
5 Years	7.6%	8.3%
10 Years	8.5%	10.0%
15 Years	7.4%	7.9%
20 Years	8.0%	8.4%
25 Years	6.8%	7.8%
30 Years	8.3%	10.9%

¹ The Retirement System's asset valuation method was changed effective with the June 30, 2007 and June 30, 2015 actuarial valuations.

Inflation as of June 30, 2023

Annualized Inflation over the Last	Inflation Assumption		COLA Benefit	
	Actual	Expected ²	Actual	Expected
1 Year	4.98%	2.4%	2.5%	1.3%
3 Years	5.35%	2.4%	2.3%	1.3%
5 Years	3.88%	2.4%	1.8%	1.3%
10 Years	2.63%	2.4%	1.4%	1.3%
15 Years	2.33%	2.4%	1.4%	1.3%
20 Years	2.50%	2.4%	1.4%	1.3%

² The annual assumption for estimating future COLA benefit payments was set at 1.3% effective with the June 30, 2019 actuarial valuation, updated from 1.5%. The COLA increase is one-half of the increase in the CPI rounded up to the nearest tenth of a percent, with a floor of 1.0% and a cap of 3.0%. Therefore, the estimate of inflation for the COLA benefit is the result of analyzing available CPI data for the last 25 years with percentages bounded between 2.0% and 6.0% and reduced by 50%. The COLA benefit began in 2001.

RATES OF RETURN

Annual Rates of Return through June 30, 2023

<u>Year Ending June 30th</u>	<u>Annual Rate of Return</u>	<u>Year Ending June 30th</u>	<u>Annual Rate of Return</u>
1983	37.1%	2006	11.8%
1984	-4.8%	2007	19.4%
1985	31.3%	2008	-6.3%
1986	28.4%	2009	-20.5%
1987	14.6%	2010	12.1%
1988	-1.5%	2011	23.2%
1989	16.8%	2012	2.8%
1990	11.4%	2013	13.7%
1991	8.3%	2014	18.2%
1992	13.0%	2015	5.2%
1993	13.6%	2016	2.3%
1994	1.8%	2017	12.5%
1995	19.3%	2018	9.0%
1996	18.8%	2019	7.1%
1997	22.0%	2020	3.5%
1998	21.5%	2021	29.0%
1999	14.0%	2022	-7.1%
2000	6.8%	2023	9.0%
2001	-5.7%		
2002	-6.8%		
2003	4.0%		
2004	16.1%		
2005	10.6%		

History of the Monthly COLA

Commencing September	Year Ended March 31 Consumer Price Index Percentage Change	Applicable COLA Percentage
2001	2.92%	1.5%
2002	1.48%	1.0%
2003	3.02%	1.6%
2004	1.74%	1.0%
2005	3.15%	1.6%
2006	3.36%	1.7%
2007	2.78%	1.4%
2008	3.98%	2.0%
2009	-0.38%	1.0%
2010	2.31%	1.2%
2011	2.68%	1.4%
2012	2.65%	1.4%
2013	1.47%	1.0%
2014	1.51%	1.0%
2015	-0.07%	1.0%
2016	0.85%	1.0%
2017	2.38%	1.2%
2018	2.36%	1.2%
2019	1.86%	1.0%
2020	1.54%	1.0%
2021	2.62%	1.4%
2022	8.54%	3.0%
2023	4.98%	2.5%

APPENDIX 13

ASSET ALLOCATION

The table below displays the Retirement System's asset allocation targets, ranges, and actual allocation percentages for the June 30, 2023 actuarial valuation. No changes have been made between June 30, 2023 and the time of this report. System asset values are frequently reviewed, and assets are periodically rebalanced in line with the asset allocation targets and ranges.

	Target	Range	Actual
Equity			
Domestic Equity	33%	29 - 37%	33.9%
International Equity	15%	11 - 19%	13.9%
Global Equity	4%	0 - 8%	3.7%
Real Estate Equity	11%	6 - 16%	12.2%
Private Equity	9%	4 - 14%	11.4%
Total Equity	72%		75.1%
Debt			
Domestic Fixed Income	16%	12 - 20%	13.5%
High-Yield Bonds	1%	0 - 3%	1.0%
Global Fixed Income	2%	0 - 4%	2.0%
Real Estate Debt	6%	2 - 10%	5.6%
Private Debt	2%	0.5 - 5%	1.5%
Cash Equivalents	1%	1 - 4%	1.3%
Total Debt	28%		24.9%

Changes to the Asset Allocation between June 30, 2022 and June 30, 2023

None.

ASSESSMENT OF RISK

ACTUARIAL STANDARD OF PRACTICE (ASOP) NO. 51

ASOP 51 as promulgated by the Actuarial Standards Board requires assessment and disclosure of the risk that actual future measurements may differ significantly from expected. NYSTRS is exposed to the following significant risks that can impact the plan's future financial condition, including the plan's funded status and employer contribution rates.

1. **Investment risk** – the potential that investment returns on System assets will be different than expected. If future returns are less than expected, employers will be required to contribute greater amounts. The System currently has 72% of its targeted asset allocation in equity investments, and 28% in fixed income instruments.
2. **Longevity and other demographic risks** – the potential that mortality or other demographic experience will be different than expected. Increases in longevity, for example, imply that retirees are living longer than expected. Retirees living longer than expected translates into more years of benefit payments and increasing costs to the plan. Actuarial assumption studies were used to develop the actuarial assumptions used in the valuation. The System's actuarial valuation uses base annuitant mortality rates which are developed from Society of Actuary (SOA) tables as well as our own member experience. Generationally applied mortality improvement developed by the SOA is then applied to these base rates to account for anticipated future mortality improvement. Another demographic risk concerns the ages at which members retire. Generally, the earlier members retire, the greater the expense for the plan, as more years of benefit payments will be required. Typically, these types of changes emerge slowly over time and assumptions are periodically revised to reflect them.
3. **Assumption Modification risk** – the potential that plan experience begins to deviate significantly from the actuarial assumptions, and the assumptions are modified to better reflect recent experience and better predict expected future experience. The most impactful of the actuarial assumptions is the assumed investment rate of return. Even a small change in the plan's assumed rate of return will have a large impact on the employer contribution rate.
4. **Contribution risk** – the potential that employers will fail to make the actuarially determined contribution. In accordance with statute and case law, employers are required to contribute at the actuarially determined employer contribution rate as adopted by the Retirement Board and have historically done so. If this rate were to quickly climb precipitously high, however, this would put a significant amount of stress on school district budgets.

5. **Interest rate risk** – the risk that interest rates in the economy, specifically inflation, will greatly increase. Only one part of the System's benefit structure is inflation-related; that is the System's COLA benefit. The COLA is greatly controlled, however, in that both the COLA percentage and the amount to which it is applied are both capped. The COLA percentage, defined as one-half of the increase in the CPI, cannot exceed 3%. Additionally, the COLA is only granted to the first \$18,000 of annual benefit. Because of these limitations the System is not at great risk of substantial increase in liability due to an increase in inflation.

6. **Benefit change risk** – the risk of the provisions of the plan being changed such that plan funding is materially changed. In addition to the actual payments to and from the plan being changed, future valuation measurements would also be impacted. Benefit changes require approval of the state legislature and the governor.

APPENDIX 14 (Cont'd)

A. Plan Maturity Measurements

1. *Asset Volatility Ratio*

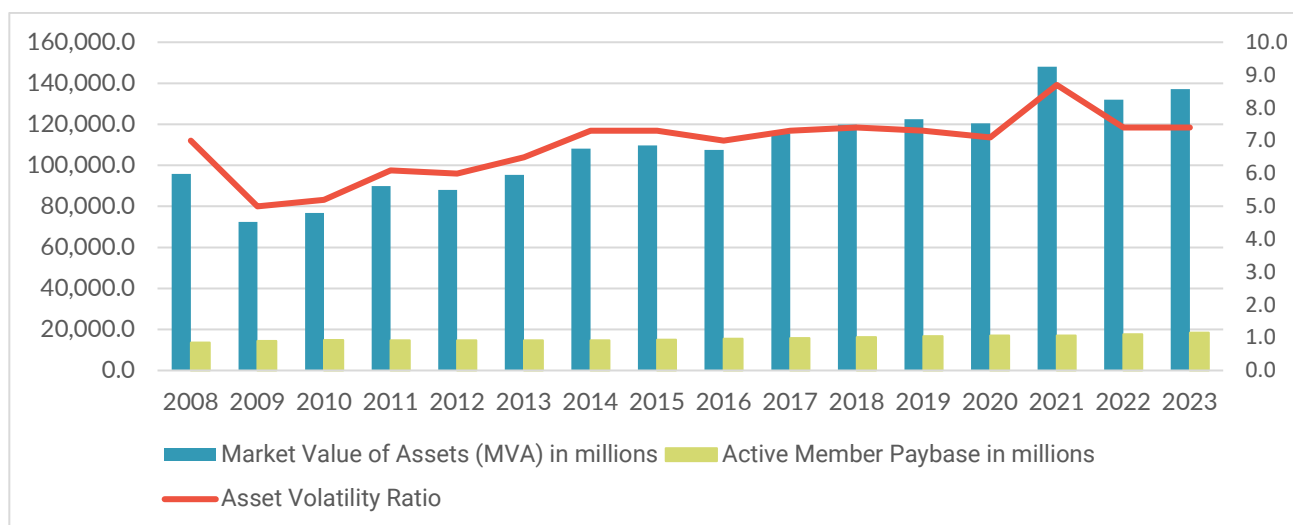
The asset volatility ratio is equal to the market value of assets of the plan divided by the active member payroll. As a plan matures, its assets typically increase. The greater a plan's assets are relative to payroll, the more vulnerable the plan is to investment volatility. NYSTRS' asset volatility ratio remained at 7.4 from June 30, 2022 to June 30, 2023 due to investment returns during the 2023 fiscal year. An asset volatility ratio of 7.4 implies that if the assets return 10% less than expected, there would be an increase to the amount remaining to be funded equal to 74% of member pay base. This does NOT imply, however, that the employer contribution rate would increase by 74%. Asset gains and losses are smoothed in the valuation, and liabilities remaining to be funded are spread over the present value of future members' salaries, which have a mitigating effect.

Recent years of relatively good performance and experience have driven the ECR down to a relatively low point, leaving it susceptible to large increases following poor performance.

A higher asset volatility ratio is also indicative of a plan having a high level of assets, which is clearly a good result and preferable to having a low level of assets.

Fiscal Year Ending June 30th	Market Value of Assets (in millions)	Active Member Paybase (in millions)	Asset Volatility Ratio
2008	95,769.3	13,690.1	7.0
2009	72,471.8	14,366.4	5.0
2010	76,844.9	14,792.1	5.2
2011	89,889.7	14,732.9	6.1
2012	88,056.3	14,640.8	6.0
2013	95,367.0	14,647.8	6.5
2014	108,155.1	14,771.3	7.3
2015	109,718.9	15,021.4	7.3
2016	107,506.1	15,431.0	7.0
2017	115,468.4	15,846.7	7.3
2018	119,915.5	16,288.9	7.4
2019	122,477.5	16,691.6	7.3
2020	120,479.5	16,973.2	7.1
2021	148,148.5	16,973.2	8.7
2022	131,964.6	17,715.3	7.4
2023	137,221.5	18,469.1	7.4

APPENDIX 14 (Cont'd)

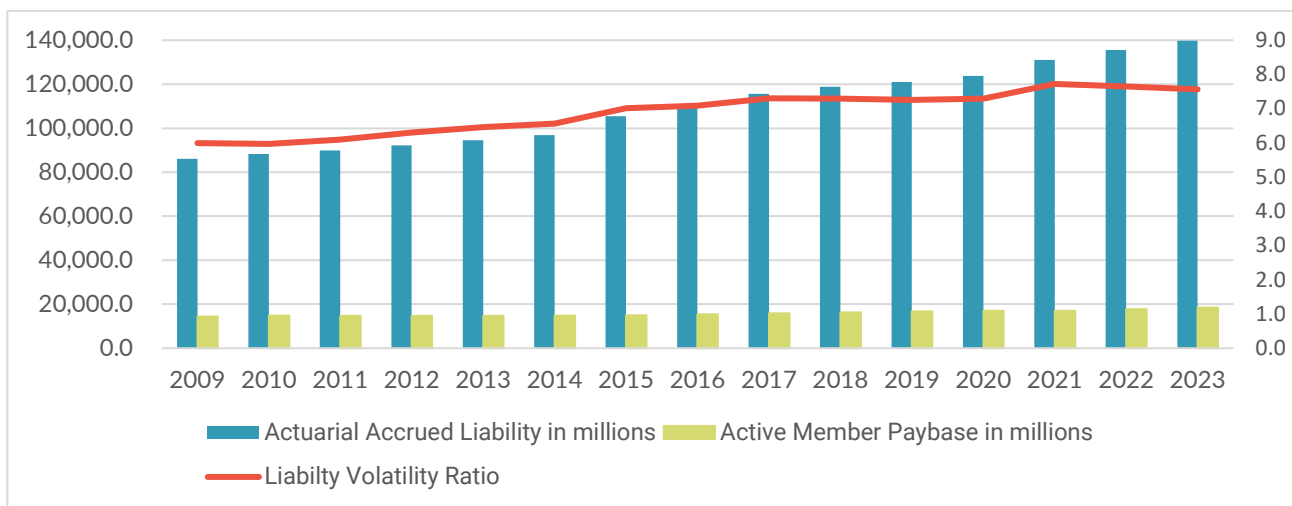


2. Liability Volatility Ratio

The liability volatility ratio is equal to the actuarial accrued liability using the Entry Age Normal Actuarial funding method divided by the active member payroll. Changes in assumptions such as reducing the assumed rate of return and improving mortality assumptions can have a significant impact on a plan's liability. For plans with a high liability volatility ratio, these changes are more significant than for plans with low ratios. However, as plans naturally mature, it is expected that their liability volatility ratios will grow as well.

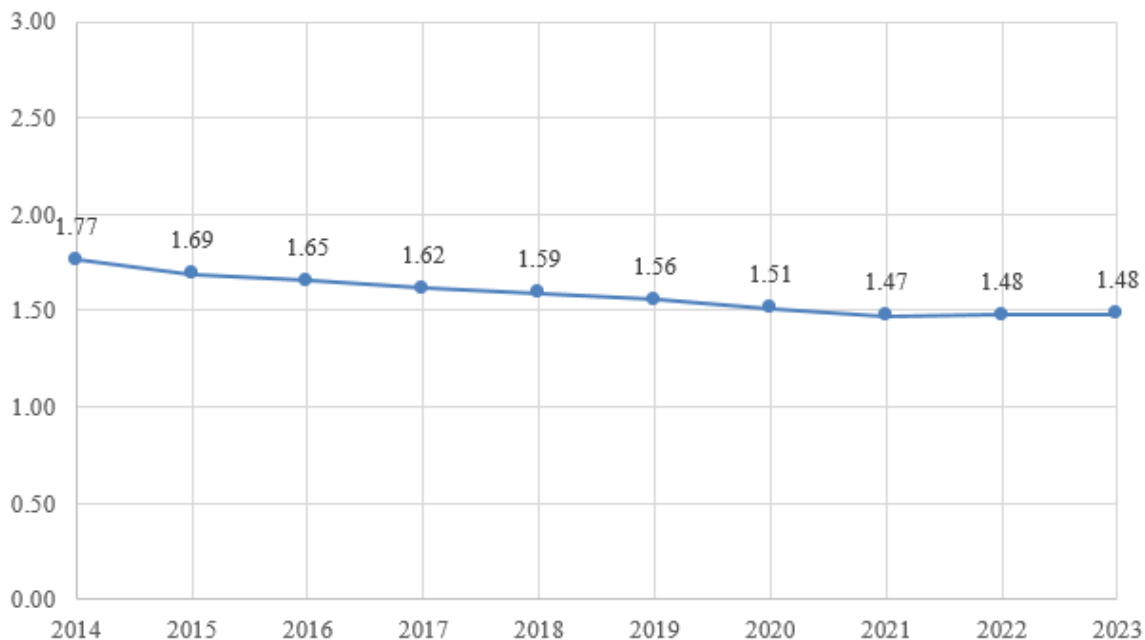
Fiscal Year Ending June 30th	Actuarial Accrued Liability (in millions)	Active Member Paybase (in millions)	Liability Volatility Ratio
2008	82,777.5	13,690.1	6.0
2009	86,062.0	14,366.4	6.0
2010	88,318.8	14,792.1	6.0
2011	89,824.9	14,732.9	6.1
2012	92,250.9	14,640.8	6.3
2013	94,583.8	14,647.8	6.5
2014	96,904.5	14,771.3	6.6
2015	105,401.8	15,021.4	7.0
2016	109,305.1	15,431.0	7.1
2017	115,672.5	15,846.7	7.3
2018	118,861.1	16,288.9	7.3
2019	121,049.3	16,691.6	7.3
2020	123,801.7	16,973.2	7.3
2021	131,077.4	16,973.2	7.7
2022	135,530.9	17,715.3	7.7
2023	139,800.8	18,469.1	7.6

APPENDIX 14 (Cont'd)



3. Active-to-Retiree Counts Ratio

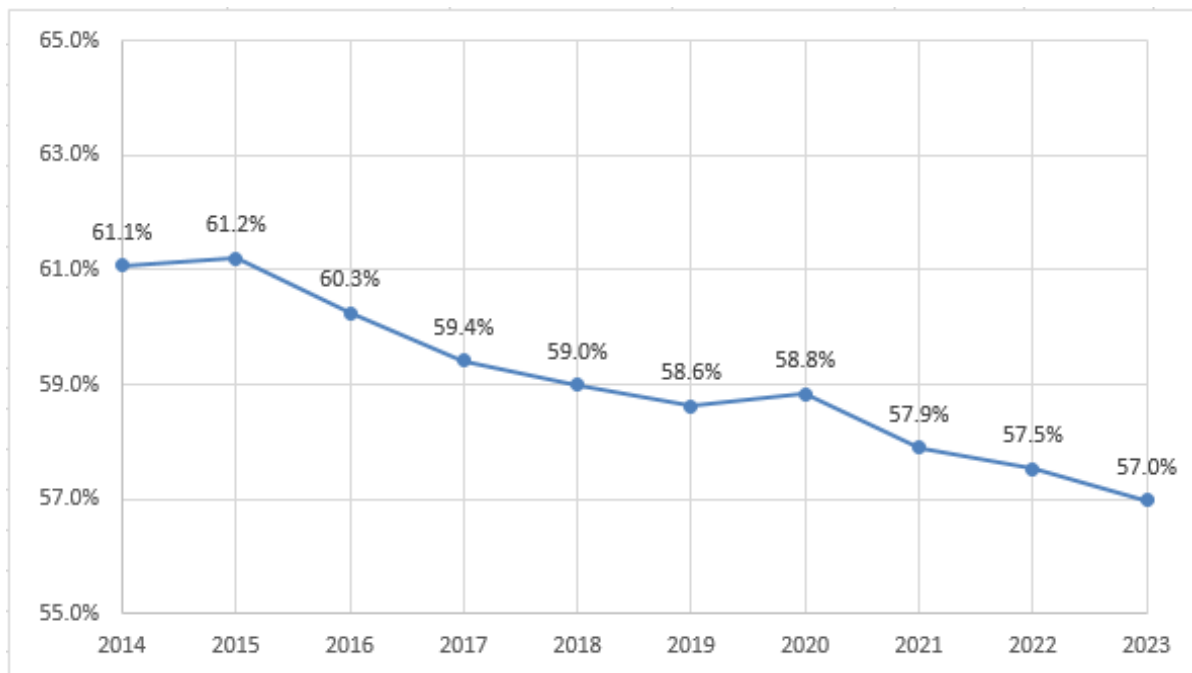
This is equal to the ratio of active members to retired and inactive members. This ratio is typically very high in a plan’s early years and declines over time. As a plan matures, and life expectancies increase over time, the percentage of retirees increases, and this ratio decreases. However, in an actuarially advanced-funded System like ours, this decrease is much less of a concern than for a system like Social Security, in which active worker contributions are directly paid to retirees, with no designed pre-funding of future benefits.



We can also compare the ratio of the retiree accrued liability to the System’s total accrued liability. A new pension plan begins with this ratio at zero and as the plan matures, this ratio would be expected to grow. The NYSTRS ratio has been between 57% and 62% over the last ten years.

APPENDIX 14 (Cont'd)

Fiscal Year Ending June 30th	Accrued Liability (AL) for Retired Members and Beneficiaries (in millions)	Total AL for All Members (in millions)	Ratio of Retired AL to Total AL
2014	59,190.2	96,904.5	61.1%
2015	64,504.9	105,401.8	61.2%
2016	65,858.4	109,305.1	60.3%
2017	68,736.2	115,672.5	59.4%
2018	70,128.9	118,861.1	59.0%
2019	70,969.1	121,049.3	58.6%
2020	72,839.6	123,801.7	58.8%
2021	75,887.8	131,077.4	57.9%
2022	77,980.8	135,530.9	57.5%
2023	79,663.0	139,800.8	57.0%



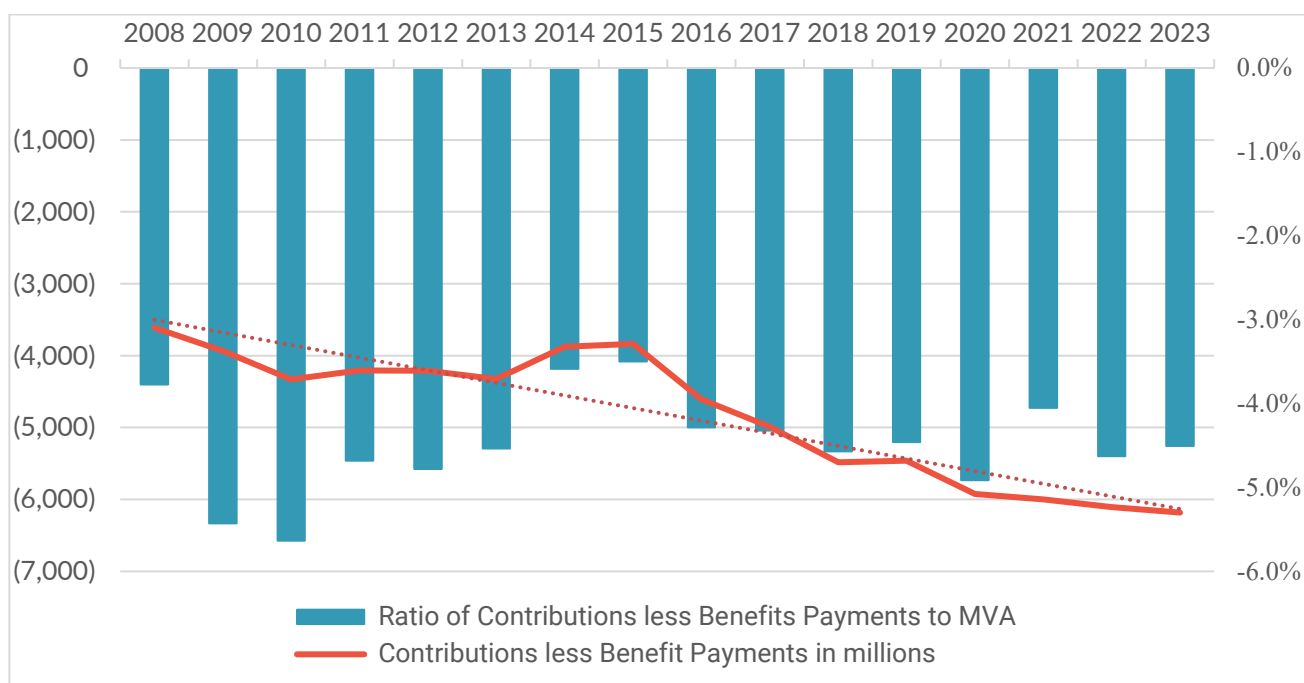
4. Cash Flow Ratio

The net cash flow ratio is equal to the ratio of the net cash flow in and out of the System divided by the market value of plan assets. Net cash flow for purposes of this ratio is defined as contributions in minus benefit payments and expenses out; it does not include investment income or appreciation. With this definition the System is in a negative cash flow position and has been for many years. Negative cash flow does not indicate a plan is in trouble or has been poorly managed. The objective of pre-funding is to create a negative cash flow and in fact it would be expected for a plan to mature into a negative cash flow. Additionally plans that are well-funded will have low contribution rates even as their benefit payroll is high. Many public sector plans have a negative cash flow.

APPENDIX 14 (Cont'd)

Negative cash flow does make the plan more sensitive to near term investment returns, particularly negative returns. When investments lose money and net cash flow is negative, it is more difficult for plans to recover from a poor investment return, as the invested asset base is lower. Therefore, plans will need an even higher return to recover.

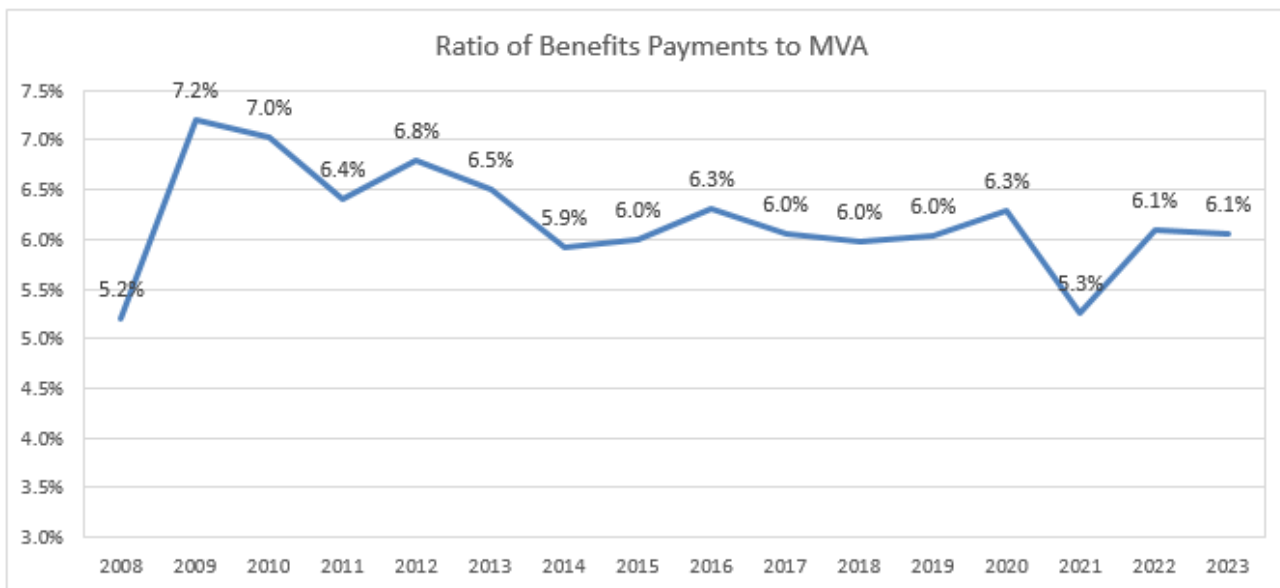
Fiscal Year Ending June 30th	Market Value of Assets (in millions)	Employer and Member Contributions (in millions)	Benefit Payments including Administrative Expenses (in millions)	Contributions less Benefit Payments (in millions)	Ratio of Contributions less Benefits Payments to MVA
2008	95,769.3	1,368.4	4,980.3	(3,611.8)	-3.8%
2009	72,471.8	1,283.5	5,217.9	(3,934.4)	-5.4%
2010	76,844.9	1,070.9	5,399.9	(4,329.0)	-5.6%
2011	89,889.7	1,545.9	5,751.5	(4,205.6)	-4.7%
2012	88,056.3	1,771.3	5,980.0	(4,208.7)	-4.8%
2013	95,367.0	1,868.3	6,194.1	(4,325.7)	-4.5%
2014	108,155.1	2,522.5	6,399.2	(3,876.6)	-3.6%
2015	109,718.9	2,751.7	6,588.1	(3,836.4)	-3.5%
2016	107,506.1	2,175.2	6,780.3	(4,605.1)	-4.3%
2017	115,468.4	1,995.0	6,984.6	(4,989.7)	-4.3%
2018	119,915.5	1,688.8	7,169.6	(5,480.9)	-4.6%
2019	122,477.5	1,920.3	7,381.6	(5,461.2)	-4.5%
2020	120,479.5	1,653.7	7,575.3	(5,921.6)	-4.9%
2021	148,148.5	1,788.3	7,787.4	(5,999.1)	-4.0%
2022	131,964.6	1,934.8	8,039.9	(6,105.1)	-4.6%
2023	137,221.5	2,131.9	8,314.2	(6,182.3)	-4.5%



APPENDIX 14 (Cont'd)

5. Annual Benefit Payments to Market Value of Assets Ratio

The percentage of the System's assets that are represented by each year's benefit payments is presented below. This percentage has remained relatively stable over time.



APPENDIX 14 (Cont'd)

B. Risk Assessment Methods – Sensitivity Analysis

Valuation results are highly dependent on the actuarial assumptions used to project future events. If actual experience emerges differently from the assumptions used in the valuation process, actuarial gains or losses will result, and future Employer Contribution Rates will be higher or lower. In this section, results of a sensitivity analysis are presented to illustrate how deviations in specific assumptions would have changed the current Employer Contribution Rate of 10.11%.

The results displayed here, except for those for the investment return, are the impact of altering each assumption individually, without accounting for possible correlation between assumptions. Therefore, these results are presented to provide an illustration of the impact that a change in a key assumption may have on valuation results.

Assumption	Adjustment	Adjusted Employer Contribution Rate
Current		10.11%
Valuation Rate of Interest ¹	Decrease from 6.95% to 6.70%	13.16%
Valuation Rate of Interest ¹	Decrease from 6.95% to 6.45%	16.30%
Valuation Rate of Interest ¹	Decrease from 6.95% to 5.95%	22.87%
Salary Scale	Decrease of 10%	9.22%
Salary Scale	Increase of 10%	10.99%
Service Retirement Rates	Decrease of 10%	9.43%
Service Retirement Rates	Increase of 10%	10.67%
Healthy Annuitant Mortality	Decrease of 10%	11.82%
Healthy Annuitant Mortality	Increase of 10%	8.54%
Active Mortality	Decrease of 10%	10.13%
Active Mortality	Increase of 10%	10.09%

¹ The sensitivity analysis assumes that the salary scale assumption would be decreased by one-half of the reduction in the investment return assumption. In a scenario in which there was a significant reduction in the System's assumed rate of return it's likely that future projected salaries would be impacted as well. For example, the salary scale is reduced by 0.125% when the assumed rate of return is reduced by 0.25%

APPENDIX 14 (Cont'd)

MEASURING PENSION OBLIGATIONS
ACTUARIAL STANDARD OF PRACTICE (ASOP) NO. 4

Low-Default-Risk Obligation Measure (LDRM)

ASOP 4 as promulgated by the Actuarial Standards Board (ASB) requires disclosure of a Low-Default-Risk Obligation Measure (LDRM). The LDRM represents what the System's accrued liability would be if the plan invested its assets solely in a portfolio of high-quality bonds whose cash flows approximately matched future benefit payments. NYSTRS invests in a diversified portfolio of stocks, bonds, real estate, and private equity with the objective of maximizing investment returns at a reasonable level of risk.

Reducing the plan's investment risk by investing solely in bonds, however, would also likely reduce the plan's long-term investment returns thereby increasing the amount of contributions needed. The ASB states that it is not intending to suggest that the LDRM represents the "right" liability measure for a pension plan, but rather that it provides additional information that may be useful in evaluating the funded status of a plan.

The difference between the plan's Actuarial Accrued Liability and the LDRM represents the expected taxpayer savings from investing in the plan's diversified portfolio compared to investing only in high-quality bonds. It can also be viewed as the cost of mitigating investment risk. Benefit security for members of the plan relies on a combination of the assets in the plan, the investment returns generated on those assets, and the promise of future contributions from plan members and sponsors.

Results as of June 30, 2023	
Low-Default-Risk Obligation Measure (LDRM)	176,795,726,018
Actuarial Accrued Liability	139,800,808,352
Expected taxpayer savings from the plan's investment in a diversified portfolio	36,994,917,666

Assumptions

The interest rate used in the LDRM calculation to represent an all-bond portfolio is the FTSE Pension Liability Index published by the Society of Actuaries. As of June 30, 2023 the rate was 4.92%. All other assumptions used for the LDRM are the same as those in use for the actuarial valuation. The Actuarial Accrued Liability is based on the long-term assumed rate of return on the System's portfolio of 6.95%.

The Actuarial Accrued Liability and LDRM are calculated in accordance with the Entry Age Cost Method with level percentage of pay as required by Governmental Accounting Standards Board (GASB) Statement No. 67. The Retirement System is funded in accordance with the Aggregate Cost Method as required by New York State Education Law §517.

APPENDIX 15

HISTORY OF THE EMPLOYER CONTRIBUTION RATE

<u>Salary Year</u>	<u>Employer Contribution Rate</u>	<u>Salary Year</u>	<u>Employer Contribution Rate</u>	<u>Salary Year</u>	<u>Employer Contribution Rate</u>
1921-22	5.10 %	1956-57	10.90 %	1991-92	6.64 %
1922-23	5.10	1957-58	11.20	1992-93	8.00
1923-24	5.20	1958-59	13.40	1993-94	8.41
1924-25	5.20	1959-60	14.00	1994-95	7.24
1925-26	5.20	1960-61	18.35	1995-96	6.37
1926-27	5.20	1961-62	18.55	1996-97	3.57
1927-28	5.20	1962-63	19.55	1997-98	1.25
1928-29	5.30	1963-64	21.13	1998-99	1.42
1929-30	5.50	1964-65	17.67	1999-00	1.43
1930-31	5.50	1965-66	17.70	2000-01	0.43
1931-32	5.50	1966-67	17.72	2001-02	0.36
1932-33	5.50	1967-68	18.50	2002-03	0.36
1933-34	5.50	1968-69	18.80	2003-04	2.52
1934-35	5.60	1969-70	18.60	2004-05	5.63
1935-36	5.70	1970-71	18.80	2005-06	7.97
1936-37	5.80	1971-72	18.80	2006-07	8.60
1937-38	5.93	1972-73	18.80	2007-08	8.73
1938-39	6.03	1973-74	18.80	2008-09	7.63
1939-40	6.13	1974-75	18.80	2009-10	6.19
1940-41	6.23	1975-76	19.40	2010-11	8.62
1941-42	6.33	1976-77	19.40	2011-12	11.11
1942-43	6.43	1977-78	20.40	2012-13	11.84
1943-44	6.53	1978-79	21.40	2013-14	16.25
1944-45	7.10	1979-80	22.49	2014-15	17.53
1945-46	7.20	1980-81	23.49	2015-16	13.26
1946-47	7.50	1981-82	23.49	2016-17	11.72
1947-48	7.80	1982-83	23.49	2017-18	9.80
1948-49	8.00	1983-84	22.90	2018-19	10.62
1949-50	8.40	1984-85	22.80	2019-20	8.86
1950-51	8.80	1985-86	21.40	2020-21	9.53
1951-52	9.60	1986-87	18.80	2021-22	9.80
1952-53	9.90	1987-88	16.83	2022-23	10.29
1953-54	9.90	1988-89	14.79	2023-24	9.76
1954-55	10.30	1989-90	6.87	2024-25	10.11
1955-56	10.40	1990-91	6.84		
				Average	10.88%

HISTORY OF THE MEMBER CONTRIBUTION RATE

Membership Year	Required Contribution
1921	4%
1948	5% (new members - 1948 and after)
1948	Voluntary 4% <u>could</u> be contributed (all members eligible)
1951	If member elected special retirement allowance: 4% went to 6.5%, 5% went to 8% (all members eligible)
1957	If member elected 1/120th plan: 6.5% went to 9%, 8% went to 11% (all members eligible)
1968	0%
1976	3% (new members - 1976 and after)
2000	3% employee contribution ceases after ten years of service or membership
2010	3.5% throughout career for members joining 1/1/2010 – 3/31/2012
2012	Throughout career for members joining on or after 4/1/2012: <ul style="list-style-type: none"> - 3.0% if salary less than or equal to \$45,000 - 3.5% if salary greater than \$45,000 and less than or equal to \$55,000 - 4.5% if salary greater than \$55,000 and less than or equal to \$75,000 - 5.75% if salary greater than \$75,000 and less than or equal to \$100,000 - 6.0% if salary greater than \$100,000 - no member contributions are collected on salary in excess of the pensionable salary limit which is currently \$250,000 (history of limit: started at \$179,000, increased to \$200,000 in 2020, \$225,000 in 2021, and \$250,000 in 2022)

As of August 1, 1921, when the Retirement System was established, members contributed 4% of salary. These contributions were used to fund a separate annuity, separate from the regular pension. New members on or after July 1, 1948 were required to contribute 5% of salary. Additional contributions, not in excess of 4% of salary, were permitted during the five-year period beginning July 1, 1948.

Under the provisions of a law passed in 1950, members could elect before July 1, 1951, or within one year of their date of membership, if later, to contribute towards a special service retirement allowance that would allow them to retire up to five years earlier. If their rate of contribution had been 4%, their new rate would be 6.5%. If their rate of contribution had been 5%, their new rate would be 8%. In 1956, an amendment was passed which provided additional benefits for service in excess of 25 years, but not in excess of 35 years, for those members who elected to contribute an additional 2.5% or 3% of their salaries. This increased the rate of contribution to 9% or 11% depending on whether the member's rate of contribution had been 6.5% or 8%.

HISTORY OF THE MEMBER CONTRIBUTION RATE (Cont'd)

Throughout the 1960's, the advent of the "take-home pay" program effectively reduced the required contribution rate to zero for many members. As of July 1, 1968, all members were no longer required to make contributions, nor permitted to make voluntary contributions unless they had been making them previously.

The law that created Tier 3 in 1976 reinstated member contributions and required members who joined the System after July 26, 1976 to contribute 3% of their annual salary. This money, however, helps fund the member's pension and does not fund a separate annuity as before. Effective October 1, 2000, however, in accordance with Chapter 126 of the Laws of 2000, the 3% required member contribution ceases upon the attainment of the earlier of 10 years of service credit or 10 years of membership.

In accordance with Tier 5, enacted in 2009, members joining on or after January 1, 2010 and prior to April 1, 2012 must contribute 3.5% of salary throughout their working career towards the funding of their pension.

Tier 6, enacted in 2012, requires members joining on or after April 1, 2012 to contribute between 3.0% and 6.0% of salary throughout their working career towards the funding of their pension. The contribution percentage for Tier 6 members can vary during their working career depending on the salary received two years prior to the year of contribution.

ACTUARIAL VALUATION INFORMATION

1. Actuarial Cost Method

The cost method used to determine the liabilities and normal cost in this valuation is the Aggregate Cost Method. This funding method is required by statute, specifically §517 of the New York State Education Law.

Each year a normal rate percentage is developed as a level percentage of total member compensation. This percentage equals the portion of the actuarial present value of projected benefits which exceeds the actuarial value of assets divided by one percent of the present value of future compensation of the active members, as of the valuation date.

The cost of the first \$50,000 of member death benefits, Retirement System administrative expenses, and benefits in excess of the IRC §415 limits are each determined using the pay-as-you-go method, which is not considered to be an actuarial cost method.

Each year, actuarial gains and losses will occur because actual experience will vary from the actuarial assumptions. All gains and losses are automatically amortized as part of the normal rate calculation, over the expected future working lifetime of active members.

The single amortization period for the Entry Age Unfunded Actuarial Accrued Liability that, combined with the Entry Age Normal Cost, is equivalent to the Aggregate method Normal Cost is 6.75 years.

The average expected future working lifetime for the active population determined by the actuarial valuation as of June 30, 2023 is 12.44 years.

2. Asset Valuation Method

The actuarial value of assets for the normal rate is determined by recognizing each year's net investment income/loss more than (or less than) 6.95% at a rate of 20% per year, until fully recognized after five years.

The actuarial value of assets for the expense, group life insurance, and excess benefit plan rates is equal to the fair market value of assets, excluding contributions receivable.

3. Actuarial Assumptions

The current actuarial assumptions were adopted by the Retirement Board on October 28, 2021 and were effective for the June 30, 2021 actuarial valuation of the Retirement System's assets and liabilities. The mortality improvement scale was updated as of the June 30, 2022 valuation to MP-2021 and was adopted on October 27, 2022. Specific details regarding the development of the actuarial assumptions can be found in the "*Recommended Actuarial Assumptions 2021 Report.*"

ACTUARIAL VALUATION INFORMATION (Cont'd)

The withdrawal rates are the assumed rates of termination of employment from all causes other than death, disability, or retirement. The withdrawal rates vary by gender and service.

The healthy annuitant mortality rates are the assumed rates of death for service and deferred retired members and beneficiaries. The healthy annuitant mortality rates vary by gender and age. Future mortality improvement was projected on a generational basis using the Society of Actuaries' Mortality Projection Scale MP-2021.

The salary scale is the assumed annual rate of increase in future compensation. The rates are based upon salary experience for members, vary by service, and are independent of the member's gender. Inflation, merit, and productivity increases are included in these rates. The assumed inflation component is 2.4%.

PRESENT ACTUARIAL ASSUMPTIONS

Actuarial assumptions have been developed based upon actual member experience. Various actuarial and graduation techniques are applied to experience data and tables are developed. Standard actuarial tables are also used as appropriate. An experience study is performed annually, and assumptions are revised when warranted. Assumptions have all been developed in conformity with the relevant Actuarial Standards of Practice (ASOPs). The current actuarial assumptions were adopted by the Retirement Board on October 28, 2021. The mortality improvement scale was updated as of the June 30, 2022 valuation to MP-2021 and was adopted on October 27, 2022. The Society of Actuaries has not developed a new mortality improvement scale since MP-2021 and its continued use is appropriate for the System's population. Specific details regarding the development of the present actuarial assumptions can be found in the *"Recommended Actuarial Assumptions 2021 Report"*.

As of January 1, 2023, Section 79-Q of the New York Civil Rights Law requires the collection of gender or sex data provide a separate field with the option of marking gender or sex as "X". NYSTRS updated its physical and online forms to provide an additional write-in option. When the data collected becomes statistically credible, NYSTRS will begin reporting gender or sex expansive data information and including the data in future experience studies. Currently those with a gender or sex selection of "X" are valued using the female rates.

The NYSTRS Office of the Actuary utilizes ProVal, a widely used actuarial valuation software program leased from Winklevoss Technologies (WinTech), to calculate liabilities and projected benefit payments. We have audited the results produced by this model to a limited degree consistent with Actuarial Standards of Practice (ASOP) No. 56 and believe the software to be appropriate for the purposes for which it has been used.

Table of Contents

- I. Active Member Mortality Rates
- II. Disability Retirement Rates
- III. Withdrawal Rates
- IV. Service Retirement Rates
 - a) With At Least 5 Years of Service and Less Than 20 Years of Service
 - b) With At Least 20 Years of Service and Less Than 30 Years of Service
 - c) With At Least 30 Years of Service
- V. Healthy Annuitant Mortality Rates
- VI. Survivor and Beneficiary Mortality Rates
- VII. Disabled Annuitant Mortality Rates
- VIII. Salary Scale
- IX. Valuation Rate of Interest Assumption
- X. Other Assumptions

I. Active Member Mortality Rates

<u>Age</u>	<u>Males</u>	<u>Age</u>	<u>Females</u>
	<u>Rate</u>		<u>Rate</u>
20	0.000326	20	0.000132
21	0.000292	21	0.000124
22	0.000249	22	0.000105
23	0.000215	23	0.000096
24	0.000189	24	0.000099
25	0.000173	25	0.000101
26	0.000189	26	0.000114
27	0.000206	27	0.000116
28	0.000223	28	0.000131
29	0.000252	29	0.000145
30	0.000269	30	0.000171
31	0.000298	31	0.000185
32	0.000314	32	0.000197
33	0.000340	33	0.000209
34	0.000353	34	0.000232
35	0.000376	35	0.000240
36	0.000396	36	0.000259
37	0.000412	37	0.000277
38	0.000438	38	0.000291
39	0.000448	39	0.000316
40	0.000467	40	0.000326
41	0.000494	41	0.000347
42	0.000518	42	0.000366
43	0.000550	43	0.000395
44	0.000582	44	0.000413
45	0.000633	45	0.000442
46	0.000683	46	0.000482
47	0.000743	47	0.000523
48	0.000816	48	0.000568
49	0.000891	49	0.000616
50	0.000988	50	0.000668
51	0.001090	51	0.000733
52	0.001197	52	0.000811
53	0.001327	53	0.000884
54	0.001463	54	0.000968

I. Active Member Mortality Rates
(cont'd.)

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
55	0.001605	55	0.001063
56	0.001769	56	0.001156
57	0.001948	57	0.001255
58	0.002146	58	0.001369
59	0.002363	59	0.001485
60	0.002605	60	0.001611
61	0.002875	61	0.001748
62	0.003162	62	0.001902
63	0.003461	63	0.002066
64	0.003789	64	0.002259
65	0.004146	65	0.002472
66	0.004515	66	0.002719
67	0.004918	67	0.003002
68	0.005349	68	0.003342
69	0.005822	69	0.003748
70	0.006313	70	0.004225
71	0.006838	71	0.004789
72	0.007406	72	0.005454
73	0.008017	73	0.006216
74	0.008674	74	0.007116
75	0.009408	75	0.008144
76	0.010787	76	0.009388
77	0.012380	77	0.010829
78	0.014221	78	0.012490
79	0.016338	79	0.014393

Society of Actuaries Mortality Improvement Scale MP-2021 is applied on a generational basis to base table rates.

II. Disability Retirement Rates

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
30	0.000007	30	0.000004
31	0.000031	31	0.000018
32	0.000060	32	0.000048
33	0.000100	33	0.000140
34	0.000131	34	0.000225
35	0.000156	35	0.000242
36	0.000183	36	0.000212
37	0.000220	37	0.000191
38	0.000261	38	0.000202
39	0.000297	39	0.000252
40	0.000324	40	0.000330
41	0.000353	41	0.000415
42	0.000378	42	0.000468
43	0.000439	43	0.000566
44	0.000519	44	0.000684
45	0.000610	45	0.000758
46	0.000680	46	0.000788
47	0.000724	47	0.000841
48	0.000772	48	0.000961
49	0.000878	49	0.001145
50	0.001035	50	0.001325
51	0.001225	51	0.001528
52	0.001395	52	0.001608
53	0.001480	53	0.001611
54	0.001435	54	0.001527
55	0.001287	55	0.001454
56	0.001060	56	0.001270
57	0.000845	57	0.001121
58	0.000721	58	0.001012
59	0.000655	59	0.000956
60	0.000642	60	0.000848
61	0.000617	61	0.000749
62	0.000581	62	0.000684
63	0.000536	63	0.000591
64	0.000485	64	0.000551

II. Disability Retirement Rates
(cont'd.)

<u>Age</u>	<u>Males</u>	<u>Rate</u>	<u>Age</u>	<u>Females</u>	<u>Rate</u>
65		0.000430	65		0.000476
66		0.000373	66		0.000258
67		0.000317	67		0.000178
68		0.000264	68		0.000169
69		0.000215	69		0.000152
70		0.000172	70		0.000131
71		0.000135	71		0.000107
72		0.000104	72		0.000083
73		0.000078	73		0.000060
74		0.000058	74		0.000042
75		0.000042	75		0.000028
76		0.000030	76		0.000018
77		0.000021	77		0.000011
78		0.000014	78		0.000006
79		0.000009	79		0.000004

III. Withdrawal Rates

<u>Males</u>		<u>Females</u>	
<u>Duration</u>	<u>Rate</u>	<u>Duration</u>	<u>Rate</u>
0	0.281672	0	0.276603
1	0.139639	1	0.125667
2	0.103566	2	0.091900
3	0.082839	3	0.070395
4	0.061281	4	0.054609
5	0.046733	5	0.048608
6	0.040304	6	0.044007
7	0.033875	7	0.039406
8	0.027446	8	0.034805
9	0.021017	9	0.030204
10	0.017586	10	0.025604
11	0.015753	11	0.022445
12	0.012379	12	0.018454
13	0.009004	13	0.014464
14	0.008712	14	0.010474
15	0.008419	15	0.009808
16	0.007735	16	0.008100
17	0.007052	17	0.006392
18	0.006368	18	0.004683
19	0.005078	19	0.004300
20	0.005000	20	0.004251
21	0.004633	21	0.003896
22	0.004265	22	0.003883
23	0.003897	23	0.003869
24	0.003530	24	0.003856
25	0.003162	25	0.002475
26	0.003058	26	0.002156
27	0.002953	27	0.001836
28	0.002848	28	0.001516
29	0.002744	29	0.001230
30	0.002639	30	0.001223
31	0.002534	31	0.001217
32+	0.002430	32+	0.001210

IV. Service Retirement Rates

a) With at Least 5 Years of Service and Less Than 20 Years of Service

<u>Age</u>	<u>Males</u>	<u>Rate</u>	<u>Age</u>	<u>Females</u>	<u>Rate</u>
55		0.016895	55		0.022034
56		0.018138	56		0.020920
57		0.018949	57		0.021583
58		0.020392	58		0.024243
59		0.023948	59		0.028714
60		0.032544	60		0.036747
61		0.053559	61		0.049865
62		0.076575	62		0.098737
63		0.086291	63		0.099499
64		0.101429	64		0.108244
65		0.135241	65		0.134619
66		0.165359	66		0.157206
67		0.171258	67		0.157651
68		0.162524	68		0.149321
69		0.168459	69		0.157048
70		0.178411	70		0.169309
71		0.168561	71		0.166236
72		0.175182	72		0.149874
73		0.204473	73		0.130584
74		0.205761	74		0.131818
75		0.201031	75		0.170940
76		0.223684	76		0.208633
77		0.250000	77		0.178744
78		0.259259	78		0.105960
79		0.243243	79		0.115385
80+		1.000000	80+		1.000000

IV. Service Retirement Rates

b) With at Least 20 Years of Service and Less Than 30 Years of Service

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
55	0.036912	55	0.048946
56	0.038733	56	0.048932
57	0.042465	57	0.050278
58	0.045650	58	0.055984
59	0.053792	59	0.066847
60	0.074850	60	0.085816
61	0.137343	61	0.124821
62	0.317298	62	0.344649
63	0.291193	63	0.320354
64	0.264522	64	0.270180
65	0.284814	65	0.306632
66	0.326565	66	0.343562
67	0.323741	67	0.335230
68	0.287004	68	0.312155
69	0.316940	69	0.294658
70	0.345833	70	0.276159
71	0.274390	71	0.258438
72	0.244094	72	0.248951
73	0.316327	73	0.231388
74	0.314286	74	0.202817
75	0.222222	75	0.232824
76	0.200000	76	0.283422
77	0.206897	77	0.291667
78	0.214286	78	0.243590
79	0.148148	79	0.170732
80+	1.000000	80+	1.000000

IV. Service Retirement Rates

c) With at Least 30 Years of Service

<u>Age</u>	<u>Males</u>	<u>Rate</u>	<u>Age</u>	<u>Females</u>	<u>Rate</u>
55		0.357369	55		0.360457
56		0.308100	56		0.328854
57		0.270702	57		0.285005
58		0.275266	58		0.281178
59		0.296323	59		0.303384
60		0.311082	60		0.329377
61		0.310642	61		0.358157
62		0.319459	62		0.383599
63		0.319013	63		0.361017
64		0.297225	64		0.336647
65		0.311052	65		0.345155
66		0.340284	66		0.361702
67		0.325405	67		0.339678
68		0.291372	68		0.289690
69		0.274286	69		0.270671
70		0.259067	70		0.268173
71		0.238434	71		0.269377
72		0.223404	72		0.255354
73		0.224806	73		0.220085
74		0.262136	74		0.204420
75		0.294872	75		0.182796
76		0.254902	76		0.157205
77		0.200000	77		0.175258
78		0.178571	78		0.222973
79		0.184615	79		0.253012
80+		1.000000	80+		1.000000

V. Healthy Annuitant Mortality Rates

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
55	0.002062	55	0.001763
56	0.002298	56	0.001932
57	0.002558	57	0.002104
58	0.002850	58	0.002284
59	0.003160	59	0.002461
60	0.003492	60	0.002642
61	0.003850	61	0.002833
62	0.004238	62	0.003026
63	0.004643	63	0.003239
64	0.005097	64	0.003476
65	0.005594	65	0.003756
66	0.006160	66	0.004075
67	0.006809	67	0.004460
68	0.007562	68	0.004926
69	0.008430	69	0.005489
70	0.009446	70	0.006169
71	0.010632	71	0.006976
72	0.012012	72	0.007929
73	0.013614	73	0.009050
74	0.015459	74	0.010362
75	0.020078	75	0.013227
76	0.022872	76	0.015184
77	0.026050	77	0.017425
78	0.029647	78	0.019982
79	0.033736	79	0.022903
80	0.038367	80	0.026219
81	0.043643	81	0.029999
82	0.049675	82	0.034278
83	0.056541	83	0.039141
84	0.064371	84	0.044654

Society of Actuaries Mortality Improvement Scale MP-2021 is applied on a generational basis to base table rates.

V. Healthy Annuitant Mortality Rates (Cont'd)

<u>Age</u>	<u>Males</u> <u>Rate</u>	<u>Age</u>	<u>Females</u> <u>Rate</u>
85	0.073241	85	0.050874
86	0.083220	86	0.057876
87	0.094351	87	0.065733
88	0.106789	88	0.074568
89	0.120557	89	0.084462
90	0.135736	90	0.109847
91	0.152258	91	0.124150
92	0.169997	92	0.139945
93	0.188712	93	0.157256
94	0.208207	94	0.175838
95	0.228238	95	0.195482
96	0.256135	96	0.216617
97	0.278405	97	0.238632
98	0.300930	98	0.261262
99	0.323597	99	0.284370
100	0.346058	100	0.307717
101	0.368382	101	0.331284
102	0.390636	102	0.355062
103	0.412527	103	0.378941
104	0.433960	104	0.402553
105	0.454672	105	0.425814
106	0.474623	106	0.448404
107	0.493810	107	0.470342
108	0.511957	108	0.491432
109	0.529320	109	0.511431
110	0.530405	110	0.530405
111	0.548187	111	0.548187
112	0.557992	112	0.557992
113	0.558942	113	0.558942
114	0.559950	114	0.559950

Society of Actuaries Mortality Improvement Scale MP-2021 is applied on a generational basis to base table rates.

V. Healthy Annuitant Mortality Rates (Cont'd)

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
115	0.560902	115	0.560902
116	0.560959	116	0.560959
117	0.561015	117	0.561015
118	0.561015	118	0.561015
119	0.561015	119	0.561015
120	1.000000	120	1.000000

Society of Actuaries Mortality Improvement Scale MP-2021 is applied on a generational basis to base table rates.

VI. Survivor and Beneficiary Mortality Rates

<u>Age</u>	<u>Males</u> <u>Rate</u>	<u>Age</u>	<u>Females</u> <u>Rate</u>
1	0.000403	1	0.000145
2	0.000403	2	0.000145
3	0.000403	3	0.000145
4	0.000403	4	0.000145
5	0.000403	5	0.000145
6	0.000403	6	0.000145
7	0.000403	7	0.000145
8	0.000403	8	0.000145
9	0.000403	9	0.000145
10	0.000403	10	0.000145
11	0.000403	11	0.000145
12	0.000403	12	0.000145
13	0.000403	13	0.000145
14	0.000403	14	0.000145
15	0.000403	15	0.000145
16	0.000403	16	0.000145
17	0.000403	17	0.000145
18	0.000403	18	0.000145
19	0.000403	19	0.000145
20	0.000403	20	0.000134
21	0.000387	21	0.000125
22	0.000360	22	0.000116
23	0.000333	23	0.000106
24	0.000306	24	0.000097
25	0.000302	25	0.000099
26	0.000338	26	0.000114
27	0.000360	27	0.000128
28	0.000383	28	0.000144
29	0.000420	29	0.000160
30	0.000442	30	0.000175

Society of Actuaries Mortality Improvement Scale MP-2021 is applied on a generational basis to base table rates.

VI. Survivor and Beneficiary Mortality Rates (Cont'd)

<u>Age</u>	<u>Males</u> <u>Rate</u>	<u>Age</u>	<u>Females</u> <u>Rate</u>
31	0.000479	31	0.000204
32	0.000498	32	0.000218
33	0.000530	33	0.000244
34	0.000559	34	0.000255
35	0.000599	35	0.000279
36	0.000621	36	0.000300
37	0.000651	37	0.000317
38	0.000677	38	0.000346
39	0.000712	39	0.000360
40	0.000740	40	0.000383
41	0.000764	41	0.000405
42	0.000798	42	0.000425
43	0.000841	43	0.000456
44	0.000883	44	0.000487
45	0.000935	45	0.000518
46	0.001001	46	0.000552
47	0.001068	47	0.000597
48	0.001151	48	0.000647
49	0.001237	49	0.000699
50	0.001339	50	0.000767
51	0.001459	51	0.000839
52	0.001585	52	0.000916
53	0.001729	53	0.001017
54	0.001890	54	0.001111
55	0.004211	55	0.003011
56	0.004591	56	0.003214
57	0.004992	57	0.003415
58	0.005427	58	0.003623
59	0.005881	59	0.003842
60	0.006353	60	0.004095

Society of Actuaries Mortality Improvement Scale MP-2021 is applied on a generational basis to base table rates.

VI. Survivor and Beneficiary Mortality Rates (Cont'd)

<u>Age</u>	<u>Males</u> <u>Rate</u>	<u>Age</u>	<u>Females</u> <u>Rate</u>
61	0.006847	61	0.004376
62	0.007355	62	0.004709
63	0.007893	63	0.005081
64	0.008469	64	0.005515
65	0.009119	65	0.006007
66	0.009879	66	0.006574
67	0.010764	67	0.007228
68	0.011791	68	0.007991
69	0.012977	69	0.008882
70	0.014348	70	0.009913
71	0.015914	71	0.011099
72	0.017714	72	0.012469
73	0.019770	73	0.014025
74	0.022137	74	0.015798
75	0.024837	75	0.017811
76	0.027914	76	0.020084
77	0.031432	77	0.022658
78	0.035426	78	0.025572
79	0.039971	79	0.028889
80	0.045158	80	0.032661
81	0.051057	81	0.036972
82	0.057759	82	0.041889
83	0.065291	83	0.047505
84	0.073728	84	0.053910
85	0.083113	85	0.061218
86	0.093445	86	0.069540
87	0.104717	87	0.078933
88	0.117043	88	0.089461
89	0.130367	89	0.101045
90	0.144705	90	0.113634

Society of Actuaries Mortality Improvement Scale MP-2021 is applied on a generational basis to base table rates.

VI. Survivor and Beneficiary Mortality Rates (Cont'd)

<u>Age</u>	<u>Males</u> <u>Rate</u>	<u>Age</u>	<u>Females</u> <u>Rate</u>
91	0.160306	91	0.127095
92	0.177295	92	0.141336
93	0.195554	93	0.157256
94	0.214933	94	0.175838
95	0.235173	95	0.195482
96	0.256846	96	0.216617
97	0.279223	97	0.238632
98	0.301941	98	0.261262
99	0.324803	99	0.284370
100	0.347403	100	0.307717
101	0.369814	101	0.331284
102	0.392154	102	0.355062
103	0.414131	103	0.378941
104	0.435647	104	0.402553
105	0.456440	105	0.425814
106	0.476468	106	0.448404
107	0.495730	107	0.470342
108	0.513947	108	0.491432
109	0.531378	109	0.511431
110	0.545110	110	0.530405
111	0.548187	111	0.548187
112	0.557992	112	0.557992
113	0.558942	113	0.558942
114	0.559950	114	0.559950
115	0.560902	115	0.560902
116	0.560959	116	0.560959
117	0.561015	117	0.561015
118	0.561015	118	0.561015
119	0.561015	119	0.561015
120	1.000000	120	1.000000

Society of Actuaries Mortality Improvement Scale MP-2021 is applied on a generational basis to base table rates.

VII. Disabled Annuitant Mortality Rates

<u>Males</u>		<u>Females</u>	
<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
30	0.004652	30	0.003422
31	0.004963	31	0.003769
32	0.005272	32	0.004129
33	0.005569	33	0.004505
34	0.005877	34	0.004881
35	0.006163	35	0.005259
36	0.006456	36	0.005634
37	0.006751	37	0.006015
38	0.007059	38	0.006401
39	0.007371	39	0.006802
40	0.007705	40	0.007219
41	0.008073	41	0.007660
42	0.008491	42	0.008131
43	0.008966	43	0.008652
44	0.009542	44	0.009236
45	0.010203	45	0.009899
46	0.010984	46	0.010640
47	0.011887	47	0.011491
48	0.012917	48	0.012463
49	0.014064	49	0.013571
50	0.015343	50	0.014803
51	0.016424	51	0.015537
52	0.017566	52	0.016336
53	0.018749	53	0.017181
54	0.019960	54	0.018046
55	0.021172	55	0.018866
56	0.022361	56	0.019608
57	0.023488	57	0.020231
58	0.024557	58	0.020721
59	0.025566	59	0.021082

Society of Actuaries Mortality Improvement Scale MP-2021 is applied on a generational basis to base table rates.

VII. Disabled Annuitant Mortality Rates (Cont'd)

<u>Age</u>	<u>Males</u>	<u>Rate</u>	<u>Age</u>	<u>Females</u>	<u>Rate</u>
60		0.026516	60		0.021350
61		0.027415	61		0.021532
62		0.028313	62		0.021709
63		0.029236	63		0.021906
64		0.030182	64		0.022166
65		0.031154	65		0.022529
66		0.032187	66		0.023039
67		0.033281	67		0.023732
68		0.034485	68		0.024639
69		0.035810	69		0.025784
70		0.037301	70		0.027188
71		0.039017	71		0.028858
72		0.040985	72		0.030823
73		0.043225	73		0.033071
74		0.045778	74		0.035661
75		0.048700	75		0.038596
76		0.051973	76		0.041899
77		0.055667	77		0.045616
78		0.059793	78		0.049768
79		0.064417	79		0.054392
80		0.069552	80		0.059522
81		0.075256	81		0.065190
82		0.081539	82		0.071412
83		0.088386	83		0.078249
84		0.095845	84		0.085710
85		0.103866	85		0.093862
86		0.112482	86		0.102354
87		0.121693	87		0.111003
88		0.131659	88		0.119794
89		0.144125	89		0.128685

Society of Actuaries Mortality Improvement Scale MP-2021 is applied on a generational basis to base table rates.

VII. Disabled Annuitant Mortality Rates (Cont'd)

<u>Age</u>	<u>Males</u>	<u>Rate</u>	<u>Age</u>	<u>Females</u>	<u>Rate</u>
90		0.157863	90		0.137873
91		0.171906	91		0.147449
92		0.186069	92		0.157607
93		0.200252	93		0.168645
94		0.214573	94		0.180687
95		0.229208	95		0.195482
96		0.256135	96		0.216617
97		0.278405	97		0.238632
98		0.300930	98		0.261262
99		0.323597	99		0.284370
100		0.346058	100		0.307717
101		0.368382	101		0.331284
102		0.390636	102		0.355062
103		0.412527	103		0.378941
104		0.433960	104		0.402553
105		0.454672	105		0.425814
106		0.474623	106		0.448404
107		0.493810	107		0.470342
108		0.511957	108		0.491432
109		0.529320	109		0.511431
110		0.530405	110		0.530405
111		0.548187	111		0.548187
112		0.557992	112		0.557992
113		0.558942	113		0.558942
114		0.559950	114		0.559950
115		0.560902	115		0.560902
116		0.560959	116		0.560959
117		0.561015	117		0.561015
118		0.561015	118		0.561015
119		0.561015	119		0.561015
120		1.000000	120		1.000000

Society of Actuaries Mortality Improvement Scale MP-2021 will be applied on a generational basis to base table rates.

VIII. Salary Scale

<u>Duration</u>	<u>Rate</u>	<u>Duration</u>	<u>Rate</u>
0	1.1231	20	1.0293
1	1.1079	21	1.0283
2	1.0814	22	1.0274
3	1.0683	23	1.0265
4	1.0582	24	1.0257
5	1.0518	25	1.0250
6	1.0480	26	1.0243
7	1.0459	27	1.0237
8	1.0447	28	1.0230
9	1.0438	29	1.0225
10	1.0430	30	1.0219
11	1.0421	31	1.0214
12	1.0409	32	1.0210
13	1.0396	33	1.0204
14	1.0380	34	1.0200
15	1.0364	35	1.0195
16	1.0347	36	1.0191
17	1.0332	37	1.0186
18	1.0317	38	1.0183
19	1.0305	39	1.0183
		40	1.0184

IX. Valuation Rate of Interest Assumption

The interest rate for valuation purposes is a level 6.95%. This valuation rate of interest is made up of a 2.4%¹ annual rate of inflation and a 4.55% real rate of return. The valuation rate of interest assumption represents our best estimate of the anticipated annual rate of return on plan assets over a long-term horizon.

The valuation rate of interest assumption is developed based upon the Retirement System's specific asset allocation, and capital market forecasted long-term return assumptions, as provided by Callan, the System's investment consultant, and other available investment consultant forecasts. Using expected returns and standard deviations for each asset class, and including anticipated correlation between the classes, a long-term anticipated rate of return is developed. Callan's most recent expected annual rate of return for the total portfolio using a 20-year horizon is 8.44% on an arithmetic basis and 7.82% on a geometric basis. Using a 30-year horizon, the expected annual rate of return for the total portfolio is 8.52% on an arithmetic basis and 7.90% on a geometric basis.

For a complete explanation of the rationale behind the System's valuation rate of interest assumption, please refer to the "*Recommended Actuarial Assumptions 2021 Report*".

X. Other Assumptions

Projected COLA Assumption

The annual percentage for estimating future COLA benefit payments is 1.3%.²

IRC Section 415(b) and 401(a)(17)

For purposes of the normal rate, the limitations under IRC Section 415(b) were not reflected due to immateriality. The IRC Section 401(a)(17) limit for the fiscal year ending June 30, 2023 was reflected for members with a membership date on or after July 1, 1996.

Retirement Rates

Retirement Rates for terminated vested members (no earnings in the fiscal year and entitled to a vested benefit, not yet retired): 100% at the age of 55 or current age if later.

¹The average annual rate of increase in the Consumer Price Index (CPI) for the last 30 years ending with March 31, 2023 was 2.51%.

²The COLA percentage is one-half of the increase in the CPI, rounded up to the nearest tenth of a percent, with a floor of 1.0% and a cap of 3.0%. Therefore, the estimate of inflation for the COLA benefit is the result of analyzing available CPI data with percentages bounded between 2.0% and 6.0% and reduced by 50%.

Marriage Assumptions

None

Tier 6 Pensionable Salary Limit

Tier 6 pensionable earnings are limited by the pensionable salary limit of the current Governor's salary of \$250,000 per year and is then assumed to increase annually by the assumed rate of inflation of 2.4%.

Maximum Salary for Tier 2-6 Death Benefits

The Tier 2 to Tier 6 maximum salary allowable for purposes of the death benefit calculation under Section 130 of the Civil Service Law is \$201,711 as of June 30, 2023. It is assumed to increase annually by the assumed annual rate of inflation of 2.4%.

APPENDIX 19

SUMMARY OF BENEFIT PROVISIONS1. Membership

With certain limited exceptions, membership is mandatory for all full-time New York State public school teachers and administrators, outside New York City. Membership is optional for certain teachers/administrators eligible for the Optional Retirement Program and teachers employed on other than a full-time basis and for certain employees of the State University of New York, community colleges, and the State Education Department. Generally, the membership of any non-vested person will terminate when seven years have elapsed since (s)he last rendered at least 20 days of credited service in a school year.

Tiers are determined by a member's date of membership in the Retirement System as follows:

Tier 1:	Membership prior to 7/1/1973
Tier 2:	Membership 7/1/1973 – 7/26/1976*
Tier 3:	Membership 7/27/1976* – 8/31/1983
Tier 4:	Membership 9/1/1983 – 12/31/2009
Tier 5:	Membership 1/1/2010 – 3/31/2012
Tier 6:	Membership on or after 4/1/2012.

*The end date for Tier 2 and the start date for Tier 3 differs from what is in the law due to a court case known as the Oliver decision, making the start date of the new tier the date that it was signed into law.

Tier 3 members are entitled to receive the benefits of either Tier 3 or Tier 4; however, they may not mix the provisions of the two tiers. For valuation purposes, Tier 3 members are assumed to receive the Tier 4 benefit at retirement, as that is generally always the larger benefit.

2. Final Average Salary (FAS)

For all tiers, FAS is generally the average of the three highest consecutive full years of regular salary, whenever they occurred in the salary history, for duties involving the supervision and instruction of students. For Tier 6 members only, the pensionable earnings can be no more than the Governor's salary, which is \$250,000 as of 6/30/2023.

Certain other restrictions apply to pensionable earnings that can be used in the FAS calculation. There are also limits on the year-over-year percentage increase in salary used in calculating FAS. For Tiers 4 through 6, salary in excess of 10% over the average of the prior two years' salaries is not included in the FAS calculation.

3. Service Retirement

The service retirement benefits are payable for life in accordance with the following benefit formulas:

Tier 1: Non-Contributory Plan

For Tier 1 members with a date of membership prior to July 1, 1970 the benefit is generally calculated as:

Service Credit	Service benefit
NYS service before July 1, 1959 AND Out-of-state service	= 1/100 th of FAS per year for each of the first 25 years of service + 1/120 th of FAS per year for each of the next 10 years of service + 1/140 th of FAS per year for each year of NYS service in excess of 35
NYS service on or after July 1, 1959	= 1/50 th of FAS per year for each of the first 25 years of NYS service + 1/60 th of FAS per year for each of the next 10 years of NYS service + 1/70 th of FAS per year for each year of NYS service in excess of 35

Non-Contributory Plan members generally may retire at:

- Age 55 with 20 years of total service or
- Any age with 35 years of total service.

Tier 1: Career Plan (effective July 1, 1970)

Service Credit	Service benefit
NYS service before July 1, 1959	= 1.8% of FAS per year of NYS service
NYS service on or after July 1, 1959	= 2.0% of FAS per year of NYS service
Out-of-state service	= 1.0% of FAS per year for each of out-of-state service* *up to 10 years of credit, but only until total service equals 35 years

The maximum pension permitted is 75% of FAS, or 79% of FAS including the two years of Article 19 service credit

If less than 20 years of NYS service, the above formula is used except the benefit is reduced by 5% for each year of service less than 20, subject to a maximum reduction of 50%.

Career Plan members generally may retire at:

- Age 55 with 2 years of NYS service or
- Any age with 35 years of total service.

The provisions of Article 19 of the Retirement and Social Security Law, effective July 11, 2000, grants eligible Tier 1 and 2 members additional service credit of one-twelfth of a year of service for each year of retirement credit as of the date of retirement or death, up to a maximum of two additional years.

Tier 2: Career Plan

Computed under the Tier 1 Career Plan formula, but may be reduced for early retirement, as noted below.

Tier 2 members generally may retire at:

- Age 62 with 5 years of service, or
- Age 55 with 30 years of service, or
- Age 55 with 5 years of service, with benefit reduced by 6% for each of the first 2 years under age 62 and 3% for each of the next 5 years.

Tier 3: Article 14

Service Credit	Service benefit
Less than 20 years	= $1\frac{2}{3}\%$ of FAS per year of NYS service
20 to 30 years	= 2% of FAS per year of NYS service
30 or more years	= 60% of FAS

At age 62 the benefit is reduced by 50% of the primary Social Security benefit accrued while in NYS public employment. A member may be eligible for automatic cost-of-living adjustments.

Tier 3 members generally may retire at:

- Age 62 with 5 years of service, or
- Age 55 with 30 years of service, or
- Age 55 with 5 years of service, with benefit reduced by 1/15th for each of the first 2 years under age 62 and 1/30th for each of the next 5 years.

Tier 4: Article 15

Service Credit	Service benefit
Less than 20 years	= $1\frac{2}{3}\%$ of FAS per year of NYS service
20 to 30 years	= 2% of FAS per year of NYS service for all service
30 or more years	= 60% of FAS + $1\frac{1}{2}\%$ of FAS per year of NYS service in excess of 30 years

Tier 4 members generally may retire at:

- Age 62 with 5 years of service, or
- Age 55 with 30 years of service, or
- Age 55 with 5 years of service, with benefit reduced by 6% for each of the first 2 years under age 62 and 3% for each of the next 5 years.

Tier 5: Article 15

Service Credit	Service benefit
Less than 25 years	= $1\frac{2}{3}\%$ of FAS per year of NYS service
25 to 30 years	= 2% of FAS per year of NYS service for all service
30 or more years	= 60% + $1\frac{1}{2}\%$ of FAS per year of NYS service in excess of 30 years

Tier 5 members generally may retire at:

- Age 62 with 5 years of service, or
- Age 57 with 30 years of service, or
- Age 55 with 5 years of service, with benefit reduced by $6\frac{2}{3}\%$ for each of the first 2 years under age 62 and 5% for each of the next 5 years.

Tier 6: Article 15

Service Credit	Service benefit
Less than 20 years	= $1\frac{2}{3}\%$ of FAS per year of NYS service
20 years	= 1.75% of FAS per year of NYS service for all service
More than 20 years	= 35% + 2% of FAS per year of NYS service in excess of 20 years

Tier 6 members generally may retire at:

- Age 63 with 5 years of service, or
- Age 55 with 5 years of service, with benefit reduced by 6.5% for each year under age 63.

4. Disability Retirement

Generally, a member with at least 10 years of service may qualify for a disability retirement benefit of the smaller of 1) $1\frac{2}{3}\%$ of FAS per year of projected service to age 60 or 2) $\frac{1}{3}$ of FAS; but the benefit shall not be less than $1\frac{2}{3}\%$ of FAS per year of completed service.

5. Death Benefits

a) *Active Service*

The Tier 1 death benefit is generally equal to the greater of

- 1) 3 times annual salary after 36 years of service (proportionately reduced for less than 36 years), or
- 2) for members who are at least age 55 with 20 years of service, the pension reserve calculated under a prior, lower service retirement formula.

Under legislation enacted in 2000, all Tier 2-6 members will be covered by the Paragraph 2 Death Benefit, unless they selected Paragraph 1 (see Tier 1 Calculation above) and it is greater than Paragraph 2. All members joining on or after January 1, 2001, will be covered by the Paragraph 2 Death Benefit. The benefit is one year's salary¹ after a year of service, increasing to a maximum of three years' salary after three years or more of service. The benefit is reduced after age 60 by 4% per year, up to a maximum reduction of 40% at age 70 (reductions begin at age 61; age is not rounded, and the reduction is not prorated.)

¹ The law limits the amount of salary that can be used in the calculation of the Paragraph 2 Death Benefit.

Under Paragraph 2, if the in-service death benefit is in effect when a member retires, coverage may continue after retirement. The benefit would be:

- 1st Year: 50% of the death benefit in effect at retirement;
- 2nd Year: 25% of the benefit at retirement; and,
- 3rd & Ensuing Years: 10% of the benefit in effect at retirement (or at age 60, if the member retires after age 59). To be eligible for the continued coverage in retirement, the member must retire within one year of leaving the payroll and not be employed (other than NYSTRS service) between the member's cease-teaching date and retirement date.

b) Not in Active Service

The death benefit for members of all tiers with at least ten years of service credit who die when not in active service is equal to one-half the active member death benefit.

6. Deferred Retirement

Tiers 1-4:

A member with at least 5 years of credited service who ceases teaching has a vested right to receive a deferred service retirement benefit. A member with at least five, but less than ten years of service credit, has the choice of receiving a refund of their member contributions with interest or a deferred service retirement benefit. A member with ten or more years of service credit will receive the deferred service retirement benefit.

Tiers 5 and 6:

A member with at least 5 years of credited service who ceases teaching has a vested right to receive a deferred service retirement benefit. Members with less than 5 years of credited service who cease teaching may receive a refund of their contributions with interest.

7. Member Contributions

Certain Tier 1 and 2 members may elect to contribute to receive an additional benefit upon retirement. Tier 3 and 4 members are required to contribute 3% of pay to fund a portion of their benefit. Effective October 1, 2000, such contributions cease upon the attainment of the earlier of 10 years of service credit or 10 years of membership.

Tier 5 members are required to contribute 3.5% of their salary throughout their active membership.

Tier 6 members are required to contribute throughout their active membership. From 4/1/2012 through 3/31/2013, all Tier 6 members were required to contribute 3.5%. Beginning 4/1/2013, members are required to contribute at the rate in accordance with the following schedule:

Salary	Contribution Rate
\$45,000 and less	3.00%
More than \$45,000 to \$55,000	3.50%
More than \$55,000 to \$75,000	4.50%
More than \$75,000 to \$100,000	5.75%
More than \$100,000	6.00%

No member contributions are collected on salary in excess of \$250,000. This is the maximum salary that is pensionable and is equal to the NYS Governor's salary (was \$179,000 in 2019, increased to \$200,000 in 2020, \$225,000 in 2021, and \$250,000 in 2022 and 2023).

For purposes of administration, a Tier 6 member's contribution rate in any given year is based on regular compensation earned two years prior. During the member's first three years of membership, the member will contribute a percentage based on a salary projection provided by the employer.

8. Cost-of-Living Adjustment (COLA)

A permanent, annually adjusted cost-of-living benefit is provided to both current and future retired members. This benefit was first paid commencing September 2001, and is increased every September thereafter, to retired members who meet one of the following eligibility criteria:

- Age 62 and retired for 5 years, or
- Age 55 and retired for 10 years, or
- Retired for 5 years under a disability retirement.

The annual COLA percentage is equal to 50% of the increase in the annual CPI, rounded up to the next tenth of a percent; not to exceed 3% nor be lower than 1%. It is applied to the first \$18,000 of annual benefit. Additionally, commencing September 2000, members retired before 1997 are eligible for a "Catch-Up" supplemental benefit upon satisfaction of the above eligibility criteria.



New York State
Teachers'
Retirement
System

Presentation to the Board: Final Employer Contribution Rate

Richard A. Young, Chief Actuary

Melody Prangle, Deputy Chief Actuary

Appendix I

124

Final Employer Contribution Rate (ECR)

June 30, 2023 Actuarial Valuation

10.11% of Pay

An increase of approximately 3.6% over prior year's ECR of 9.76%

ECR Components

Normal Rate	9.63%
Expense Rate	0.35%
Group Life Rate	0.13%
Excess Benefit Plan Rate	0.00%
Final June 30, 2023 ECR	10.11%



When the 10.11% ECR Applies

- Multiplied by the 2024-2025 fiscal year salaries
- Collected in 2025-2026 fiscal year (September, October, November 2025)

Employer Contribution in Dollars

Collection Date	Employer Contribution	ECR
Fall 2020	\$1.5 billion	8.86%
Fall 2021	\$1.6 billion	9.53%
Fall 2022	\$1.7 billion	9.80%
Fall 2023	\$1.9 billion	10.29%
Fall 2024	\$1.8 billion*	9.76%
Fall 2025	\$1.9 billion*	10.11%

**estimated*

Historic 50 Years of ECRs

50-Year Average ECR = 11.33%

'75 - '76	19.40%	'88 - '89	14.79%	'01 - '02	0.36%	'14 - '15	17.53%
'76 - '77	19.40%	'89 - '90	6.87%	'02 - '03	0.36%	'15 - '16	13.26%
'77 - '78	20.40%	'90 - '91	6.84%	'03 - '04	2.52%	'16 - '17	11.72%
'78 - '79	21.40%	'91 - '92	6.64%	'04 - '05	5.63%	'17 - '18	9.80%
'79 - '80	22.49%	'92 - '93	8.00%	'05 - '06	7.97%	'18 - '19	10.62%
'80 - '81	23.49%	'93 - '94	8.41%	'06 - '07	8.60%	'19 - '20	8.86%
'81 - '82	23.49%	'94 - '95	7.24%	'07 - '08	8.73%	'20 - '21	9.53%
'82 - '83	23.49%	'95 - '96	6.37%	'08 - '09	7.63%	'21 - '22	9.80%
'83 - '84	22.90%	'96 - '97	3.57%	'09 - '10	6.19%	'22 - 23	10.29%
'84 - '85	22.80%	'97 - '98	1.25%	'10 - '11	8.62%	'23 - 24	9.76%
'85 - '86	21.40%	'98 - '99	1.42%	'11 - '12	11.11%	'24 - 25	10.11%
'86 - '87	18.80%	'99 - '00	1.43%	'12 - '13	11.84%		
'87 - '88	16.83%	'00 - '01	0.43%	'13 - '14	16.25%		

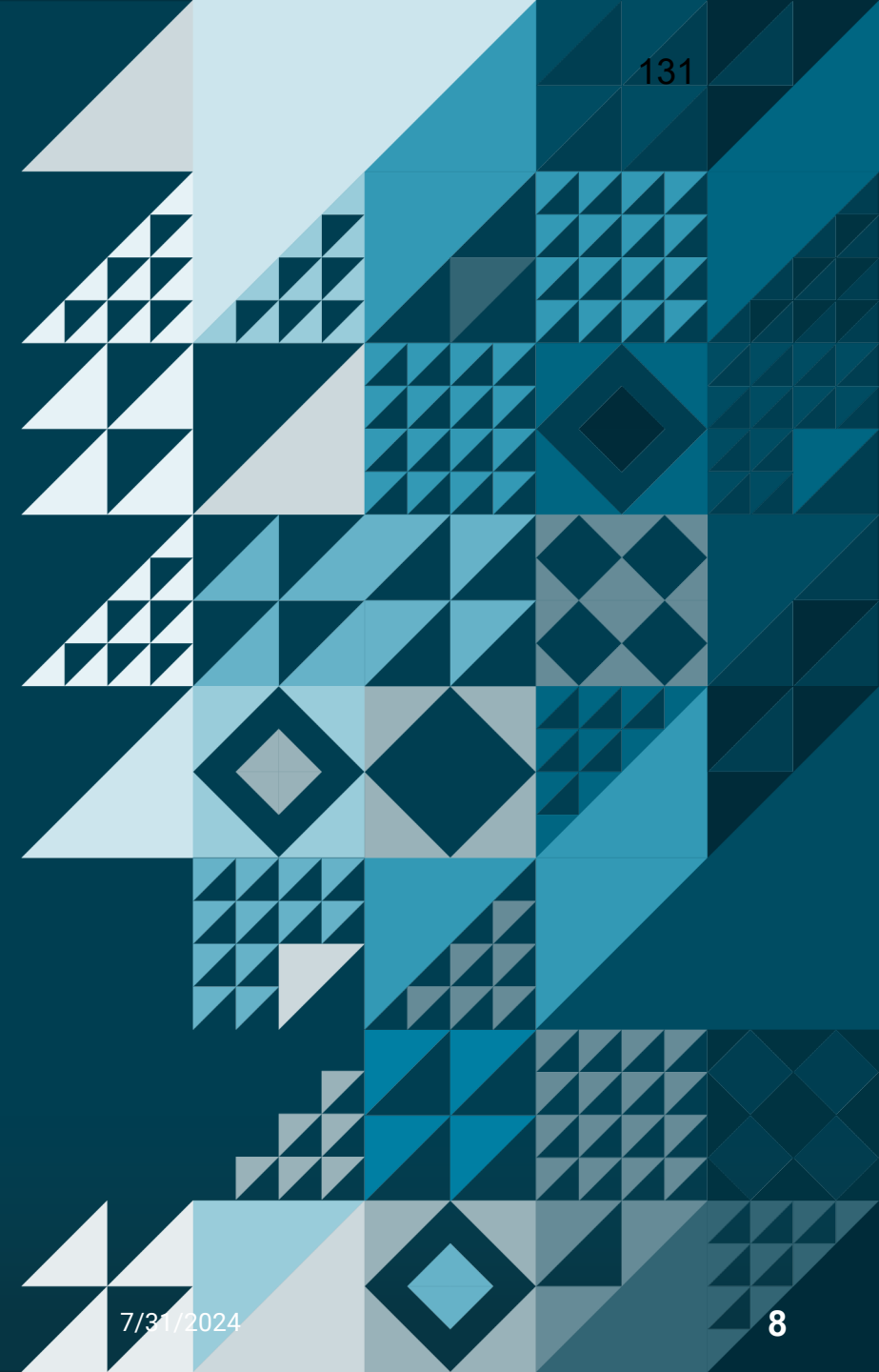
Funded Ratio History

The Funded Ratio is the ratio of plan assets to the plan's accrued liability.

FYE	Funded Ratio Based on MVA	Funded Ratio Based on AVA
6/30/2019	101.2%	99.6%
6/30/2020	97.3%	98.9%
6/30/2021	113.0%	99.3%
6/30/2022	97.4%	99.3%
6/30/2023	98.2%	98.6%

MVA = market value of assets; AVA = actuarial value of assets.

Preliminary 6/30/2024 Assets



Market Value of Assets

As of:	Market Value of Assets (in Billions)
June 30, 2020	\$120.5
June 30, 2021	\$148.1
June 30, 2022	\$132.0
June 30, 2023	\$137.2
June 30, 2024*	\$145.5

Five-Year Period 2019 – 2024 (in Billions)		
Benefit Payments and Expenses	Employer Contributions Collected	Member Contributions Collected
\$40.3	\$8.6	\$1.0

*Based on estimated 6/30/2024 Real Estate and Private Equity values

Benchmark Rates of Return for FYE 6/30/24

- NYSTRS long-term target investment return is 6.95%.
- U.S. and International equity returns for the 2023-2024 fiscal year were strong.
- NYSTRS' rate of return for FYE 6/30/24 will be finalized in October 2024.

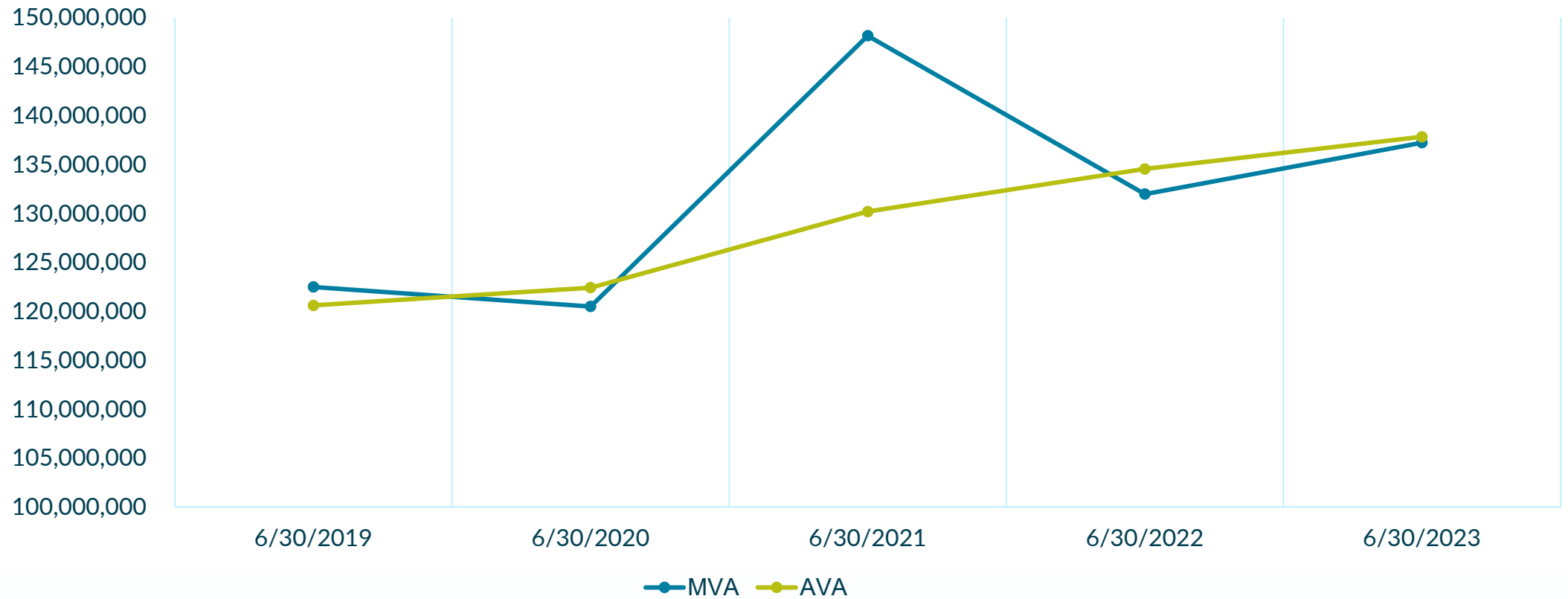
2023-2024 Fiscal Year Benchmark Rates of Return		
Domestic Equity Index	S&P 1500	23.5%
International Equity Index	ACWI ex-US	11.6%
Fixed Income Index	Barclay's US Aggregate	2.7%

Historic Rates of Return – Last Five Years

Fiscal Year	Rate of Return (net of fees)
2018 – 2019	7.1%
2019 – 2020	3.5%
2020 – 2021	29.0%
2021 – 2022	-7.1%
2022 – 2023	9.0%
5-year average:	7.6%

5-year geometric average: $[(1.071) \times (1.035) \times (1.29) \times (0.929) \times (1.09)]^{(1/5)} - 1 = 7.6\%$

Actuarial Value of Assets Development



Thirty Year Asset Summary 1994-2024

Employer Contributions
\$34.7 billion

Member Contributions
\$5.0 billion

Investment Income
\$220.0 billion



Benefit Payments and Expenses
\$154.5 billion

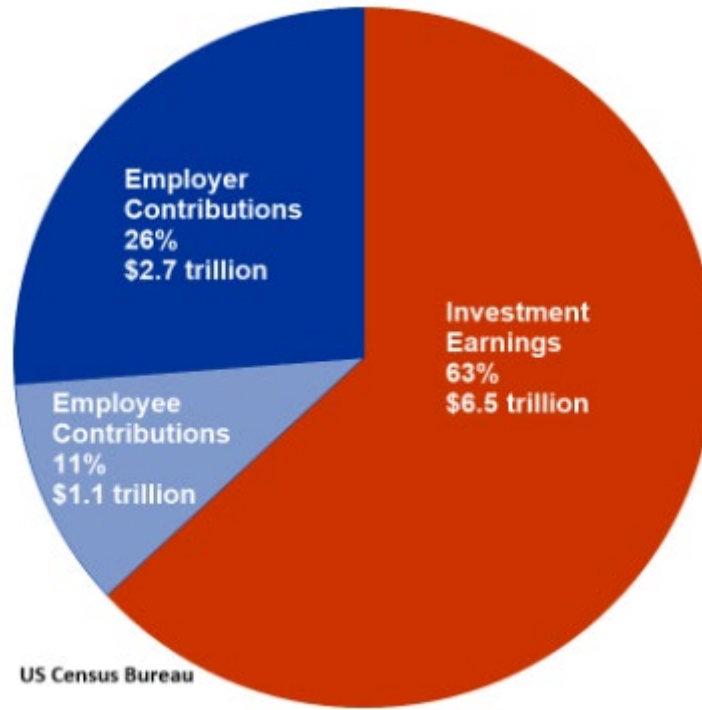


Approximate Market Value of Assets - 1994: \$40.3 B
Approximate Market Value of Assets - 2024: \$145.5 B*

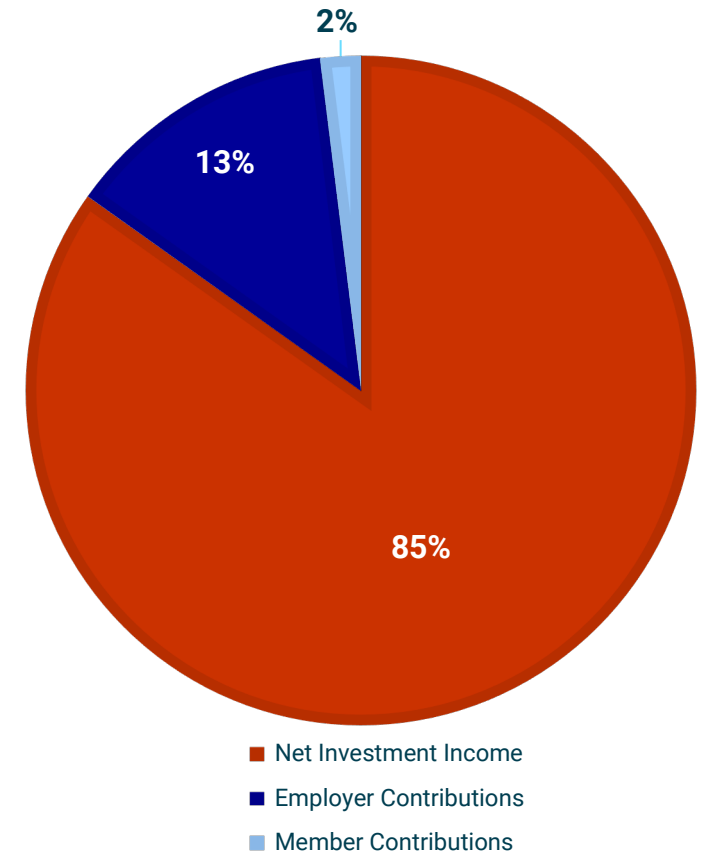
*Based on estimated 6/30/2024 Real Estate and Private Equity values

Sources of Income: 30 Years

NASRA Public Plan Database 1993-2022



NYSTRS 7/1/1994 - 6/30/2024



Peer Comparison – NYS and NYC Systems

Retirement System	ER Cont. Rate**	EE Cont. Rate
NYSTRS (current)	10.11%	3.00% – 6.00%
NYS&L ERS	15.2%	3.00% - 6.00%
NYS&L PFRS (Police/Fire)	31.2%	3.00% - 6.00%
NYC ERS*	22.6%	3.00% - 6.00% + AMC (0.90% - 6.75%)
NYC TRS	27.5%	3.00% - 6.00%
NYC Police	54.7%	3.00% - 4.00%
NYC Fire*	103.3%	3.00% + AMC (2.1%)
NYC BERS (Board of Ed.)*	19.0%	3.00% - 6.00% + AMC (1.85% - 6.25%)

Teacher Systems Peer Comparison (Assets > \$50B)

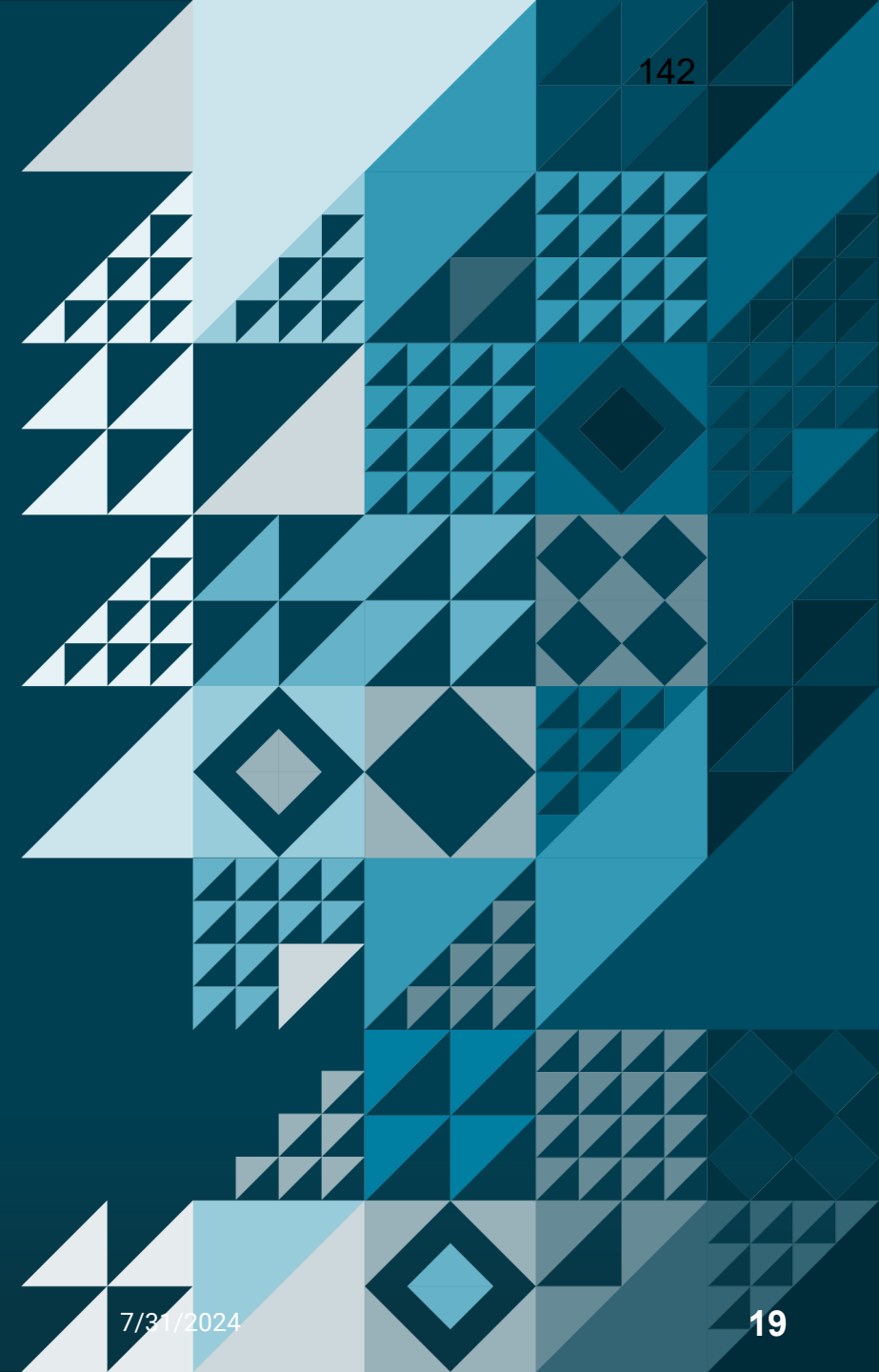
Retirement System	ER Cont. Rate	EE Cont. Rate
NYSTRS (current)	10.11%	3.00% – 6.00%
Pennsylvania School Employees	33.90%	7.37% (Average)
North Carolina Teachers & State	16.79%	6.00%
Ohio State Teachers	14.00%	14.00%
Texas State Teachers	9.46%	8.25%
California State Teachers	27.43%	10.25%
Illinois State Teachers	49.90%	9.00%
Georgia State Teachers	21.91%	6.00%

New Legislation

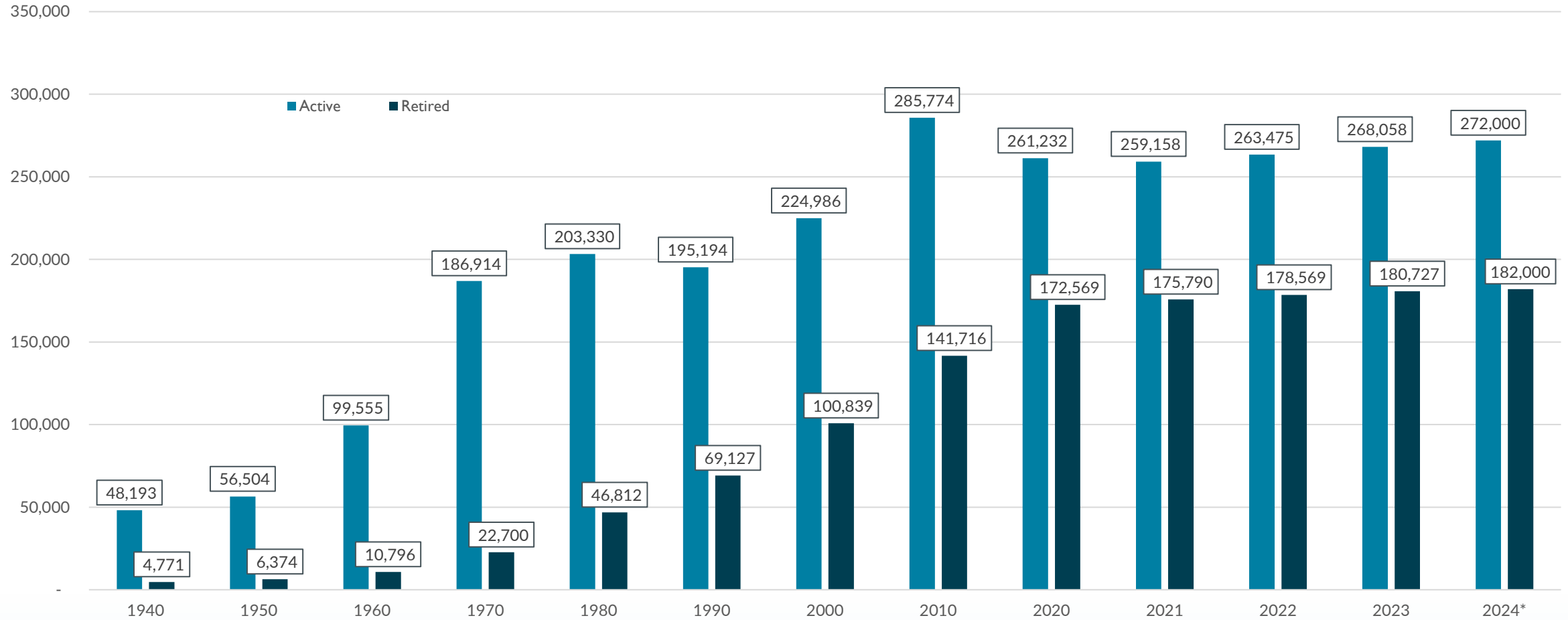
New Legislation That Impacts Plan Costs

- **Tier 6 FAS 3** - Changed definition of final average salary (FAS) to be based on the highest three years, instead of five.
- **Tier 6 Employee Contribution Rate** – employee contribution calculated on base salary only. Extended for two more years.
- **Temporary Waiver of the Earnings-After-Retirement Limit** – waiver now extended to June 30, 2025.
- The estimated annual cost of these changes is 0.13% of pay, or \$24.4 million.
- These changes will impact next year's ECR (the one following the 10.11% ECR).

Preliminary June 30, 2024 Member Data

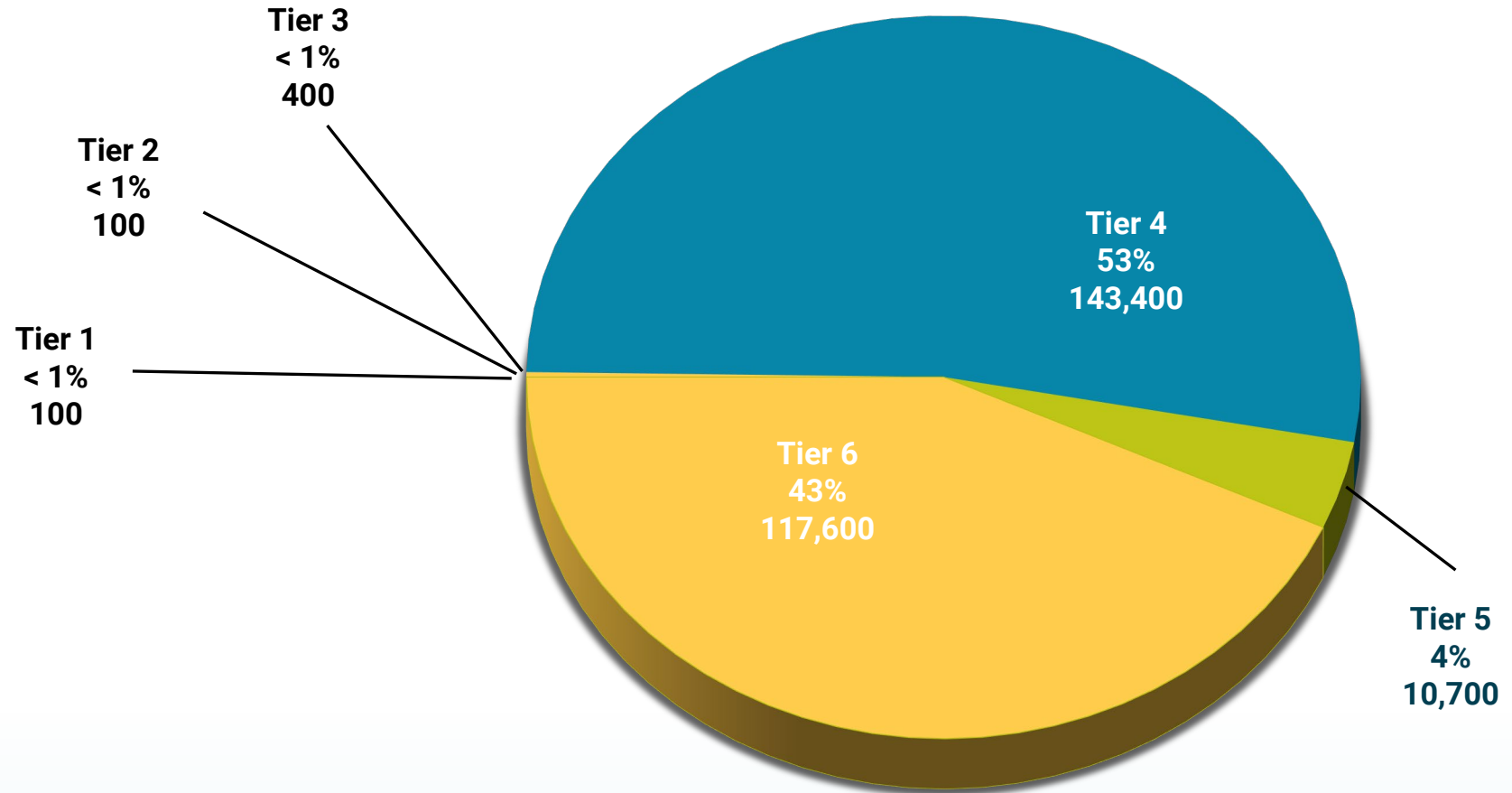


Active and Retired Member Counts



* estimated

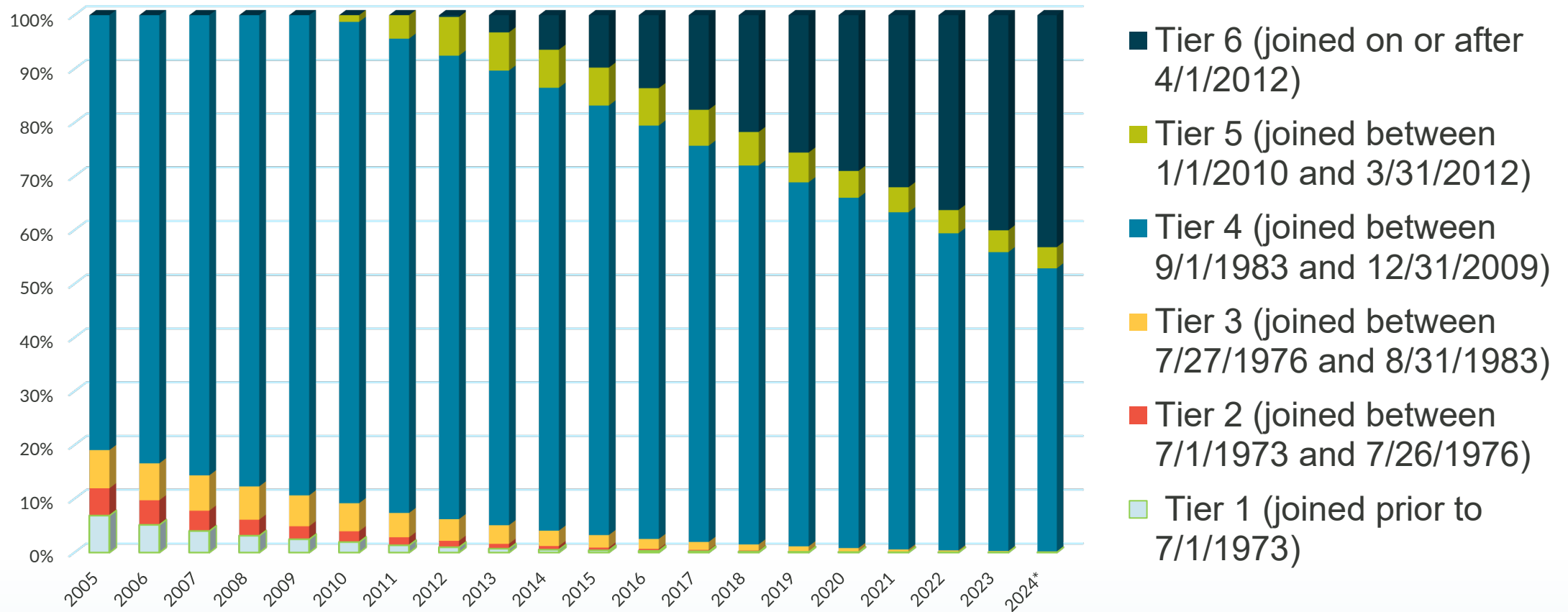
Distribution of Active Members by Tier June 30, 2024*



* estimated

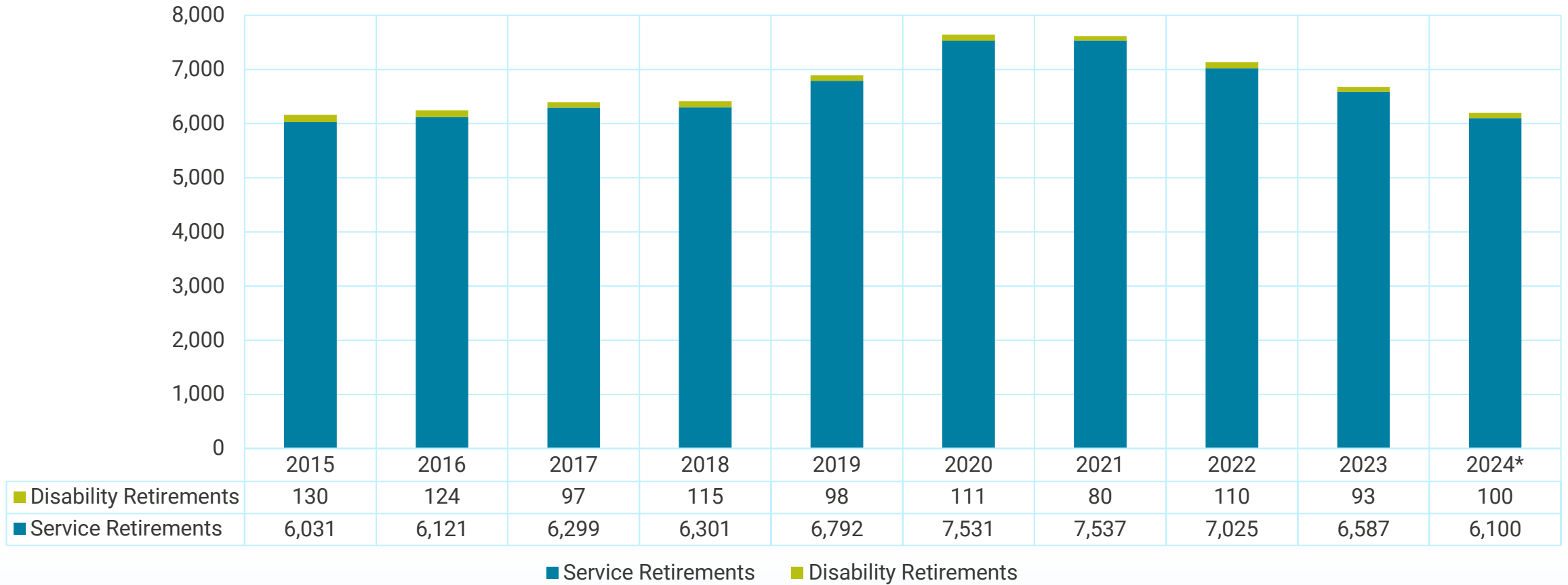
Number of Active Members by Tier

Distribution of Active Members by Tier, as of June 30th, for the Last 20 Years



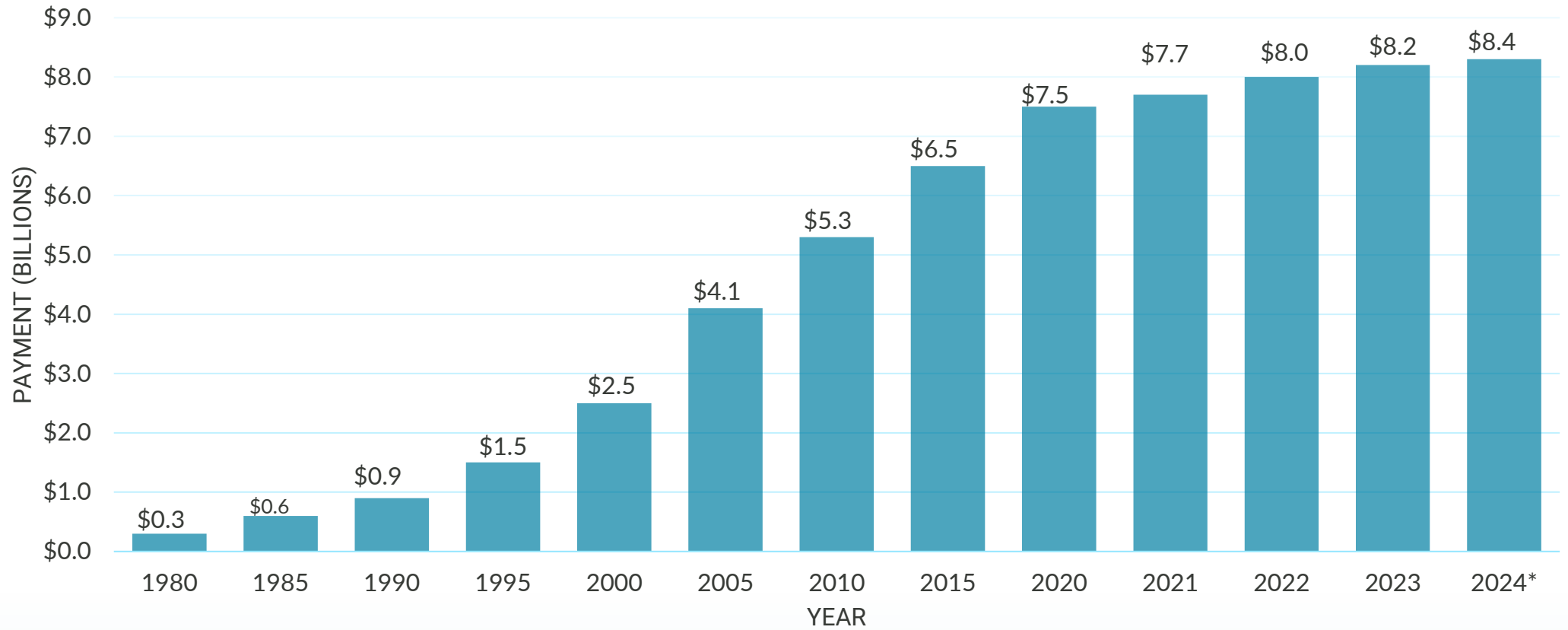
* estimated

Number of Retirements



* estimated

Annual Benefit Payments



* estimated

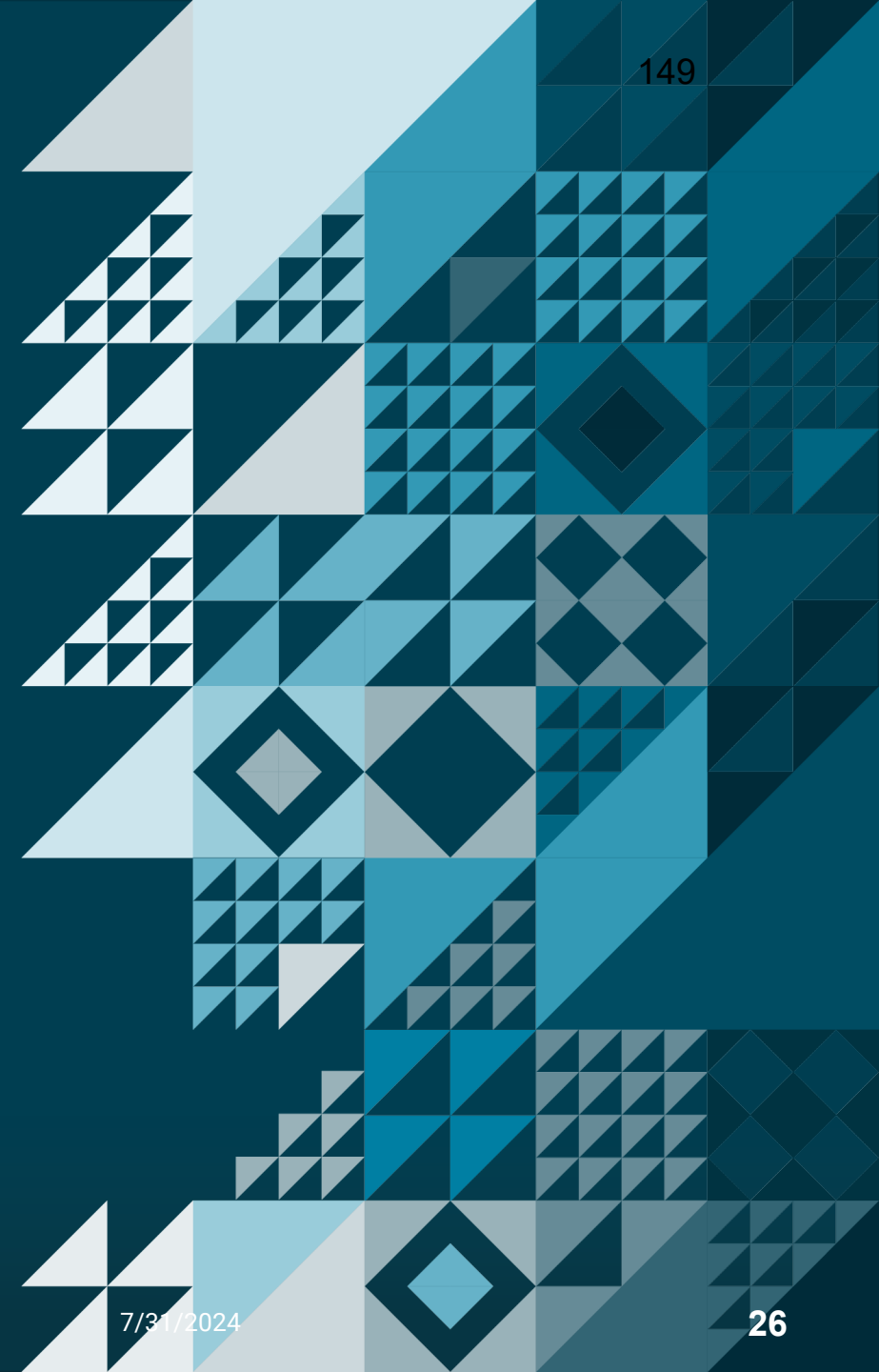
Monthly COLA Increases

	Commencing September 2024	Commencing September 2023
CPI Percentage Change for Year ended March 31	3.48%	4.98%
Applicable COLA Percentage	1.8%	2.5%
Maximum Monthly COLA Increase based on Annual Benefit Amount of \$18,000	\$27.00	\$37.50
Cumulative Maximum Monthly COLA (back to Sept. 2001)	\$508.50	\$481.50

Cost-of-living increases are paid to eligible retired members (generally the later of age 62 and retired for 5 years) and are increased each September. The annual COLA percentage is equal to 50% of the increase in the annual CPI, not to exceed 3% nor to be lower than 1%. The percentage is applied to the first \$18,000 of the maximum annual benefit.

Risk Measures 6/30/2023

Actuarial Standards of Practice



Actuarial Standard of Practice 51 Risk Scorecard

The 6/30/2023 NYSTRS risk measures are all indicative of, and consistent with, a well-funded Retirement System.

Risk Measure	6/30/2023	10-Yr Avg	Comment
Asset Volatility Ratio = Market Value of Assets / Payroll	7.4	7.4	The greater a plan's assets are relative to payroll, the more prone the plan is to ECR swings due to investment volatility.
Liability Volatility Ratio = Accrued Liability / Payroll	7.6	7.3	As plans mature, it is expected that their liability volatility ratio will grow as well.
Number of Active Members to Retirees Ratio	1.48	1.58	As a plan matures, this ratio typically decreases.
Cash Flow Ratio = (contributions minus ben. pmt's plus expenses) / Market Value Assets	-4.5%	-4.3%	As a mature, well funded plan NYSTRS has a negative cash flow as contributions coming in are less than benefits being paid out. This is typical of a well funded plan and to be expected.

Cash Flow Ratio Example: Asset Allocation (in Billions)

6/30/2023 Market Value of Assets	\$137.2
+Employer Contribution	\$1.8
+Member Contribution	\$0.2
-Benefit Payments and Expenses	(\$8.5)
+Investment Income	\$14.7
6/30/2024 Market Value of Assets*	\$145.5

*Based on estimated 6/30/2023 Real Estate and Private Equity values.

Sensitivity Analysis

Assumption	Adjustment	Resulting ECR
Current		10.11%
Assumed Rate of Return	Decrease from 6.95% to 6.70%	13.16%
Assumed Rate of Return	Decrease from 6.95% to 6.45%	16.30%
Salary Scale	Decrease of 10%	9.21%
Salary Scale	Increase of 10%	10.98%
Service Retirement Rates	Decrease of 10%	9.42%
Service Retirement Rates	Increase of 10%	10.67%
Healthy Annuitant Mortality	Decrease of 10%	11.82%
Healthy Annuitant Mortality	Increase of 10%	8.54%

- The ECR is sensitive to changes in the actuarial assumptions and is very sensitive to changes in the assumed rate of return.
- Prolonged periods of experience different than expected can lead to notable increases in the ECR.

Actuarial Standard of Practice 4 (ASOP4)

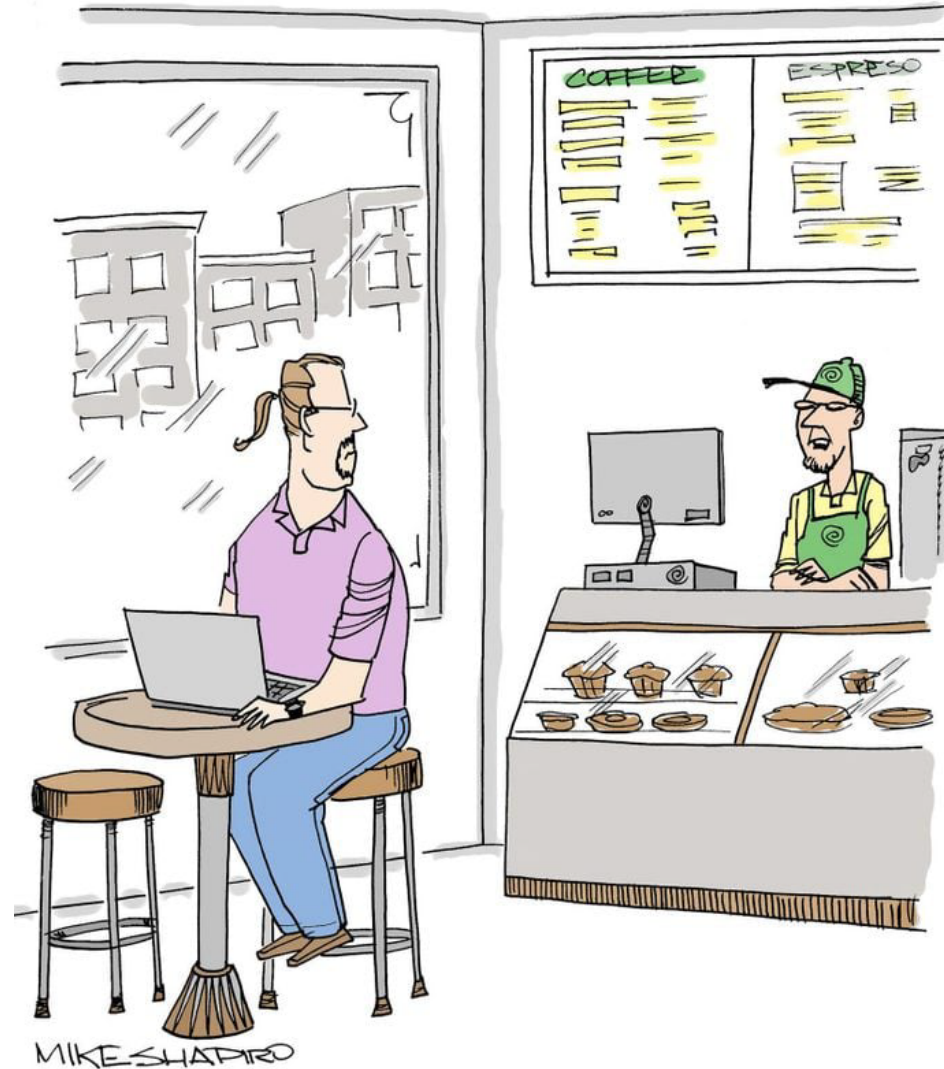
Low-Default-Risk Measure as of June 30, 2023

- A new risk measure is included in Appendix 14 of the June 30, 2023 Actuarial Valuation Report – the Low-Default Risk Obligation Measure (LDROM).
- This will **NOT** replace or change how we currently report or calculate our funded ratio or ECR. This is an **additional** risk measurement required by ASOP4 for informational purposes only.
- The difference between the plan’s Actuarial Accrued Liability (AAL) and the LDROM of approximately \$37B represents the expected taxpayer savings from investing in the plan’s diversified portfolio compared to investing only in high-quality bonds.

	Current Measure	LDROM
Interest Rate	Based on the long-term assumed rate of return for valuation purposes (6.95%)	Based on high quality bond yields - FTSE liability index of hypothetical AA zero coupon bonds (4.92%)
Liability	Actuarial Accrued Liability: 139,800,808,352	LDROM: 176,795,726,018

Questions

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“The WiFi passsword is:
‘buysomethingorgetout’.”

**NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
Executive Salary
Promotion 2024**

	Current Salary	Promotion Increase	%	Salary	Effective Date
D. Ampansiri	\$ 212,513	\$ 12,487	5.88	\$ 225,000	8/1/2024

Approved by the Retirement Board upon the recommendation of the Compensation Committee of the New York State Teacher's Retirement Board.

X

David Keefe
Board President

X

Phyllis Harrington
Chair, Compensation Committee

HOLD for Dave/Phyllis signed copy of comp attachment

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