

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 26, 2023.

The following individuals were in attendance:

Committee Members: Elizabeth Chetney, Christopher Morin (via WebEx), Oliver Robinson, Nicholas Smirensky

Board Members: Juliet Benaquisto, Eric Iberger, David Keefe (via WebEx), Ruth Mahoney

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

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

Visitor via WebEx: Pete Savage, NYSUT

The meeting was called to order by C. Morin, Chair at 8:31 a.m.

The following items were discussed:

1. Approval of the minutes of April 26, 2023

Upon motion of O. Robinson, seconded by N. Smirensky and unanimously carried, the meetings minutes of the April 26, 2023 were approved.

2. Compliance Update

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

3. Investment Risk Update and KRI Dashboard

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

Upon motion of N. Smirensky, seconded by O. Robinson and unanimously carried, the Committee went into Executive Session at 8:41 a.m. to discuss personnel matters.

With unanimous consent, the meeting came out of Executive Session at 8:56 a.m. There being no further business, the Committee unanimously adjourned at 8:58 a.m.

Respectfully submitted,



Thomas K. Lee

Risk Management Compliance Update

Matthew Albano, CFA, Chief Risk Officer

Matthew Tice, Manager, Enterprise Risk and Compliance



Compliance Inventory Board Action

Compliance Inventory Item	Owner	January	Board Meeting		
			April	July	October
Annual Reporting - Pension Government Accounting Standards Board- (GASB) 67 and 68 filing	Actuary				Reviewed at the Board Meeting
Annual Reporting - Other Post Employment Benefits- (OPEB) GASB 67 Filing	Actuary	Reviewed in the December Audit Committee			
Transfer of Reserves & Pension Reserve Factors	Actuary		Board resolution only needed if transfer hits criteria		
Approval of Disaster Recovery (DR) and Business Continuity (BC) plan changes	Administration	Board Resolution			
Approval of the Investment Policy Manual (IPM)	Executive				Board Resolution
Divest and restriction list criteria. I.E. Divest from all of the System's directly held public equity securities in companies that derive more than 10% of their revenue from thermal coal.	Executive	At Board Discretion	At Board Discretion	At Board Discretion	At Board Discretion
Annual Investment Asset Allocation	Executive		Reviewed by the Board	Board Resolution	
Signatory approval	Finance			Board Resolution	



Investment Risk Update

Risk Management

Risk Committee Meeting: July 2023

Matthew Albano, CFA, Chief Risk Officer

Ryan Ranado, CFA, Assistant Manager, Investment Risk Management

Public market data as of 5/31/2023; Private asset data as of 3/31/2023



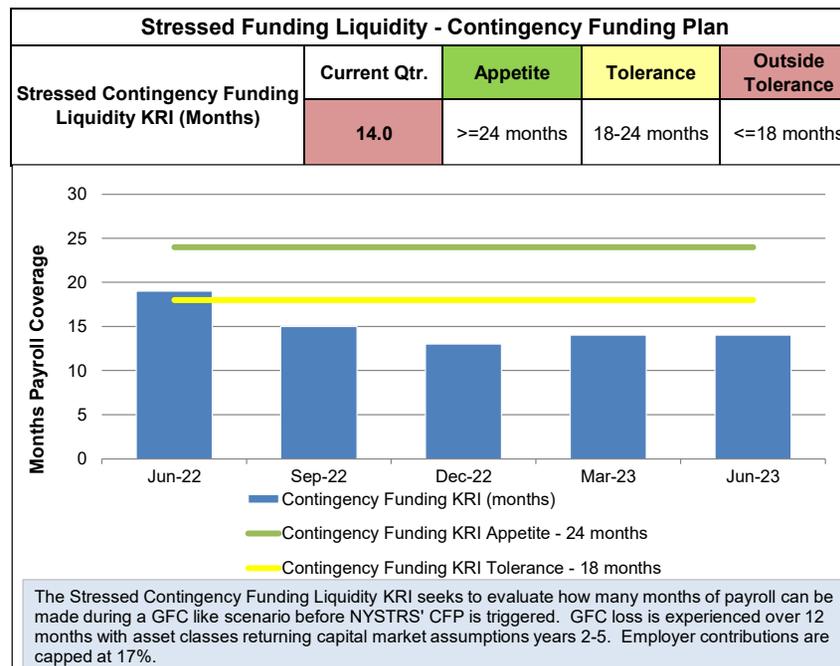
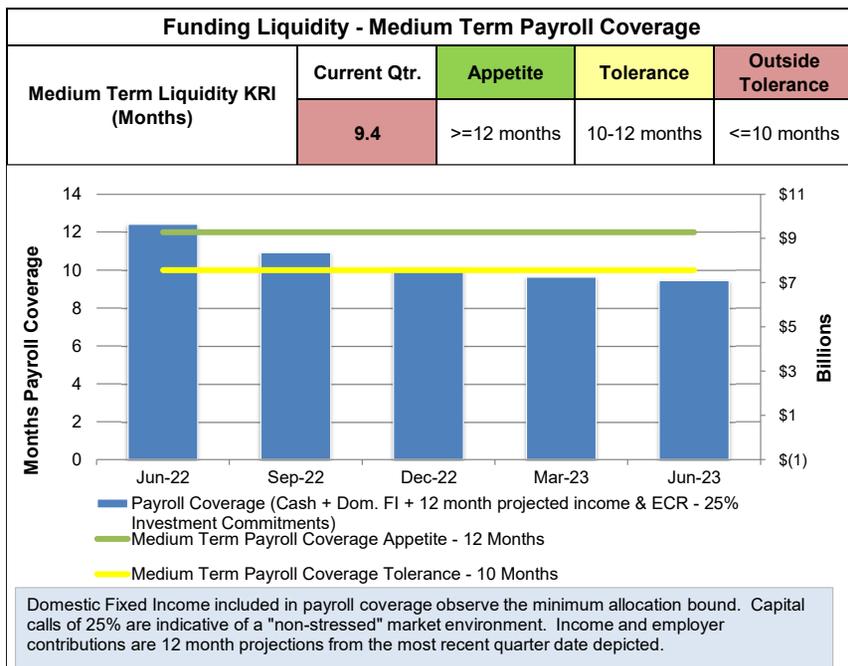
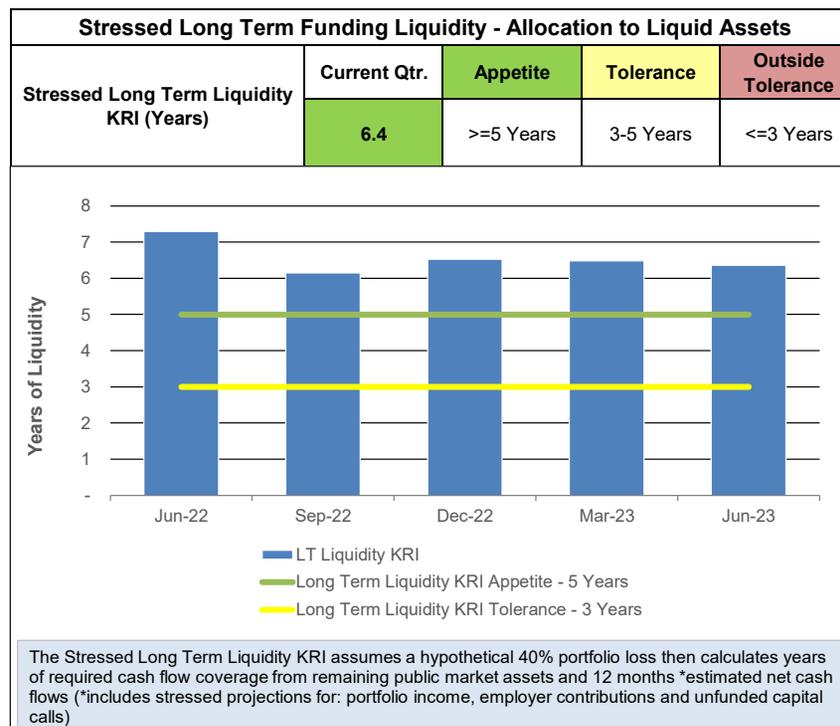
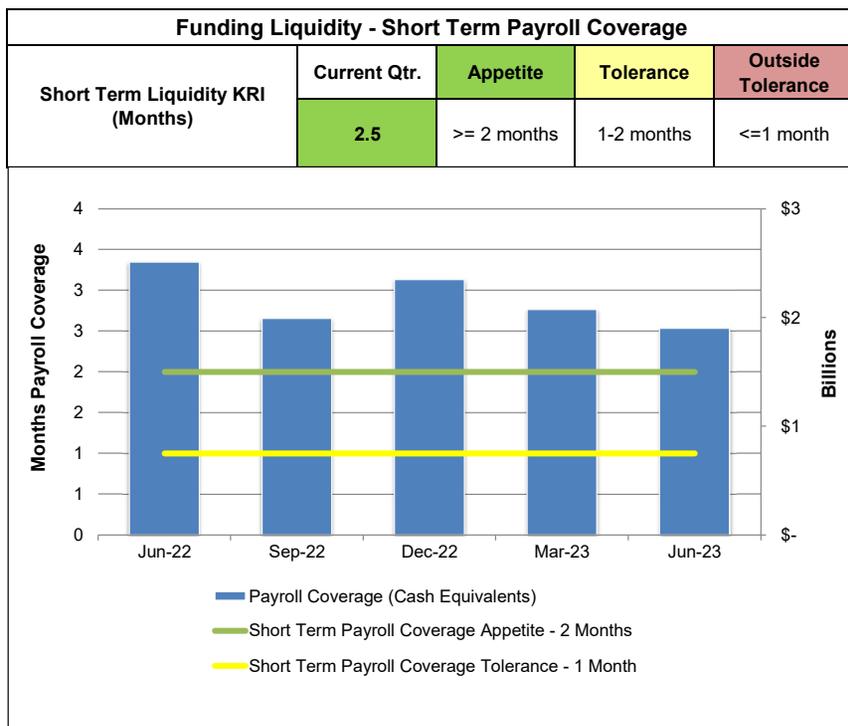
Investment Risk - Key Risk Indicators

Updates:

- Medium Term Liquidity and the Stressed Contingency Funding Liquidity continue to be "Outside Tolerance".
 - **Risk Mitigation**
 - Staff continues to execute our plan to address the liquidity KRIs and meets weekly on asset allocation
 - The Stressed Contingency Funding model assumes an extreme stressed scenario similar to the 2008-2009 Global Financial Crisis on the portfolio, beyond the current market volatility already experienced
- The plan Funded Ratio is now within our "Risk Appetite" as of 6/30/2022 with a ratio of 97.4%.
- Total Plan Risk; Tail Risk; and Risk Contributions by Asset Class, Sector, Geography, and Factor are as expected

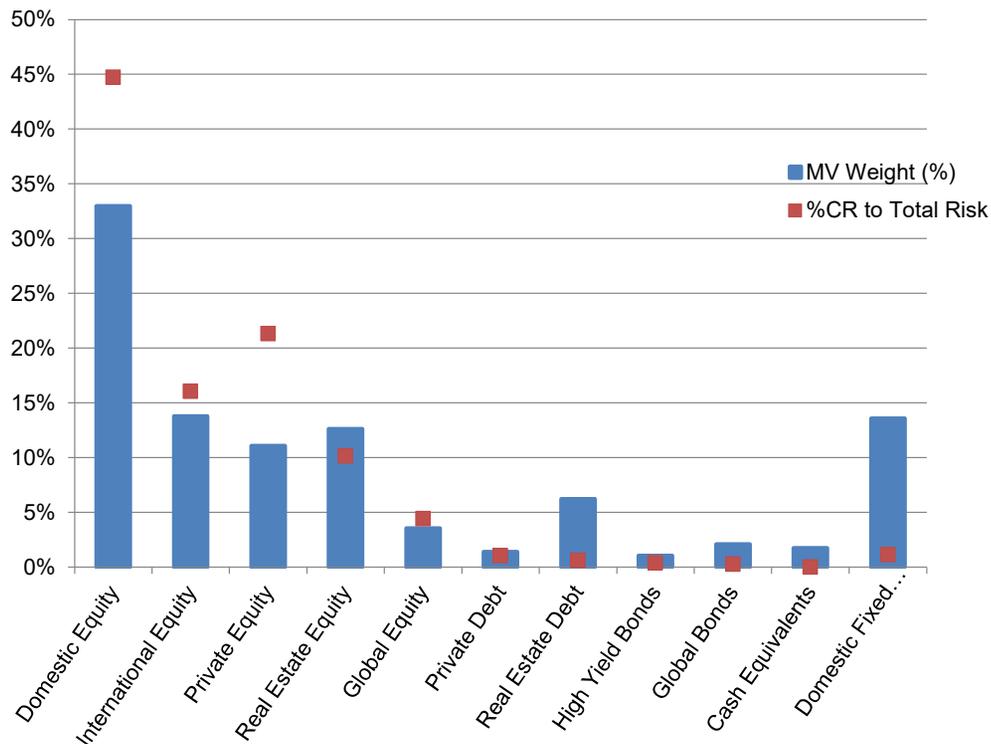
Key Risk Indicator	Outside Tolerance	Risk Tolerance	Risk Appetite	Current Assessment
Asset Allocation (Market Risk Management)	One or More Asset Classes Out of Bounds	One or More Asset Classes Outside of Policy During Transition Period	All Asset Classes within Policy Range	All Asset Classes within Policy Range
Net Benefit Payments as % of Assets (Liquidity)	>10%	>5 - 10%	<= 5%	4.7%
Short Term Liquidity (Liquidity)	<= 1 Month	1 - 2 Months	>= 2 Months	2.5 Months
Medium Term Liquidity (Liquidity)	<= 10 Months	10 - 12 Months	>= 12 Months	9.4 Months
Stressed Contingency Funding Liquidity (Liquidity)	<= 18 Months	18 - 24 Months	>= 24 Months	14 Months
Stressed Long Term Liquidity (Liquidity)	<= 3 Years	3 - 5 Years	>= 5 Years	6.4 Years
Funded Ratio: Market Value of Total Plan Assets (Unfunded Liability)	<80% or >120%	80 - 90% or 110 - 120%	90 - 110%	97.4% (6/30/2022)
ECR Volatility (Unfunded Liability)*	Δ +/- >3%	Δ +/- 2 - 3%	Δ +/- 2%	-0.53% (6/30/2022)
ECR Level (Unfunded Liability)*	<4% or >17%	4 - 6% or 12 - 17%	6 - 12%	9.76% (6/30/2022)
Actuarial Valuation: Quinquennial 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 (10/27/2022)

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



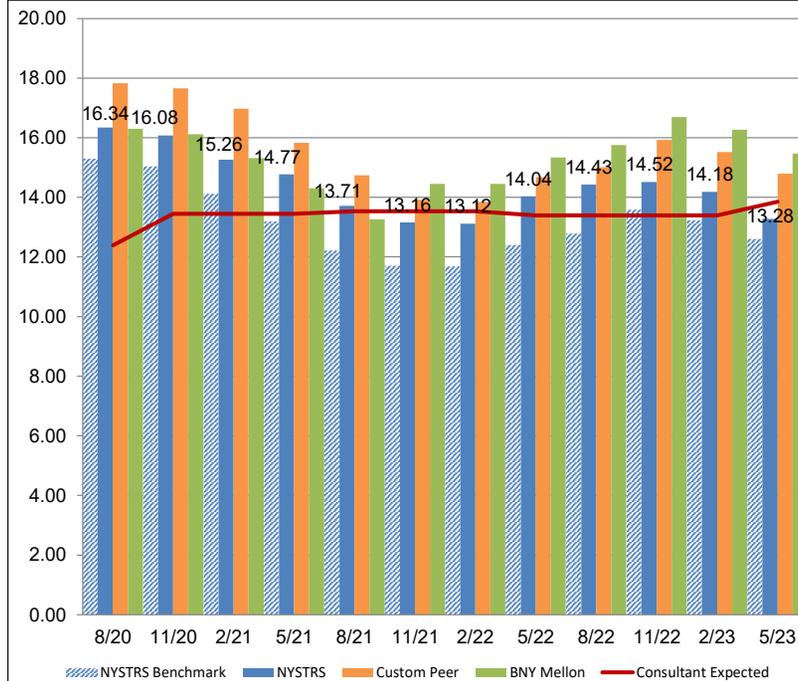
Total Predicted Risk by Asset Class

Asset class contributions to Total Predicted Risk are in line with expectations, with equity investments being the largest contributors.



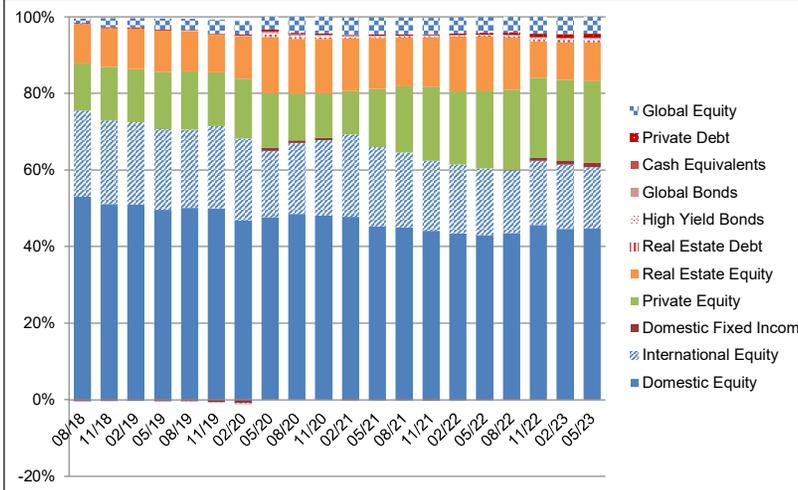
Total Predicted Risk and Peer Comparison

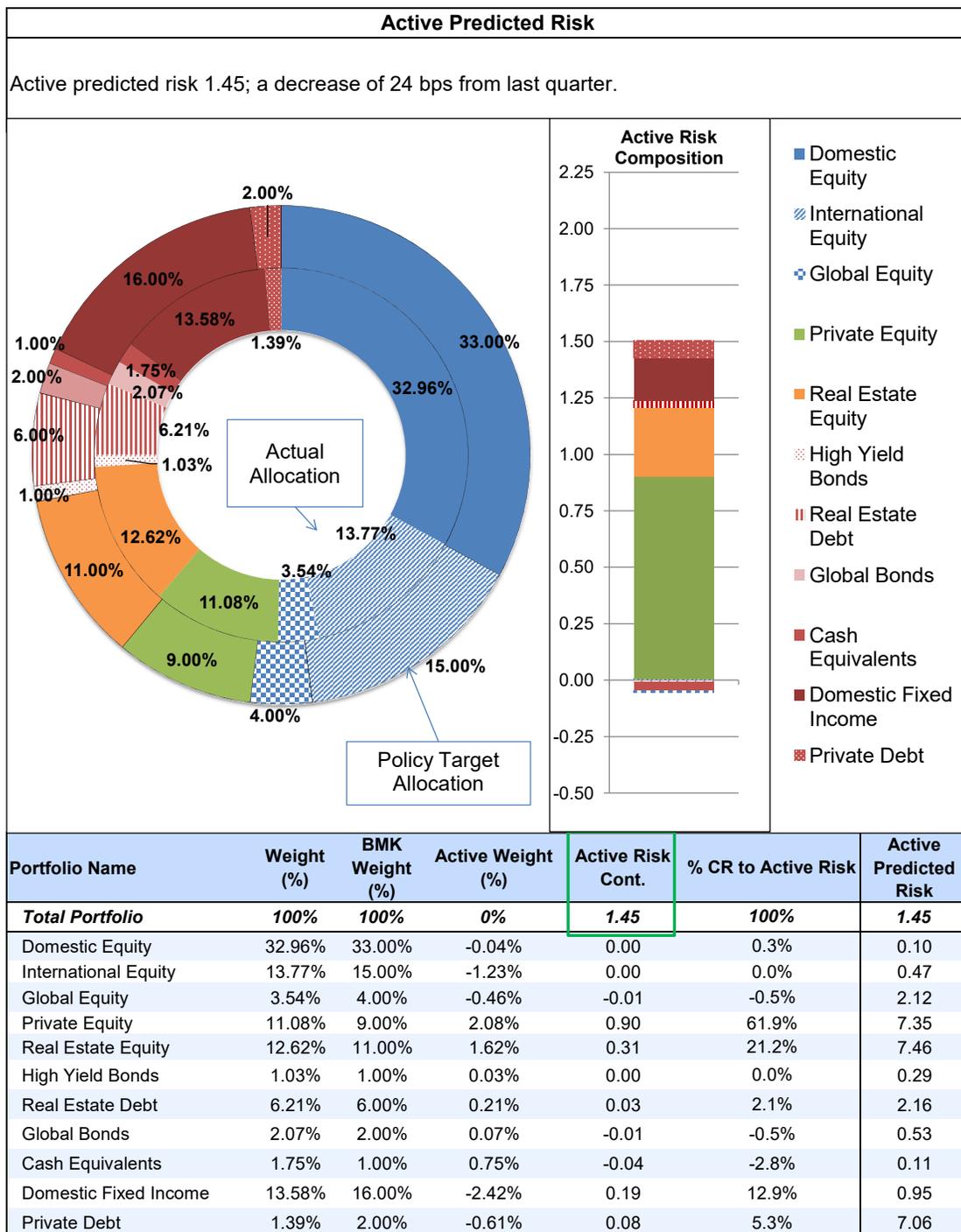
Long term expected risk target 13.86%; short term predicted risk 13.28%



Portfolio Name	Market Value (Millions \$)	Weight (%)	%CR to Total Risk	Total Plan Risk Cont.	Total Predicted Risk
Total Portfolio	\$ 131,097	100%	100%	13.28	13.28
Domestic Equity	\$ 43,209	32.96%	44.72%	5.94	18.73
International Equity	\$ 18,053	13.77%	16.03%	2.13	17.29
Private Equity	\$ 14,520	11.08%	21.32%	2.83	30.28
Real Estate Equity	\$ 16,547	12.62%	10.13%	1.35	12.99
Global Equity	\$ 4,641	3.54%	4.40%	0.58	17.05
Private Debt	\$ 1,818	1.39%	1.04%	0.14	11.62
Real Estate Debt	\$ 8,142	6.21%	0.61%	0.08	3.25
High Yield Bonds	\$ 1,355	1.03%	0.37%	0.05	6.53
Global Bonds	\$ 2,714	2.07%	0.26%	0.03	5.89
Cash Equivalents	\$ 2,291	1.75%	0.00%	0.00	0.11
Domestic Fixed Income	\$ 17,806	13.58%	1.11%	0.15	5.61

Historical Total Predicted Risk Contribution





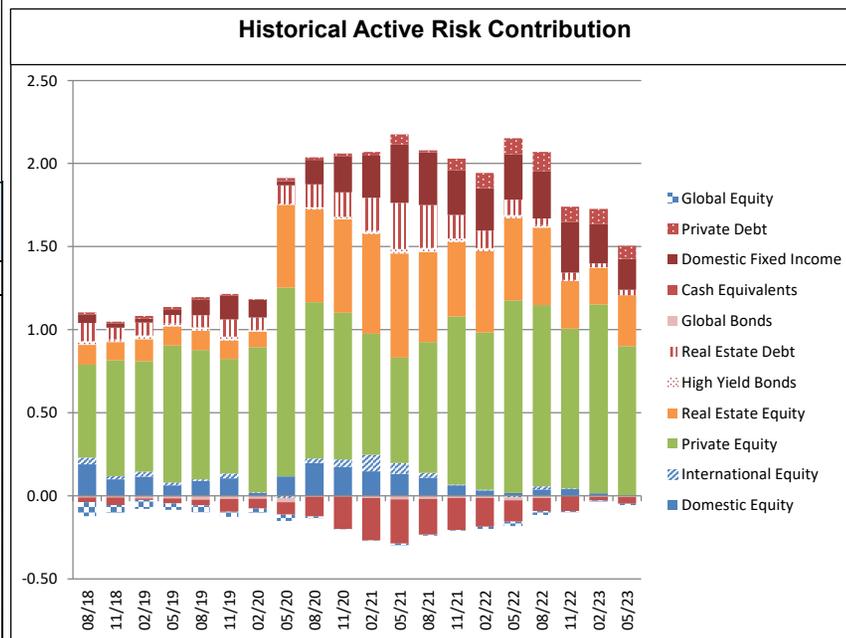
Active Predicted Risk:

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.

Observations:

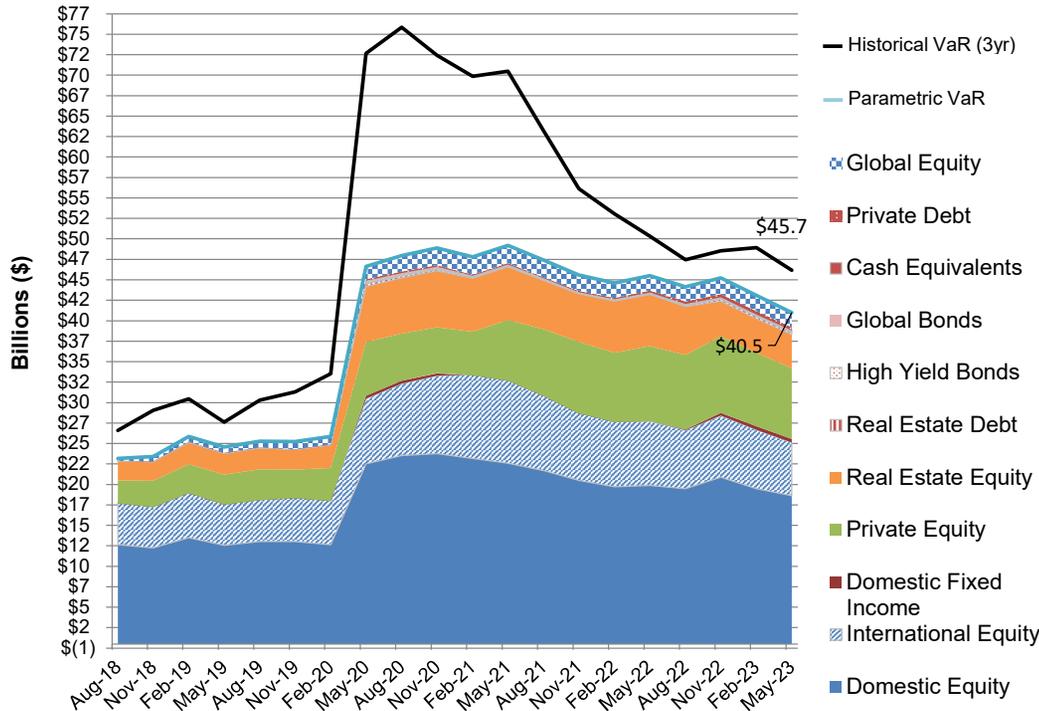
Active Risk for the Fund is largely controlled by limiting the difference between the actual and policy benchmark (target) weights for each asset class.

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



Value at Risk Contribution by Asset Class

VaR metrics remain elevated as a result of recent market volatility, but have been slowly coming down. NYSTRS' strong liquidity position provides significant downside protection against realized portfolio losses.



Portfolio Name	Total Portfolio VaR	Diversification Benefit	\$ Contribution to VaR (millions)	%Contribution to VaR
Total Portfolio	\$47,169	-\$6,667	\$40,503	100%
Domestic Equity	\$18,823		\$18,113	44.72%
International Equity	\$7,259		\$6,493	16.03%
Private Equity	\$10,228		\$8,635	21.32%
Real Estate Equity	\$5,001		\$4,103	10.13%
High Yield Bonds	\$206		\$150	0.37%
Real Estate Debt	\$616		\$248	0.61%
Global Bonds	\$372		\$103	0.26%
Cash Equivalents	\$6		\$0	0.00%
Domestic Fixed Income	\$2,325		\$451	1.11%
Private Debt	\$492		\$423	1.04%
Global Equity	\$1,841		\$1,783	4.40%

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.

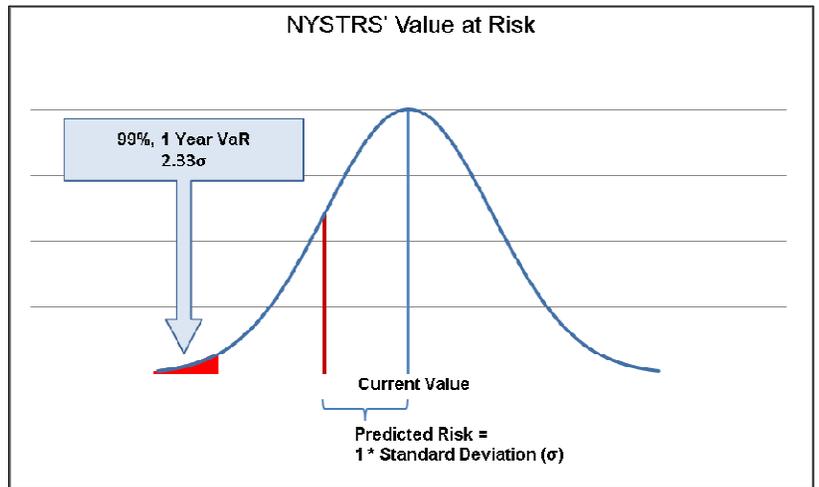
Methods Used:

- ▶ **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:

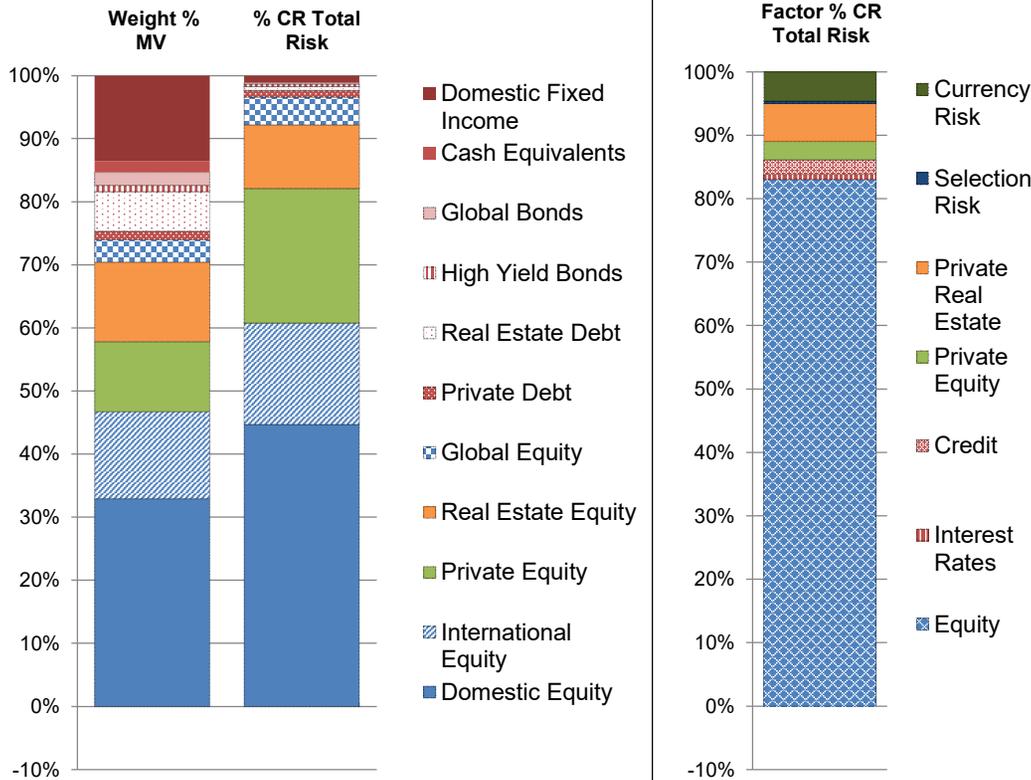
Funding Liquidity Assumptions	Months Coverage	
	5/31/2022	5/31/2023
Cash + Domestic Fixed Income	6.1 to 9.8	5.8 to 9
Portfolio Income/Maturities	7.9	6.0
Employer Contributions	2.6	2.9
Capital Calls	-9.8	-8.8
Total Payroll Coverage	7 to 11	6 to 8

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 scenarios market bottom and do not incorporate expected cash flows or market recovery. (*Net Benefit Payments=Annual Benefit Payments-Employer & Employee Contributions)

Total Predicted Risk by Risk Factor

As expected, equity markets are the largest contributor to the Plan's total risk.



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.

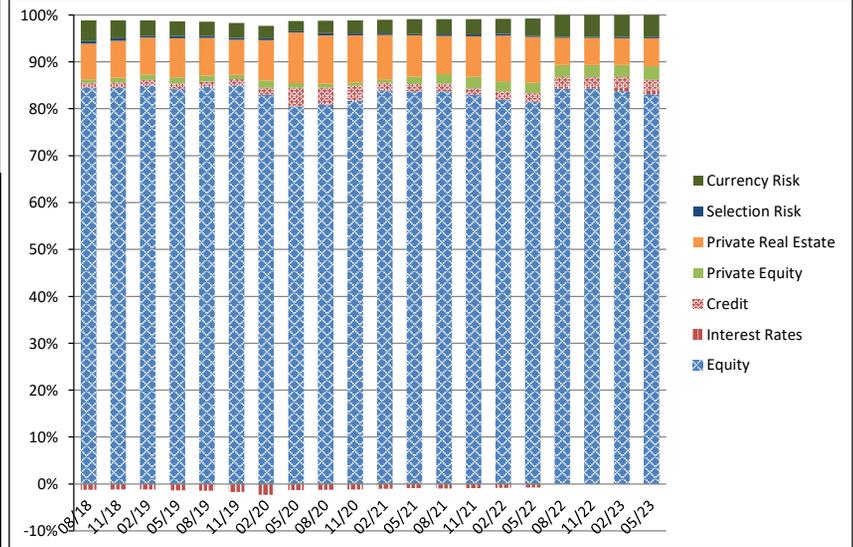
All of NYSTRS holdings are modeled according to their exposures to individual risk factors.

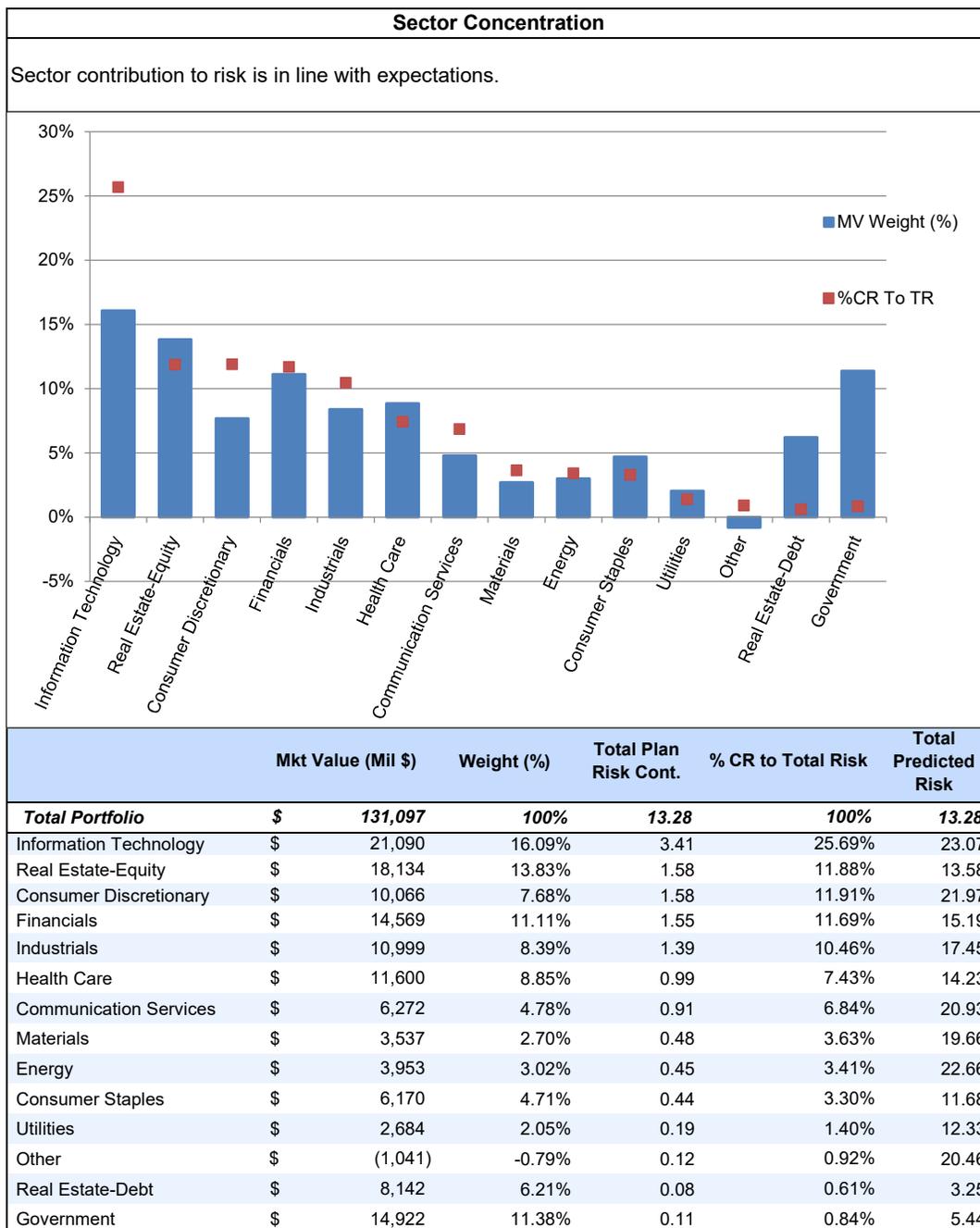
Observations:

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

Risk Source	Total Plan Risk Cont.	%CR to Total Risk	BMK Risk Cont.	BMK %CR to Total Risk	% CR to Active Risk
Total Risk	13.28	100%	12.60	100.00%	100%
Local Market Risk	12.67	95.38%	12.02	95.44%	97.74%
Common Factor Risk	12.62	95.02%	11.96	94.92%	88.01%
Equity	11.03	83.06%	9.84	78.12%	44.14%
Interest Rates	0.11	0.80%	0.20	1.55%	7.01%
Credit	0.30	2.29%	0.37	2.95%	-1.98%
Private Equity	0.38	2.86%	0.15	1.21%	36.65%
Private Real Estate	0.80	6.00%	1.40	11.08%	2.20%
Selection Risk	0.05	0.36%	0.07	0.52%	9.73%
Currency Risk	0.61	4.62%	0.57	4.56%	2.26%

Historical Risk Factor Contribution to Total Risk





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.

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. ¹

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.

¹Investopedia

"Other" primarily consists of Cash, Private Equity fund liabilities; fund of funds; derivatives; and asset backed securities.

Geographic Region Concentration						
Total developed and emerging market regions are within 1.0% of benchmark.						
Geographic Region*	Mkt Value (Mil \$)	Weight (%)	Bmk Weight (%)	Active Weight (%)	Total Plan Risk Cont.	Total Predicted Risk
Total Portfolio	\$ 131,097	100%	100%	0%	13.28	13.28
Total Developed	\$ 122,734	93.62%	93.65%	-0.03%	12.47	13.34
United States	\$ 101,189	77.19%	78.93%	-1.75%	9.84	12.93
Europe and Middle East	\$ 13,620	10.39%	9.12%	1.27%	1.81	19.62
Japan	\$ 3,411	2.60%	2.63%	-0.03%	0.30	17.49
Pacific ex Japan	\$ 2,093	1.60%	1.43%	0.17%	0.27	20.93
Canada	\$ 2,421	1.85%	1.55%	0.30%	0.25	15.31
Total Emerging	\$ 7,344	5.60%	5.73%	-0.13%	0.78	17.82
Asia	\$ 5,881	4.49%	4.78%	-0.29%	0.57	17.47
EMEA	\$ 685	0.52%	0.45%	0.07%	0.10	29.15
Latin America	\$ 778	0.59%	0.50%	0.10%	0.11	27.91
Total Other	\$ 1,020	0.78%	0.62%	0.16%	0.03	4.49
Rest of the World	\$ 817	0.62%	0.35%	0.27%	0.01	2.82
Frontier Market	\$ 202	0.15%	0.26%	-0.11%	0.01	18.97
N/A	\$ 0	0.00%	0.00%	0.00%	0.01	-

Observations:

As expected, the largest contribution on a geographic basis comes from NYSTRS exposure to U.S. investments.

*See appendix for countries included in each geographic region.

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 26, 2023**

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 26, 2023.

Nicholas Smirensky, Chair, called the meeting to order at 8:58 a.m.

ATTENDANCE:

Investment Committee Members

Elizabeth Chetney, David Keefe (via WebEx), Jennifer Longtin, Ruth Mahoney, Christopher Morin (via WebEx), Nicholas Smirensky

Board Members

Juliet Benaquisto, Phyllis Harrington (via WebEx), Eric Iberger, Oliver Robinson

Staff

Thomas Lee, Margaret Andriola, Gerald Yahoudy, Don Ampansiri, Kathy Ebert, Richard Young, Beth Dellea, Miriam Dixon, Michael Federici, Vijay Madala, Dave Gillan, Paul Cummins, Danny Malavé, Matt Albano, Emily Ekland, Han Yik, Melody Prangle, Kevin Maloney, Aaron VanDerwiel, Jeff Shubert, Ben Keezer, Justin Milanese, Wanette Alston, Stacey Lesser Meehan

System Consultants

Callan – Tom Shingler, Lauren Sertich

StepStone – Jose Fernandez, Scott Schwind

Visitors via WebEx:

Steve Huber, Sean Atkinson, Peter Cosgrove, Pete Savage, NYSUT; Greg Gethards, PEI Media

T. Lee and N. Smirensky introduced the first-ever NYSTRS' Investment Fellows: Christopher Brown (Private Equity), Matthew Hernandez (Public Equities), Renee Ong (Fixed Income) and Yusuf Oluwadamola (Real Estate). The inaugural investment fellowship program, open to recent college graduates, is designed to provide hands-on training in NYSTRS' four investment departments: Fixed Income, Private Equity, Public Equities and Real Estate. Fellows will also learn about the System's investment operations functions. The program is a two-year paid fellowship and at its conclusion, fellows will have obtained the necessary experience to qualify and apply for a permanent investment officer position at NYSTRS.

Approval of Minutes

A. Approval of Minutes of April 26, 2023 Investment Committee Meeting

There being no changes or corrections and upon motion of R. Mahoney, seconded by D. Keefe and unanimously carried, the minutes of the April 26, 2023 Investment Committee meeting were approved.

Staff Updates

1. Investment Committee Executive Summary (Appendix A, pp. 8-14)
2. Public Equities Update (Appendix B, p. 15)
3. Fixed Income Update (Appendix C, p. 16)
4. Real Estate Update (Appendix D, pp. 17-19)
5. Private Equity/Debt Update (Appendix E, p. 20)

6. Callan Update

T. Shingler from Callan reviewed Callan's recommendation for no changes to the NYSTRS' asset allocation at the present time (Appendix F, pp. 21-38).

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.

Policy Review and Action

A. Consent Agenda Item #1 and #2 (Appendix G, pp. 39-40)

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 #1 and #2 together, with one motion:

Upon motion of R. Mahoney, seconded by J. Longtin and unanimously carried, the Committee voted to recommend the following resolutions (consent agenda items # 1 and #2) 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, 2023.

- 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, 2023
Brookfield Investment Management Inc.	August 15, 2023
AEW Capital Management, L.P.	September 12, 2023
Dimensional Fund Advisors, L.P.	September 22, 2023

- 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, 2023.

- 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, 2023.

- Prima Capital Advisors

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the System’s contract with Prima Capital 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, 2023.

- 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, 2023.

- 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, 2023.

2. Reappointment of Risk Advisors

- Resolution Reappointing Sean William Atkinson

WHEREAS, The term of Mr. Atkinson as an advisor to the Risk Committee expires on July 28, 2023; be it

RESOLVED, That the Retirement Board hereby reappoints Mr. Atkinson as an advisor to the Risk Committee effective immediately, with term expiring December 31, 2026.

- Resolution Reappointing Peter K. Cosgrove

WHEREAS, The term of Mr. Cosgrove as an advisor to the Risk Committee expires on July 28, 2023; be it

RESOLVED, That the Retirement Board hereby reappoints Mr. Cosgrove as an advisor to the Risk Committee effective immediately, with term expiring December 31, 2026.

- Resolution Reappointing Steven C. Huber

WHEREAS, The term of Mr. Huber as an advisor to the Risk Committee expires on July 28, 2023; be it

RESOLVED, That the Retirement Board hereby reappoints Mr. Huber as an advisor to the Risk Committee effective immediately, with term expiring December 31, 2026.

3. Resolution on Investment Discretion

Upon motion of J. Longtin, seconded by R. Mahoney 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 2022 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.

4. Resolution on Asset Allocation

Upon motion of J. Longtin, seconded by R. Mahoney 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%

Informational reports

- The Committee reviewed the following informational reports: EDCIO Investment Discretion Report (Appendix H, pp. 41-43) and Mail Vote Quarterly Board Report (Appendix I, p. 44).

There being no further business and with unanimous consent, the Committee adjourned at 11:42 a.m.

Respectfully submitted,



Thomas K. Lee

Investment Committee Executive Summary

Office of the CFO: Investment Operations Department

Investment Committee Meeting: July 26, 2023

Margaret Andriola, CIPM, CPA
Chief Financial Officer



Investment Committee Executive Summary

Market Value Summary ('000s)

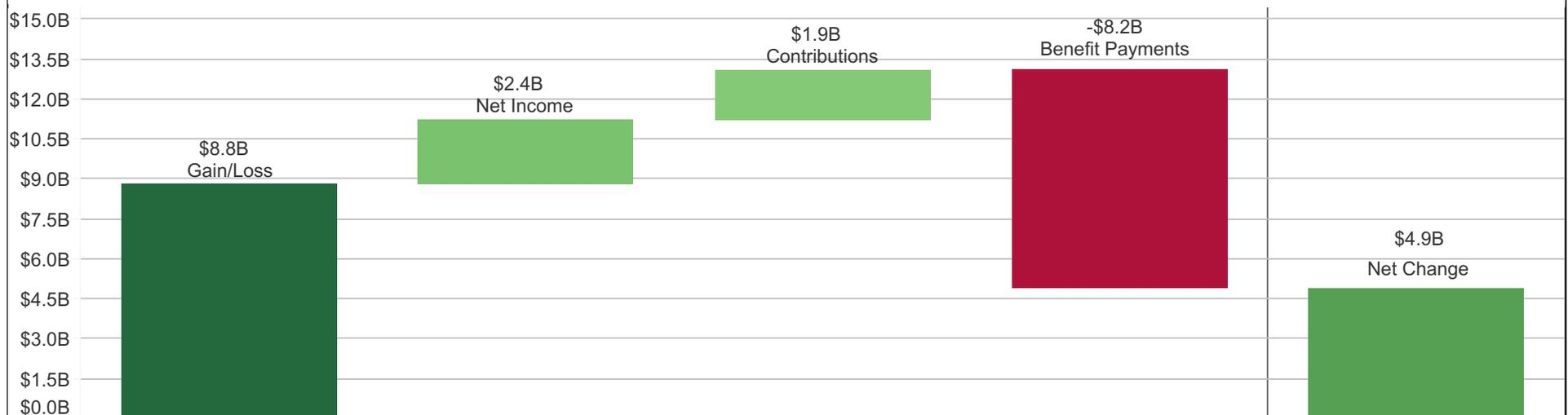
Asset Category	Asset Class	June 30, 2023		March 31, 2023		June 30, 2022	
		Net Asset Value	% Net Asset Value	Net Asset Value	% Net Asset Value	Net Asset Value	% Net Asset Value
Equity	Domestic Equity	\$45,854,870	34.0%	\$43,913,364	33.2%	\$41,996,869	32.3%
	International Equity	\$18,812,576	13.9%	\$19,253,326	14.6%	\$19,595,506	15.1%
	Global Equity	\$4,926,176	3.7%	\$4,634,117	3.5%	\$4,226,308	3.3%
	Real Estate Equity	\$16,673,148	12.4%	\$16,518,879	12.5%	\$16,501,073	12.7%
	Private Equity	\$15,037,427	11.1%	\$14,425,621	10.9%	\$14,073,681	10.8%
	Asset Category Subtotal	\$101,304,198	75.1%	\$98,745,306	74.8%	\$96,393,437	74.1%
Fixed Income	Domestic Fixed Income	\$18,194,259	13.5%	\$17,571,336	13.3%	\$18,358,958	14.1%
	Global Bonds	\$2,697,024	2.0%	\$2,710,005	2.1%	\$2,889,172	2.2%
	High Yield	\$1,381,448	1.0%	\$1,214,585	0.9%	\$974,221	0.7%
	Real Estate Debt	\$7,588,876	5.6%	\$8,073,659	6.1%	\$7,708,371	5.9%
	Private Debt	\$1,986,765	1.5%	\$1,833,473	1.4%	\$1,424,443	1.1%
	Cash & Short Term Debt	\$1,750,709	1.3%	\$1,940,012	1.5%	\$2,272,389	1.7%
Asset Category Subtotal	\$33,599,081	24.9%	\$33,343,070	25.2%	\$33,627,553	25.9%	
Total Plan		\$134,903,279	100.0%	\$132,088,376	100.0%	\$130,020,990	100.0%

Due to rounding, numbers may not sum to 100%

Components of Change in Total Investments

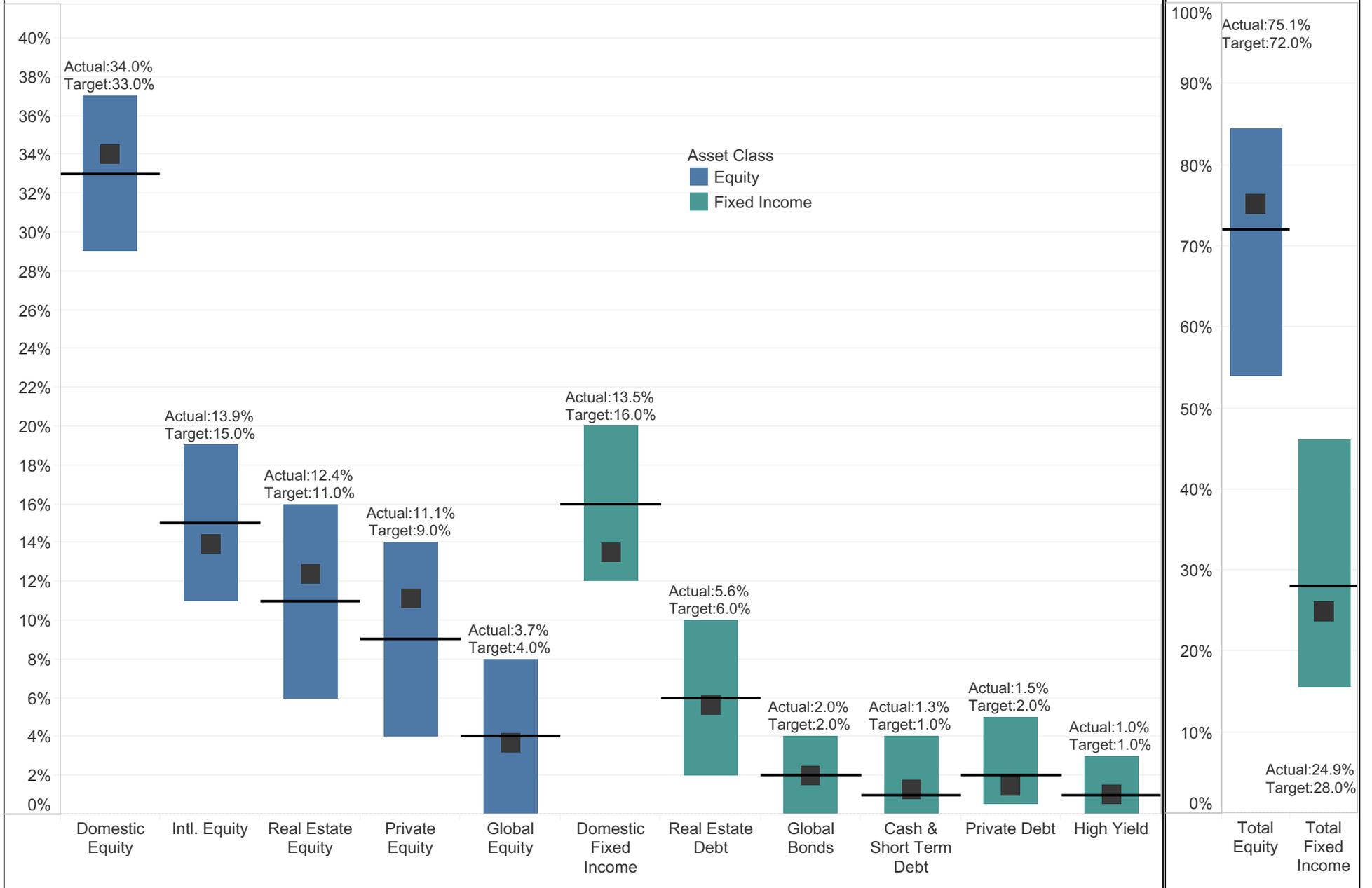
FYTD: 7/1/2022 to 6/30/2023

\$130.0B to \$134.9B



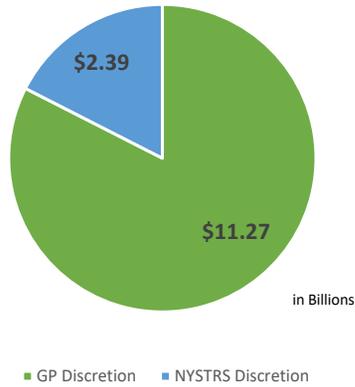
NYSTRS' Asset Allocation: \$134.9B (June 30, 2023)

Equity vs. Debt

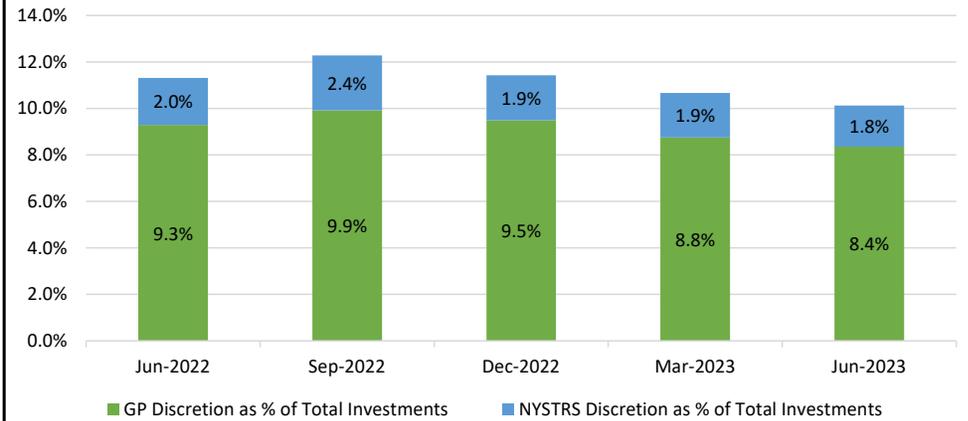


Unfunded Commitments - Private Assets

Total Unfunded Commitments at 6/30/2023 \$13.7B



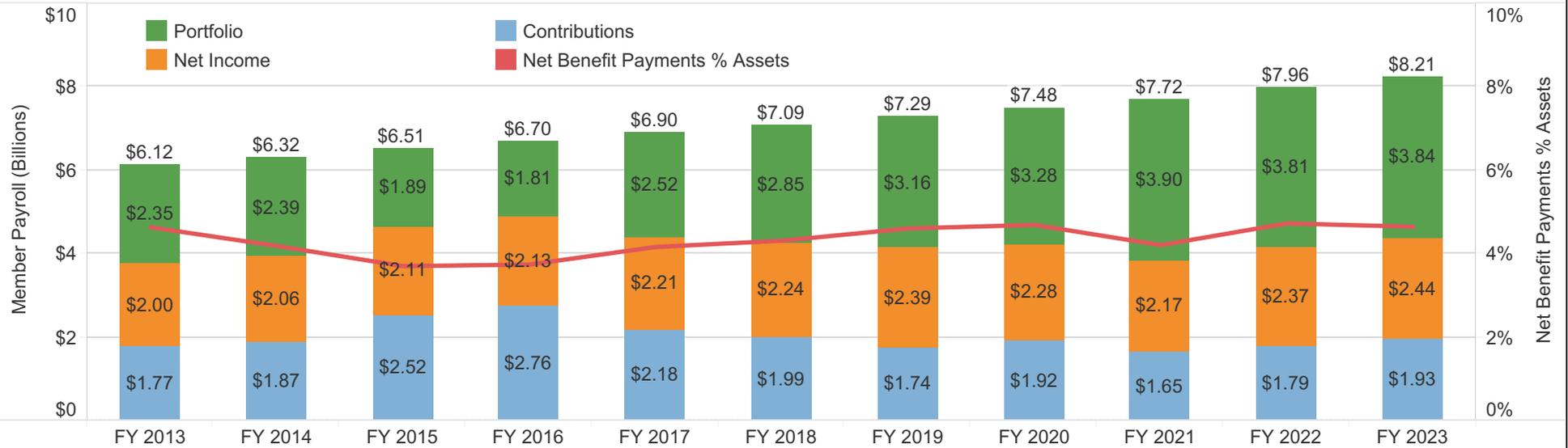
Unfunded Commitments - GP vs. NYSTRS Discretion



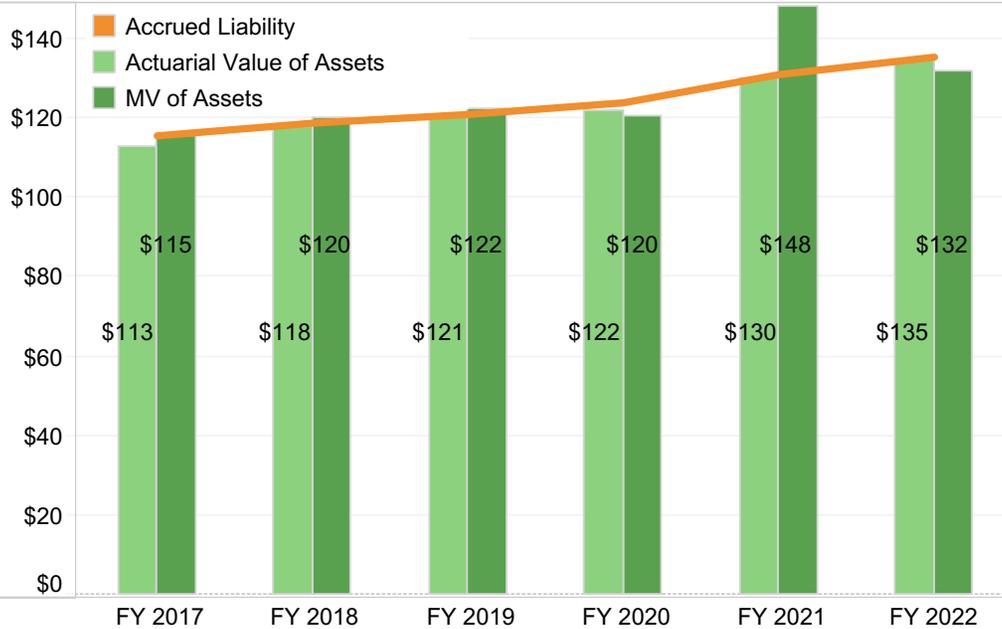
Unfunded Commitments - by Asset Class and % of Total Investments



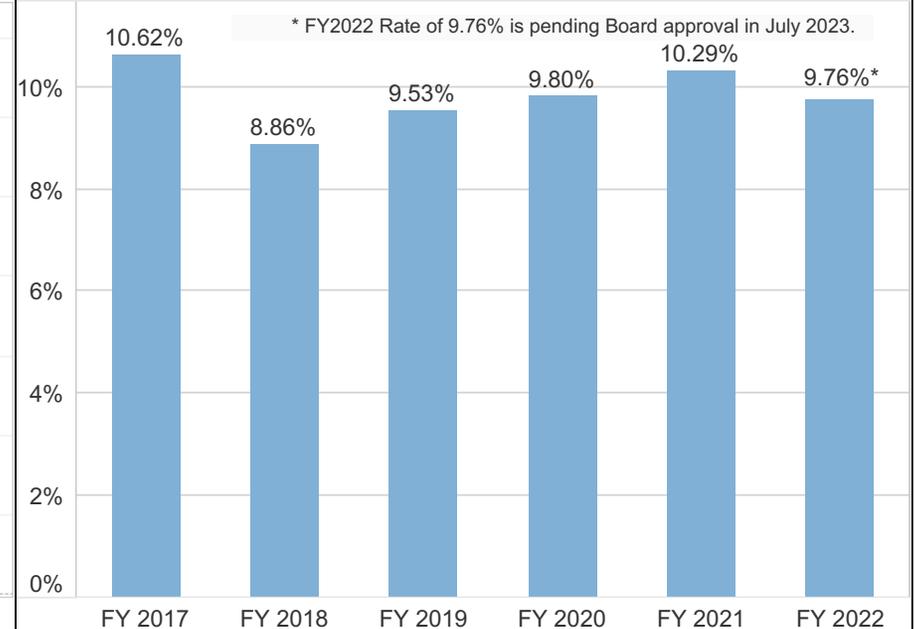
Member Payroll Funding Sources



Assets & Actuarial Accrued Liability



Employer Contribution Rate



Investment Committee Executive Summary

Public Market Performance as of June 30, 2023

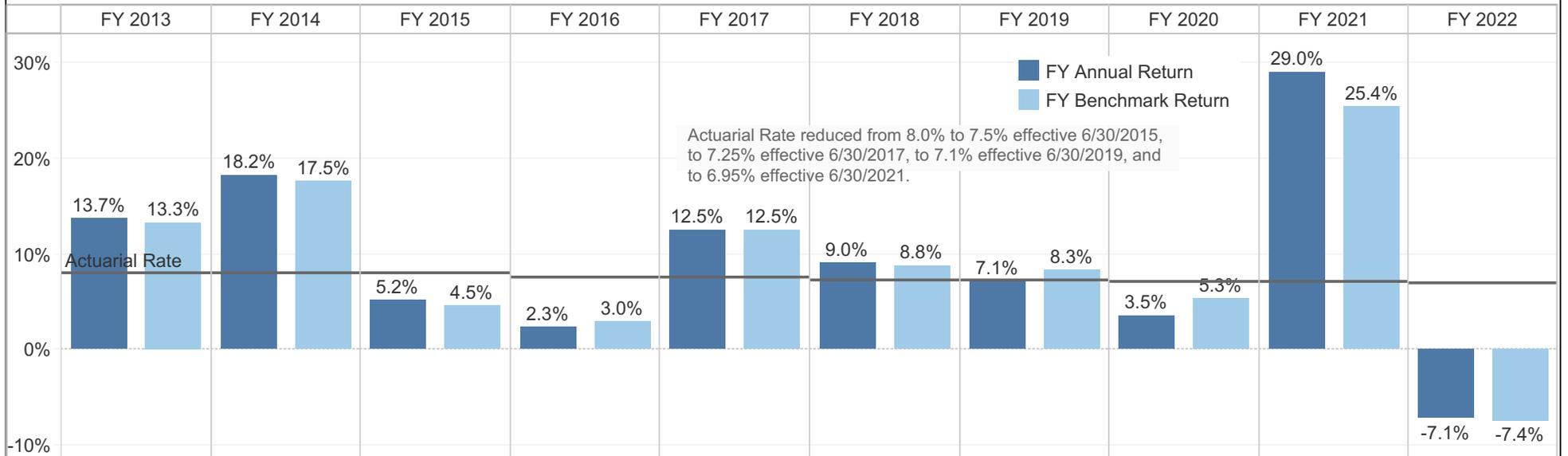
Asset Class	Current QTR	
	Net Return	Excess Return
Domestic Equity	8.5%	0.1%
International Equity	3.0%	0.5%
Global Equity	6.2%	0.0%
Private Equity	N/A	N/A
Real Estate Equity	3.2%	0.8%
Domestic Fixed Income	-0.8%	0.0%
Global Bonds	-0.5%	-0.3%
High Yield Bonds	1.2%	0.0%
Private Debt	N/A	N/A
Real Estate Debt	0.3%	0.9%
Short Term	1.3%	0.1%

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

Total Fund Performance as of March 31, 2023

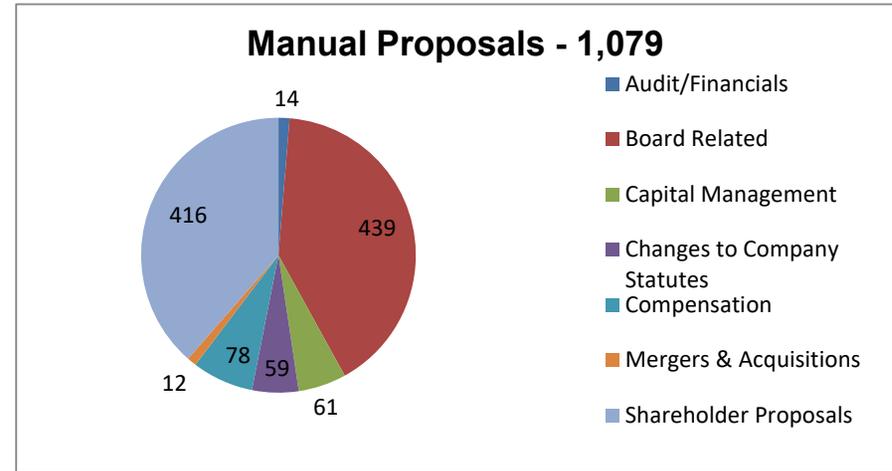
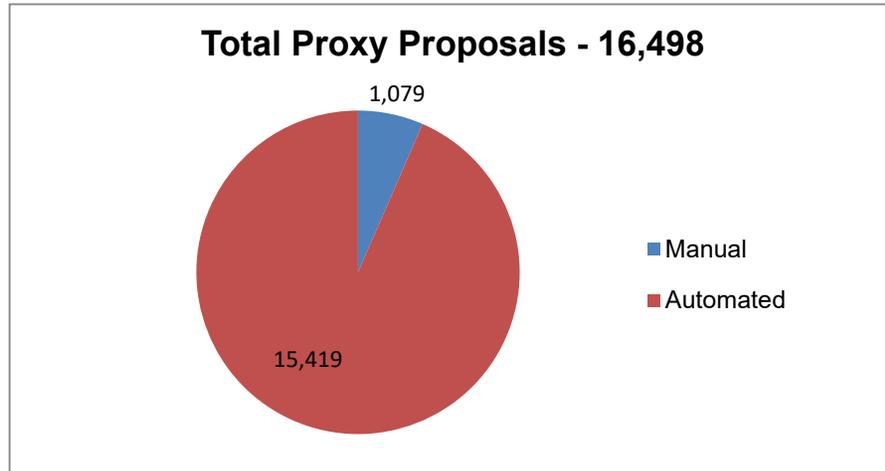
Asset Class	QTR		FYTD		10YR	
	Net Return	Excess Return	Net Return	Excess Return	Net Return	Excess Return
Domestic Equity	7.2%	0.1%	10.0%	0.0%	11.9%	-0.1%
International Equity	7.1%	0.3%	10.4%	0.3%	4.6%	0.4%
Global Equity	5.2%	-2.1%	9.4%	-0.4%	N/A	N/A
Private Equity	3.2%	-5.5%	3.5%	-10.2%	16.0%	-1.2%
Real Estate Equity	-0.4%	3.0%	-3.5%	4.5%	9.3%	0.8%
Domestic Fixed Income	2.9%	-0.1%	0.6%	0.5%	1.3%	-0.1%
Global Bonds	3.1%	0.0%	0.6%	0.5%	2.0%	0.2%
High Yield Bonds	3.8%	0.2%	7.7%	0.5%	N/A	N/A
Private Debt	2.7%	-1.3%	6.5%	-3.0%	N/A	N/A
Real Estate Debt	1.3%	-2.0%	0.4%	0.2%	3.7%	0.7%
Short Term	1.1%	0.1%	2.6%	0.3%	1.0%	0.3%
Total Fund	4.5%	-0.5%	5.3%	-0.9%	8.2%	0.1%

Annual Performance



Investment Committee Executive Summary

Proxy Voting Summary: 4/1/2023 - 6/30/2023



The System has implemented automated voting for those issues that can reliably be voted according to established 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 established guidelines, 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 generally supports independent directors outside of management, gender diversity on boards, and considers related party transactions.

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: 23, Environment: 87, Governance: 133, Other: 28, and Social: 145



Public Equity MD Update

Investment Committee July 26, 2023

Portfolio Values				Asset Allocation			
Portfolio Values (000)	06/30/23	06/30/22	Difference	Asset Allocation	Range	Target	Actual 06/30/23
Domestic Equity	\$45,854,870	\$41,996,869	\$3,858,001	Domestic:	29-37%	33.0%	34.0%
International Equity	\$18,812,576	\$19,595,506	(\$782,930)	International:	11-19%	15.0%	13.9%
Global Equity	\$4,926,176	\$4,226,308	\$699,868	Global:	0-8%	4.0%	3.7%
Total Public Equity	\$69,593,622	\$65,818,683	\$3,774,939				

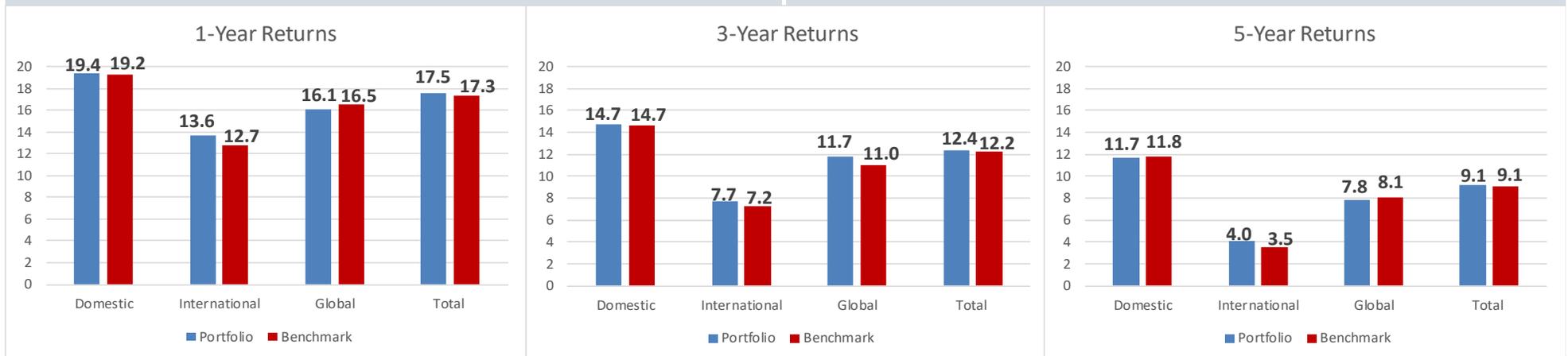
Public Equity Portfolio Values:

- Strong equity markets generated a one-year return of 17.5% for the public equity portfolio for the period ended 6/30/23.
- During the period:
 - o \$3.7B (including dividends swept) was raised from domestic equities.
 - o \$3.25B was raised from international equities.
- The public equity portfolio value increased by \$3.8B for the one-year period.

Asset Allocation

- \$2.25B was raised from the domestic and international equities portfolios during the quarter.
- The public equities asset classes remain close to their respective targets and well within their asset allocation ranges.

Appendix B



Commentary:

- All managers remain in good standing and are performing within our range of expectations.
- Active strategies, including internally managed, generated positive overall excess returns in both domestic and international sleeves, for the quarter and one-year periods.
- Team: currently hiring for three open positions; our first investment fellow joined the team in July.



Fixed Income MD Update

Investment Committee Meeting: July 26, 2023

	Sector/Portfolio	Mkt Val \$B	Asset Allocation %			Net Returns % (Annualized)					Excess Returns % (Annualized)				
			Actual	Target	Range	Qtr	FYTD	1-Yr	3-Yr	5-Yr	Qtr	FYTD	1-Yr	3-Yr	5-Yr
Internal	Dom. Fixed Income	18.19	13.5	16	12-20	-0.82	-0.26	-0.26	-2.97	0.95	0.04	0.59	0.59	1.00	0.13
	Short-Term Bond	1.74	1.3	1	0-4	1.27	3.92	3.92	1.42	1.67	0.11	0.43	0.43	0.23	0.34
External	Global Bonds	2.70	2.0	2	0-4	-0.53	0.05	0.05	-3.12	1.10	-0.30	0.17	0.17	0.46	0.47
	High Yield	1.38	1.0	1	0-3	1.24	9.06	9.06	2.93	3.25	-0.02	0.48	0.48	0.29	-0.13

- **Allocation:** Invested \$1.5B (\$881M net) in Domestic; funded 1 new account (PGIM) to reach 1% high yield target
- **Market in quarter:** Lower volatility as bank concerns eased; government yields increased and credit spreads declined
- **FY perf:** Net returns led by high yield/short-term amid higher rates & tighter credit spreads; good excess returns for all 4 areas
 - **Dom. FI:** Team generated strong excess returns from duration positioning, overweighting corporates versus Treasuries & mortgage-backed, and relative value trading¹
 - **Short-Term:** Team continues to source high quality paper with yields up to 5.5%
 - **Global Bonds/High Yield:** Mixed manager performance, but overall positive due to credit and macro positioning
- **Fixed Income Team:** Investment fellow (Renee) and intern from Girls Who Invest program (Lucila)
- **Policy:** Questions—1 or 2 more Fed hikes? When does Fed easing cycle start?; Various implications of 2023 US dollar weakness
- **Inflation:** Overall and core (ex-food and energy) have slowed significantly; central banks will be cautious about a rebound
- **Growth:** forecasts pushing recession risk to 2024; higher borrowing cost effects on demand are still modest
- **Credit:** company balance sheets and profits strong; household debt levels modest with employment still growing (but slower)

¹Domestic Fixed Income duration was -1.0 year vs. benchmark and -0.8 year excluding maturities under 1 year (compared to -1.4 and -1.0 in June 2022)

Commercial Real Estate (CRE) Investments - Managing Director Update

CRE Equity	<u>6/30/23 Value</u>	<u>Target</u>	<u>Range</u>	<u>Actual</u>	<u>w/Commit</u>	
	\$16,673	11%	6%-16%	12.4%	15.1%	
Performance for Periods Ended <u>March 31, 2023</u>						
Strategy (Inception Date)	Net Asset Value	Current Quarter	1 Year	5 Year	10 Year	Since Inception
Direct Properties (2/90)	\$6,783	-1.8%	0.4%	7.7%	10.5%	9.6%
Core Funds (7/85)	\$1,708	-2.7%	-11.2%	2.3%	5.7%	6.4%
Value Added (12/89)	\$1,596	-0.3%	-0.3%	16.3%	17.7%	12.1%
Opportunistic (3/99)	\$2,896	0.4%	2.2%	9.1%	10.6%	11.2%
U.S. RE Securities (7/95)	\$2,077	2.9%	-17.7%	6.6%	6.9%	10.8%
Global RE Securities (9/17)	\$953	1.1%	-20.4%	2.2%	-	1.6%
Timber (12/98)	\$298	2.5%	7.0%	6.5%	6.0%	4.5%
Total CRE Equity Portfolio	\$16,311	-0.4%	-5.9%	7.2%	9.3%	8.3%
NCREIF-ODCE (Spliced)	-	-3.4%	-3.9%	7.5%	8.5%	6.7%

Return Drivers:

- For the quarter ended 3/31/23, the impact of slowing rent growth and higher interest rates turned appreciation negative in the private markets across all property sectors.
- The office markets remain by far the greatest concern as widespread adoption of hybrid work schedules especially in the larger tech markets are creating uncertainty around future office space demand..

Appendix D

Market Conditions

- Overall, commercial debt maturities are approaching \$1 trillion over the next two years where many of the existing owners are going to have to paydown their debt in order to have an opportunity to refinance their existing loans and, if they're able to, their debt service cost will go up substantially. In the office space it's nearly impossible to finance anything other than the absolutely top few buildings in each of the markets. Overall private property valuations are estimated to have declined ~15% in aggregate from their peak in March of 2022, whereas private office valuations have dropped 35% over the same period..
- Specifically, with respect to the public markets overall, REITs are pricing at an 9.6% discount on an unlevered basis , whereas office securities are trading at a 27% discount on an unlevered basis relative to their private market valuations.

Portfolio Focus:

- Acquisitions remains focused on maintaining vintage year diversification with high conviction managers in sectors with durable long term demand expectations such as industrial, multifamily and, previously committed operating companies focused on necessity-based retail and cold storage.

Investment Activity:

- The System closed on a \$100 million of commitments to FCP Realty Fund VI, a value-add multi-family focused commingled fund. Additionally, \$14.3M was returned from outstanding open-end commingled fund redemption requests.



CRE Debt	6/30/23 Value	Target	Range	Actual	w/Commit	
	\$7,589	6%	2%-10%	5.6%	6.8%	
Performance for Periods Ended March 31, 2023						
Strategy (Inception Date)	Net Asset Value	Current Quarter	1 Year	5 Years	10 Years	Since Inception
First Mortgages (7/85)	\$3,206	1.7%	0.9%	3.3%	3.6%	7.8%
Commercial MBS (4/01)	\$2,367	1.6%	-5.6%	1.4%	2.2%	4.2%
Core Plus Strategies (8/04)	\$1,903	0.1%	-0.6%	3.8%	5.6%	4.2%
Opportunistic Debt (9/01)	\$627	1.4%	2.5%	5.3%	8.7%	1.0%
Total CRE Debt Portfolio	\$8,103	1.3%	-1.3%	3.1%	3.7%	7.7%
GL Custom Index (Spliced)	-	3.3%	-1.9%	2.7%	3.1%	7.8%

Return Drivers:

- Negative one-year performance was driven by an increase in interest rates over the past year which led to an unrealized markdown of the existing debt portfolio.

Market Conditions:

- Interest rates were extremely volatile during 2023 as a result of the Fed rate hikes, inflation, and regional bank failures. Currently, first mortgage interest rates are in the 5.50%-5.75% range. However, transaction financing volume continues to be down significantly due to a wide bid-ask spread between asset buyers and sellers where sellers are unwilling to capitulate on discounted pricing. Because of the lack of transactions there's limited CMBS liquidity in the market.
- Investment grade CMBS securities are generally providing yields in the 5.5%-7.0%.range and private senior mezzanine/bridge loans provide net yields in excess of 7.5%.
- Office assets remain the most likely to change hands via foreclosure with 7.24% of office CMBS in special servicing (an 81 basis point increase over the prior month).

Portfolio Focus:

- Work through the \$873 million of office first mortgage maturities through 2024 targeting paydowns with modifications/extensions as well as loan payoffs.
- Continue to pursue investment grade CMBS, private mezzanine, bridge loans and first mortgages on high quality, new vintage, stabilized assets.

Investment Activity:

- During the first quarter of 2023, the System closed on a \$150 million upside commitment to the Artemis Debt Separate Account targeting mezzanine loans and first mortgage loans on high-quality stabilized and transitional assets in the United States.



Commercial Real Estate (CRE) Investments - Managing Director Update

Performance Relative to Blended Benchmarks

Equity Real Estate Performance for Periods Ended <u>March 31, 2023</u>						
Strategy (Inception Date)	Net Asset Value	Current Quarter	1 Year	5 Year	10 Year	Since Inception
Direct Properties (2/90)	\$6,783	-1.8%	0.4%	7.7%	10.5%	9.6%
Core Funds (7/85)	\$1,708	-2.7%	-11.2%	2.3%	5.7%	6.4%
Value Added (12/89)	\$1,596	-0.3%	-0.3%	16.3%	17.7%	12.1%
Opportunistic (3/99)	\$2,896	0.4%	2.2%	9.1%	10.6%	11.2%
U.S. RE Securities (7/95)	\$2,077	2.9%	-17.7%	6.6%	6.9%	10.8%
Global RE Securities (9/17)	\$953	1.1%	-20.4%	2.2%	-	1.6%
Timber (12/98)	\$298	2.5%	7.0%	6.5%	6.0%	4.5%
Total CRE Equity Portfolio	\$16,311	-0.4%	-5.9%	7.2%	9.3%	8.3%
Blended Benchmark*	-	-2.0%	-8.3%	5.1%	7.3%	6.3%

Debt Real Estate Performance for Periods Ended <u>March 31, 2023</u>						
Strategy (Inception Date)	Net Asset Value	Current Quarter	1 Year	5 Years	10 Years	Since Inception
First Mortgages (7/85)	\$3,206	1.7%	0.9%	3.3%	3.6%	7.8%
Commercial MBS (4/01)	\$2,367	1.6%	-5.6%	1.4%	2.2%	4.2%
Core Plus Strategies (8/04)	\$1,903	0.1%	-0.6%	3.8%	5.6%	4.2%
Opportunistic Debt (9/01)	\$627	1.4%	2.5%	5.3%	8.7%	1.0%
Total CRE Debt Portfolio	\$8,103	1.3%	-1.3%	3.1%	3.7%	7.7%
Blended Benchmark*	-	2.6%	-2.7%	2.5%	2.9%	7.8%

* 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 Giliberto-Levy Custom Index for the Real Estate Debt Portfolio.



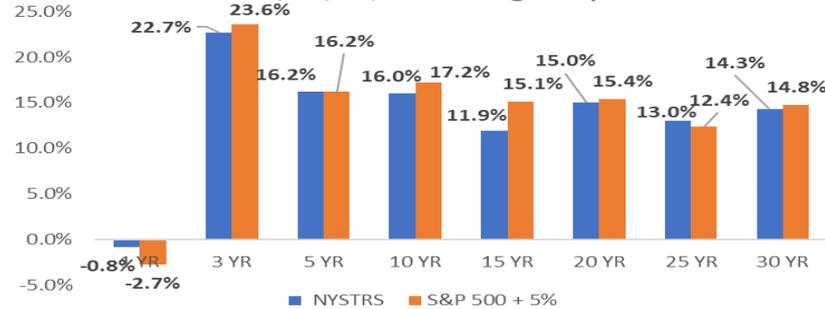
Private Equity – 9% Target (4-14%)

- 6/30/23 - \$15bn or approx. 11.1% vs. target
- \$6.4bn unfunded

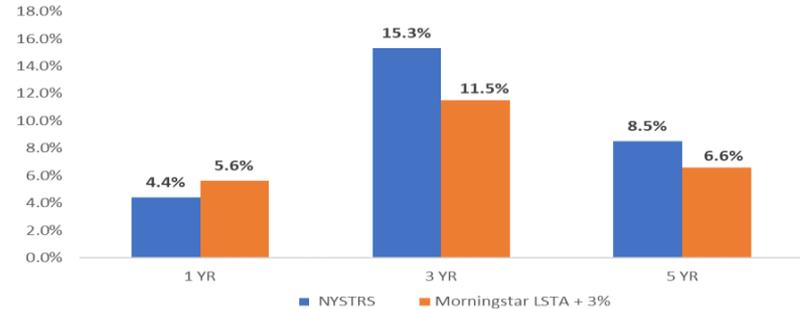
Private Debt – 2% Target (0.5-5%)

- 6/30/23 - \$2bn or approx. 1.5% vs. target
- \$1.2bn unfunded

NYSTRS Private Equity Performance (as of 3/31/23, time-weighted)



NYSTRS Private Debt Performance (as of 3/31/23, time-weighted)



Market Overview:

- Fundraising continues to be slow given investors are generally overallocated to private equity.
- PE deal activity continues to be slow due to continued economic uncertainty and buyer/seller pricing expectations.
- Private debt markets continue to be a major source of financing for buyouts.
- NYSTRS Portfolio – 3/31 quarterly PE & PD time weighted returns up 3.2% and 2.7% respectively from 12/31.

Other Items:

- Team – Fellow started this month.
- RFP for alternatives consultant.

July 26, 2023



**New York State Teachers'
Retirement System**

2023 Asset Allocation Review

Jay Kloepfer

Capital Market Research

Kevin Machiz, CFA, FRM

Capital Market Research

Tom Shingler

Fund Sponsor Consulting

Angel Haddad

Fund Sponsor Consulting

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 (AA) 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 that was presented in April and is being recommended, today. Per NYSTRS' Investment Policy Manual:

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.

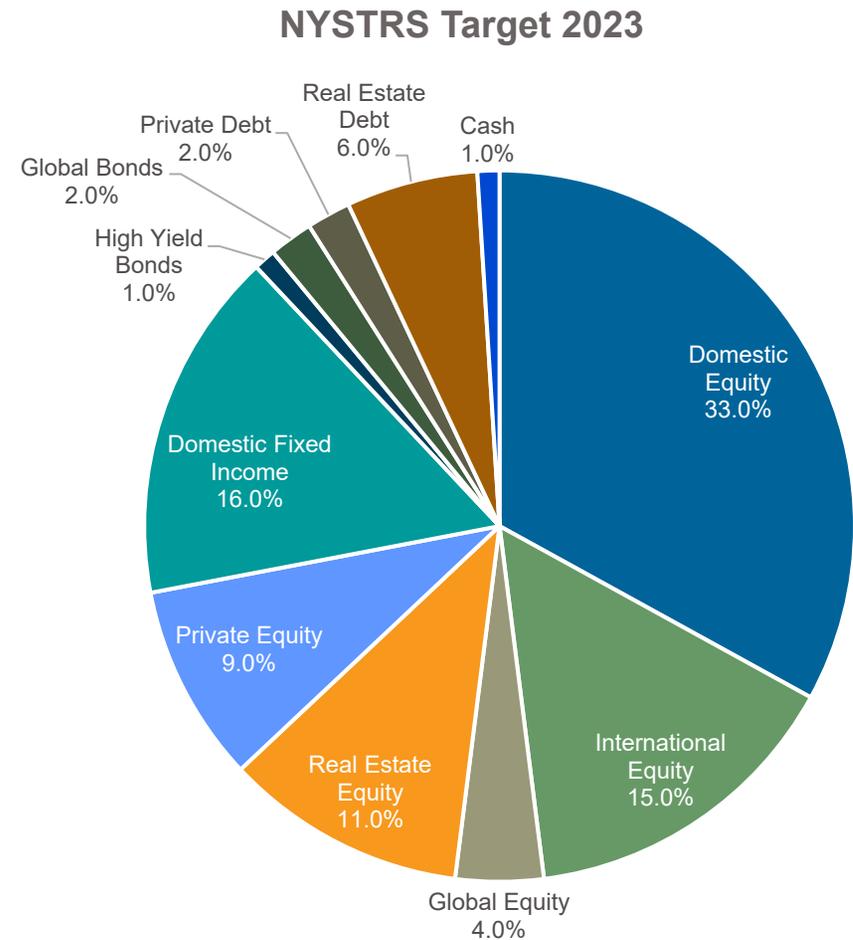
No Changes Recommended For the Current Target

Callan and NYSTRS Staff considered whether to recommend asset allocation changes and explored several themes

- Adding emerging market debt
- Increasing fixed income
- Increasing cash
- Reducing real estate debt and increasing private credit

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

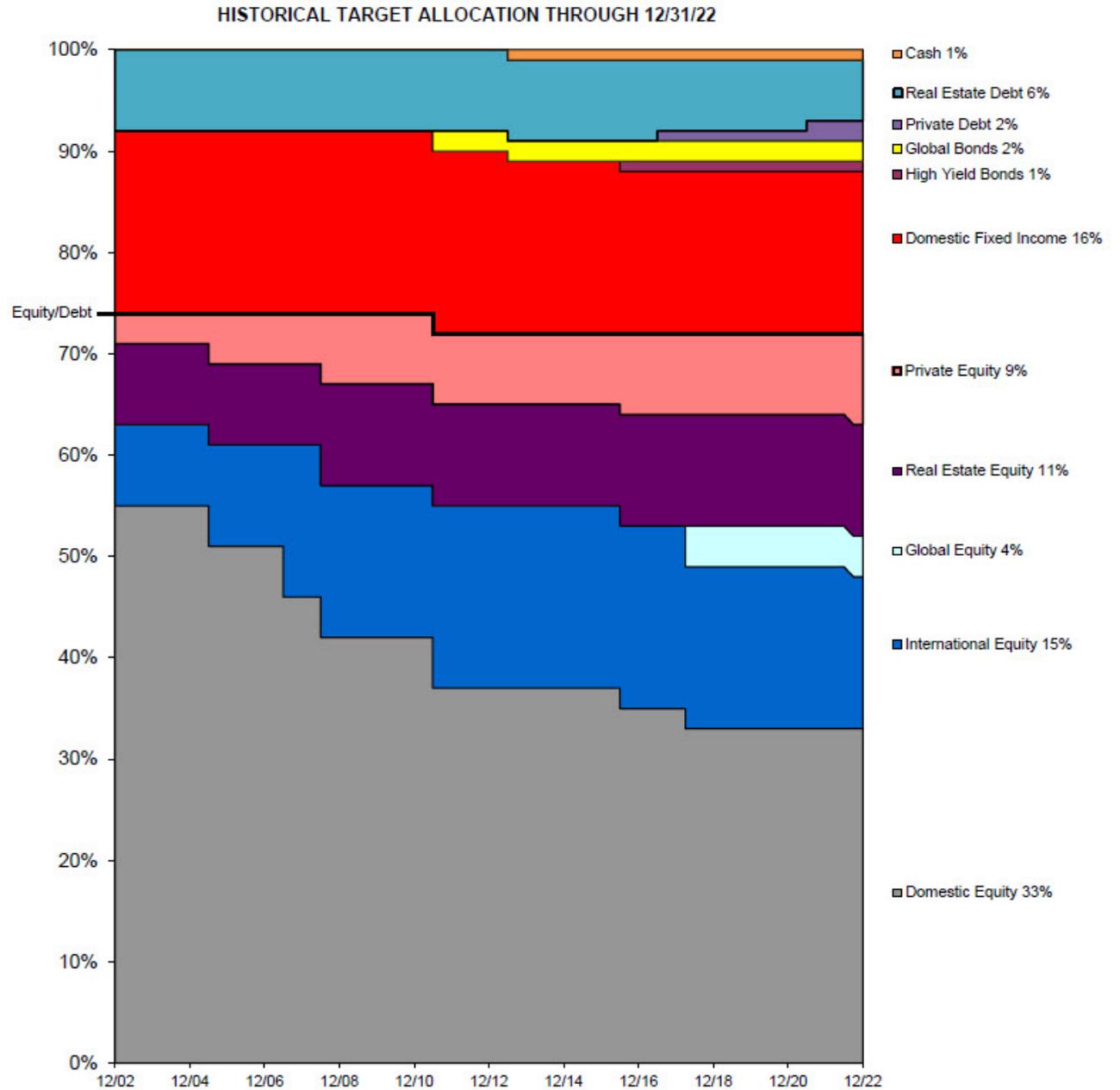


NYSTRS Asset Allocation Target Over Time

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
 - Global equity
 - Global fixed income
 - Real estate
 - Private credit
 - High Yield bonds

Importantly, NYSTRS has maintained a deliberate fixed income allocation over time



Source: Office of the CFO/Investment Operations Department

What's Top of Mind for Public Plans?

- The increase in fixed income yields is a gift to plan sponsors, how to consider using it? One approach: incrementally take equity risk off the table and add to fixed income, which several plans have done already, increasing fixed income by a couple of percentage points
- What to do about fixed income depends on the starting point of a plan; how much did a plan have in fixed income before rates rose? This option of adding to fixed income has not been as popular as we thought it would be. Alternatively, plans have told us they have grown accustomed to their current level of risk, they lived through both the pandemic and 2022, and they'd rather maintain this risk for a higher potential return
- Higher fixed income yields leads to the question about implementation: does a plan need to take on below investment grade risk and pursue yield alternatives now that core bonds yield 4.75%? Or is the focus on reconfirming the pursuit of yield alternatives for different reasons, such as potentially higher returns and diversification of equity risk
- What are the ramifications of the banking sector turmoil? The bank failures of the Spring appear contained at this point, though there are longer-term consequences, including possibly tighter regulations that are negative for economic growth. The largest U.S. banks just passed the Federal Reserve's stress tests, a positive sign
- Continued debate over the length of this period of high inflation and what changes, if any, to make to asset allocation in response to high inflation
- What will happen within real estate, with more pain inevitable as the write-downs are still coming. What about office and global gateway markets – are there really alternatives to current office use, like repurposing to residential? Repurposing assumes the office buildings are taken over at minimal cost. What about the opportunities in value-add and opportunistic real estate strategies given the market environment? What about other real asset areas like infrastructure?

Callan

Appendix

Customized NYSTRS Capital Market Projections – 10-Year Time Horizon

NYSTRS Asset Allocation Model 2023-2032

Projection set customized to reflect specific NYSTRS strategies:

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

Current target projected return of 7.27% compounded over 10 years, at a risk (standard deviation) of 13.44%

Actual AA at 12/31/22 is 1.1% lower in public equity, 2.1% higher in real estate equity, 1.7% higher in private equity, and 3% lower in core US fixed income, compared to the target

Asset Class	Target Weight	Actual (12/31/2022)	PROJECTED RETURN			PROJECTED RISK
			Single-Period Arithmetic Return	10-Year Geometric Return	Projected Yield	Annualized Standard Deviation
Public Equity	52.0%	50.9%				
Broad US Equity (1)	33.0%	32.6%	8.75%	7.35%	1.96%	18.05%
Global Ex-US Equity (2)	15.0%	14.9%	9.35%	7.45%	3.69%	21.05%
Global Equity (3)	4.0%	3.4%	9.05%	7.60%	2.74%	18.35%
Private Market Equity	20.0%	23.8%				
Real Estate Equity (4)	11.0%	13.1%	8.05%	6.95%	3.12%	16.10%
Private Equity	9.0%	10.7%	11.95%	8.50%	0.00%	27.60%
Private Debt	2.0%	1.3%				
Private Debt	2.0%	1.3%	8.00%	7.00%	7.00%	15.50%
Fixed Income	25.0%	22.1%				
Core U.S. Fixed Income	16.0%	13.0%	4.25%	4.25%	4.30%	4.10%
Global Fixed Income (5)	2.0%	2.0%	3.30%	3.30%	3.16%	3.70%
Real Estate Debt (6)	6.0%	6.2%	5.55%	5.50%	3.60%	5.00%
High Yield	1.0%	0.9%	6.75%	6.25%	8.00%	11.75%
Cash Equivalents	1.0%	1.8%				
Cash Equivalents	1.0%	1.8%	2.75%	2.75%	2.75%	0.90%
Inflation				2.50%		1.60%
Total Fund	100.0%	100.0%				
Single-Period Arithmetic Return			7.95%	8.07%		
10-Year Geometric Return			7.27%	7.34%		
Annualized Standard Deviation			13.44%	13.86%		
Projected Yield			2.87%	2.75%		
Sharpe Ratio			0.34	0.33		

(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 = 55% broad US, 45% global ex-US

(4) Real estate equity = 55% core real estate, 30% non-core real estate, 15% REITs

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

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

Source: Callan LLC

Customized NYSTRS Capital Market Projections – 20-Year Time Horizon

NYSTRS Asset Allocation Model 2023-2042

Projection set customized to reflect specific NYSTRS strategies:

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

Current target projected return of 7.57% compounded over 20 years, at a risk (standard deviation) of 13.44%

Actual AA at 12/31/22 is 1.1% lower in public equity, 2.1% higher in real estate equity, 1.7% higher in private equity, and 3% lower in core US fixed income, compared to the target.

Asset Class	Target Weight	Actual (12/31/2022)	PROJECTED RETURN			PROJECTED RISK
			Single-Period Arithmetic Return	20-Year Geometric Return	Projected Yield	Annualized Standard Deviation
Public Equity	52.0%	50.9%				
Broad US Equity (1)	33.0%	32.6%	9.05%	7.65%	1.96%	18.05%
Global Ex-US Equity (2)	15.0%	14.9%	9.75%	7.80%	3.69%	21.05%
Global Equity (3)	4.0%	3.4%	9.35%	7.95%	2.74%	18.35%
Private Market Equity	20.0%	23.8%				
Real Estate Equity (4)	11.0%	13.1%	8.45%	7.35%	3.12%	16.10%
Private Equity	9.0%	10.7%	12.30%	8.85%	0.00%	27.60%
Private Debt	2.0%	1.3%				
Private Debt	2.0%	1.3%	8.25%	7.25%	7.00%	15.50%
Fixed Income	25.0%	22.1%				
Core U.S. Fixed Income	16.0%	13.0%	4.45%	4.45%	4.30%	4.10%
Global Fixed Income (5)	2.0%	2.0%	3.75%	3.70%	3.16%	3.70%
Real Estate Debt (6)	6.0%	6.2%	5.65%	5.60%	3.60%	5.00%
High Yield	1.0%	0.9%	6.85%	6.30%	8.00%	11.75%
Cash Equivalents	1.0%	1.8%				
Cash Equivalents	1.0%	1.8%	2.80%	2.80%	2.75%	0.90%
Inflation				2.50%		1.60%
Total Fund	100.0%	100.0%				
Single-Period Arithmetic Return	8.24%	8.37%				
20-Year Geometric Return	7.57%	7.66%				
Annualized Standard Deviation	13.44%	13.86%				
Projected Yield	2.87%	2.75%				
Sharpe Ratio	0.35	0.35				

(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 = 55% broad US, 45% global ex-US

(4) Real estate equity = 55% core real estate, 30% non-core real estate, 15% REITs

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

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

Source: Callan L2C

Customized NYSTRS Capital Market Projections – 30-Year Time Horizon

NYSTRS Asset Allocation Model 2023-2052

Projection set customized to reflect specific NYSTRS strategies:

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

Current target projected return of 7.83% compounded over 30 years, at a risk (standard deviation) of 13.44%

Actual AA at 12/31/22 is 1.1% lower in public equity, 2.1% higher in real estate equity, 1.7% higher in private equity, and 3% lower in core US fixed income, compared to the target

Asset Class	Target Weight	Actual (12/31/2022)	PROJECTED RETURN			PROJECTED RISK
			Single-Period Arithmetic Return	30-Year Geometric Return	Projected Yield	Annualized Standard Deviation
Public Equity	52.0%	50.9%				
Broad US Equity (1)	33.0%	32.6%	9.30%	7.90%	1.96%	18.05%
Global Ex-US Equity (2)	15.0%	14.9%	10.05%	8.10%	3.69%	21.05%
Global Equity (3)	4.0%	3.4%	9.65%	8.20%	2.74%	18.35%
Private Market Equity	20.0%	23.8%				
Real Estate Equity (4)	11.0%	13.1%	8.75%	7.70%	3.12%	16.10%
Private Equity	9.0%	10.7%	12.60%	9.15%	0.00%	27.60%
Private Debt	2.0%	1.3%				
Private Debt	2.0%	1.3%	8.50%	7.55%	7.00%	15.50%
Fixed Income	25.0%	22.1%				
Core U.S. Fixed Income	16.0%	13.0%	4.65%	4.65%	4.30%	4.10%
Global Fixed Income (5)	2.0%	2.0%	4.10%	4.05%	3.16%	3.70%
Real Estate Debt (6)	6.0%	6.2%	5.70%	5.70%	3.60%	5.00%
High Yield	1.0%	0.9%	6.90%	6.35%	8.00%	11.75%
Cash Equivalents	1.0%	1.8%				
Cash Equivalents	1.0%	1.8%	2.80%	2.80%	2.75%	0.90%
Inflation				2.50%		1.60%
Total Fund	100.0%	100.0%				
Single-Period Arithmetic Return			8.49%	8.62%		
30-Year Geometric Return			7.83%	7.93%		
Annualized Standard Deviation			13.44%	13.86%		
Projected Yield			2.87%	2.75%		
Sharpe Ratio			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 = 55% broad US, 45% global ex-US

(4) Real estate equity = 55% core real estate, 30% non-core real estate, 15% REITs

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

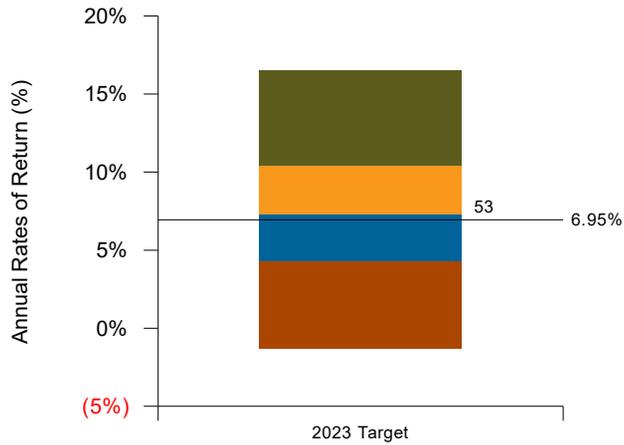
(6) Real estate debt = 80% commercial mortgages/20% private mezzanine debt

Source: Callan LLC

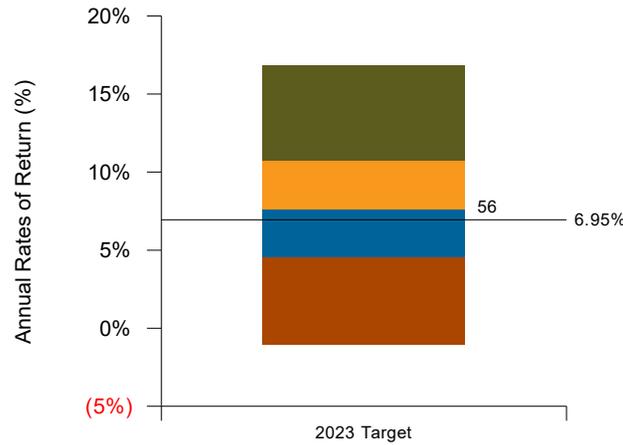
Range of Projected Rates of Return vs. 6.95% Assumed Return

Probability of Exceeding 0% and 6.95% Using Ten, Twenty and Thirty Year CMAs

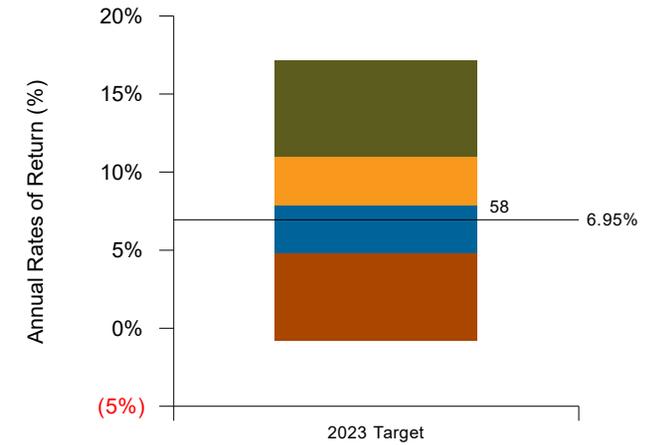
Range of Projected Rates of Return
Projection Period: 10 Years
Optimization Set: 2023 10-Year



Range of Projected Rates of Return
Projection Period: 10 Years
Optimization Set: 2023 20-year



Range of Projected Rates of Return
Projection Period: 10 Years
Optimization Set: 2023 30-year



2.5th Percentile	16.5%
25th Percentile	10.4%
Median	7.3%
75th Percentile	4.3%
97.5th Percentile	(1.3%)
Prob > 6.95%	53%
Prob > 0%	95%

2.5th Percentile	16.8%
25th Percentile	10.7%
Median	7.6%
75th Percentile	4.6%
97.5th Percentile	(1.0%)
Prob > 6.95%	56%
Prob > 0%	96%

2.5th Percentile	17.1%
25th Percentile	11.0%
Median	7.9%
75th Percentile	4.8%
97.5th Percentile	(0.8%)
Prob > 6.95%	58%
Prob > 0%	96%

Source: Callan LLC

2023 Callan Capital Market Projections – Standard Set, 10 Year Horizon

Risk and return: 2023–2032

Summary of Callan's Long-Term Capital Markets Assumptions (2023–2032)

Asset Class	Index	Projected Return		Real	Projected Risk Standard Deviation	2022–2031			vs. 2022	
		1-Year Arithmetic	10-Year Geometric*			1-Year Arithmetic	10-Year Geometric*	Standard Deviation	Geometric* Delta	Std Dev Delta
Equities										
Broad U.S. Equity	Russell 3000	8.75%	7.35%	4.85%	18.05%	8.00%	6.60%	17.95%	0.75%	0.10%
Large Cap U.S. Equity	S&P 500	8.60%	7.25%	4.75%	17.75%	7.85%	6.50%	17.70%	0.75%	0.05%
Smid Cap U.S. Equity	Russell 2500	9.60%	7.45%	4.95%	22.15%	8.75%	6.70%	21.30%	0.75%	0.85%
Global ex-U.S. Equity	MSCI ACWI ex USA	9.45%	7.45%	4.95%	21.25%	8.70%	6.80%	20.70%	0.65%	0.55%
Developed ex-U.S. Equity	MSCI World ex USA	9.00%	7.25%	4.75%	20.15%	8.25%	6.50%	19.90%	0.75%	0.25%
Emerging Market Equity	MSCI Emerging Markets	10.45%	7.45%	4.95%	25.70%	9.80%	6.90%	25.15%	0.55%	0.55%
Fixed Income										
Short Duration Gov/Credit	Bloomberg 1-3 Year Gov/Credit	3.75%	3.80%	1.30%	2.30%	1.50%	1.50%	2.00%	2.30%	0.30%
Core U.S. Fixed	Bloomberg Aggregate	4.25%	4.25%	1.75%	4.10%	1.80%	1.75%	3.75%	2.50%	0.35%
Long Government	Bloomberg Long Gov	4.55%	3.70%	1.20%	13.50%	1.85%	1.10%	12.50%	2.60%	1.00%
Long Credit	Bloomberg Long Credit	5.75%	5.20%	2.70%	11.75%	2.60%	2.10%	10.50%	3.10%	1.25%
Long Government/Credit	Bloomberg Long Gov/Credit	5.25%	4.75%	2.25%	11.35%	2.30%	1.80%	10.40%	2.95%	0.95%
TIPS	Bloomberg TIPS	4.10%	4.00%	1.50%	5.30%	1.35%	1.25%	5.05%	2.75%	0.25%
High Yield	Bloomberg High Yield	6.75%	6.25%	3.75%	11.75%	4.40%	3.90%	10.75%	2.35%	1.00%
Global ex-U.S. Fixed	Bloomberg Global Agg ex US	2.70%	2.25%	-0.25%	9.80%	1.20%	0.80%	9.20%	1.45%	0.60%
Emerging Market Sov Debt	EMBI Global Diversified	6.25%	5.85%	3.35%	10.65%	4.00%	3.60%	9.50%	2.25%	1.15%
Alternatives										
Core Real Estate	NCREIF ODCE	6.60%	5.75%	3.25%	14.20%	6.60%	5.75%	14.20%	0.00%	0.00%
Private Infrastructure	MSCI GI Infra/FTSE Dev Core 50/50	7.15%	6.15%	3.65%	15.45%	7.10%	6.10%	15.45%	0.05%	0.00%
Private Equity	Cambridge Private Equity	11.95%	8.50%	6.00%	27.60%	11.45%	8.00%	27.60%	0.50%	0.00%
Private Credit	See footnote	8.00%	7.00%	4.50%	15.50%	6.40%	5.50%	14.60%	1.50%	0.90%
Hedge Funds	Callan Hedge FOF Database	5.80%	5.55%	3.05%	8.45%	4.35%	4.10%	8.20%	1.45%	0.25%
Commodities	Bloomberg Commodity	5.05%	3.50%	1.00%	18.00%	4.05%	2.50%	18.00%	1.00%	0.00%
Cash Equivalents	90-Day T-Bill	2.75%	2.75%	0.25%	0.90%	1.20%	1.20%	0.90%	1.55%	0.00%
Inflation	CPI-U		2.50%		1.60%		2.25%	1.60%	0.25%	0.00%

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

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

Callan's projection for Private Credit does not correspond to a specific index, instead is based on middle market direct lending strategies

Source: Callan LLC

Customized NYSTRS Capital Market Projections

NYSTRS Correlation Matrix

Correlation Matrix	Broad US	Glb ex US	Gbl Eq	RE Eq	Priv Eq	Priv Cred	Core Fix	Gbl Fix	RE Debt	Hi Yield	Cash
Broad US Equity	1.000										
Global ex-US Equity	0.797	1.000									
Global Equity	0.949	0.946	1.000								
Real Estate Equity	0.618	0.623	0.654	1.000							
Private Equity	0.804	0.778	0.836	0.730	1.000						
Private Credit	0.701	0.678	0.727	0.458	0.670	1.000					
Core US Fixed	0.016	-0.013	0.004	0.050	-0.086	0.000	1.000				
Global Fixed Income	0.072	0.081	0.081	0.092	0.015	0.080	0.846	1.000			
Real Estate Debt	0.746	0.720	0.775	0.712	0.873	0.627	0.316	0.368	1.000		
High Yield	0.762	0.756	0.801	0.411	0.610	0.630	0.090	0.160	0.644	1.000	
Cash Equivalents	-0.065	-0.103	-0.088	-0.037	0.000	-0.040	0.150	0.100	0.065	-0.090	1.000

Projection set customized to reflect specific NYSTRS strategies:

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

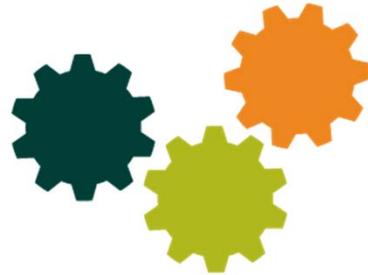
Source: Callan LLC

Published Research Highlights from 2Q23

2023 Private Credit Fees and Terms Study



The Critical Underlying Technology Behind Digital Assets: A Primer for Institutional Investors



Understanding the DNA of the U.S. Life Sciences Sector



Research Café: ESG Interview Series Session



Recent Blog Posts

Biodiversity: A Relatively New Theme for ESG-focused Investors

Kristin Bradbury

How Your Public DB Plan's Returns Compare

Public DB Plan Focus Group

Additional Reading

Alternatives Focus quarterly newsletter

Active vs. Passive quarterly charts

Capital Markets Review quarterly newsletter

Monthly Updates to the Periodic Table

Market Pulse Flipbook quarterly markets update

Real Estate Indicators market outlook

Callan Institute Events

Upcoming conferences, workshops, and webinars

Callan College

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 23-24, 2023 – Virtual Session via Zoom

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 26–28, 2023 – Virtual Session via Zoom

– November 1–2, 2023 – Atlanta, Georgia

Please visit our website at callan.com/events-education as we add dates to our 2023 calendar!

Mark Your Calendar

2023 Regional Workshops

October 24, 2023 – New York

October 26, 2023 – Chicago

2024 National Conference

April 8 –10, 2024 – San Francisco

Watch your email for further details and an invitation.

Webinars & Research Café Sessions

Webinar:

The End of the Low-Yield Environment

August 9, 2023 – 9:30am (PT)

Callan Updates

Firm updates by the numbers, as of 6/30/23

Total Associates: ~200

Ownership

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

Total General and Investment Consultants: more than 55

Total Specialty and Research Consultants: more than 50

Total CFA/CAIA/FRMs: more than 55

Total Institutional Investor Clients: more than 475

Assets Under Advisement: more than \$4 trillion

Headquarters Office Move

- In August, Callan’s headquarters office will move to One Bush Street in San Francisco

Milestones

- Celebrating our 50th anniversary

“Callan’s reputation for providing exceptional, thoughtful guidance to clients for the past 50 years initially drew me to the organization...it’s clear that quality people and a cohesive culture are essential to this enduring success. I’m excited about the opportunity to work in this collaborative environment to deliver the best outcomes for clients.”

— Tony Lissuzzo, SVP, on joining Callan’s Chicago Fund Sponsor Consulting this May

Diversity, Equity & Belonging (DEB)

Building a diverse workforce, pursuing equitable outcomes, and creating a sense of belonging

Five-Year Strategic Plan: Key Areas



DEB Leadership:

Greg Allen, Executive Sponsor and Lauren Mathias, Champion

DEB Council:

Annie Boschetti, Citlali Cuevas, Laura Dawson, Mike Joecken, Lindsay Jones, Paola Juarez, Erik Partida, Juan Pablo Piz, Avery Robinson, Jeff Salyer, Álvaro Vega, Nicole Wubbena

Recent client DEB projects: Investment manager Callan DEI Score trends, investment manager team and employee demographics review versus peers, diverse-owned manager searches, incorporating diversity in an IPS, and review of DEI in DC plans.

Accomplishments

- ▶ Inclusive culture education for all
- ▶ Engagement surveys
- ▶ Inclusive interviewing and resume review guides
- ▶ Equitable policies for promotion and partnership
- ▶ Enhanced pay equity and supplier diversity policies
- ▶ Pronoun education
- ▶ DEB Awareness Calendar



Near-Term Future Plans

- ▶ Ongoing education
- ▶ Employee Resource Groups (ERGs)
- ▶ Aligning onboarding with belonging best practices
- ▶ Mentorship program
- ▶ Callan DEB Progress Report



Important Disclosures

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The statements made herein may include forward-looking statement regarding future results. The forward-looking statements herein: (i) are best estimations consistent with the information available as of the date hereof and (ii) involve known and unknown risks and uncertainties. Actual results may vary, perhaps materially, from the future results projected in this document. Undue reliance should not be placed on forward-looking statements.

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Callan undertakes no obligation to update the information contained herein except as specifically requested by the client.

Past performance is no guarantee of future results.

Appendix G



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

Investment Committee Meeting

July 26, 2023

COMMITTEE MEMBERS

N. Smirensky, Chair

Elizabeth Chetney, David Keefe, Jennifer Longtin, Ruth Mahoney, Christopher Morin

AGENDA pp. 18-19**Approval of Minutes**

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**NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
ED&CIO Investment Discretion Exercised**

TO: Retirement Board
FROM: T. Lee
SUBJECT: Quarterly Report of Executive Director and Chief Investment Officer Investment Discretion Exercised April – June 2023

Fixed Income

Period	Action Taken	Amount
Q/E 6/30/23	Net cash reallocated into internally managed Long-Term Bonds	\$881.0 M
Q/E 6/30/23	Net cash reallocated into High Yield	\$150.0M

Public Equities

Period	Action Taken	Amount
Q/E 6/30/2023	Net cash reallocated out of internally managed domestic equity portfolios	\$1.5B
Q/E 6/30/2023	Net cash reallocated out of externally managed international equity portfolios (BlackRock \$500M, SSGA \$250M)	\$750M



**NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
ED&CIO Investment Discretion Exercised**

SUBJECT: Quarterly Report of Executive Director and Chief Investment Officer Investment Discretion Exercised April – June 2023

Real Estate - New Commitments

Date of Internal Inv. Comm. Approval	Investment Name	Amount	New or Renew
April 20, 2023	FCP Realty Fund VI	\$100M	Renew

Real Estate

Period	Action Taken	Amount
	- None -	



**NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
ED&CIO Investment Discretion Exercised**

SUBJECT: Quarterly Report of Executive Director and Chief Investment Officer Investment Discretion Exercised April – June 2023

Private Equity/Debt – New Commitments

Date of Internal Inv. Comm. Approval	Investment Name	Amount	New or Renew
04-07-2023	ECI 12 LP	£100M (approx. \$122.6 USD)	Renew
05-15-2023	Cortec Group Fund VIII	\$100M	Renew
06-06-2023	MGG SF Evergreen Fund	\$100M	Renew



**NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
Board Mail Votes**

TO: Retirement Board
FROM: T. Lee
SUBJECT: Quarterly Board Report of Mail Votesⁱ for the period April – June 2023

Date	Type (Full Board Vote or Investment Committee Vote)	Transaction
05-18-2023	Full Board	IPM Rating Restrictions

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
10 CORPORATE WOODS DRIVE, ALBANY NY

Disability Review Committee Meeting

A meeting of the Disability Review Committee of the Retirement Board was held at the System on July 26, 2023. The meeting was called to order at 11:42 a.m. by Elizabeth Chetney, Chair.

The following individuals were in attendance:

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

Board Members: Jennifer Longtin, Christopher Morin (via WebEx), Phyllis
Harrington (via WebEx), Nicholas Smirensky

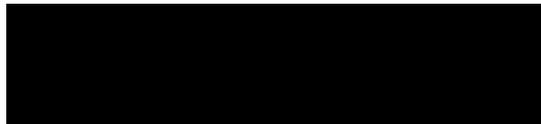
Visitor via WebEx: Pete Savage, NYSUT

Upon motion of J. Benaquisto, seconded by E. Iberger and unanimously carried, the meeting minutes of April 27, 2023 were approved.

E. Chetney, Chair, reported that the System's Medical Board had met monthly over the prior three months and that a disability denial and a disability rescission resolution would be brought to the Board at the Board meeting on July 26, 2023.

With unanimous consent, the Committee adjourned at 11:44 a.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 26, 2023. The meeting was called to order by Ruth Mahoney, Chair, at 11:45 a.m.

The following individuals were in attendance:

Committee Members: Elizabeth Chetney, Ruth Mahoney, Nicholas Smirensky
Thomas Lee, Don Ampansiri

Board Members: Juliet Benaquisto, Phyllis Harrington (via WebEx), Eric
Iberger, David Keefe (via WebEx), Jennifer Longtin,
Christopher Morin (via WebEx), Oliver Robinson

NYSTRS Staff: Matt Albano, Matt Tice

Visitor via WebEx: Pete Savage, NYSUT

Upon motion of E. Chetney seconded by N. Smirensky, the minutes from the April 27, 2023 meeting were approved.

R. Mahoney asked the Committee if any discussion in Executive Session was needed on the EDCIO quarterly disclosures. The Committee agreed no further discussion was needed.

There being no further business, the meeting unanimously adjourned at 11:46 a.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

A meeting of the Trustees of the New York State Teachers' Retirement System Retired Employee Health Benefits Trust was held at the System on July 26, 2023.

ATTENDANCE:

Present: Juliet Benaquisto, Elizabeth Chetney, Eric Iberger, David Keefe (via WebEx), Jennifer Longtin, Ruth Mahoney, Christopher Morin (via WebEx), Oliver Robinson, Nicholas Smirensky

NYSTRS staff: Thomas Lee, Don Ampansiri, Richard Young

Visitor via WebEx: Pete Savage, NYSUT

The meeting was called to order by D. Keefe at 1:00 p.m.

1. Approval of Minutes of April 27, 2023

Upon motion of O. Robinson, seconded by J. Longtin and unanimously adopted by the Trustees, the minutes of the April 27, 2023 meeting were approved.

2. Resolution Authorizing the Contribution to the Retired Employees Health Benefits Trust for the 2023-2024 Fiscal Year

O. Robinson offered the following resolution, seconded by R. Mahoney and unanimously carried by the Trustees:

WHEREAS, Governmental Accounting Standards Board ("GASB") Statements 74 and 75 have established certain standards for the reporting of the System's liabilities to provide health care benefits to its current and future retired employees and their eligible dependents;

WHEREAS, Said GASB Statements afford certain advantages to the reporting of such liabilities when such liabilities are pre-funded through a trust which satisfies the requirements for a trust under the GASB Statements; and

WHEREAS, The System established a Trust Agreement for the New York State Teachers' Retirement System Retired Employee Health Benefits Trust in November 2007, be it

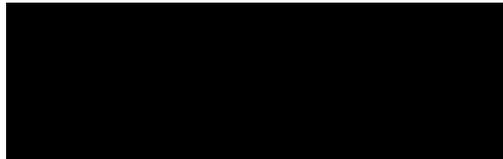
RESOLVED, That the System's Executive Director and Chief Investment Officer or his designee, is authorized to deposit, or cause to be deposited, into such trust, a total of \$6,910,000 in contributions for the 2023-2024 fiscal year.

3. Review of Trust Financial Statements

The Trustees reviewed financial statements and related supplemental schedule for the Trust for the period ending June 30, 2023 and 2022 (attached as Appendix A).

There being no further business, the meeting concluded at 1:03 p.m.

Respectfully submitted,



Thomas K. Lee

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM

MEMORANDUM

TO: T. Lee

FROM: Office of the CFO / Finance Department

DATE: July 26, 2023

SUBJECT: Retirement Board Package - OPEB Trust

Attached are the quarterly OPEB Trust financial statements and related supplemental schedule for the years ended June 30, 2023 and 2022.

The following is a list of the documents included:

1. Statements of Fiduciary Net Position (unaudited)
2. Statements of Changes in Fiduciary Net Position (unaudited)
3. Diversification of Investments
4. Fund Performance

New York State Teachers' Retirement System Retired Employee Health Benefits Trust
 (Administered by New York State Teachers' Retirement System)
Statements of Fiduciary Net Position (Unaudited)

June 30, 2023 and 2022

	<u>2023</u>	<u>2022</u>
Assets:		
Investments at fair value:		
Cash equivalents	\$ 77,795	\$ 129,594
Mutual funds	<u>65,475,687</u>	<u>57,378,031</u>
Total investments	<u>65,553,482</u>	<u>57,507,625</u>
Total assets	<u>65,553,482</u>	<u>57,507,625</u>
Liabilities:		
Accounts payable	<u>—</u>	<u>—</u>
Total liabilities	<u>—</u>	<u>—</u>
Net position restricted for other postemployment health benefits	\$ <u><u>65,553,482</u></u>	\$ <u><u>57,507,625</u></u>

New York State Teachers' Retirement System Retired Employee Health Benefits Trust
 (Administered by New York State Teachers' Retirement System)
Statements of Changes in Fiduciary Net Position (Unaudited)

For the Years Ended June 30, 2023 and 2022

	<u>2023</u>	<u>2022</u>
Additions:		
Investment income:		
Net increase (decrease) in fair value of investments	\$ 5,670,563	\$ (10,884,538)
Dividends	1,434,138	1,300,046
Net investment income (loss)	7,104,701	(9,584,492)
Contributions:		
Employer	6,394,396	6,000,000
Total contributions	6,394,396	6,000,000
Total additions (deductions)	13,499,097	(3,584,492)
Deductions:		
Other postemployment benefit payments	5,439,240	4,834,885
Professional fees and services	14,000	(56,365)
Total deductions	5,453,240	4,778,520
Net increase (decrease)	8,045,857	(8,363,012)
Net position restricted for other postemployment health benefits		
Beginning of year	57,507,625	65,870,637
End of year	\$ 65,553,482	\$ 57,507,625

New York State Teachers' Retirement System Retired Employee Health Benefits Trust
 (Administered by New York State Teachers' Retirement System)
Diversification of Investments

June 30, 2023 and 2022

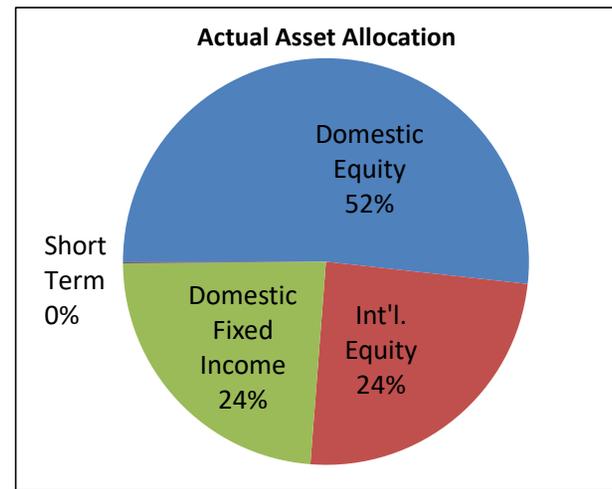
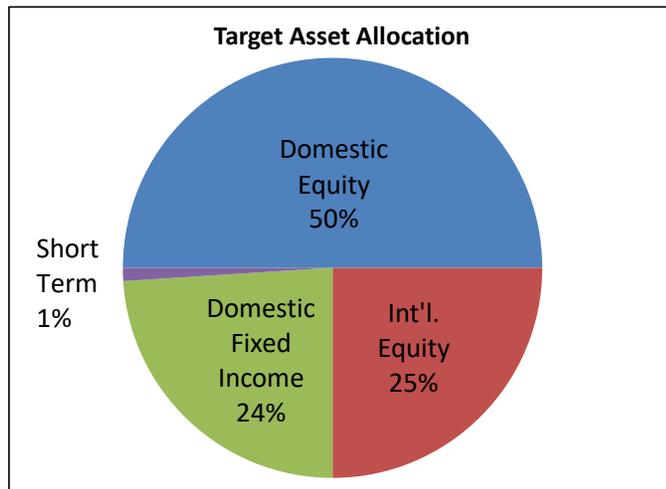
<u>Investment Type*</u>	<u>2023</u>		<u>2022</u>		<u>Increase (Decrease)</u>	<u>Target Percent</u>
	<u>Percent</u>		<u>Percent</u>			
Short-term:						
Federal Money Market Fund	\$ 77,795	0.12	\$ 129,594	0.23	\$ (51,799)	1.00
Domestic fixed income securities:						
Total Bond Market Index Institutional Fund	15,502,615	23.65	15,678,494	27.26	(175,879)	24.00
Domestic equities:						
Total Stock Market Index Institutional Fund	33,919,497	51.74	27,361,878	47.58	6,557,619	50.00
International equities:						
International Stock Index Institutional Fund	<u>16,053,575</u>	<u>24.49</u>	<u>14,337,659</u>	<u>24.93</u>	<u>1,715,916</u>	<u>25.00</u>
Total investments	<u>\$ 65,553,482</u>	<u>100.00</u>	<u>\$ 57,507,625</u>	<u>100.00</u>	<u>\$ 8,045,857</u>	<u>100.00</u>

*All investments are held with Vanguard

**New York State Teachers' Retirement System
Retired Employee Health Benefits Trust
as of June 30, 2023**

Fund Performance¹

	<u>Market Value</u>	<u>Quarter</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>10 Years</u>	<u>Inception Return</u>	<u>Date</u>
Domestic Equity ²	\$ 33,919,497	8.41%	18.93%	18.93%	12.90%	11.29%	12.34%	9.87%	4/30/2008
CRSP US Total Market ³		8.41%	18.94%	18.94%	12.91%	11.31%	12.36%	9.88%	
International Equity ⁴	\$ 16,053,575	2.61%	12.34%	12.34%	7.54%	3.72%	5.08%	2.31%	4/30/2008
FTSE Global All Cap ex US ⁵		2.53%	12.51%	12.51%	7.22%	3.52%	4.75%	2.05%	
Domestic Fixed Income	\$ 15,502,615	-0.90%	-0.89%	-0.89%	-4.01%	0.78%	1.49%	2.60%	4/30/2008
Bloomberg Cap. US Agg. Float Adj.		-0.86%	-0.85%	-0.85%	-3.97%	0.82%	1.54%	2.67%	
Short Term	\$ 77,795	5.99%	8.53%	8.53%	2.83%	2.42%	1.40%	1.07%	4/30/2008
iMoney Net Money Fund Avg/Taxable		1.16%	3.49%	3.49%	1.19%	1.32%	0.79%	0.61%	
Total Portfolio	\$ 65,553,482	4.63%	12.00%	12.00%	7.38%	7.02%	7.73%	7.17%	4/30/2008



Footnotes:

¹Returns for periods greater than 1 year are annualized. All returns are time-weighted rates of return and reflect the deduction of fund expense ratios, purchase or redemption fees, and any advisory service fees.

²Effective 5/31/21, the Domestic Equity portfolio was transferred from the Institutional Index fund to the Vanguard Total Stock Market Index fund.

³S&P 500 Index through 5/31/21, and the CRSP US Total Market Index thereafter.

⁴The Benchmark for the Vanguard Total International Stock Index Fund was the MSCI EAFE + Emerging Markets Index through 12/15/2010; MSCI ACWI ex USA IMI Index through 6/2/2013; and FTSE Global All Cap ex US Index thereafter.

⁵MSCI EAFE Index through 10/31/11, MSCI ACWI Ex-US Index through 5/31/21, and the FTSE Global All Cap ex US Index thereafter.

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 26, 2023.

The following individuals were in attendance:

Committee Members: Phyllis Harrington (via WebEx), David Keefe (via WebEx), Christopher Morin (via WebEx), Oliver Robinson

Board Members: Juliet Benaquisto, Elizabeth Chetney, Eric Iberger, Jennifer Longtin, Ruth Mahoney, Nicholas Smirensky

NYSTRS Staff: Thomas Lee, Don Ampansiri, Yiselle Ruoso

Visitor via WebEx: Pete Savage, NYSUT

The meeting was called to order by D. Keefe, Chair, at 1:03 p.m. The following items were discussed:

1. Approval of minutes from April 27, 2023 meeting

Upon motion of O. Robinson, seconded by C. Morin and unanimously carried, the minutes of the April 27, 2023 meeting were approved.

2. Legislative Program

D. Ampansiri provided a review of the System's 2023 Legislative Program together with legislation of significant interest to the System and a look at the proposed 2024 Legislative Program (Appendix A, pp. 6-15). The 2024 Legislative Program will be presented for recommendation to the Committee and to the Board at the October 2023 meeting.

3. Amendments to the System's Rules and Regulations

a. Resolution Amending the System's Rules and Regulations Part 5004 – Loans

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

WHEREAS, Part 5004 of the System's Rules and Regulations governs the provisions relating to member loans;

WHEREAS, Staff recommends amendments to the System's Rules and Regulations Section 5004.9 incorporating the administrative practice of allowing members to make payment on an outstanding loan after retirement:

1. In the case of those retiring for service, the member will have 30 days from the date of retirement to make full payment on the outstanding loan; and
2. In the case of those retiring for disability, the member will have 30 days following the date that the System's Retirement Board approves the disability retirement application or 30 days following the date on which retirement occurs, whichever is later.

WHEREAS, Staff further recommends technical amendments to System's Rules and Regulations Section 5004.3 to mirror the statute limiting the maximum amount certain Tier 6 members may borrow against their retirement contributions; be it therefore

RESOLVED, That, effective immediately, the following amendments to Sections 5004.9 and 5004.3 of the Rules and Regulations of the New York State Teachers' Retirement System be adopted and implemented, a copy of which is annexed hereto and made a part thereof of Appendix B, page 16-24.

- b. Resolution Amending the System's Rules and Regulations Part 5020 – Disability Retirement Determinations

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

WHEREAS, In certain circumstances NYSTRS members may be eligible to receive workers' compensation or long term disability payments and said payments are issued via a private or third-party administrator;

WHEREAS, Payments made for workers' compensation and long term disability by private or third-party administrators are not considered pensionable;

WHEREAS, Members may be on leaves collecting these benefits from a private or third-party administrator for years leading to a substantial gap between the member's ceased teaching date and the date they file a disability application with NYSTRS, and this passage of time hinders NYSTRS' ability to determine the member's degree of disability at the time they ceased teaching and to obtain supporting medical documentation from the time of such cessation; be it therefore

RESOLVED, Staff recommends adding a new §5020.6, with an effective date of July 1, 2024, to provide members receiving private or third-party workers' compensation and long term disability payments a period not exceeding twelve (12) months from the date the member was last paid on the employer payroll for the timely filing of the disability retirement application with NYSTRS; and be it further

RESOLVED, That the following new Section 5020.6 of the Rules and Regulations of the New York State Teachers' Retirement System is hereby adopted and implemented, a copy of which is annexed hereto and made a part thereof of Appendix C, page 16-24.

4. Signatory Authority

A. Resolution Identifying Financial and Legal Document Signatories

Upon motion of O. Robinson, 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 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 October 27, 2022, 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 D, pp. 25-26); 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 26, 2023 and, upon taking effect, shall supersede the identifying resolution previously adopted by the Retirement Board on October 27, 2022

B. Resolution Identifying Warrant Signatories

Upon motion of P. Harrington, seconded by C. Morin 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 October 27, 2022, 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 E, p. 27) dated July 26, 2023; 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 26, 2023 and, upon taking effect, shall supersede the identifying resolution previously adopted on October 27, 2022.

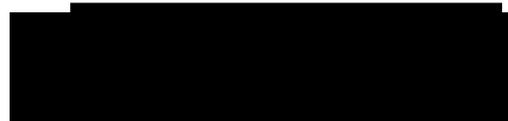
5. Finance Report

The Committee members reviewed the Statement of Fiduciary Net Position, Statement of Changes in Fiduciary Net Position and Administrative Fund (Appendix F. pp. 28-32).

6. Quarterly Signatory Additions and Deletions were reviewed by the Committee (Appendix G, p. 33).

There being no further business, the Committee adjourned at 1:22 p.m.

Respectfully submitted,

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

Thomas K. Lee

NEW YORK STATE TEACHERS' RETIREMENT SYSTEM
Legal Department Memorandum

TO: Retirement Board

FROM: D. Ampansiri, Jr./Y. Ruoso/K. Vrbanac

RE: 2023 Legislative Report

DATE: July 18, 2023

CC: T. Lee

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 are the 2023 Legislation of Interest to NYSTRS chart, the NYSTRS 2023 Legislative Program grid and a first look at the 2024 Proposed Legislative Program.

2023 Legislative Session Data

- 896 bills were approved by both the Senate and Assembly
- 1 of 2 System program bills passed both houses
- As of this writing, there are 191 chapters (bills enacted in law)
- New York lawmakers considered 603 bills over 10 days in June.

Proposed 2024 Program

The 2024 legislative session is the second year of the two year cycle. As such, NYSTRS 2024 Legislative Program will carry forward one bill from the 2023 Legislative Program not acted on by the Legislature, program bill 23-2 (2-year Benefit Recalculation) as program bill 24-2 respectively:

- 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.

As of this writing, the following program bill 23-1 (Transfer of Reserves) has passed both houses and, depending on the Governor's action, staff will provide a recommendation at the October Retirement Board meeting:

- 23-1 Reinstates the transfer of reserves for members transferring between certain public retirement systems with 10 or more years of credited service.

2023 Legislation of Interest

The 2023 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 a couple items captured on the chart that have been signed into law by the Governor:

Chapter 55 of the Laws of 2023, Part V – Amends the Retirement and Social Security Law to waive §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, 2024. Part V is a one-year extension of Chapter 56 of the Laws of 2022 (Part HH). **Signed by the Governor on May 3, 2023.**

Chapter 190 of the Laws of 2023, Governor's Program Bill 13 – Ratifies the contracts for the Professional, Scientific and Technical Services Unit employees (Part A) and for Managerial or Confidential employees (Part B). Due to the increase in salary for the upcoming years covered under the collective bargaining agreements, the maximum salary which is used to calculate the ordinary death benefit of members of the public retirement systems will also increase. **Signed by the Governor on June 30, 2023.**

2023 LEGISLATION OF INTEREST TO NYSTRS

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

S4005C A3005C (Part V)	<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, 2024. Part V is a one-year extension of Chapter 56 of the Laws of 2022 (Part HH).</p> <p>Last Action: 05/01/23 Passed Senate 05/01/23 Passed Assembly 05/02/23 Delivered to the Governor 05/03/23 Signed by the Governor [Chapter 55 of the Laws of 2023]</p>	Article VII (PPGG)
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II. AMENDMENTS TO THE RETIREMENT AND SOCIAL SECURITY LAW

S5131 A5629	<p>Permits a retired member to change their option election or designate a new beneficiary where the beneficiary has been convicted of domestic violence against the retiree.</p> <p>Last Action: 03/20/23 Referred to GE 05/22/23 Passed Senate 05/22/23 Delivered to Assembly and Referred to GE</p>	Webb Reyes
S7509 A7668	<p>Updates certain death benefit provisions of the NYCERS, NYCTRS and BERS to ensure compliance with the Older Workers' Benefit Act; also updates the law to remove the age 60 qualifier and provide retirees to be eligible for the post-retirement death benefit in the third and subsequent years following retirement at the rate of 10% of the benefit in force at the time of retirement (this piece is similar to the NYSTRS update made by Chapter 376 of the laws of 2021).</p> <p>Last Action: 06/09/23 Passed Senate 06/10/23 Passed Assembly 06/10/23 Returned to Senate</p>	Jackson Pheffer Amato

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

July 18, 2023

III. AMENDMENTS TO THE EDUCATION LAW

S899 A1101	Creates the “Teachers’ Fossil Fuel Divestment Act” requiring the NYSTRS Board to create an exclusion list of coal producers and oil and gas producers and provides timeframes for divesting any investments in companies included on the exclusion list; requires reporting to the legislature. Last Action: 01/09/23 Referred to CS 01/13/23 Referred to GE	Brisport Kelles
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IV. AMENDMENTS TO THE CIVIL SERVICE LAW

S7576 A7766	Ratifies the contracts for the Professional, Scientific and Technical Services Unit employees (Part A) and for Managerial or Confidential employees (Part B). Due to the increase in salary for the upcoming years covered under the collective bargaining agreements, the maximum salary which is used to calculate the ordinary death benefit of members of the public retirement systems will also increase. Governor’s Program #13 Last Action: 06/09/23 Passed Assembly 06/09/23 Passed Senate 06/09/23 Returned to Senate 06/29/23 Delivered to Governor 06/30/23 Signed by the Governor [Chapter 190 of the Laws of 2023]	Jackson Pheffer Amato
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V. OTHERS

S4878A A398A	Amends Labor Law to require employers to provide employees who are terminated or whose hours are reduced with notice that they may be eligible for unemployment benefits. Last Action: 06/01/23 Passed Assembly 06/05/23 Passed Senate 06/05/23 Returned to Assembly	Mayer Burdick
S2518A A836	Amends Labor Law to prohibit employers from requesting or requiring an employee or applicant to disclose any username, password, or other means for accessing a personal account or service. Last Action: 03/21/23 Passed Assembly 05/22/23 Passed Senate 05/22/23 Returned to Assembly	Ramos Dinowitz

NYSTRS 2023 LEGISLATIVE PROGRAM GRID

Subject	2023 Bill No.	Sponsor	Com. Ref.	Report 1 st /2 nd	3 RD Reading.	Passed	To Gov.	Gov.'s Action
23-1 Reinstates the transfer of reserves for members transferring between certain public retirement systems with 10 or more years of credited service. Cost - No Cost	S7512	Jackson	06/02/23 Rules	XXX	06/05/23 ORDERED CAL. 1605	06/05/23		
	----- A7444A	----- McMahon	----- 05/19/23 GE 05/23/23 W&M 06/05/23 W&M 06/09/23 W&M	----- 06/09/23 Rules	----- 06/09/23	----- 06/09/23		
23-2 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	S7462	Ryan	05/30/23 CS 06/01/23 Rules	XXX	06/01/23 ORDERED CAL 1553	06/07/23		
	-----	-----	----- 06/07/23 GE	-----	-----	-----		

July 18, 2023

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



New York State Teachers' Retirement System

10 Corporate Woods Drive
Albany, New York 12211-2395
(800) 348-7298 or (518) 447-2900
NYSTRS.org

RETIREMENT BOARD

David P Keefe <i>President</i>	Hempstead
L. Oliver Robinson <i>Vice President</i>	Clifton Park
Juliet C. Benaquisto	Schenectady
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Christopher Morin	Scarsdale
Nicholas Smirensky	Delmar
Thomas K. Lee, Executive Director & CIO	

PROPOSED 2024 LEGISLATIVE PROGRAM

Bill No.	Bill Purpose
24-1	Reinstates the transfer of reserves for members transferring between certain public retirement systems with 10 or more years of credited service. [Passed both houses during the 2023 Legislative Session and awaiting Governor'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.

Legislative Update

July 2023



NYSTRS 2023 Program Bills



Program Bill 23-1 (Transfer of Reserves)

Amends various provisions of law to reinstate the transfer of pension reserves in cases in which a member of NYSTRS or other NY public plans (except for the police and fire plans and within the city plans) transfers a membership with ten or more year of credited service at the time of transfer is initiated.

- Passed Senate June 5, 2023
- Passed Assembly June 9, 2023
- Awaiting delivery to the Governor
- If enacted, estimated to be no additional annual cost to employers of members of NYSTRS

Program Bill 23-2 (2-year Benefit Recalculation)

Amends Education Law 503(11) to allow NYSTRS retirees who return to active service and suspend their retirement benefit, the option of electing to combine their service credit earned prior to their retirement with at least 2 years of service credit earned since restoration to active service. The member must return the amount of pension previously received with interest or have their benefit actuarially reduced for life.

- Passed Senate June 7, 2023
- Not introduced in Assembly
- If enacted, estimated cost to be negligible to employers of members of NYSTRS

SECURE 2.0

Mandatory

RMD for 401(a) DB plans – NYSTRS has updated process to comply

- Raises the RMD age to “applicable age”
- Age 73 on 1/1/2023
- Incremental increase to age 75 by 1/1/2033

Total RMDs processed at NYSTRS:

- 2023: 25
- 2022: 41

Optional*

Recovery of Overpayments – IRC amended to allow fiduciary discretion on inadvertent overpayments to members and beneficiaries.

**State fiduciary standards should also be considered. NYS statute requires NYSTRS to collect overpayments.*

Expansion of EPCRS (Employee Plans Compliance Resolution System) – allows broader self-correction

**Future IRS guidance may limit this provision*

Staff are reviewing the optional provisions, consulting with other state pension plans and tax counsel and will return to the Retirement Board with a more detailed summary and recommendation on the application to defined benefit plans once available.

*The effective dates for optional provisions vary.





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

TO: Retirement Board

FROM: D. Ampansiri, Jr.; B. Dellea; Y. Ruoso

SUBJECT: Amendments to the System's Rules and Regulations

DATE: July 18, 2023

CC: T. Lee

As discussed at the April 2023 meeting of the Executive Committee of the Retirement Board, staff from Member Relations and Legal proposed amendments to the System's Rules and Regulations. The proposals are summarized in this memo.

This is the second look at these regulations and, in the interim, staff met with the active teacher Board members to discuss the effect of the new proposals. In those discussions, staff recommended the amendment to Part 5020, the new §5020.6, take effect on July 1, 2024.

We are providing the proposed amendments in two formats (a mark-up and a clean version) and accompanying resolutions for your consideration.

In addition to the amendments to section §5004.9 and §5020.6 discussed in April, please find regulations updating §5004.3 to reflect the Tier 6 loan limitations enacted by statute in 2021 and effective July 1, 2022. The System timely implemented the law and this amendment updates the rules and regulations for consistency.

Summary of proposals:

Part 5004 – amend §5004.9, provision (b)

When a member commences the retirement process, and has an outstanding loan, System staff provide the member with the opportunity to make a loan payoff thirty (30) days from the member's date of retirement. This has been an administrative practice for members retiring for service retirement for many years and parallels the timeframe to make an option change. If the member does not make payment on the outstanding loan,

the statutes require a lifetime actuarial reduction of the member's retirement benefit equivalent to the amount of the outstanding loan.

Staff recommends the administrative practice of allowing 30 days from the date of retirement to make payment on the outstanding loan be incorporated into regulations for members filing for service and disability retirement.

The proposed regulations amend Section 5004.9 (b) to allow retiring members to make said payment as follows:

1. In the case of those retiring for service, the member will have 30 days from the date of retirement to make the payment on the outstanding loan.
2. In the case of those retiring for disability, the member will have 30 days following the date the System's Retirement Board approves the disability retirement application or 30 days following the date on which retirement occurs, whichever is later.

The time frame for the disability retiree reflects and captures the Medical Board process which unavoidably takes them outside the 30 day loan payoff window available for service retirees and will provide disability retirees with a comparable opportunity to remit the payment on the outstanding loan.

Part 5020 – add new §5020.6

Workers' compensation payments to NYSTRS members having an employer-employee relationship and being paid directly by the member's employer are pensionable and employers are required to report these payments to the System.

Worker's compensation payments paid by a private or third-party administrator are not considered pensionable. With that said, many members collect these benefits for lengthy periods of time and then decide to file for disability retirement. Although the members technically meet the criteria for filing their disability application as they are on a leave of absence for medical reasons without pay and have not terminated their employment, the extension of time between collecting these benefits and filing for retirement is problematic.

In some cases, the members are on a leave collecting the benefits from a third-party administrator for many years and have a substantial gap between the ceased teaching date and the date they file their disability application. Under the statute, they must establish and meet the standard of totally and permanently disabled from gainful employment at the time they ceased teaching.

The further out in time these cases are filed, the more difficult it is for the Medical Board to determine the member's degree of disability at the time they ceased teaching. The same difficulty may also exist for the member. In our research, peer NYS plans have addressed this matter via regulation to provide time parameters for disability retirement filing around these extended leaves when the member is receiving workers' compensation or other employer-funded disability programs not paid directly by their employer.

Staff recommends a regulation to provide members receiving said private or third-party payments a period not exceeding twelve (12) months from the date the member was last paid on the employer payroll for the timely filing of the disability retirement application. The period of 12 months parallels the statutory time frame to file for disability retirement and creates a consistent process for those members who are no longer reported on the district payroll, but have also not terminated their employment with the district due to the receipt of these types of payments.

The recommendation is for this regulation to become effective July 1, 2024 in order to have sufficient time to provide education to the employers and membership.

The addition of this regulation will help to ensure, for both the System and the members, that contemporaneous medical documentation is submitted and reviewed for the disability claim while also affording a consistent process and time parameter for all members filing for disability.

Part 5004 – makes technical amendments to §5004.3

Amends §5004.3 to mirror the statutory provisions limiting the maximum amount Tier 6 members who join NYSTRS on or after July 1, 2022 may borrow against their retirement contributions. A Tier 6 member joining NYSTRS on or after July 1, 2022 may borrow up to 50% of the member's total contribution balance or \$50,000, whichever is less.

PART 5004**LOANS**

(Statutory authority: Education Law, §512-b; Retirement and Social Security Law, §§517-b, 613-a)

Section 5004.9 THE EFFECT ON UNPAID LOANS OF DEATH, RETIREMENT, WITHDRAWAL OR TRANSFER TO ANOTHER RETIREMENT SYSTEM FOR TIER 3 THROUGH 6 MEMBERS.

(b) (1) Whenever a member for whom a loan is outstanding retires for service, the member will have 30 days from the date of retirement to make full payment on the outstanding loan. If no such payment is received by the System, the retirement allowance payable without optional modification shall be reduced by a life annuity which is actuarially equivalent to the amount of the outstanding loan. Such life annuity shall be calculated utilizing the average annual percentage interest rate on the Nominal 10-year United States Treasury constant maturity obligations as published in the Federal Reserve Selected Interest Rates H.15 Historical Data report for the days during the calendar year preceding the calendar year in which the retirement becomes effective, truncated to two decimal places and pursuant to the mortality tables for options available under Retirement and Social Security Law Section 514 or 610.

(2) Whenever a member for whom a loan is outstanding retires under a disability retirement, the member will have the later of: (i) 30 days following the date on which the retirement application is approved by the System's Retirement Board; or (ii) 30 days following the date on which retirement occurs to make full payment on the outstanding loan. If no such payment is received by the System, the retirement allowance payable without optional modification shall be reduced by a life annuity which is actuarially equivalent to the amount of the outstanding loan. Such life annuity shall be calculated utilizing the average annual percentage interest rate on the Nominal 10-year United States Treasury constant maturity obligations as published in the Federal Reserve Selected Interest Rates H.15 Historical Data report for the days during the calendar year preceding the calendar year in which the retirement becomes effective, truncated to two decimal places and pursuant to the mortality tables for options available under Retirement and Social Security Law Section 514 or 610.

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(2) Whenever a member for whom a loan is outstanding retires under a disability retirement, the member will have the later of: (i) 30 days following the date on which the retirement application is approved by the System's Retirement Board; or (ii) 30 days following the date on which retirement occurs to make full payment on the outstanding loan. If no such payment is received by the System, the retirement allowance payable without optional modification shall be reduced by a life annuity which is actuarially equivalent to the amount of the outstanding loan. Such life annuity shall be calculated utilizing the average annual percentage interest rate on the Nominal 10-year United States Treasury constant maturity obligations as published in the Federal Reserve Selected Interest Rates H.15 Historical Data report for the days during the calendar year preceding the calendar year in which the retirement becomes effective, truncated to two decimal places and pursuant to the mortality tables for options available under Retirement and Social Security Law Section 514 or 610.

PART 5020**DISABILITY RETIREMENT DETERMINATIONS**

(Statutory authority: Education Law, §511; Retirement and Social Security Law, §§506, 507, 605)

Section 5020.6 WORKERS' COMPENSATION OR OTHER EMPLOYER-FUNDED

DISABILITY PROGRAMS. For the purposes of eligibility for timely filing an application for disability retirement benefits, members who are receiving benefit payments from either workers' compensation or other employer-funded disability programs and whose employment has not terminated by resignation, employer action or any other means, shall be considered to be in service upon which membership in the System is based for a period not exceeding 12 months from the date the member was last paid on the employer payroll.

PART 5020**DISABILITY RETIREMENT DETERMINATIONS**

(Statutory authority: Education Law, §511; Retirement and Social Security Law, §§506, 507, 605)

Section 5020.6 WORKERS' COMPENSATION OR OTHER EMPLOYER-FUNDED DISABILITY PROGRAMS. For the purposes of eligibility for timely filing an application for disability retirement benefits, members who are receiving benefit payments from either workers' compensation or other employer-funded disability programs and whose employment has not terminated by resignation, employer action or any other means, shall be considered to be in service upon which membership in the System is based for a period not exceeding 12 months from the date the member was last paid on the employer payroll.

PART 5004**LOANS**

(Statutory authority: Education Law, §512-b; Retirement and Social Security Law, §§517-b, 613-a)

Section 5004.3 ADDITIONAL ELIGIBILITY REQUIREMENTS FOR TIER 3 THROUGH 6 MEMBERS.

(a) Members must not have previously received a loan during the calendar year (January 1 - December 31) in which the loan is to be issued. A member must apply by December 15 in order to assure the loan is issued by December 31.

(b) [A] For members with a date of membership prior to July 1, 2022, a loan shall be at least one thousand dollars (\$1000.00) and, together with any outstanding loan balance, shall not exceed 75 percent of the member's total [contributions] contribution balance.

(c) For members who first join the System on or after July 1, 2022, a loan shall be at least one thousand dollars (\$1000.00), and, together with any outstanding loan balance, shall not exceed 50 percent of the member's total contribution balance or \$50,000, whichever is less.

(d) To the extent that the loan satisfies the requirements of Section 72(p) of the Internal Revenue Code except that the amount loaned exceeds the limitations of Section 72(p)(2)(A) of the Internal Revenue Code, the amount of the loan in excess of the limitations of Section 72(p)(2)(A) shall be treated as a deemed distribution for Federal income tax purposes at the time the loan is made in accordance with Treasury Regulation Section 1.72(p)-1, Q&A-4 and Q&A-12.

PART 5004**LOANS**

(Statutory authority: Education Law, §512-b; Retirement and Social Security Law, §§517-b, 613-a)

Section 5004.3 ADDITIONAL ELIGIBILITY REQUIREMENTS FOR TIER 3 THROUGH 6 MEMBERS.

(a) Members must not have previously received a loan during the calendar year (January 1 - December 31) in which the loan is to be issued. A member must apply by December 15 in order to assure the loan is issued by December 31.

(b) For members with a date of membership prior to July 1, 2022, a loan shall be at least one thousand dollars (\$1000.00) and, together with any outstanding loan balance, shall not exceed 75 percent of the member's total contribution balance.

(c) For members who first join the System on or after July 1, 2022, a loan shall be at least one thousand dollars (\$1000.00), and, together with any outstanding loan balance, shall not exceed 50 percent of the member's total contribution balance or \$50,000, whichever is less.

(d) To the extent that the loan satisfies the requirements of Section 72(p) of the Internal Revenue Code except that the amount loaned exceeds the limitations of Section 72(p)(2)(A) of the Internal Revenue Code, the amount of the loan in excess of the limitations of Section 72(p)(2)(A) shall be treated as a deemed distribution for Federal income tax purposes at the time the loan is made in accordance with Treasury Regulation Section 1.72(p)-1, Q&A-4 and Q&A-12.



Signatory Authorization Grid

Financial and Legal Document Signatories As of June 30, 2023

Division	Name	Position
Administration	Miriam Dixon	Executive
Administration	Rebecca Kannan	Deputy Executive
Administration	Jason Freeman	Manager/Director
Diversity, Equity, & Inclusion	Danny Malavé	Executive
Executive	Emily Eklund	Executive
Executive	Heidi Brennan	Manager/Director
Executive	Timothy Mack	Assistant Manager/Assistant Director
Fixed Income	Joseph Wood	Assistant Manager/Assistant Director
Fixed Income	Michael Federici	Executive
Fixed Income	Aaron VanDerwiel	Manager/Director
Information Technology	Vijay Madala	Executive
Information Technology	Sarah Garrand	Manager/Director
Information Technology	Mark Gallagher	Manager/Director
Internal Audit	Kathy Ebert	Executive
Internal Audit	Bruce Woolley	Assistant Manager/Assistant Director
Internal Audit	Lei Zhang	Assistant Manager/Assistant Director
Member Relations	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
Office of the Actuary	Richard Young	Executive
Office of the Actuary	Melody Pranglely	Deputy Executive
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	Manager/Director
Office of the General Counsel	Yiselle Ruoso	Manager/Director
Office of the General Counsel	Janet Graham	Assistant/Associate Counsel
Office of the General Counsel	Adam Kinney	Assistant/Associate Counsel
Office of the General Counsel	Morgan Anderson	Assistant/Associate Counsel
Private Equity	Gerald Yahoudy	Executive
Private Equity	Brad Woolworth	Manager/Director
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

Division	Name	Position
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

Signatory Authorization Grid

Appendix E



Warrant Signatories As of June 30, 2023

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

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM

MEMORANDUM

TO: T. Lee

FROM: Office of the CFO / Finance Department

DATE: July 26, 2023

SUBJECT: Retirement Board Package

Attached are the System's annual financial statements and related schedules for the years ended June 30, 2023 and 2022.

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 6/30/23 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)

29

June 30, 2023 and 2022

Assets	<u>2023</u>	<u>2022</u>
Investments at fair value:		
Domestic equity	\$ 45,821,764,524	\$ 41,961,629,092
International equity	18,709,767,570	19,509,374,580
Global equity	4,904,669,810	4,218,622,930
Real estate equity ¹	16,659,757,222	16,491,592,394
Private equity ¹	15,037,427,267	14,073,680,950
Domestic fixed income	18,091,466,052	18,271,844,042
High-yield bonds	1,359,491,795	958,586,276
Global bonds	2,714,219,549	2,950,256,319
Real estate debt ¹	7,587,925,954	7,730,875,919
Private debt ¹	1,986,765,200	1,424,443,081
Cash equivalents	1,762,023,837	2,269,278,079
Total investments ¹	<u>134,635,278,780</u>	<u>129,860,183,662</u>
Receivables:		
Employer	1,825,705,153	1,695,039,855
Member	167,253,807	167,253,806
Investment income	332,408,931	291,344,466
Investment sales	137,152,123	157,375,348
Total receivables	<u>2,462,520,014</u>	<u>2,311,013,475</u>
Other assets:		
Securities lending collateral, invested	352,050,044	709,826,877
Member loans	251,656,190	232,472,976
Net investment in capital assets	19,658,929	20,722,456
Miscellaneous assets	5,945,088	11,232,853
Total other assets	<u>629,310,251</u>	<u>974,255,162</u>
Total assets ¹	<u>137,727,109,045</u>	<u>133,145,452,299</u>
Deferred outflows of resources:		
Changes in net OPEB liability	15,103,133	10,703,193
Changes in net pension liability ²	18,052,606	18,052,606
Total deferred outflows of resources	<u>33,155,739</u>	<u>28,755,799</u>
Liabilities		
Securities lending collateral, due to borrowers	350,248,637	707,886,736
Investment purchases payable	192,336,611	278,471,685
Mortgage escrows and deposits, net of investments	6,269,489	12,895,063
Net OPEB liability	48,846,994	34,792,089
Other liabilities ²	149,215,808	128,582,365
Total liabilities ²	<u>746,917,539</u>	<u>1,162,627,938</u>
Deferred inflows of resources:		
Changes in net OPEB liability	2,249,463	13,229,678
Changes in net pension liability ²	33,768,375	33,768,375
Total deferred inflows of resources	<u>36,017,838</u>	<u>46,998,053</u>
Net position restricted for pensions	<u>\$ 136,977,329,407</u>	<u>\$ 131,964,582,107</u>

¹ Based on estimated 6/30/23 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)

30

For the Years Ended June 30, 2023 and 2022

Additions:	<u>2023</u>	<u>2022</u>
Investment income:		
Net appreciation (depreciation) in fair value of investments ¹	\$ 8,814,215,111	\$ (12,446,619,443)
Interest	882,704,006	785,225,205
Dividends	1,412,283,356	1,442,148,917
Real estate, net operating income	540,404,132	525,001,378
Securities lending, gross earnings	21,813,453	4,006,442
Other (net)	3,236,162	10,969,283
	<u>11,674,656,220</u>	<u>(9,679,268,218)</u>
Less: Investment expenses	407,838,603	399,564,207
Securities lending:		
Broker rebates	15,752,582	(522,779)
Management fees	851,300	613,227
Depreciation (appreciation) on collateral	138,735	(108,355)
Net investment income (loss) ¹	<u>11,250,075,000</u>	<u>(10,078,814,518)</u>
Contributions:		
Employer	1,870,332,779	1,735,254,972
Member	190,556,719	190,853,146
Transfers	10,841,010	8,684,549
Total contributions	<u>2,071,730,508</u>	<u>1,934,792,667</u>
Net additions (deductions) ¹	<u>13,321,805,508</u>	<u>(8,144,021,851)</u>
Deductions:		
Retirement benefit payments, periodic	8,135,345,612	7,895,256,952
Beneficiary payments	79,352,984	66,612,636
Return of contributions	20,212,723	16,754,318
Administrative expenses ²	74,146,889	61,229,499
Total deductions	<u>8,309,058,208</u>	<u>8,039,853,405</u>
Net increase (decrease) in net position ¹	5,012,747,300	(16,183,875,256)
Net position restricted for pensions, beginning of year	<u>131,964,582,107</u>	<u>148,148,457,363</u>
Net position restricted for pensions, end of year	<u>\$ 136,977,329,407</u>	<u>\$ 131,964,582,107</u>

¹ Based on estimated 6/30/23 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, 2023 and 2022

	2023	2022	Increase (Decrease)
Administrative Income:			
Contributions from employers	\$ 46,093,182	\$ 44,155,335	\$ 1,937,847
Allocation of investment income	25,981,646	24,027,527	1,954,119
Loan delinquency charges	137,864	25,918	111,946
Loan service charges	320,280	282,060	38,220
Other (net)	18,894	1,728	17,166
Total income	<u>72,551,866</u>	<u>68,492,568</u>	<u>4,059,298</u>
Administrative Expenses:			
Salaries and benefits:			
Salaries	37,245,253	36,037,940	1,207,313
Civil service	63,342	57,000	6,342
Employees' retirement	5,076,489	4,450,950	625,539
Health and dental insurance	7,122,366	6,018,703	1,103,663
OPEB contribution	6,394,396	6,000,000	394,396
Overtime salaries	58,453	28,337	30,116
Social Security	2,594,077	2,510,841	83,236
Total salaries and benefits	<u>58,554,376</u>	<u>55,103,771</u>	<u>3,450,605</u>
Building occupancy expenses:			
Building, grounds and equipment	2,659,791	1,814,895	844,896
Depreciation - building and improvement	1,953,926	1,950,407	3,519
Depreciation - equipment	126,366	146,168	(19,802)
Office supplies and expenses	185,022	163,931	21,091
Utilities and municipal assessments	1,100,573	1,126,526	(25,953)
Total building occupancy expenses	<u>6,025,678</u>	<u>5,201,927</u>	<u>823,751</u>
Computer expenses:			
Depreciation - computer micro	905,980	1,107,940	(201,960)
Computer hardware and software	4,908,252	4,027,120	881,132
Computer maintenance and supplies	144	43,860	(43,716)
Total computer expenses	<u>5,814,376</u>	<u>5,178,920</u>	<u>635,456</u>
Personnel and meeting expenses:			
Board - meetings, travel and education	82,802	72,132	10,670
Delegates' meeting	632,118	5,454	626,664
Pre-retirement seminars	4,500	(2,564)	7,064
Professional development	854,808	635,733	219,075
Travel	211,357	68,408	142,949
Other personnel expenses	170,496	116,033	54,463
Total personnel and meeting expenses	<u>1,956,081</u>	<u>895,196</u>	<u>1,060,885</u>



Administrative Fund

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

Years Ended June 30, 2023 and 2022

	2023	2022	Increase (Decrease)
Professional and governmental services:			
Auditors - financial	\$ 460,832	\$ 482,396	\$ (21,564)
Auditors - insurance department	—	—	—
Medical examinations	80,015	96,309	(16,294)
Postage	862,903	804,020	58,883
Professional fees and services	1,322,017	1,218,136	103,881
Publications	254,611	129,594	125,017
Statutory custodian charges	141,250	136,250	5,000
Total professional and governmental services	<u>3,121,628</u>	<u>2,866,705</u>	<u>254,923</u>
Total administrative expenses ¹	<u>75,472,139</u>	<u>69,246,519</u>	<u>6,225,620</u>
Net (decrease)	(2,920,273)	(753,951)	(2,166,322)
Administrative fund balance, beginning of year	<u>62,052,572</u>	<u>62,806,523</u>	<u>(753,951)</u>
Administrative fund balance, end of year	<u>\$ 59,132,299</u>	<u>\$ 62,052,572</u>	<u>\$ (2,920,273)</u>

¹ Administrative expenses on the Statements of Changes in Fiduciary Net Position for the years ended June 30, 2023 and 2022 include a reconciliation of other postemployment contribution expense to OPEB expense and employees retirement contribution expense to pension expense for (\$1,325,250) and (\$8,017,020), respectively.





Quarterly Signatory Additions & Deletions

For Quarter Ended June 30, 2023

Division	Name	Position	Warrant Signatory	Document Signatory
Diversity, Equity, & Inclusion	Danny Malavé	Executive	Not Applicable	Added
Executive	Emily Ekland	Executive	Not Applicable	Added
Fixed Income	Joseph Wood	Assistant Manager/Assistant Director	Added	Added

**NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM**

**BOARD MEETING
July 26, 2023**

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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 26, 2023. David Keefe, President, called the meeting to order at 1:30 p.m. and asked Elizabeth Chetney to lead the group in the Pledge of Allegiance.

ATTENDANCE

Present: Juliet Benaquisto, Elizabeth Chetney, Phyllis Harrington (via WebEx), Eric Iberger, David Keefe (via WebEx), Jennifer Longtin, Ruth Mahoney, Christopher Morin (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); Kevin Baload, WithIntelligence (via WebEx), Steve Greenberg, Greenberg PR.

B. Correspondence

None.

C. Approval of April 27, 2023 Board Meeting Minutes

There being no changes or corrections and upon motion of E. Chetney, seconded by P. Harrington and unanimously carried, the minutes of the April 27, 2023 Board meeting were approved.

Committee Reports/Action Items

A. Audit Committee

1. Chairman's report

O. Robinson, Chair, reported that the Committee had last met on June 8th and heard vulnerability testing results and internal audit reports.

2. Resolution Approving Interim Internal Audit Plan (R1)

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

WHEREAS, System staff has presented to the Retirement Board an internal audit plan for the period July 1, 2023 to December 31, 2023, a copy of which is annexed hereto and made a part hereof as Appendix A, p. 13; be it

RESOLVED, That the Internal Audit Plan for the period July 1, 2023 to December 31, 2023 is approved as presented.

B. Disability Review Committee

1. Disability Denial Resolution (R2)

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

WHEREAS, After reviewing the medical information submitted in connection with the following members, the Medical Board has determined the members are not incapacitated for the performance of gainful employment and has recommended the members' applications be denied, be it

RESOLVED, That the applications for retirement on account of disability submitted by the following members be denied as recommended by the Medical Board:



2. Disability Rescission Resolution (R3)

E. Iberger offered the following resolution, seconded by R. Mahoney 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>EmplID</u>	<u>Date Retired</u>	<u>Date Restored</u>
	11/03/2014	05/12/2023
	09/30/2017	07/27/2023
	10/09/2021	07/27/2023

C. Ethics Committee

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

D. Executive Committee

1. Resolution Amending the System's Rules and Regulations Part 5004 - Loans (R4)

P. Harrington offered the following resolution, seconded by O. Robinson and unanimously carried by the Board:

WHEREAS, Part 5004 of the System's Rules and Regulations governs the provisions relating to member loans;

WHEREAS, Staff recommends amendments to the System's Rules and Regulations Section 5004.9 incorporating the administrative practice of allowing members to make payment on an outstanding loan after retirement:

1. In the case of those retiring for service, the member will have 30 days from the date of retirement to make full payment on the outstanding loan; and
2. In the case of those retiring for disability, the member will have 30 days following the date that the System's Retirement Board approves the disability retirement application or 30 days following the date on which retirement occurs, whichever is later.

WHEREAS, Staff further recommends technical amendments to System's Rules and Regulations Section 5004.3 to mirror the statute limiting the maximum amount certain Tier 6 members may borrow against their retirement contributions; be it therefore

RESOLVED, That, effective immediately, the following amendments to Sections 5004.9 and 5004.3 of the Rules and Regulations of the New York State Teachers' Retirement System be adopted and implemented, a copy of which is annexed hereto and made a part thereof of Appendix B, pages 14-17.

2. Resolution Amending the System's Rules and Regulations Part

5020 – Disability Retirement Determinations (R5)

O. Robinson offered the following resolution, seconded by P. Harrington and unanimously carried by the Board:

WHEREAS, In certain circumstances NYSTRS members may be eligible to receive workers' compensation or long term disability payments and said payments are issued via a private or third-party administrator;

WHEREAS, Payments made for workers' compensation and long term disability by private or third-party administrators are not considered pensionable;

WHEREAS, Members may be on leaves collecting these benefits from a private or third-party administrator for years leading to a substantial gap between the member's ceased teaching date and the date they file a disability application with NYSTRS, and this passage of time hinders NYSTRS' ability to determine the member's degree of disability at the time they ceased teaching and to obtain supporting medical documentation from the time of such cessation; be it therefore

RESOLVED, Staff recommends adding a new §5020.6, with an effective date of July 1, 2024, to provide members receiving private or third-party workers' compensation and long term disability payments a period not exceeding twelve (12) months from the date the member was last paid on the employer payroll for the timely filing of the disability retirement application with NYSTRS; and be it further

RESOLVED, That the following new Section 5020.6 of the Rules and Regulations of the New York State Teachers' Retirement System is hereby adopted and implemented, a copy of which is annexed hereto and made a part thereof of Appendix C, pages 18-19.

3. Resolution Identifying Warrant Signatories (R6)

E. Chetney offered the following resolution, seconded by R. Mahoney 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 October 27, 2022, 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 D, p. 20) dated July 26, 2023; 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 26, 2023 and, upon taking effect, shall supersede the identifying resolution previously adopted on October 27, 2022.

4. Resolution Identifying Financial and Legal Document Signatories (R7)

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

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 October 27, 2022, 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 E, 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 26, 2023 and, upon taking effect, shall supersede the identifying resolution previously adopted by the Retirement Board on October 27, 2022

E. Investment Committee

1. Consent Agenda Items A and B (Appendix F, pp.23-24)

D. Keefe 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 A and B) with one motion.

Upon motion O. Robinson, seconded by R. Mahoney and unanimously carried, the following resolutions were moved and approved together as consent agenda items:

A. Renew Agreements

- Baillie Gifford Overseas Limited (R8)

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, 2023.

- Global REIT Managers (R9)

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, 2023
Brookfield Investment Management Inc.	August 15, 2023
AEW Capital Management, L.P.	September 12, 2023
Dimensional Fund Advisors, L.P.	September 22, 2023

- Heitman US Total Return Strategy (R10)

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, 2023.

- Leading Edge (R11)

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, 2023.

- Prima Capital Advisors (R12)

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the System's contract with Prima Capital 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, 2023.

- T. Rowe Price Associates, Inc. (R13)

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, 2023.

- William Blair and Company (R14)

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, 2023.

2. Reappointment of Risk Advisors

- Resolution Reappointing Sean William Atkinson (R15)

WHEREAS, The term of Mr. Atkinson as an advisor to the Risk Committee expires on July 28, 2023; be it

RESOLVED, That the Retirement Board hereby reappoints Mr. Atkinson as an advisor to the Risk Committee effective immediately, with term expiring December 31, 2026.

- Resolution Reappointing Peter K. Cosgrove (R16)

WHEREAS, The term of Mr. Cosgrove as an advisor to the Risk Committee expires on July 28, 2023; be it

RESOLVED, That the Retirement Board hereby reappoints Mr. Cosgrove as an advisor to the Risk Committee effective immediately, with term expiring December 31, 2026.

- Resolution Reappointing Steven C. Huber (R17)

WHEREAS, The term of Mr. Huber as an advisor to the Risk Committee expires on July 28, 2023; be it

RESOLVED, That the Retirement Board hereby reappoints Mr. Huber as an advisor to the Risk Committee effective immediately, with term expiring December 31, 2026.

3. Resolution on Investment Discretion (R18)

J. Longtin 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 2022 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.

4. Resolution on Asset Allocation (R19)

J. Longtin offered the following resolution, seconded by R. Mahoney 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%

F. Risk Committee

C. Morin, 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/Action Items

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 as Appendix G, pp. 25-26.

2. Member Relations

B. Dellea reported that the Delegates' Meeting will be held November 5-6 in Saratoga, New York. S. Bonesteel provided a quality assurance update of the monthly retirement file reviews. Appendix H, pp. 27-41).

3. DEI Update

D Malavé provided an update on NYSTRS' DEI program, accomplishments to date and next steps (Appendix I, pp. 42-47).

4. Actuarial Valuation Report

This report was made available to Board members prior to the meeting and is attached hereto as Appendix J, pp. 48-135.

5. Employer Contribution Rate Update

R. Young and M. Prangle gave a presentation to the Board on the employer contribution rate, attached hereto as Appendix K, pp. 136-169.

a. Resolution on Employer Contribution Rate (R20)

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

WHEREAS, The Actuary has presented to the Board the calculations based upon the June 30, 2022 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 2024-25 shall be 9.76% of the 2023-24 member payroll and shall be comprised as follows:

Normal Rate, 9.37% of payroll, credited to the Pension Accumulation Fund

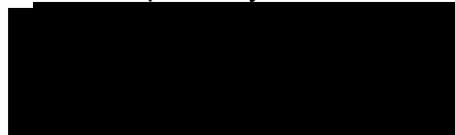
Group Life Insurance Rate, 0.13% of payroll, credited to the Group Life Insurance Fund

Expense Rate, 0.26% of payroll, credited to the Expense Fund

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

There being no further business, the meeting unanimously adjourned at 2:45 p.m.

Respectfully submitted,

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

Thomas K. Lee

Appendix: Proposed Interim Internal Audit Plan

Summary of Audit Plan - For the Period July 1, 2023 to December 31, 2023

Retirement Administration		Basis for Audit		Asset Administration		Basis for Audit	
Service Retirement Benefit Process		Operational Risk		Portfolio Limitation		Compliance Risk	
Participating Employer Reviews		AICPA Expectation & Operational Risk		Investment Account Reconciliation		Operational & Reporting Risk	
(PY) Active Death Benefits - Follow Up		Operational Risk		(PY) Real Estate Acquisition Operational Audit		Operational Risk	
(PY) Recording of Overpayments		Operational Risk		(PY) Transition Audit: Investment Infrastructure Modernization		Operational Risk	
*Pension calculation Rewrite Project (Consulting)		Operational Risk & Reputational Risk		*Proxy Voting		Operational & Compliance Risk	
*Pension calculation Rewrite Project - Mismatch Report		Operational Risk & Reputational Risk		*Private Equity and Real Estate Warrants		Operational Risk	
*Direct Deposit		Operational Risk		*Cash Management and Liquidity		Operational Risk	
*Collection and Write-Off (Backup)		Operational Risk		*Direct Equity Real Estate		Operational Risk	
*Employer Reporting - Overrides (Backup)		Operational Risk					
*Abandon Accounts (Backup)		Operational Risk					
Information Technology		Basis for Audit		General Administration		Basis for Audit	
Vulnerability Assessment & Pen. Testing (Co-Sourced)		IA Charter & Cyber Risk		Operating Expenses		OSC Expectation/Operational & Reputational Risk	
				Fraud, Waste or Abuse Hotline		Fraud Risk & GFOA Best Practice	
				Coordination of Annual Financial Statement Audit		IA Charter & Reporting Risk	
				Coordination of External Real Estate Audits		IPM & Reporting Risk	
				(PY) Contract Approval - Investments		Compliance Risk	
				(PY) Examination by DFS for the five years ended June 30, 2022		IA Charter/Operational & Compliance Risk	

Key

*New Audits

(PY) Carryover audits

PART 5004**LOANS**

(Statutory authority: Education Law, §512-b; Retirement and Social Security Law, §§517-b, 613-a)

Section 5004.3 ADDITIONAL ELIGIBILITY REQUIREMENTS FOR TIER 3 THROUGH 6 MEMBERS.

(a) Members must not have previously received a loan during the calendar year (January 1 - December 31) in which the loan is to be issued. A member must apply by December 15 in order to assure the loan is issued by December 31.

(b) [A] For members with a date of membership prior to July 1, 2022, a loan shall be at least one thousand dollars (\$1000.00) and, together with any outstanding loan balance, shall not exceed 75 percent of the member's total [contributions] contribution balance.

(c) For members who first join the System on or after July 1, 2022, a loan shall be at least one thousand dollars (\$1000.00), and, together with any outstanding loan balance, shall not exceed 50 percent of the member's total contribution balance or \$50,000, whichever is less.

(d) To the extent that the loan satisfies the requirements of Section 72(p) of the Internal Revenue Code except that the amount loaned exceeds the limitations of Section 72(p)(2)(A) of the Internal Revenue Code, the amount of the loan in excess of the limitations of Section 72(p)(2)(A) shall be treated as a deemed distribution for Federal income tax purposes at the time the loan is made in accordance with Treasury Regulation Section 1.72(p)-1, Q&A-4 and Q&A-12.

PART 5004**LOANS**

(Statutory authority: Education Law, §512-b; Retirement and Social Security Law, §§517-b, 613-a)

Section 5004.3 ADDITIONAL ELIGIBILITY REQUIREMENTS FOR TIER 3 THROUGH 6 MEMBERS.

(a) Members must not have previously received a loan during the calendar year (January 1 - December 31) in which the loan is to be issued. A member must apply by December 15 in order to assure the loan is issued by December 31.

(b) For members with a date of membership prior to July 1, 2022, a loan shall be at least one thousand dollars (\$1000.00) and, together with any outstanding loan balance, shall not exceed 75 percent of the member's total contribution balance.

(c) For members who first join the System on or after July 1, 2022, a loan shall be at least one thousand dollars (\$1000.00), and, together with any outstanding loan balance, shall not exceed 50 percent of the member's total contribution balance or \$50,000, whichever is less.

(d) To the extent that the loan satisfies the requirements of Section 72(p) of the Internal Revenue Code except that the amount loaned exceeds the limitations of Section 72(p)(2)(A) of the Internal Revenue Code, the amount of the loan in excess of the limitations of Section 72(p)(2)(A) shall be treated as a deemed distribution for Federal income tax purposes at the time the loan is made in accordance with Treasury Regulation Section 1.72(p)-1, Q&A-4 and Q&A-12.

PART 5004**LOANS**

(Statutory authority: Education Law, §512-b; Retirement and Social Security Law, §§517-b, 613-a)

Section 5004.9 THE EFFECT ON UNPAID LOANS OF DEATH, RETIREMENT, WITHDRAWAL OR TRANSFER TO ANOTHER RETIREMENT SYSTEM FOR TIER 3 THROUGH 6 MEMBERS.

(b) (1) Whenever a member for whom a loan is outstanding retires for service, the member will have 30 days from the date of retirement to make full payment on the outstanding loan. If no such payment is received by the System, the retirement allowance payable without optional modification shall be reduced by a life annuity which is actuarially equivalent to the amount of the outstanding loan. Such life annuity shall be calculated utilizing the average annual percentage interest rate on the Nominal 10-year United States Treasury constant maturity obligations as published in the Federal Reserve Selected Interest Rates H.15 Historical Data report for the days during the calendar year preceding the calendar year in which the retirement becomes effective, truncated to two decimal places and pursuant to the mortality tables for options available under Retirement and Social Security Law Section 514 or 610.

(2) Whenever a member for whom a loan is outstanding retires under a disability retirement, the member will have the later of: (i) 30 days following the date on which the retirement application is approved by the System's Retirement Board; or (ii) 30 days following the date on which retirement occurs to make full payment on the outstanding loan. If no such payment is received by the System, the retirement allowance payable without optional modification shall be reduced by a life annuity which is actuarially equivalent to the amount of the outstanding loan. Such life annuity shall be calculated utilizing the average annual percentage interest rate on the Nominal 10-year United States Treasury constant maturity obligations as published in the Federal Reserve Selected Interest Rates H.15 Historical Data report for the days during the calendar year preceding the calendar year in which the retirement becomes effective, truncated to two decimal places and pursuant to the mortality tables for options available under Retirement and Social Security Law Section 514 or 610.

PART 5004**LOANS**

(Statutory authority: Education Law, §512-b; Retirement and Social Security Law, §§517-b, 613-a)

Section 5004.9 THE EFFECT ON UNPAID LOANS OF DEATH, RETIREMENT, WITHDRAWAL OR TRANSFER TO ANOTHER RETIREMENT SYSTEM FOR TIER 3 THROUGH 6 MEMBERS.

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PART 5020**DISABILITY RETIREMENT DETERMINATIONS**

(Statutory authority: Education Law, §511; Retirement and Social Security Law, §§506, 507, 605)

Section 5020.6 WORKERS' COMPENSATION OR OTHER EMPLOYER-FUNDED

DISABILITY PROGRAMS. For the purposes of eligibility for timely filing an application for disability retirement benefits, members who are receiving benefit payments from either workers' compensation or other employer-funded disability programs and whose employment has not terminated by resignation, employer action or any other means, shall be considered to be in service upon which membership in the System is based for a period not exceeding 12 months from the date the member was last paid on the employer payroll.

PART 5020**DISABILITY RETIREMENT DETERMINATIONS**

(Statutory authority: Education Law, §511; Retirement and Social Security Law, §§506, 507, 605)

Section 5020.6 WORKERS' COMPENSATION OR OTHER EMPLOYER-FUNDED DISABILITY PROGRAMS. For the purposes of eligibility for timely filing an application for disability retirement benefits, members who are receiving benefit payments from either workers' compensation or other employer-funded disability programs and whose employment has not terminated by resignation, employer action or any other means, shall be considered to be in service upon which membership in the System is based for a period not exceeding 12 months from the date the member was last paid on the employer payroll.



Signatory Authorization Grid

Warrant Signatories
As of June 30, 2023

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



Signatory Authorization Grid

Financial and Legal Document Signatories
As of June 30, 2023

Division	Name	Position
Administration	Miriam Dixon	Executive
Administration	Rebecca Kannan	Deputy Executive
Administration	Jason Freeman	Manager/Director
Diversity, Equity, & Inclusion	Danny Malavé	Executive
Executive	Emily Ekland	Executive
Executive	Heidi Brennan	Manager/Director
Executive	Timothy Mack	Assistant Manager/Assistant Director
Fixed Income	Joseph Wood	Assistant Manager/Assistant Director
Fixed Income	Michael Federici	Executive
Fixed Income	Aaron VanDerwiel	Manager/Director
Information Technology	Vijay Madala	Executive
Information Technology	Sarah Garrand	Manager/Director
Information Technology	Mark Gallagher	Manager/Director
Internal Audit	Kathy Ebert	Executive
Internal Audit	Bruce Woolley	Assistant Manager/Assistant Director
Internal Audit	Lei Zhang	Assistant Manager/Assistant Director
Member Relations	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
Office of the Actuary	Richard Young	Executive
Office of the Actuary	Melody Pranglely	Deputy Executive
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
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Private Equity	Gerald Yahoudy	Executive
Private Equity	Brad Woolworth	Manager/Director
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

Division	Name	Position
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



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

Quarterly Retirement Board Meeting

July 26, 2023

Call to Order by President

Agenda pp. 154-155

- A. Introduction of Visitors
- B. Correspondence - none
- C. Approval of Minutes of April 27, 2023 pp. 156-164

Committee Reports & Action Items

- A. Audit Committee
 - 1. Chairman's report
 - 2. Resolution Approving Interim Internal Audit Plan (R1, p 165)
- B. Disability Review Committee
 - 1. Disability Denial Resolution (R2, p. 166)
 - 2. Disability Rescission Resolution (R3, p. 167)
- C. Ethics Committee
 - 1. Chairman's report
- D. Executive Committee
 - 1. Chairman's report
 - 2. Resolution Amending the System's Rules and Regulations Part 5004 – Loans (R4, p. 168)
 - 3. Resolution Amending the System's Rules and Regulations Part 5020 – Disability Retirement Determinations (R5, p. 169)
 - 4. Resolution Identifying Warrant Signatory (R6, p. 170)
 - 5. Resolution Identifying Financial & Legal Document Signatories (R7, p. 171)
- E. Investment Committee
 - 1. **Consent Agenda Item 1A and B** pp. 172-181
 - A. Renew Agreements:
 - 1. Baillie Gifford Overseas Limited (R8, p. 172)
 - 2. Global REIT Managers (AEW, Brookfield, DFA, Heitman) (R9, p. 173)
 - 3. Heitman US Total Return Strategy (R10, p. 174)
 - 4. Leading Edge (R11, p. 175)
 - 5. Prima Capital Advisors (R12, p. 176)
 - 6. T. Rowe Associates, Inc. (R13, p. 177)
 - 7. William Blair and Company (R14, p. 178)

- B. Reappointment of Risk Advisors
 - 1. Sean William Atkinson (R15, p. 179)
 - 2. Peter K. Cosgrove (R16, p, 180)
 - 3. Steven C. Huber (R17, p 181)
- 2. Resolution on Investment Discretion (R18, p. 182)
- 3. Resolution on Asset Allocation (R19, p. 183)
- F. Risk Committee
 - 1. Chairman's report

Staff Reports

- A. Old Business
- B. New Business
 - 1. Litigation Report – D. Ampansiri pp. 184-185
 - 2. Member Relations Update – B. Dellea
 - a. Quality Assurance Update – S. Bonesteel pp. 186-196
 - 3. DEI Update – D. Malavé pp. 197-202
 - 4. Actuarial Valuation Report – R. Young pp. 203-290
 - 5. Employer Contribution Rate – R. Young pp. 291-324
 - a. Resolution on Employer Contribution Rate (R20, p. 325)

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

TO: Retirement Board
FROM: Don Ampansiri, Jr., Janet A. Graham
RE: Status of System Litigation as of July 18, 2023
DATE: July 18, 2023
CC: T. Lee, Y. Ruoso

UPDATE ON PENDING LAWSUITS SINCE THE LAST REPORT

Michael Bellarosa v. New York State Teachers' Retirement System

Action commenced: 9/8/22

Favorable Article 78 decision: 5/12/2023

CURRENT STATUS: May 12, 2023, the Court found in favor of the System and dismissed the petition. Petitioner filed a Notice of Appeal on May 24, 2023, and has until November 24, 2023, to perfect the filing of the appeal. The Attorney General's office will continue to represent the System in the appeal.

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.

Andrea Loscalzo v. New York State Teachers' Retirement System

Action commenced: 7/18/22

Favorable Article 78 decision: 7/11/2023**CURRENT STATUS: July 11, 2023, the Court found in favor of the System and dismissed the petition. Petitioner has 30 days to file a Notice of Appeal.***Summary of the case/background information:*

Petitioner, a Tier 4 member, is challenging the System's determination excluding for pension purposes all salary and service credit under a settlement agreement with Greenburgh-Graham Union Free School District (District). Notwithstanding that Petitioner rendered no further service to the District following entry into the settlement, the cause of action contends such payments should be considered regular compensation and, as such, be includable in the pension calculation.

Audra Schmitt v. New York State Teachers' Retirement System

Action commenced: 4/4/2023

CURRENT STATUS: The Attorney General's office responded on behalf of NYSTRS. We are awaiting the court's decision.*Summary of the case/background information:*

Petitioner, a Tier 4 member, is challenging the System's determination excluding for pension purposes all salary and service credit under a settlement agreement with Livonia Central School District (the District) because the payment is termination pay which is not includable in a Tier 4 benefit calculation. Pursuant to NYSTRS' regulations, termination pay is any payment received in anticipation of the termination of a member's employment, for any reason, or any payment for accrued sick leave, annual leave, deferred compensation, or other credits for time not worked. Notwithstanding that Petitioner rendered no further service to the District following entry into the settlement, and tendered her resignation, the cause of action contends such payments should be considered regular compensation and, as such, includable in the pension calculation.

LAWSUITS COMMENCED SINCE THE LAST REPORT**NONE**

Quality Assurance Department Updates

BOARD PRESENTATION JULY 26, 2023

Agenda



What's new in Quality Assurance



Results of Quality Assurance Department
Service Retirement Monthly Review



Items Reported to NYS Department of Financial
Services (DFS)

QA Accomplishments

- Worked with IT to create a Member Salary and Service Review page.
- Developed a File Review Quick Reference Guide for Member Relations staff to supplement procedures and memos.
- Welcomed the Documentation and Training Unit to QA (conducts trainings for new division staff and as needed, provides oversight of division procedures).
- Completed the first in a series of topic-specific knowledge articles.



QA 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% Lump-sum distributions
 - ✓ After training period for new staff to ensure understanding of the process to create a benefit
- Random sample

Service Retirement Monthly Review January-June 2023 Summary

454

File Reviews Completed by
Quality Assurance*

38

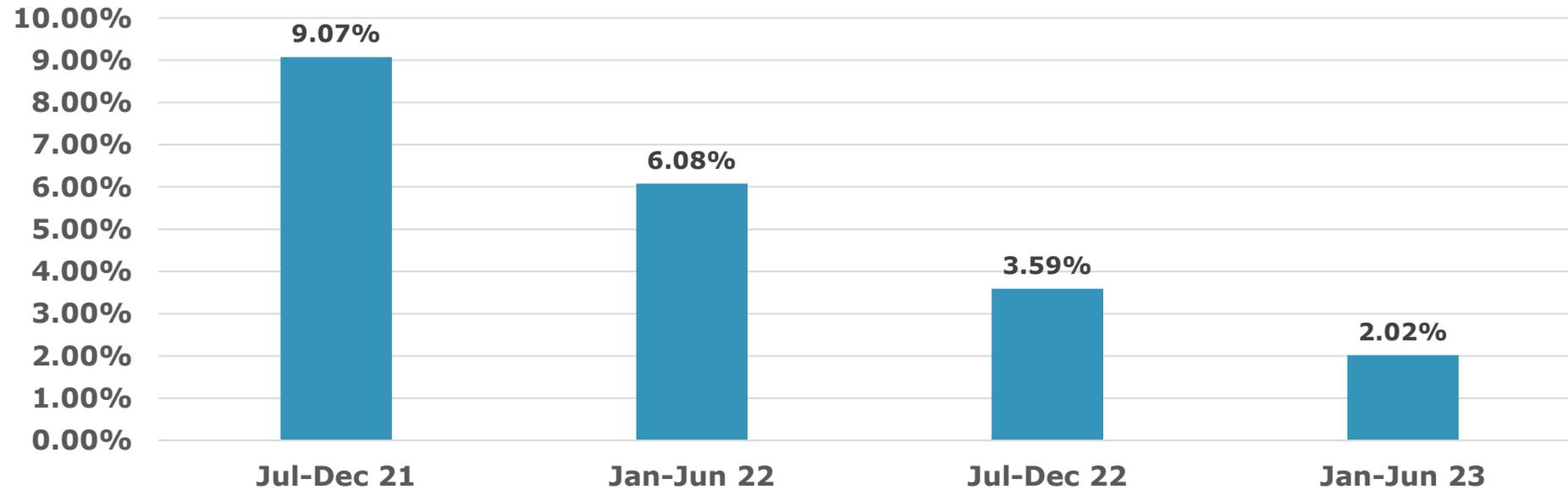
Files In Process
as of June 30, 2023

2

Files Outstanding
as of June 30, 2023

*Includes files closed out in earlier periods but completed during the January-June 2023 half.

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



	Jul-Dec 21	Jan-Jun 22	Jul-Dec 22	Jan-Jun 23
Files Closed Out by Service Retirement Unit	4,218	3,594	3,637	4,171
Files Selected for Review	455	365	368	425
Files Completed	452 (99.34%)	362 (99.18%)	362 (98.37%)	397 (93.41%)
Files Resulting in Revision, Change in Benefit	41	22	13	8

*As of June 30, 2023

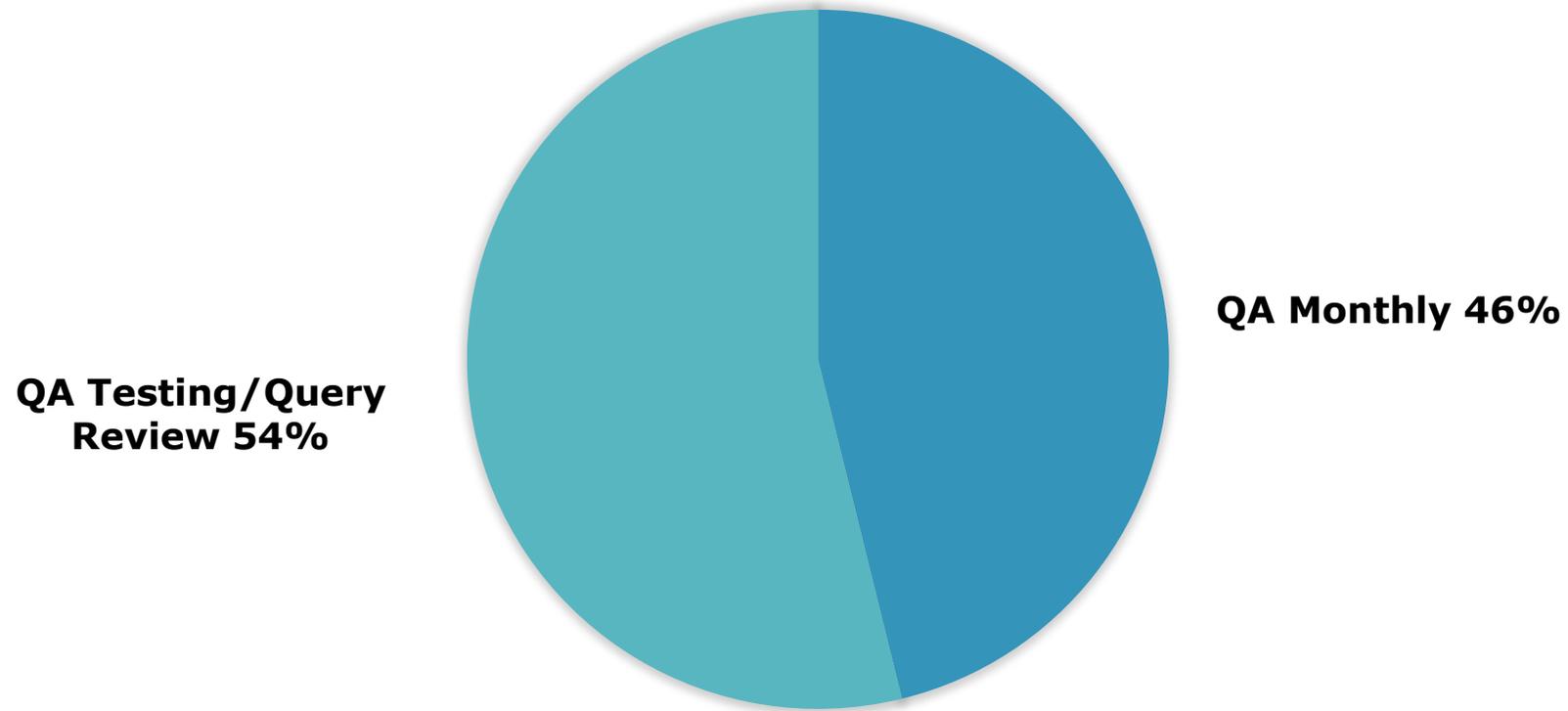


Items Reported to DFS January-June 2023

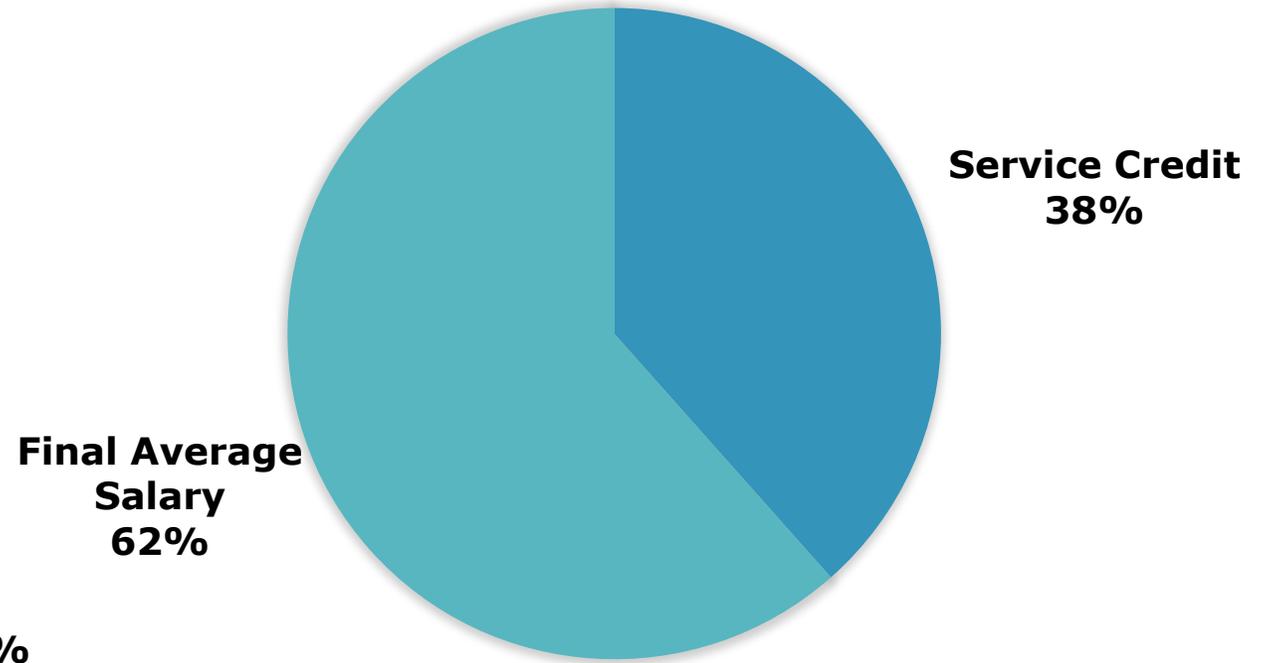
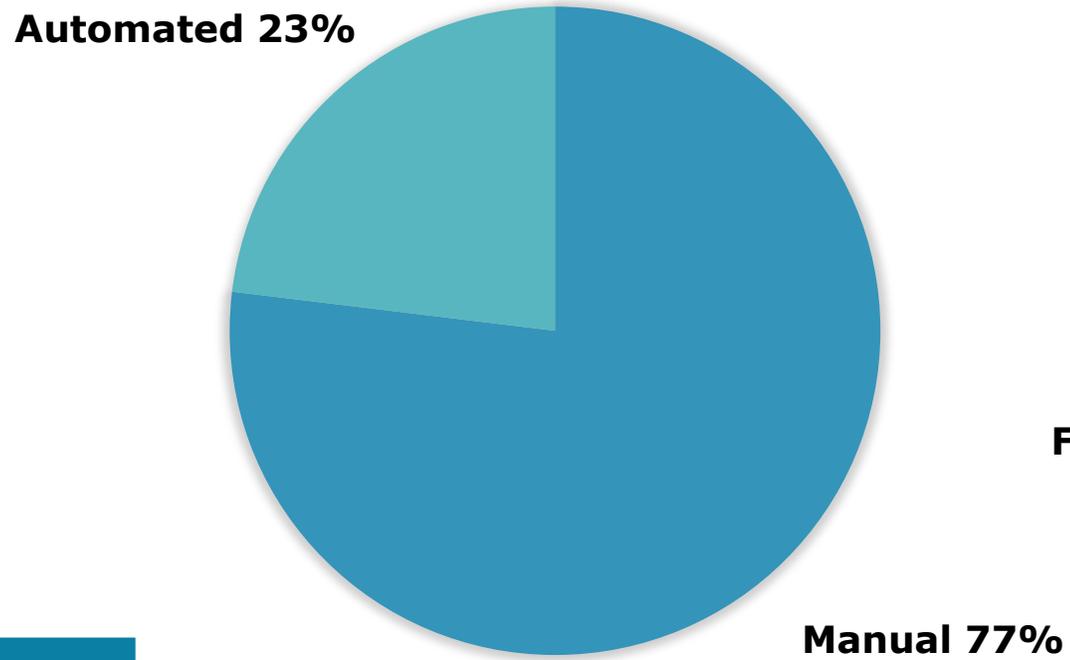
Administrative error – An error by the System (either manual or automated) that requires revision to finalized benefit payments. This would not include revisions to estimated benefits, errors or revisions made by participating employers, members or other parties.

January 2023	3
February 2023	1
March 2023	1
April 2023	2
May 2023	3
June 2023	3
<hr/>	
Total	13

January-June 2023 DFS Items by Reporting Department

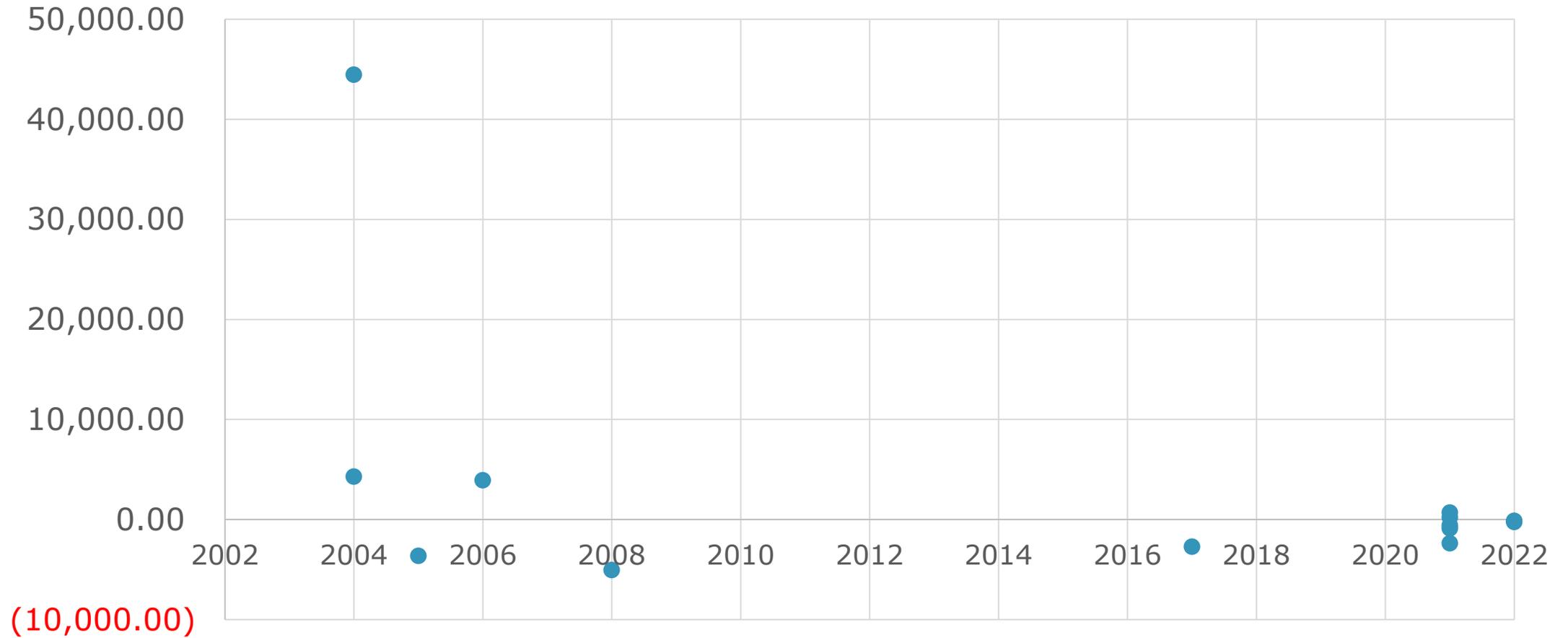


January-June 2023 DFS Items by Error Type and Category



January-June 2023 DFS Items

Amount Underpaid/Overpaid by Calendar Year of Retirement



Questions?



NYSTRS
INTEROFFICE MEMORANDUM

TO: T. Lee

FROM: C. Laven

DATE: July 27, 2023

SUBJECT: Member and Employer Services - Materials for the July 27, 2023
Retirement Board Meeting

Attached is the summary of Member Loan information for the July 27, 2023, Retirement Board meeting.

If you need further information, please let me know.

Colleen Laven

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 26, 2023

<u>Total Loans Outstanding</u>	<u>June 30, 2023</u>	<u>June 30, 2022</u>	<u>Increase(Decrease)</u>
Direct Payments	2,990	2,966	24
Payroll Deductions	<u>18,694</u>	<u>18,985</u>	<u>(291)</u>
Total	21,684	21,951	(267)

Direct Payments	\$ 35,603,466	\$ 33,701,176	\$ 1,902,290
Payroll Deductions	<u>216,059,594</u>	<u>198,786,600</u>	<u>17,272,994</u>
Total	\$251,663,060	\$232,487,776	\$19,175,284

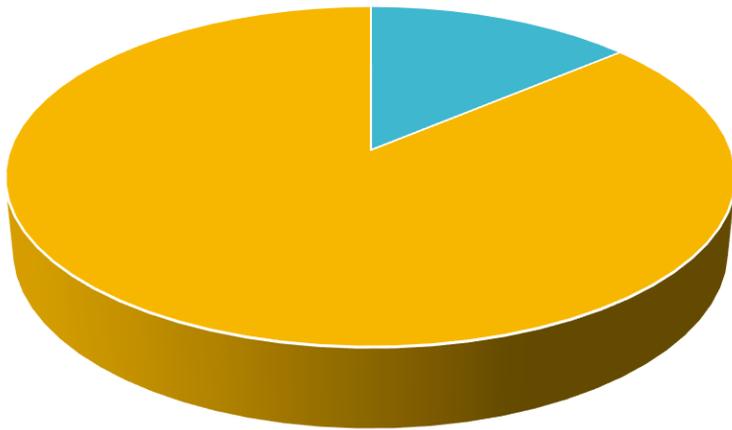
<u>Delinquent Loans</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
One Month	64	0.3	67	0.3
Two Months	45	0.2	39	0.2
Three Months	<u>35</u>	<u>0.2</u>	<u>24</u>	<u>0.1</u>
Total	144	0.7	130	0.6

<u>Loans Issued Annually</u>	<u>June 30, 2023</u>	<u>June 30, 2022</u>	<u>Increase(Decrease)</u>
Direct Payments	274	226	48
Payroll Deductions	<u>10,490</u>	<u>9,217</u>	<u>1,273</u>
Total	10,764	9,443	1,321

Direct Payments	\$ 2,644,795	\$ 1,953,012	\$ 691,783
Payroll Deductions	<u>93,708,930</u>	<u>76,306,481</u>	<u>17,402,449</u>
Total	\$96,353,725	\$78,259,493	\$18,094,232

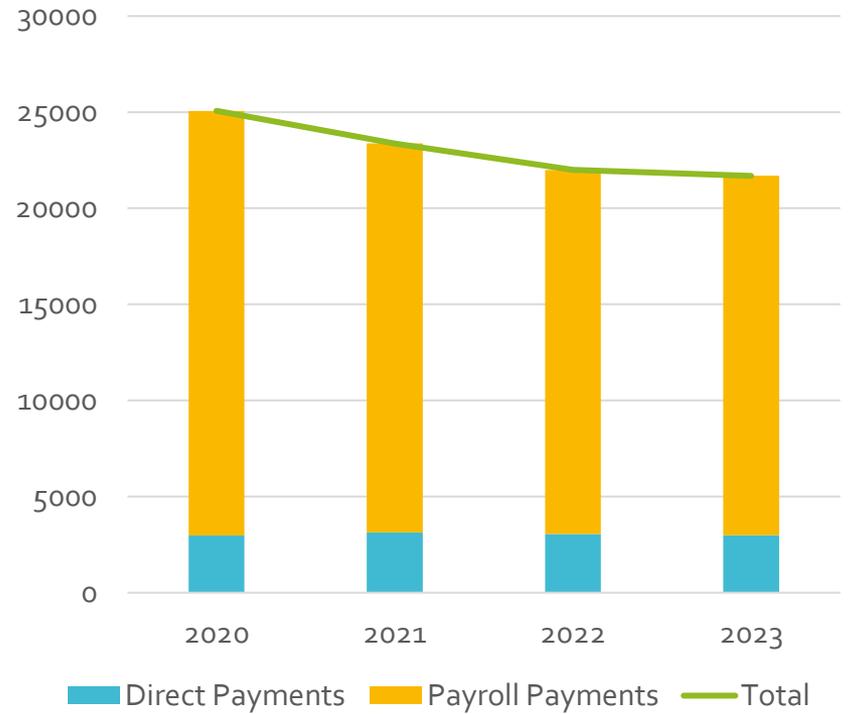
Member Loans June 30, 2023

Member Loans Outstanding as of 6/30/2023 (\$251,663,060)

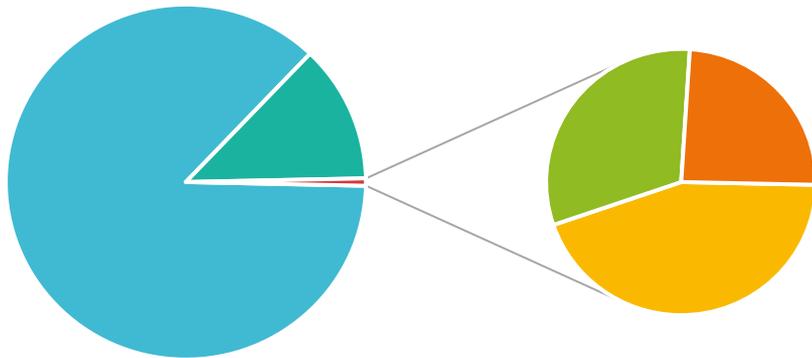


- Direct Payments (\$35,603,446)
- Payroll Deduction (\$216,059,594)

Member Loans Outstanding 2020-2023

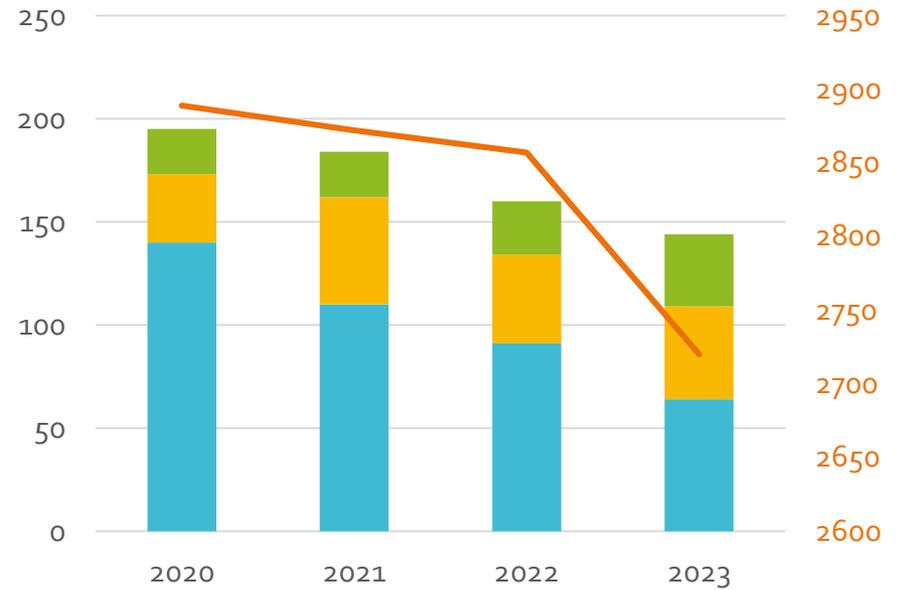


Member Loan Repayment Status as of 6/30/2023



- Current (18,820)
- One Month Delinquent (64)
- Two Months Delinquent (45)
- Three Months Delinquent (35)
- Defaulted (2,720)

Delinquent Member Loans 2020-2023



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



Diversity, Equity, & Inclusion Division

Appendix I

Strategic Plan Update

July 26, 2023

Staffing Update

- Deputy Managing Director of Diversity, Equity, & Inclusion - August 3rd Start Date
- DEI Internships
- Further Expansion – Administrative Support

Diversity, Equity, & Inclusion Strategic Commitments

1) Recognize diversity as an organizational asset (Diversity Commitment)

Objectives established under this commitment encompass recruitment and retention efforts, as well as strategies to broaden individual and collective awareness.

2) Include and cultivate belonging for all stakeholders (Inclusion Commitment)

Objectives under this commitment align with our provision of exceptional customer service and center universally designed strategies toward normative inclusion.

3) Set organizational equity expectations as System norms (Equity Commitment)

Objectives comprise fundamental fairness in access, opportunity, and accountability, and serve as a foundation for policy and procedural analysis.

4) Evaluate & assess our DEI strategy diligently (Data Commitment)

Objectives include the development and maintenance of a robust quantitative and qualitative dataset, and a provide framework for deliberate ongoing assessment of DEI initiatives.

5) Share information and resources broadly and transparently (Communication Commitment)

Objectives establish the infrastructure for stakeholder communication, reporting, and resource provision.

Diversity Commitment Priority – Recruitment & Retention

- Implemented job applicant demographic analytics
- Launched employee mentorship program (EMP), management peer mentor program, & Inclusion Council

Inclusion Commitment Priority – Building Workforce Trust

- Commenced first annual All-employee training with 100% participation
- Conducted inaugural inclusion and equity focus groups

Equity Commitment Priority – Equity of Opportunity

- Held 2023 MWBE Hybrid Conference on February 16th broadening access via virtual engagement
- Champion broader representation in institutional investing through fellowships & internships

Data Commitment Priority – Demographic Instrument Alignment

- Initiated several projects to align demographic instrument data sets across the System

Communication Commitment – Standardize Inclusive Language

- Commenced several projects to update communications, web resources, and forms with inclusive language.



Infrastructure Accomplishments

45

- Employee Network Group Framework & Process
- System Accessibility Group
- Focus Groups – Qualitative Research
- Name Pronunciation Software
- Physical Workplace Design

Programmatic Accomplishments

- NYSTRS Voices – Monthly Fireside Chat Series
- Inclusion Council (ENG)
- Mentorship Programs – Traditional & Peer
- Inclusive Leadership Series (In-Person)

DEI Division Training	Employee Satisfaction	Learning Objective Assessment
All Employee Training	4.69/5	"The word "deliberate" stuck out to me in the definition of inclusion. I don't believe I intentionally exclude anyone, but this isn't enough. I will strive to intentionally/deliberately include people in meetings, work assignments, planning, etc." – Employee Assessment Response
Search Committee Training	4.72/5	"We all have unintentional bias hardwired into our brains - it is natural. We must remain cognizant of this to ensure we are offering a fair and equitable process, and not falling victim to such tendencies." – Employee Assessment Response
Voluntary Monthly Offerings	4.53/5	"Implicit bias exists towards individuals of the LGBTQ+ community and it is important that we are aware. This helps us individually and collectively overcome challenges and can build a sense of community" – Employee Assessment Response



Diversity, Equity, & Inclusion Division
FY 22-23 Accomplishments

Diversity Commitment Priority – Analytical Insights

- Communicate recruitment and retention analytical insights to develop more robust data-driven efforts

Inclusion Commitment Priority – Inclusion Insights & Customer Service

- Conduct inaugural *Inclusion and Equity Survey*

Equity Commitment Priority – Workplace Equity

- Analyze and enhance workplace equity reporting, resources, and awareness

Data Commitment Priority – Continued Enhancement to Infrastructure

- Establish internal engagement measures, ensuring comprehensive implementation and comparative benchmarks
- Collaborate across the System to enhance MWBE vendor and manager strategy beyond our annual conference

Communication Commitment Priority – Reflecting DEI Commitment Externally

- Establish external DEI web presence and external engagement strategy related to DEI





Diversity, Equity, & Inclusion Division
Anticipated Timeline

ACTUARIAL VALUATION REPORT

as of

JUNE 30, 2022



New York State Teachers' Retirement System

Office of the Actuary

July 18, 2023

NEW YORK STATE TEACHERS' RETIREMENT SYSTEM**Actuarial Valuation Report
as of June 30, 2022****TABLE OF CONTENTS**

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NEW YORK STATE TEACHERS' RETIREMENT SYSTEM

**Actuarial Valuation Report
as of June 30, 2022****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, 2022. 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 30th. 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, 2023 to June 30, 2024 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, 2023 to June 30, 2024 fiscal year and collected in the fiscal year ending June 30, 2025 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.

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.

The actuarially computed Employer Contribution Rate to be applied to the member salaries for the fiscal year ending June 30, 2024 is **9.76%**. The Employer Contribution Rates determined by the actuarial valuations as of June 30, 2022 and June 30, 2021 and the changes between the two are summarized below:

	<u>As of 6/30/2022</u>	<u>As of 6/30/2021</u>	<u>Change</u>
Normal Rate	9.37%	9.89%	-0.52%
Expense Rate	0.26	0.26	0.00
Group Life Insurance Rate	0.13	0.13	0.00
Excess Benefit Plan Rate	<u>0.00</u>	<u>0.01</u>	<u>-0.01</u>
Employer Contribution Rate	9.76%	10.29%	-0.53%

The actuarial assumptions in use for the June 30, 2022 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.

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, 2022 were equal to the employer contributions determined in accordance with the applicable annual actuarial valuation.

C. GAIN/LOSS IN THE EMPLOYER CONTRIBUTION RATE

The Employer Contribution Rate of 9.76% represents a 53 basis point decrease from the prior year's rate of 10.29%.

NORMAL RATE

The Normal Rate component of the Employer Contribution Rate (ECR) of 9.37% represents a 52 basis point decrease over the prior year's rate of 9.89%. 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.	+0.49
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.	-1.17
New Entrants:	New entrants join the Retirement System as Tier 6 members with a long-term expected normal rate of approximately 5.15% which results in downward pressure on the Normal Rate.	-0.14
Withdrawal:	Withdrawal experience produced a gain.	-0.01
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
Pension Payments:	Actual payments to retirees were less than expected.	-0.07
Cost of Living Adjustment:	The actual COLA increase of 3.0% was higher than the expected increase of 1.3%.	+0.22
Plan and Assumption Changes:	Plan Change: Death benefit improvement Assumption Change: increase due to update of mortality improvement scale to MP-2021	+0.12
Miscellaneous:	Net increase due to miscellaneous sources (e.g. data updates, tier reinstatements, transfers in/out)	+0.05
TOTAL CHANGE IN THE NORMAL RATE		-0.52%

OTHER COMPONENTS

The **Expense Rate** is set during the budget process. As of June 30, 2022, the expense rate remains at 0.26%.

The **Group Life Insurance Fund Rate** is unchanged from the previous year. 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 \$418 million as of June 30, 2022. The Group Life Insurance Rate is being held constant, however, 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** decreased back to 0.00%. This rate represents the Excess Benefit Fund's need for contributions to cover retirement benefits paid in excess of the Internal Revenue Code Section 415 limits. 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 \$2.7 million as of June 30, 2022. The rate has been set back to 0.00% this year as additional contributions are not needed at this time.

D. 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.

<i>Salary Year</i>	<i>Employer Contribution Rate</i>	<i>Salary Year</i>	<i>Employer Contribution Rate</i>
2004-2005	5.63 %	2014-2015	17.53 %
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 *

* Pending adoption by the Retirement Board at its July 2023 Board Meeting.

E. EMPLOYER CONTRIBUTION RATE CHANGE

The Employer Contribution Rate has decreased this year from 10.29% to 9.76%, representing a decrease of 5.2%, primarily attributable to the decrease in the Normal Rate component which decreased from 9.89% to 9.37%. The rate of return on the System's market value of assets for the fiscal year ending June 30, 2022 was -7.1%. The System's current five-year market value rate of return decreased to 7.7%, a decrease from last year's 11.9%. The June 30, 2022 actuarial valuation resulted in an overall decrease in the normal rate primarily due to an increase in the Actuarial Value of Assets due to deferred prior investment gains. Factors which exerted upward pressure on the normal rate this year were salary increases higher than expected and the COLA amount higher than expected.

The Normal Rate component of the Employer Contribution Rate is calculated in accordance with the Aggregate Actuarial Cost Method, as required by statute (New York State Education Law Section 517). Under the Aggregate Actuarial Cost Method gains and losses resulting from differences between actual and expected experience, as well as changes to assumptions or plan provisions, are not separately amortized but are spread as part of the normal cost calculation, over the expected future working lifetime of active members. The Aggregate Method is a reasonable and appropriate actuarial cost method to use for ongoing plan funding purposes and is consistent with the System's goal of accumulating sufficient assets to pay benefits as they come due.

F. MEMBER DATA

The member data for the annual actuarial valuation was determined as of June 30, 2022.

	June 30, 2022	June 30, 2021
Active Members and Members not yet receiving benefits	263,475	259,158
Retired Members receiving monthly benefits	171,616	169,068
Beneficiaries receiving monthly benefits	6,953	6,722
Total	442,044	434,948

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

<i>Fiscal Year</i>	<i>Number of Retirements</i>	<i>Fiscal Year</i>	<i>Number of Retirements</i>
2012-2013	6,330	2017-2018	6,416
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

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.

G. FUNDED STATUS

As of June 30, 2022, the actuarial value of plan assets, including GLIF assets, was equal to \$134.5 billion. The accrued pension benefit liability calculated in accordance with the Entry Age Normal Cost Method, including GLIF liabilities, was equal to \$135.5 billion. These two values produced a funded ratio of 99.3% as of June 30, 2022. If the market value of plan assets is used instead of the actuarial value of plan assets, the funded ratio as of June 30, 2022 would be equal to 97.4%.

For purposes of this funded ratio calculation, the plan liabilities have been calculated in accordance with the Entry Age Normal Cost Method as required by Governmental Accounting Standards Board (GASB) Statement No. 67. The Retirement System is funded in accordance with the Aggregate Cost Method. 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. Both Aggregate and Entry Age Normal are appropriate contribution allocation procedures for purposes of ongoing plan funding and are widely accepted actuarial cost methods.

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 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 says that now the System 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.

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 "*Report on the 2021 Recommended Actuarial Assumptions*".

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 only asset allocation change made between June 30, 2022 and the time of this report was a reduction of 1% in International Equity (decreasing the allocation percentage to 15%) and an increase of 1% in Private Equity (increasing the allocation percentage to 9%). The asset allocation target equity-fixed income split of 72/28 was not changed.

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 2023 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 7.83% on a 30-year time horizon, and a geometric annual rate of return of 7.57% 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 2022 or first half of 2023. None of the items have a material impact on plan costs.

Extension of the COVID-19 Death Benefit:

The COVID-19 death benefit enables the beneficiary of an eligible active member who died of COVID-19 to elect to receive the accidental death benefit (annuity of 50% of salary) instead of the ordinary active death benefit (generally a lump sum of three times salary plus a refund of member contributions). Chapter 783 of the Laws of 2022 extended the deadline for this benefit to any member who dies of COVID-19 to December 31, 2024.

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

Chapter 55 of the Laws of 2023 extended the waiver of the earnings-after-retirement limit of \$35,000 to June 30, 2024. 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, 2024 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.

Ordinary Death Benefit Change:

Chapter 720 of the Laws of 2022, effective April 1, 2023, changed the age at which reductions in the ordinary death benefit (4% per year) commence to age 62 for members with a date of membership prior to April 1, 2012 (before it was age 61), and to age 63 for members with a date of membership on or after April 1, 2012 (before it was age 61). The post-retirement death benefit for affected members, which is based on the ordinary death benefit, would be increased as well.

Change to Permitted Investments:

Chapter 775 of the Laws of 2022 amended section 177 of the Retirement and Social Security Law to increase the total permitted percentage of assets which may be invested by a public retirement system under the “basket clause” provision from 25% to 35%. The basket clause refers to asset classes or investments which are not specifically permitted elsewhere within this section.

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.

L. FUTURE EXPECTATIONS

The next employer contribution rate will be based upon the actuarial valuation as of June 30, 2023. The equity markets performed well for the fiscal year ending June 30, 2023. The System's domestic equity index, the S&P1500, returned 19.2% for the fiscal year. The System's international equity index, the ACWI ex-US, returned 12.7% for the fiscal year. The System's fixed income index, the Barclay's US Aggregate Float Adjusted Bond index, returned -0.8% for the fiscal year. The System's finalized investment rate of return for the fiscal year ending June 30, 2023 will not be available until October of 2023. Based on the performance of these benchmarks, however, the System will have a positive rate of return on investments for the fiscal year, representing a nice rebound from last year's -7.1% return.

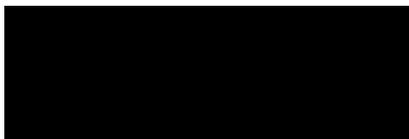
M. CERTIFICATION

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 Prangley, FSA, EA, MAAA, FCA
Deputy Chief Actuary



New York State Teachers' Retirement System
Office of the Actuary
July 18, 2023

RECONCILIATION OF THE MARKET VALUE OF ASSETS

From June 30, 2021 to June 30, 2022

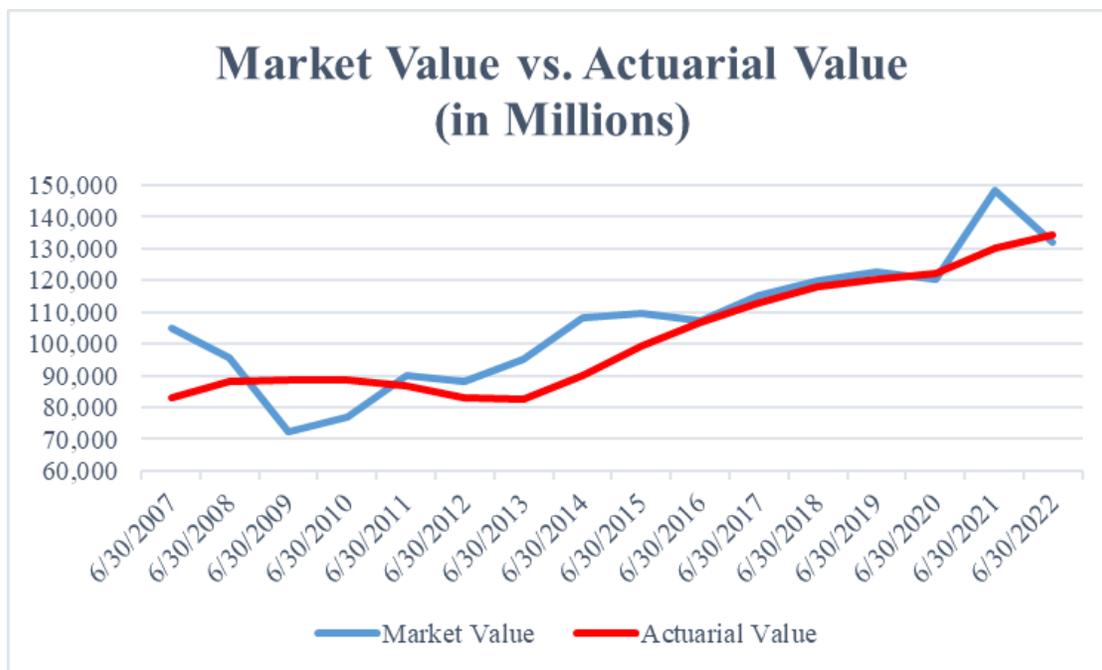
		Market Value (in thousands)
1	Market Value of Assets as of June 30, 2021	\$148,148,457
2	Contributions and Transfers	
	Employer Contributions	1,735,255
	Member Contributions	190,853
	Net Transfers in/(out)	8,685
		1,934,793
3	Net Investment Income/(Loss)	(10,078,815)
4	Distributions	
	Benefit Payments	(7,978,624)
	Administrative Expenses	(61,229)
		(8,039,853)
5	Market Value of Assets as of June 30, 2022	\$131,964,582

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, 2007 and June 30, 2015 actuarial valuations.

Fiscal Year Ending	Market Value	Actuarial Value	Fiscal Year Ending	Market Value	Actuarial Value
6/30/2007	104,912.9	82,858.9	6/30/2015	109,718.9	99,301.8
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



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, 2022	June 30, 2021
Present Value of Benefits Currently Being Paid:		
Service Retirement Benefits	\$70,199,316	\$68,662,650
Disability Retirement Benefits	422,523	413,056
Death Benefits	2,485	2,523
Survivor Benefits	1,248,183	1,169,906
Cost-of-Living Allowance	<u>5,464,928</u>	<u>5,052,489</u>
Total Present Value of Benefits Presently Being Paid	77,337,435	75,300,623
 Present Value of Benefits Payable in the Future to Current Active Members:		
Service Retirement Benefits	68,190,109	65,619,677
Disability Retirement Benefits	655,807	632,570
Termination Benefits	1,817,728	1,735,183
Death and Survivor Benefits	514,797	501,731
Cost-of-Living Allowance	<u>1,521,282</u>	<u>1,490,590</u>
Total Active Member Liabilities	72,699,722	69,979,750
 Present Value of Benefits Payable in the Future to Current Inactive (Vested) Members:		
Retirement Benefits	537,273	492,184
Death Benefits	283	269
Cost-of-Living Allowance	<u>45,055</u>	<u>41,246</u>
Total Vested Liabilities	582,611	533,698
 Unclaimed Funds	 26,678	 24,600
 Total Actuarial Present Value of Future Benefits	 \$150,646,447	 \$145,838,672

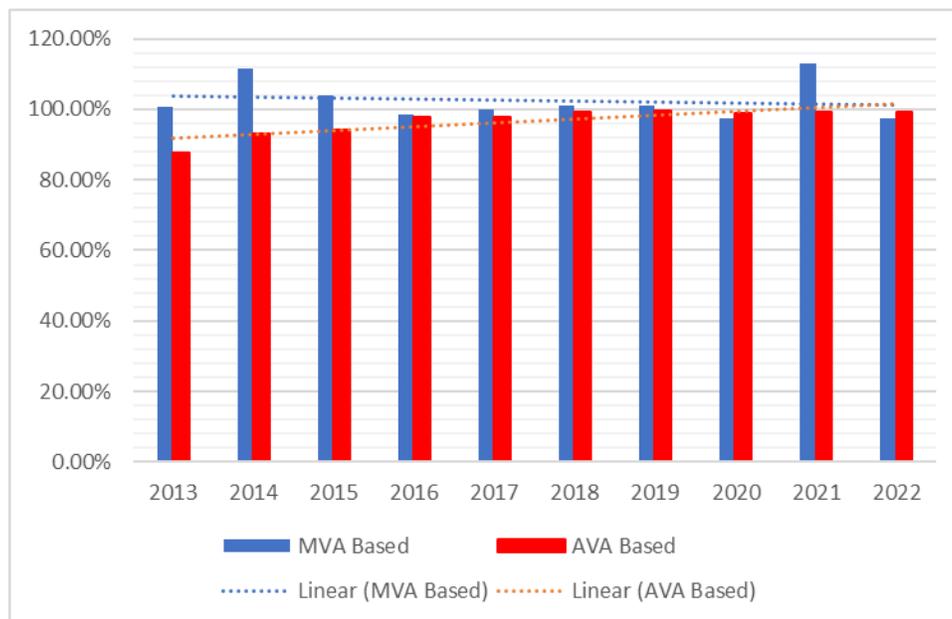
Note: Totals may not sum due to rounding

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
2013	\$95,367.0	\$82,742.5	\$94,583.8	100.8%	87.5%
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



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

EMPLOYER CONTRIBUTION RATE

2022 Valuation

6.95% Interest

Normal Rate	9.37%
Group Life Insurance Rate	0.13
Excess Benefit Plan Rate	0.00
Expense Rate	0.26
Computed Contribution Rate as of June 30, 2022	<hr/> 9.76%

NORMAL RATE CALCULATION

2022 Valuation

6.95% Interest

Liabilities**Active Tier 1**

Service Pension	\$56,590,137
Disability Pension	5,616
Vested Pension	305,295
Active Death over \$50,000	1,020,269
Death Benefit After 10-Yr Withdrawal over \$50,000	0
Annuity Savings Fund	1,673,632
COLA	389,632
Total	\$59,984,581

Active Tier 2

Service Pension	\$62,913,910
Post Retired Death over \$50,000	66,612
Disability Pension	18,370
Post Disabled Death over \$50,000	59
Vested Pension	421,118
Active Death over \$50,000	314,507
Death Benefit After 10-Yr Withdrawal over \$50,000	0
COLA	700,729
Total	\$64,435,305

Active Tier 3

Service Pension	\$443,474,964
Post Retired Death over \$50,000	297,212
Disability Pension	339,035
Post Disabled Death over \$50,000	1,564
Refund on Active Death	535,223
Active Death over \$50,000	1,386,839
Refund on Quit	11,096
Vested Pension	2,859,323
Death Benefit After 10-Yr Withdrawal over \$50,000	0
Refund on Death after Vested Withdrawal	0
COLA	7,066,070
Total	\$455,971,326

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

Service Pension	\$60,788,840,431
Post Retired Death over \$50,000	40,230,464
Disability Pension	524,618,687
Post Disabled Death over \$50,000	2,551,291
Refund on Active Death	40,925,507
Active Death over \$50,000	291,903,904
Refund on Quit	7,608,807
Vested Pension	1,228,102,727
Death Benefit After 10-Yr Withdrawal over \$50,000	1,217,945
Refund on Death after Vested Withdrawal	352,477
COLA	1,255,979,671
Total	\$64,182,331,911

Active Tier 5

Service Pension	\$1,542,876,070
Post Retired Death over \$50,000	1,409,435
Disability Pension	27,885,341
Post Disabled Death over \$50,000	122,088
Refund on Active Death	5,393,275
Active Death over \$50,000	15,285,142
Refund on Quit	6,141,505
Vested Pension	82,108,708
Death Benefit After 10-Yr Withdrawal over \$50,000	241,554
Refund on Death after Vested Withdrawal	150,471
COLA	42,558,429
Total	\$1,724,172,018

Active Tier 6

Service Pension	\$4,640,173,311
Post Retired Death over \$50,000	6,058,405
Disability Pension	102,925,881
Post Disabled Death over \$50,000	458,384
Refund on Active Death	28,929,473
Active Death over \$50,000	68,695,914
Refund on Quit	135,308,119
Vested Pension	349,877,469
Death Benefit After 10-Yr Withdrawal over \$50,000	988,340
Refund on Death after Vested Withdrawal	1,118,542
COLA	170,070,451
Total	\$5,504,604,289

Liabilities (Cont'd)**Retirees**

Retired Pension	\$70,128,479,126
Retired Annuity	70,836,691
Disability Pension	422,171,319
Disability Annuity	351,575
Beneficiary Pension	1,234,005,118
Beneficiary Annuity	6,047,902
DBA Pension	7,939,518
DBA Annuity	190,403
Post Retired Death over \$50,000	2,174,038
COLA	5,321,280,017
Catch-Up, Prior §532 Supp & Escalation	143,648,207
Total	<u>\$77,337,123,914</u>

Vesteds

Inactive Vested	\$537,273,235
Death Benefit After 10-Yr Withdrawal over \$50,000	283,330
Active Vested	652,324,504
Death Benefit After 10-Yr Withdrawal over \$50,000	888,001
COLA	89,496,696
Total	<u>\$1,280,265,766</u>

TIAA

Service Pension	\$1,241,790
Disability Pension	13,614
Vested Pension	26,859
Active Death over \$50,000	17,462
COLA	75,007
Total	<u>\$1,374,732</u>

Miscellaneous

Incurred Death but not Paid	\$9,504,524
Unclaimed Non-Member Funds	26,678,186
Total	<u>\$36,182,710</u>

Total Liabilities\$150,646,446,552

Assets for Valuation

Current Total Assets (excluding contributions receivable)	\$130,102,288,446
Less: Expense Fund	62,052,572
Less: Group Life Insurance Fund	418,104,808
Plus: (Employer Contributions Receivable as of June 30, 2022 ¹) x (1.0695) ^{-7/24}	
= (1,695,039,855) x (1.0695) ^{-7/24}	1,662,144,782
Plus: (Member Contributions Receivable as of June 30, 2022 ¹) x (1.0695) ^{-7/24}	
= (167,253,806) x (1.0695) ^{-7/24}	164,007,967
Adjusted Market Value of Assets for Normal Rate	\$131,448,283,815
Plus: 5 Year Smoothing Adjustment	2,660,584,478
Actuarial Value of Assets for Normal Rate Valuation Purposes	\$134,108,868,293

Receivables

Employer Contributions Receivable from Normal Rate in 2023-2024 Fiscal Year ² (2022-2023 Salaries) x (2021 Normal Rate) x (1.0695) ^(1+7/24)	
= (17,209,820,513) x (0.0989) x (1.0695) ^(1+7/24)	\$1,560,561,111
Present Value of Future Member Contributions ³	
(Tier 5 Present Value of Future Employee Contributions) x (1.0695) ^{-7/24}	
= (286,868,127) x (1.0695) ^{-7/24}	281,300,973
(Tier 6 Present Value of Future Employee Contributions) x (1.0695) ^{-7/24}	
= (2,320,231,164) x (1.0695) ^{-7/24}	2,275,203,212
(Adjustment due to Section 613 of RRS Law amendment for Tier 6 Contribution rates) x (1.0695) ^{-7/24}	
= (-9,500,000) x (1.0695) ^{-7/24}	(9,315,637)
Total Receivables	\$4,107,749,659

¹ Employer and Member Contributions Receivables are based on the 2021-2022 Member Paybase and are collected in 3 installments on September 15, October 15, and November 15 of 2022. The discount represents the time value of money to the measurement date.

² Employer Contributions Receivable is estimated based on projected 2022-2023 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 2023. 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 2023-2024 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.

Present Value of Future Salaries (PVFS)

	Total PVFS ¹	
Tier 1	\$18,858,136	
Tier 2	25,767,455	
Tier 3	141,890,695	
Tier 4	98,850,239,581	
Tier 5	8,196,232,207	
Tier 6	44,196,123,801	
	<u>\$151,429,111,875</u>	
2022-2023 Discounted Salary	16,091,463,780	
Net PVFS	<u>\$135,337,648,095</u>	$\times (1.0695)^{-7/24} = \$132,711,195,546$

Normal Rate

Total Liabilities – (Assets + Receivables)

Present Value of Future Salaries

$$= \frac{\$12,429,828,600}{\$132,711,195,546}$$

$$= 9.366074\%$$

$$= 9.37\% \quad (\text{rounded})$$

¹ The Present Value of Future Salaries includes billable salaries starting with the 2023-2024 salary year. The billable salaries for the years 2021-2022 and 2022-2023 are excluded from the PVFS because a Normal Rate applicable to the 2021-2022 and 2022-2023 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 2021 and 2023, respectively. Therefore, the total PVFS is discounted 3.5 months to the measurement date.

**GROUP LIFE INSURANCE FUND
(GLIF)**

2022 Valuation

6.95% Interest

GLIF Balance as of June 30, 2021	\$453,669,551
Benefit Payments During 2021-2022	25,209,226
Contributions During 2021-2022	22,065,169
GLIF Net Investment Income During 2021-2022	(32,420,686)
(Based on 2021-2022 Market Value of Assets Rate of Return of -7.10%)	
GLIF Balance as of June 30, 2022	\$418,104,808
Benefit Payments During 2022-2023	25,000,000
Contributions During 2022-2023	23,029,855
GLIF Net Investment Income During 2022-2023	29,326,706
(Based on estimated Market Value of Assets Rate of Return of 6.95%)	
Estimated GLIF Balance as of June 30, 2023	\$445,461,370

Calculation of the GLIF Rate for the June 30, 2022 Actuarial Valuation:

Expected Salaries for the 2022-2023 Fiscal Year	\$18,459,314,889
GLIF Rate	0.13%
Expected Contributions for the 2023-2024 Fiscal Year	\$23,997,109

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

2022 Valuation

Excess Benefit Plan Balance as of June 30, 2021	\$2,847,550
Final Adjustment for the Fiscal Year Ending June 30, 2021	378,501
Benefit Payments During 2021-2022	500,000
Contributions During 2021-2022	0
Net Investment Income During 2021-2022 ¹ (Including miscellaneous adjustments)	0
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	0
Net Investment Income During 2022-2023 ¹ (Including miscellaneous adjustments)	0
Estimated Excess Benefit Plan Balance as of June 30, 2023	\$2,520,612

Calculation of the Excess Benefit Plan Rate for the June 30, 2022 Actuarial Valuation:

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

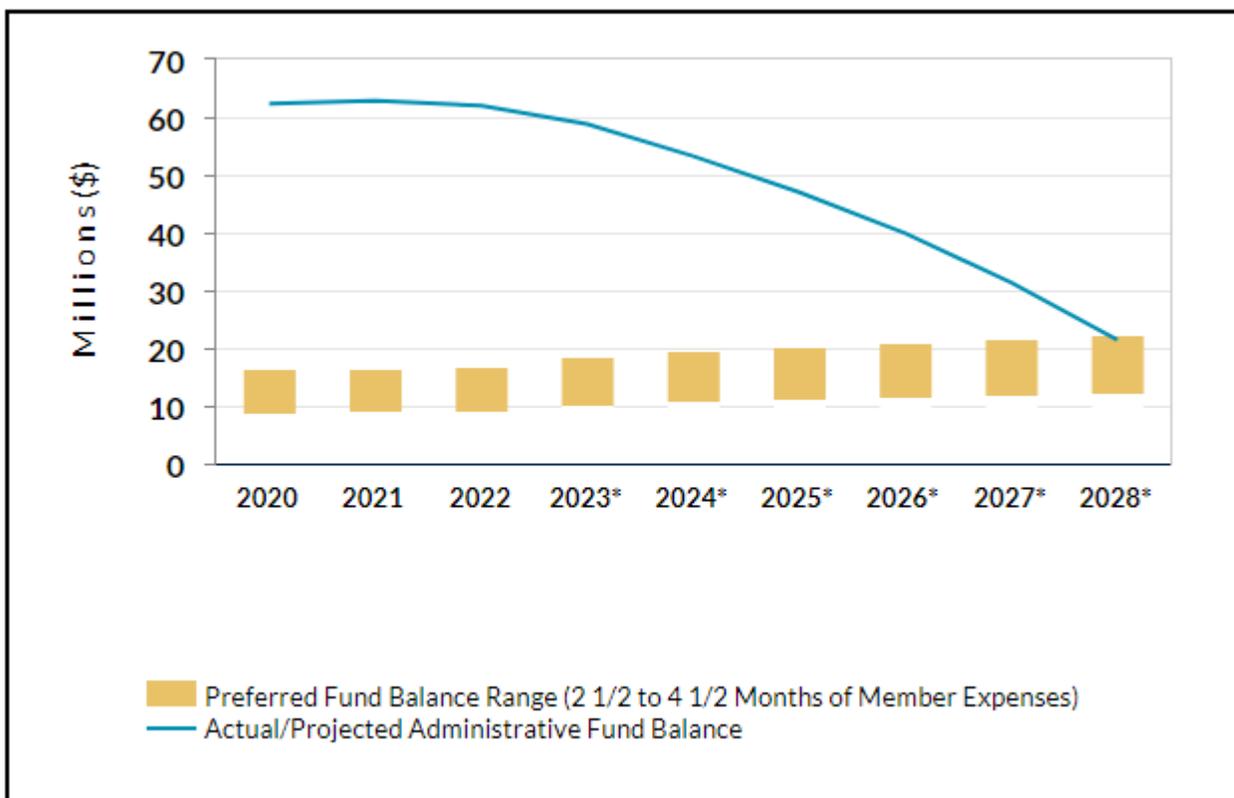
¹ Fund is in a zero-interest checking account.

Administrative Rate and Employer Contributions¹

The administrative portion (Rate) of the Employer Contribution Rate is adopted annually by the Retirement Board in the amount necessary to defray Retirement Administration related expenses for the following fiscal year. The first step in determining the rate is to divide the projected Retirement Administration related expenses by the projected member payroll. Consideration is also given to the overall status of the fund balance.

Based on the fall collection period for employer contributions, the preferred fund balance has been established to be 2 ½ to 4 ½ months of estimated member-related expenses. Since 2009, the fund balance has exceeded the preferred range due to prudent spending and cost containment initiatives. To bring the fund balance gradually back down within the preferred range, the administrative rate was lowered from 0.27% to 0.26% during the 2018-2019 fiscal year. The 2023-2024 fiscal year will be the sixth year that employer contributions will be collected at the 0.26% rate.

A forecast analysis of expenses was performed. This forecast projects maintaining the Administrative Rate at 0.26% through 2027. The administration 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.



*Projected fund balance.

Collections Based on Member Payroll – Fiscal Years 2018 - 2025

Annual Member Payroll (dollars in thousands)		Employer Contribution	Employer Contributions (dollars in thousands)		% Increase (Decrease) in Contributions
Year	Amount	Rate (%)	Year Collected	Amount	
2024-25	\$18,744,000 *	0.26% *	2025-26	\$47,827 *	1.90% *
2023-24	18,395,000 *	0.26	2024-25	46,935 *	1.90 *
2022-23	18,052,000 *	0.26	2023-24	46,060 *	4.37 *
2021-22	17,715,300	0.26	2022-23	44,130 **	(0.06)
2020-21	16,973,207	0.26	2021-22	44,155	1.69
2019-20	16,973,200	0.26	2020-21	43,421	(1.30)
2018-19	16,691,600	0.26	2019-20	43,994	2.76
2017-18	16,288,900	0.27	2018-19	42,812	2.76

* Estimated

** Reflects employer contributions based on actual member payroll.

¹This entire section comes from the NYSTRS 2023-24 Operating Budget Report

**ASSET VALUATION
METHOD**

Development of Smoothing Adjustment

FYE	Market Value	Contributions	Benefit Payments	Average Market Value ¹
6/30/2017	113,516,789,802	2,165,955,433	6,984,647,124	
6/30/2018	118,230,310,625	1,994,973,683	7,169,609,705	111,345,091,308
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

FYE	Actual Gain/(Loss) ²	Expected Gain/(Loss) ³	Unexpected Gain/(Loss) ⁴	Smoothing Adjustment ⁵
6/30/2017	12,951,891,658			
6/30/2018	9,928,010,678	8,072,519,120	1,855,491,558	
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)	(2,660,584,478)

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 years ending 6/30/2018 and 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) 6/30/2019)

+ (.40 x Unexpected Gain/(Loss) 6/30/2020)

+ (.60 x Unexpected Gain/(Loss) 6/30/2021)

+ (.80 x Unexpected Gain/(Loss) 6/30/2022)

HYPOTHETICAL LONG-TERM NORMAL RATE CALCULATION BASED ON NEW ENTRANT NORMAL RATE AS OF JUNE 30, 2022

The long-term expected normal rate has been determined based on the new entrant population for the year ending June 30, 2022. The new entrant population of **14,971 Tier 6 members** is defined to be members with the following characteristics:

1. date of membership between 7/1/2021 and 6/30/2022;
2. active as of 6/30/2022; and
3. no more than 1 year of NYS service as of 6/30/2022.

New Entrant Normal Rate as of June 30, 2022

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, 2022** 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)	\$ 651,241,828	\$ 586,362,581	\$ 489,829,858
(2) Present Value of Future Member Contributions (PVFC)	85,062,556	179,911,151	245,144,095
(3) Present Value of Future Salaries (PVFS)	5,140,318,600	5,140,318,600	5,140,318,600
(4) Long Term Normal Cost of Benefit Structure as a Percent of Salary: (1) / (3)	12.7%	11.4%	9.5%
(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)	11.0%	7.9%	4.7%
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)	\$ 819,418,561	\$ 735,860,530	\$ 616,229,448
(2) Present Value of Future Member Contributions (PVFC)	86,888,892	189,200,133	256,005,252
(3) Present Value of Future Salaries (PVFS)	5,405,718,085	5,405,718,085	5,405,718,085
(4) Long Term Normal Cost of Benefit Structure as a Percent of Salary: (1) / (3)	15.2%	13.6%	11.4%
(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%	10.1%	6.7%

History

As of June 30, 2022, 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	
2018	8.47%	9.4%	6.8%	4.2%	11.6%	8.8%	6.0%	11,759
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

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 RECONCILIATION

ACTIVE MEMBERS:

	Male	Female	Total
June 30, 2021	60,592	198,566	259,158
Changes During Year:			
Added	3,329	12,373	15,702
Withdrawn	1,031	3,039	4,070
Retired	1,453	5,682	7,135
Died	69	111	180
June 30, 2022	61,368	202,107	263,475

MEMBERS RETIRED FOR:

	Service*			Disability**			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
June 30, 2021	49,020	117,993	167,013	414	1,641	2,055	49,434	119,634	169,068
Changes During Year:									
Retired	1,432	5,593	7,025	21	89	110	1,453	5,682	7,135
Died	1,801	2,593	4,394	27	88	115	1,828	2,681	4,509
Lump Sum	14	62	76	0	0	0	14	62	76
Restored to Active Membership	0	0	0	0	2	2	0	2	2
June 30, 2022	48,637	120,931	169,568	408	1,640	2,048	49,045	122,571	171,616

*Also includes vested retirees.

**Includes 13 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, 2021	1,539	4,807	6,346	113	161	274	21	81	102	1,673	5,049	6,722
Changes During Year:												
Added	211	456	667	0	4	4	2	4	6	213	464	677
Died	102	325	427	4	8	12	1	6	7	107	339	446
June 30, 2022	1,648	4,938	6,586	109	157	266	22	79	101	1,779	5,174	6,953

SUMMARY:

	Male	Female	Total
Active Members	61,368	202,107	263,475
Retired Members	49,045	122,571	171,616
Beneficiaries	1,779	5,174	6,953
Total	112,192	329,852	442,044

DISTRIBUTION OF ACTIVE MEMBERS

Distribution by Age as of June 30, 2022

Age as of Last Birthday	Male	Female	Total
15-19	52	165	217
20-24	1,933	6,700	8,633
25-29	4,972	16,656	21,628
30-34	6,408	21,879	28,287
35-39	7,203	25,058	32,261
40-44	9,518	30,600	40,118
45-49	10,181	30,512	40,693
50-54	10,182	31,900	42,082
55-59	6,289	21,399	27,688
60-64	2,998	12,120	15,118
65-69	1,127	3,835	4,962
70-74	363	1,009	1,372
75-79	101	206	307
80-84	29	56	85
85 or older	12	12	24
Total	61,368	202,107	263,475

Average Age (Years – Months)	44-3	44-2	44-2
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Distribution by Age and Tier of Membership as of June 30, 2022

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	217	217
20-24	0	0	0	0	0	8,633	8,633
25-29	0	0	0	20	79	21,529	21,628
30-34	0	0	0	1,555	3,186	23,546	28,287
35-39	0	0	0	16,121	3,909	12,231	32,261
40-44	0	0	0	29,499	1,351	9,268	40,118
45-49	0	0	0	32,930	835	6,928	40,693
50-54	0	0	0	35,326	809	5,947	42,082
55-59	0	0	18	23,289	591	3,790	27,688
60-64	0	2	326	12,181	345	2,264	15,118
65-69	3	51	344	3,491	181	892	4,962
70-74	51	90	66	837	67	261	1,372
75-79	42	12	14	182	10	47	307
80-84	17	4	3	37	5	19	85
85 or older	8	1	0	12	1	2	24
Total	121	160	771	155,480	11,369	95,574	263,475

Average Age (Years – Months)	76-0	71-0	65-4	49-3	40-7	36-1	44-2
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Distribution of Active Members by Age and New York State Service as of June 30, 2022

Age as of Last Birthday	Male		Total
	< 10 Years NYS	10+ Years NYS	
15-19	52	0	52
20-24	1,933	0	1,933
25-29	4,972	0	4,972
30-34	5,996	412	6,408
35-39	3,821	3,382	7,203
40-44	2,775	6,743	9,518
45-49	2,012	8,169	10,181
50-54	1,574	8,608	10,182
55-59	1,114	5,175	6,289
60-64	803	2,195	2,998
65-69	440	687	1,127
70-74	183	180	363
75-79	44	57	101
80-84	18	11	29
85 or older	9	3	12
Total	25,746	35,622	61,368

Age as of Last Birthday	Female		Total
	< 10 Years NYS	10+ Years NYS	
15-19	165	0	165
20-24	6,700	0	6,700
25-29	16,656	0	16,656
30-34	20,337	1,542	21,879
35-39	13,940	11,118	25,058
40-44	10,864	19,736	30,600
45-49	8,616	21,896	30,512
50-54	8,256	23,644	31,900
55-59	5,274	16,125	21,399
60-64	2,854	9,266	12,120
65-69	1,070	2,765	3,835
70-74	351	658	1,009
75-79	73	133	206
80-84	21	35	56
85 or older	6	6	12
Total	95,183	106,924	202,107

Distribution of Active Members by Total Service as of June 30, 2022

Years of Service	Male	Female	Total
0-4	16,282	56,401	72,683
5-9	8,994	36,760	45,754
10-14	6,661	24,932	31,593
15-19	9,313	30,288	39,601
20-24	10,622	30,378	41,000
25-29	6,627	16,091	22,718
30-34	2,310	5,873	8,183
35+	559	1,384	1,943
Total	61,368	202,107	263,475

Average Service (Years – Months)	13-6	12-4	12-7
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Distribution of Active Members by Total Service and Tier of Membership as of June 30, 2022

Age as of Last Birthday	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Total
0-4	22	15	13	2,893	1,767	67,973	72,683
5-9	6	21	36	15,809	3,877	26,005	45,754
10-14	7	22	76	24,299	5,653	1,536	31,593
15-19	8	15	50	39,421	60	47	39,601
20-24	9	4	96	40,873	10	8	41,000
25-29	5	13	107	22,589	2	2	22,718
30-34	9	10	76	8,085	0	3	8,183
35+	55	60	317	1,511	0	0	1,943
Total	121	160	771	155,480	11,369	95,574	263,475

Average Service (Years – Months)	29-7	25-9	29-1	18-8	8-6	3-1	12-7
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Total and Average Earnings by Tier of Membership for Active Members as of June 30, 2022

	Total Earnings	Average Earnings*	Average Earnings* of Full-Time Members
Tier 1	\$10,448,770	\$108,841	\$128,829
Tier 2	\$10,960,835	\$97,865	\$116,874
Tier 3	\$69,499,473	\$104,041	\$110,559
Tier 4	\$13,318,808,686	\$97,544	\$100,685
Tier 5	\$652,339,584	\$69,627	\$75,677
Tier 6	\$3,446,614,878	\$47,309	\$60,354
Total	\$17,508,672,226	\$79,715	\$88,698

*Average earnings calculated using only those active members with earnings during the 2021–22 school year.

HISTORICAL MEMBER STATISTICS

Active Members and Annuitants 1925-2022

As of June 30	Active Members	Retirees & Beneficiaries
1925	29,057	1,815
1930	39,663	2,732
1935	45,031	3,919
1940	48,193	4,771
1945	52,359	5,637
1950	56,504	6,374
1955	71,273	7,897
1960	99,555	10,796
1965	129,543	16,043
1970	186,914	22,700
1975	227,038	35,252
1980	203,330	46,812
1985	178,516	57,366
1990	195,194	69,127
1995	199,398	82,459
2000	224,986	100,839
2005	260,356	125,325
2010	285,774	141,716
2015	267,715	158,458
2020	261,232	172,569
2022	263,475	178,569

Number of Active Members by Tier

As of June 30	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Total
2003	28,327	14,463	19,083	185,374	-	-	247,247
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

RETIREMENT STATISTICS

Members Retired in 2021-2022 for:

	Service*	Disability
Number Retired	7,025	110
Age at Retirement:		
Average	61 yrs. 3 mos.	51 yrs. 0 mos.
Median	61 yrs. 2 mos.	50 yrs. 6 mos.
Years of Service:		
Average	25 yrs. 7 mos.	20 yrs. 4 mos.
Median	27 yrs. 1 mo.	19 yrs. 8 mos.
Benefit**:		
Average	\$48,724	\$34,430
Median	\$49,571	\$34,678
Final Average Salary (FAS):		
Average	\$92,434	\$92,122
Median	\$92,494	\$92,410
Benefit as % of FAS***:		
Average	48.12%	36.74%
Median	51.56%	33.33%

Members Retired in 2021-2022 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	388	994	2,574	3,069
Age at Retirement:				
Average	62 yrs. 4 mos.	62 yrs. 5 mos.	63 yrs. 0 mos.	59 yrs. 4 mos.
Median	61 yrs. 11 mos.	62 yrs. 3 mos.	62 yrs. 7 mos.	58 yrs. 4 mos.
Years of Service:				
Average	7 yrs. 2 mos.	15 yrs. 1 mo.	23 yrs. 8 mos.	33 yrs. 1 mo.
Median	7 yrs. 1 mos.	15 yrs. 3 mos.	23 yrs. 4 mos.	32 yrs. 2 mos.
Benefit**:				
Average	\$3,909	\$13,516	\$40,285	\$72,871
Median	\$3,487	\$10,346	\$38,809	\$68,744
Final Average Salary (FAS):				
Average	\$37,519	\$57,671	\$88,720	\$113,752
Median	\$35,069	\$49,931	\$86,822	\$106,789
Benefit as % of FAS***:				
Average	10.36%	22.86%	44.83%	63.84%
Median	10.19%	22.68%	44.33%	63.17%

*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, 2022 Retired for:

	Service*	Disability
Number Retired	169,613	2,003
Age at Retirement:		
Average	59 yrs. 2 mos.	49 yrs. 7 mos.
Median	58 yrs. 2 mos.	50 yrs. 4 mos.
Age Attained as of June 30, 2022:		
Average	73 yrs. 8 mos.	66 yrs. 2 mos.
Median	73 yrs. 5 mos.	66 yrs. 8 mos.
Years of Service:		
Average	27 yrs. 7 mos.	18 yrs. 4 mos.
Median	30 yrs. 1 mo.	17 yrs. 6 mos.
Benefit**:		
Average	\$44,484	\$22,491
Median	\$44,941	\$20,461
Final Average Salary (FAS):		
Average	\$77,478	\$62,169
Median	\$75,373	\$58,823
Benefit as % of FAS***:		
Average	53.34%	35.42%
Median	60.00%	33.33%

All Retirees as of June 30, 2022 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	5,230	24,125	50,677	89,581
Age at Retirement:				
Average	60 yrs. 5 mos.	59 yrs. 5 mos.	60 yrs. 6 mos.	58 yrs. 3 mos.
Median	59 yrs. 8 mos.	58 yrs. 1 mo.	60 yrs. 11 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. 8 mos.	33 yrs. 8 mos.
Benefit**:				
Average	\$4,279	\$10,095	\$35,221	\$61,333
Median	\$3,687	\$7,825	\$32,726	\$57,454
Final Average Salary (FAS):				
Average	\$40,839	\$44,965	\$73,882	\$90,407
Median	\$37,398	\$38,003	\$69,669	\$85,151
Benefit as % of FAS***:				
Average	10.54%	21.79%	47.37%	67.72%
Median	10.19%	21.03%	47.78%	66.89%

*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.

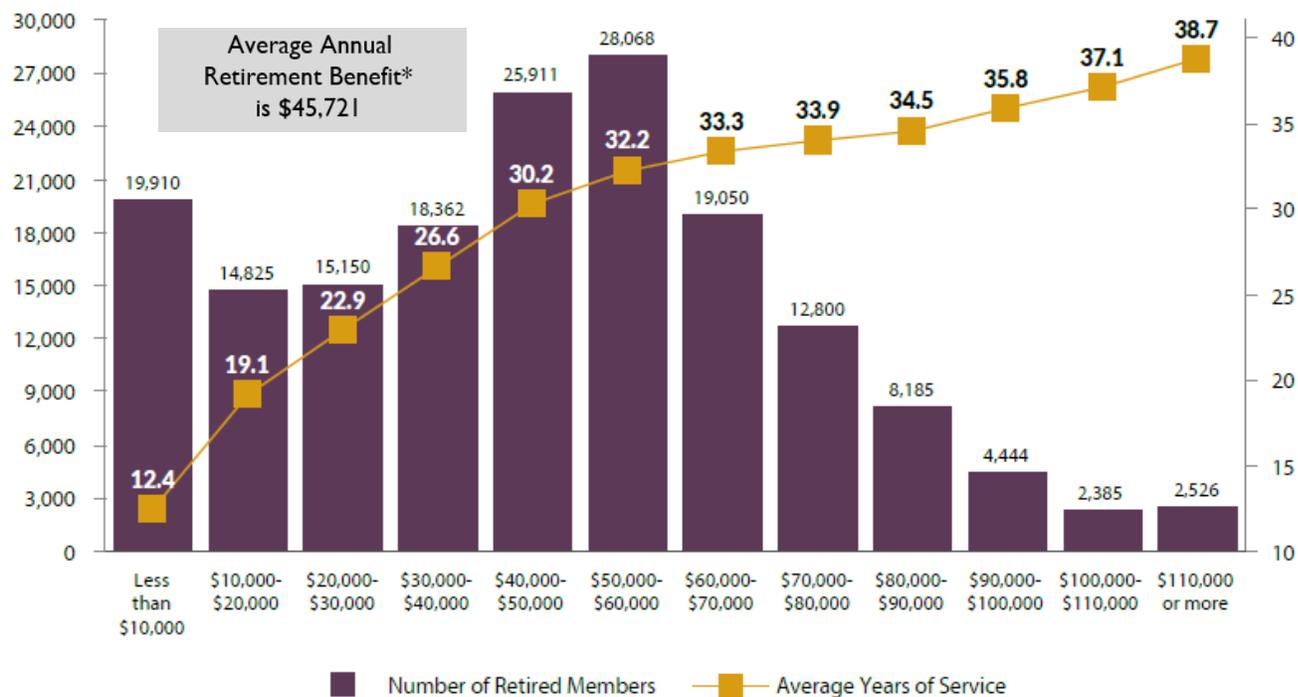
Retired Members' Characteristics* by Year of Retirement

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
2013	6,330	60-10	25-6	\$81,987	\$44,768
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

*Averages are for service and vested retirees

DISTRIBUTION OF THE ANNUAL BENEFIT* OF ALL RETIRED MEMBERS

— as of June 30, 2022



*Maximum annual retirement benefit including supplementation and COLA.

2018 – 2022 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	1.18	0.00	1	2.02	0.50
25 – 29	9	3.81	2.36	7	7.75	0.90
30 – 34	6	7.88	0.76	6	17.18	0.35
35 – 39	12	15	0.81	31	31	1.00
40 – 44	28	23	1.23	50	47	1.07
45 – 49	48	34	1.42	72	69	1.05
50 – 54	44	47	0.94	92	97	0.95
55 – 59	45	50	0.91	92	118	0.78
60 – 64	44	42	1.05	107	108	0.99
65 – 69	14	24	0.59	57	53	1.08
70 – 74	7	9.46	0.74	14	19.9	0.70
75 – 79	2	3.66	0.55	3	8.64	0.35
	259	259	0.999	532	577	0.921

II. Disability Retirement Rates

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
30 – 34	0	0.41	0.00	0	2.07	0.00
35 – 39	0	5.38	0.00	5	15.00	0.33
40 – 44	7	14.63	0.48	27	48.06	0.56
45 – 49	17	29.15	0.58	52	93.84	0.55
50 – 54	29	45.90	0.63	117	150.86	0.78
55 – 59	7	21.88	0.32	58	95.72	0.61
60 – 64	2	6.70	0.30	11	36.00	0.31
65 – 69	0	1.32	0.00	2	4.62	0.43
70 – 74	0	0.12	0.00	0	0.30	0.00
75 – 79	0	0.00	0.00	0	0.01	0.00
	62	125.49	0.494	272	446.48	0.609

III. Withdrawal Rates

Service	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
0 – 4	6,491	6,282.48	1.03	21,308	20,464.91	1.04
5 – 9	1,125	1,074.90	1.05	4,816	4,720.32	1.02
10 – 14	574	492.65	1.17	2,835	2,499.51	1.13
15 – 19	388	365.79	1.06	1,268	1,102.83	1.15
20 – 24	206	198.19	1.04	537	500.80	1.07
25 – 29	81	74.09	1.09	127	127.62	1.00
30 +	16	21.64	0.74	54	30.21	1.79
	8,881	8,509.74	1.044	30,945	29,446.20	1.051

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	138	131.74	1.05	931	866.30	1.07
60 – 64	271	282.09	0.96	1,734	1,614.30	1.07
65 – 69	298	298.27	1.00	1,155	1,041.70	1.11
70 – 74	94	102.09	0.92	216	211.38	1.02
75 – 79	18	28.62	0.63	39	43.95	0.89
	819	842.81	0.972	4,075	3,777.63	1.079

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	540	458.89	1.18	2,035	1,766.93	1.15
60 – 64	934	930.50	1.00	5,206	4,960.43	1.05
65 – 69	411	386.33	1.06	2,508	2,313.74	1.08
70 – 74	68	64.95	1.05	368	319.68	1.15
75 – 79	14	12.88	1.09	59	50.10	1.18
	1,967	1,853.55	1.061	10,176	9,410.88	1.081

With at Least 30 Years of Service

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
55 – 59	2,039	1,957.00	1.04	5,647	5,409.11	1.04
60 – 64	1,142	1,022.08	1.12	3,173	2,988.51	1.06
65 – 69	385	346.61	1.11	1,062	937.86	1.13
70 – 74	78	72.27	1.08	272	223.46	1.22
75 – 79	12	13.56	0.88	58	51.47	1.13
	3,656	3,411.52	1.072	10,212	9,610.41	1.063

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	30	28.55	1.05	58	74.37	0.78
60 – 64	106	93.55	1.13	210	233.53	0.90
65 – 69	327	301.43	1.08	624	619.22	1.01
70 – 74	873	826.07	1.06	1188	1145.36	1.04
75 – 79	1,224	1298.26	0.94	1,551	1528.46	1.01
80 – 84	1,568	1516.79	1.03	1,753	1703.53	1.03
85 – 89	2,109	1924.87	1.10	2,422	2182.19	1.11
90 – 94	1,562	1417.12	1.10	2,521	2517.20	1.00
95 - 99	496	460.91	1.08	1377	1338.15	1.03
100 - 104	51	47.22	1.08	341	328.76	1.04
105 +	3	1.40	2.14	34	28.29	1.20
	8,349	7,916.17	1.055	12,079	11,699.06	1.032

VI. Survivor and Beneficiary Mortality Rates

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
54 & Under	0	0.26	0.000	2	0.23	8.696
55 – 59	2	1	2.151	1	1	0.826
60 – 64	3	3.45	0.870	4	4.32	0.926
65 – 69	17	10.73	1.584	16	16.04	0.998
70 – 74	38	32.07	1.185	47	52.14	0.901
75 – 79	43	50	0.867	105	118	0.890
80 – 84	61	72	0.842	206	213	0.967
85 – 89	147	121	1.212	331	327	1.013
90 – 94	132	120	1.101	408	393	1.039
95 - 99	77	70.11	1.098	286	263.31	1.086
100 - 104	18	15.66	1.149	58	61.99	0.936
105 +	2	1.47	1.361	8	9.83	0.814
	540	497.92	1.085	1,472	1,459.24	1.009

VII. Disability Mortality Rates

Age	Male			Female		
	Actual	Expected	A/E	Actual	Expected	A/E
44 & Under	3	0.3	10.00	3	1.83	1.64
45 – 49	5	1	3.40	13	5	2.41
50 - 54	4	3	1.19	23	14	1.66
55 – 59	10	6	1.59	37	25	1.48
60 – 64	5	6	0.87	35	30	1.18
65 – 69	8	11	0.74	37	37	1.01
70 – 74	19	19	1.00	40	43	0.92
75 – 79	30	18	1.64	35	32	1.09
80 – 84	14	12	1.14	26	21	
85 – 89	13	10.56	1.23	21	18.62	
90 +	8	4.53	1.77	27	21.9	1.23
	119	93	1.285	297	249	1.191

VIII. Salary Scale (Dollars in Thousands)¹

Duration	Previous Year's Salaries	Actual Salaries	Expected Salaries	Actual/Expected
1	\$1,707,512	\$2,381,872	\$1,891,753	1.259
2	1,840,320	1,975,493	1,990,122	0.993
3	1,842,470	1,950,907	1,968,310	0.991
4	1,809,631	1,900,035	1,914,951	0.992
5	1,722,356	1,806,595	1,811,574	0.997
6	1,648,189	1,727,538	1,727,302	1.000
7	1,592,114	1,662,989	1,665,192	0.999
8	1,602,816	1,674,288	1,674,462	1.000
9	1,721,233	1,796,556	1,796,623	1.000
10	1,961,914	2,038,887	2,046,276	0.996
11	2,267,452	2,361,428	2,362,912	0.999
12	2,586,228	2,684,996	2,692,005	0.997
13	2,915,787	3,026,071	3,031,252	0.998
14	3,191,581	3,305,097	3,312,861	0.998
15	3,447,176	3,568,595	3,572,653	0.999
16	3,684,966	3,805,229	3,812,834	0.998
17	3,980,531	4,105,960	4,112,685	0.998
18	4,143,204	4,269,069	4,274,544	0.999
19	4,218,595	4,347,611	4,347,262	1.000
20	4,068,380	4,163,838	4,187,584	0.994
21	3,773,003	3,868,171	3,879,779	0.997
22	3,382,019	3,462,641	3,474,687	0.997
23	3,014,743	3,083,590	3,094,634	0.996
24	2,658,651	2,717,567	2,726,978	0.997
25	2,334,929	2,380,472	2,393,302	0.995
26	2,034,564	2,072,921	2,084,004	0.995
27	1,853,942	1,888,765	1,897,881	0.995
28	1,703,155	1,734,789	1,742,328	0.996
29	1,606,868	1,633,569	1,643,022	0.994
30	1,279,837	1,248,795	1,307,865	0.955
31	991,569	984,242	1,012,788	0.972
32	778,242	766,508	794,585	0.965
33	562,536	552,190	574,012	0.962
34	394,086	389,128	401,968	0.968
35	283,320	281,341	288,845	0.974
36	200,602	195,575	204,434	0.957
37	139,385	135,703	141,978	0.956
38	97,090	95,030	98,867	0.961
39	72,182	68,336	73,503	0.930
40	251,334	241,756	255,958	0.945
Total	\$79,364,515	\$82,354,141	\$82,284,577	1.001

¹ Totals may not sum due to rounding.

APPENDIX 12

RATES

Investment Rate of Return on
Market and Actuarial Value of Assets as of June 30, 2022

Annualized Rates of Return over the Last	Based Upon Market Value of Assets	Based Upon Actuarial Value of Assets ¹
1 Year	-7.1%	8.5%
3 Years	7.4%	9.0%
5 Years	7.7%	8.6%
10 Years	8.9%	9.8%
15 Years	6.3%	8.1%
20 Years	7.7%	8.3%
25 Years	7.3%	8.3%
30 Years	8.5%	

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, 2022

Annualized Inflation over the Last	Inflation Assumption		COLA Benefit	
	Actual	Expected ²	Actual	Expected
1 Year	8.5%	2.4%	3.0%	1.3%
3 Years	4.2%	2.4%	1.8%	1.3%
5 Years	3.4%	2.4%	1.5%	1.3%
10 Years	2.3%	2.4%	1.3%	1.3%
15 Years	2.3%	2.4%	1.3%	1.3%
20 Years	2.4%	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 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, 2022

<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%		
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%

ASSET ALLOCATION

The table below displays the Retirement System's asset allocation targets, ranges, and actual allocation percentages for the June 30, 2022 actuarial valuation. A slight revision to the asset allocation was adopted by the Retirement Board on August 3, 2022, moving 1% out of International Equity (decreasing its target to 15%) and into Private Equity (increasing its target to 9%). 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%	32.2%
International Equity	15%	12 – 20%	15.1%
Global Equity	4%	0 – 8%	3.3%
Real Estate Equity	11%	6 – 16%	12.7%
Private Equity	9%	3 – 13%	10.8%
<i>Total Equity</i>	<i>72%</i>		<i>74.1%</i>
Debt			
Domestic Fixed Income	16%	12 – 20%	14.1%
High-Yield Bonds	1%	0 – 3%	0.8%
Global Bonds	2%	0 – 4%	2.2%
Real Estate Debt	6%	2 – 10%	5.9%
Private Debt	2%	0.5 – 5%	1.1%
Cash Equivalents	1%	1 – 4%	1.8%
<i>Total Debt</i>	<i>28%</i>		<i>25.9%</i>

Changes to the Asset Allocation between June 30, 2021 and June 30, 2022

Reduced Real Estate Debt target allocation by 1% (reducing its allocation to 6%) and increased Private Debt target allocation by 1% (increasing its allocation to 2%).

ASSESSMENT OF RISK

ACTUARIAL STANDARDS OF PRACTICE NO. 51

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.

A. Plan Maturity Measurements

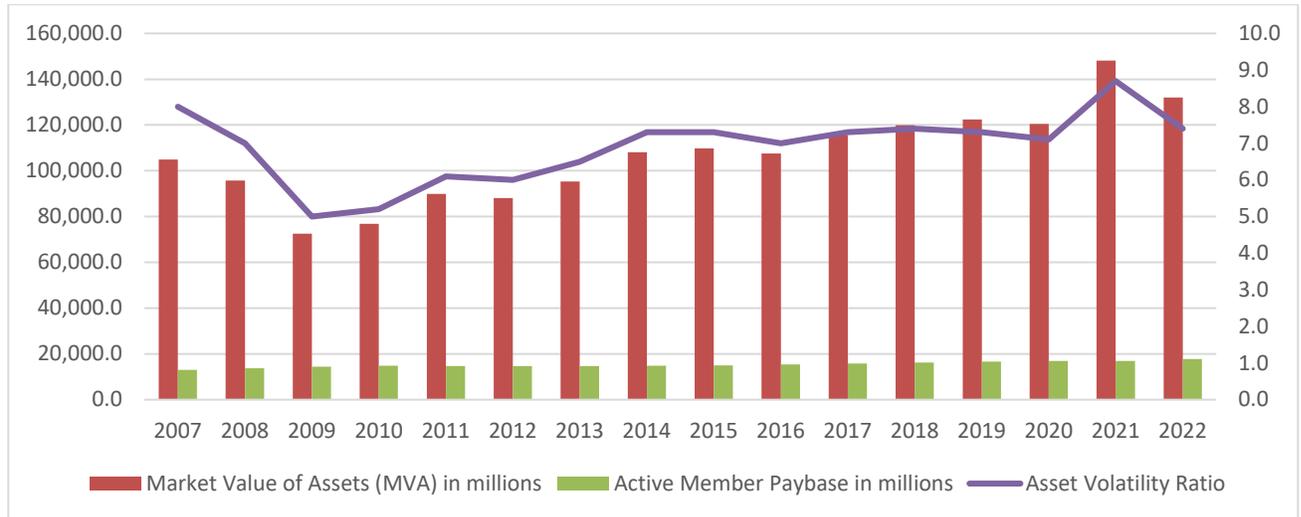
1. Asset Volatility Ratio

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 decreased from 8.7 as of June 30, 2021 to 7.4 as of June 30, 2022 due to the investment loss sustained during the 2022 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.

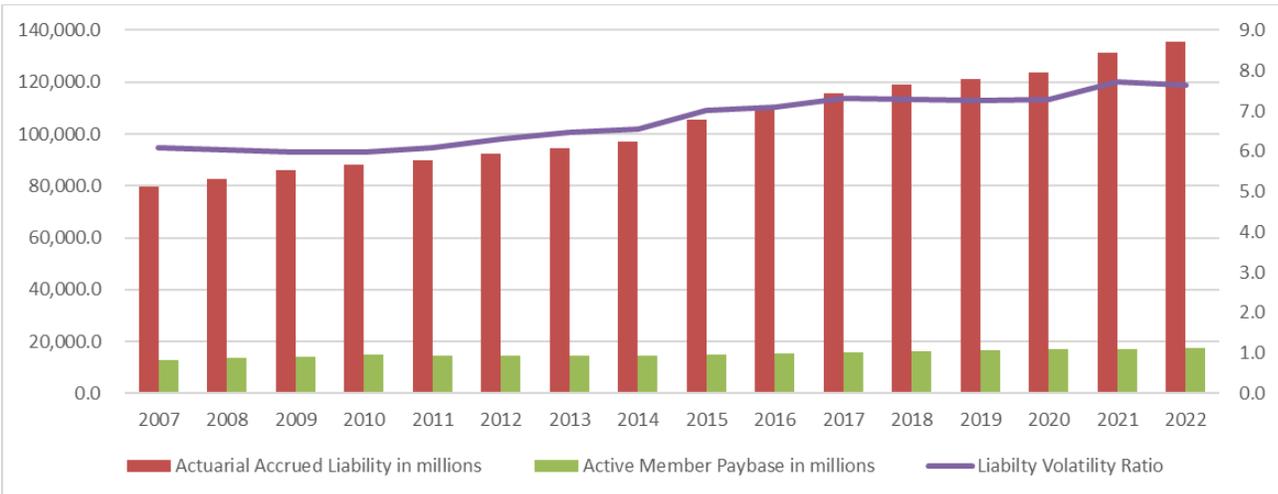
Fiscal Year Ending June 30th	Market Value of Assets (in millions)	Active Member Paybase (in millions)	Asset Volatility Ratio
2007	104,912.9	13,083.0	8.0
2008	95,769.3	13,690.1	7.0
2009	72,471.8	14,366.4	5.0
2010	76,844.9	14,792.1	5.2
2011	89,889.7	14,732.9	6.1
2012	88,056.3	14,640.8	6.0
2013	95,367.0	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



2. Liability Volatility Ratio

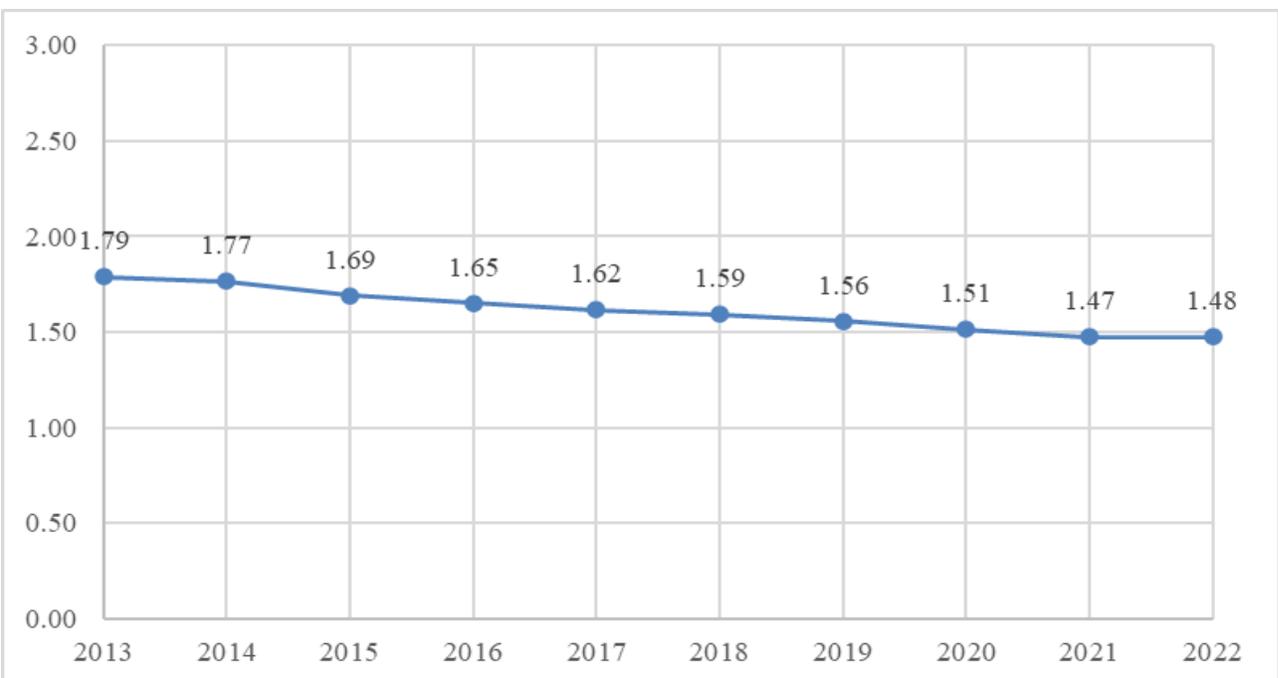
The liability volatility ratio is equal to the actuarial accrued liability using the Entry Age Normal Actuarial funding method divided by the active member payroll. Changes in assumptions such as reducing the assumed rate of return and improving mortality assumptions can have a significant impact on 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
2007	79,537.2	13,083.0	6.1
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



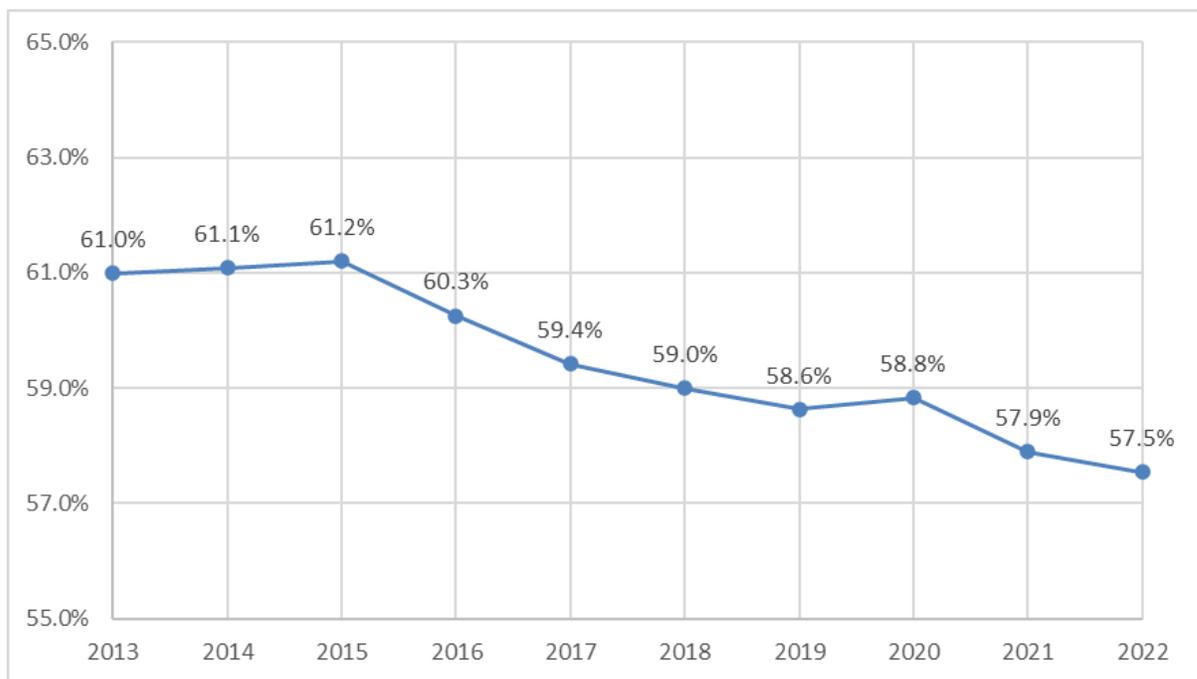
3. Active-to-Retiree Counts Ratio

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 58% and 61% over the last ten years.

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
2013	57,681.9	94,583.8	61.0%
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%



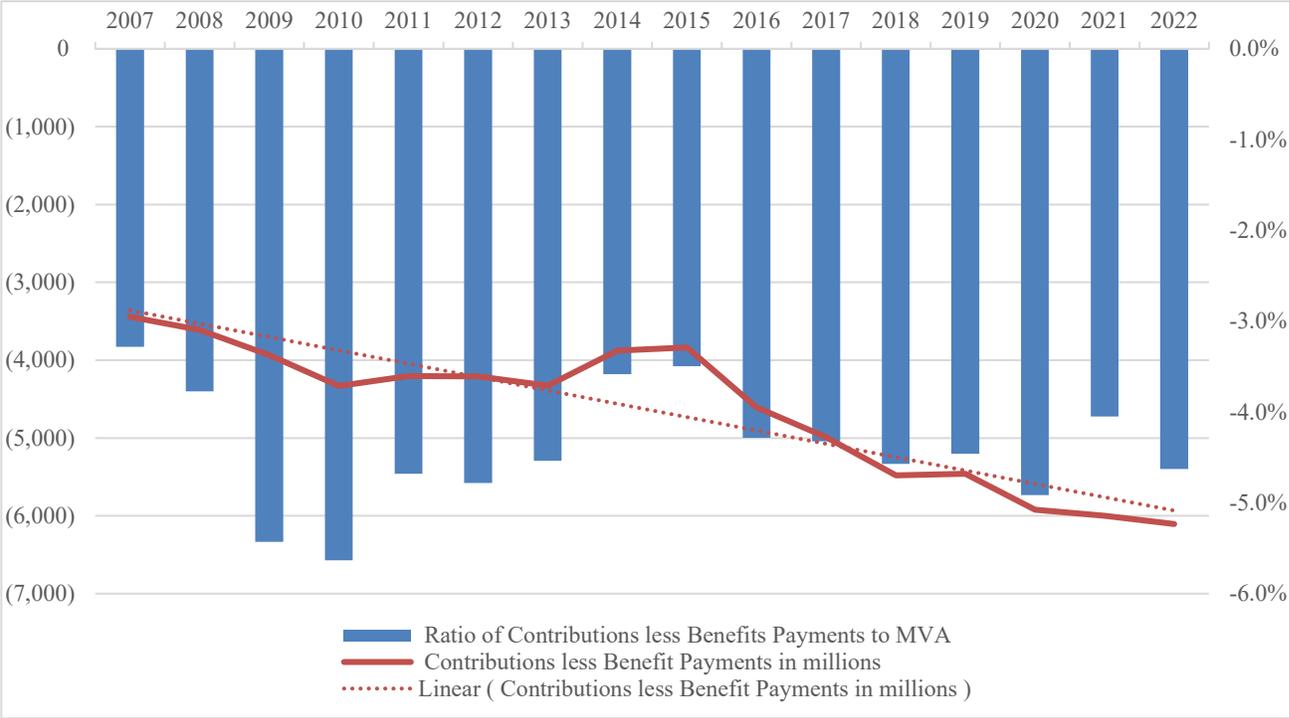
4. Cash Flow Ratio

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.

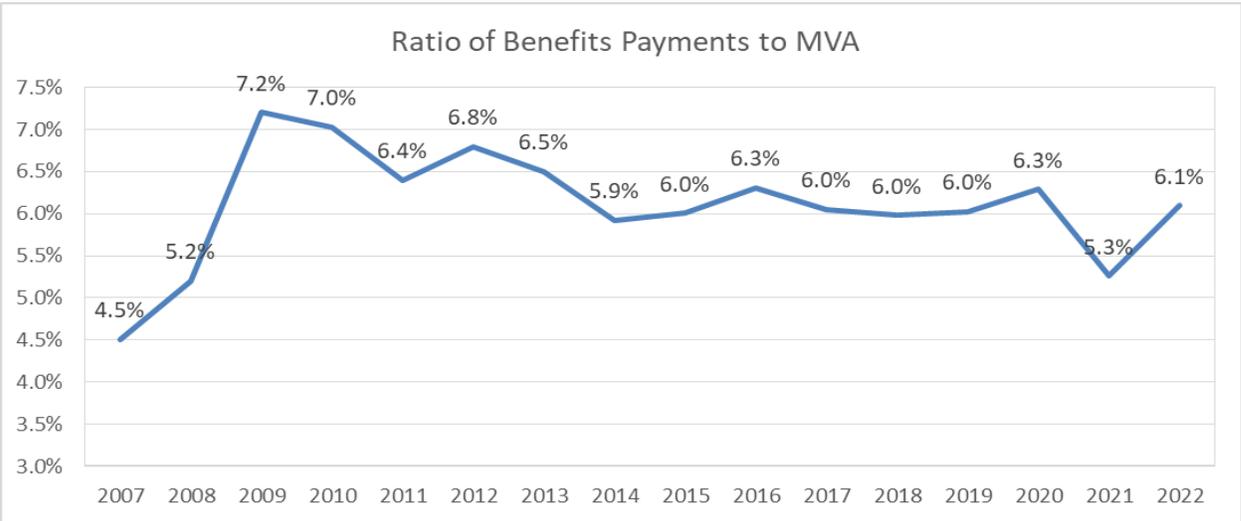
Negative cash flow does make a plan more sensitive to near term investment returns, particularly negative returns. When investments lose money and net cash flow is negative, it is more difficult for plans to recover from a poor investment return, as the invested asset base is lower. Therefore, plans 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
2007	104,912.9	1,279.7	4,722.4	(3,443)	-3.3%
2008	95,769.3	1,368.4	4,980.3	(3,612)	-3.8%
2009	72,471.8	1,283.5	5,217.9	(3,934)	-5.4%
2010	76,844.9	1,070.9	5,399.9	(4,329)	-5.6%
2011	89,889.7	1,545.9	5,751.5	(4,206)	-4.7%
2012	88,056.3	1,771.3	5,980.0	(4,209)	-4.8%
2013	95,367.0	1,868.3	6,194.1	(4,326)	-4.5%
2014	108,155.1	2,522.5	6,399.2	(3,877)	-3.6%
2015	109,718.9	2,751.7	6,588.1	(3,836)	-3.5%
2016	107,506.1	2,175.2	6,780.3	(4,605)	-4.3%
2017	115,468.4	1,995.0	6,984.6	(4,990)	-4.3%
2018	119,915.5	1,688.8	7,169.6	(5,481)	-4.6%
2019	122,477.5	1,920.3	7,381.6	(5,461)	-4.5%
2020	120,479.5	1,653.7	7,575.3	(5,922)	-4.9%
2021	148,148.5	1,788.3	7,787.4	(5,999)	-4.0%
2022	131,964.6	1,934.8	8,039.9	(6,105)	-4.6%



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.



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 9.76%.

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		9.76%
Valuation Rate of Interest ¹	Decrease from 6.95% to 6.70%	12.83%
Valuation Rate of Interest ¹	Decrease from 6.95% to 6.45%	16.00%
Valuation Rate of Interest ¹	Decrease from 6.95% to 5.95%	22.57%
Salary Scale	Decrease of 10%	8.82%
Salary Scale	Increase of 10%	10.68%
Service Retirement Rates	Decrease of 10%	9.08%
Service Retirement Rates	Increase of 10%	10.28%
Healthy Annuitant Mortality	Decrease of 10%	11.47%
Healthy Annuitant Mortality	Increase of 10%	8.18%
Active Mortality	Decrease of 10%	9.78%
Active Mortality	Increase of 10%	9.74%

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%

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		
1955-56	10.40	1990-91	6.84	Average	10.89%

APPENDIX 16

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 of \$250,000 (was \$179,000 in 2019, 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.

APPENDIX 17

ACTUARIAL VALUATION INFORMATION1. 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 Section 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 average expected future working lifetime for our active population as determined by the actuarial valuation as of June 30, 2022 is 12.50 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 effective with the current actuarial valuation of the Retirement System's assets and liabilities as of June 30, 2021. The mortality improvement scale was updated as of 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 "*Report on the 2021 Recommended Actuarial Assumptions.*"

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

APPENDIX 17 (Cont'd)

ACTUARIAL VALUATION INFORMATION (Cont'd)

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%.

APPENDIX 18

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. The current actuarial assumptions were adopted by the Retirement Board on October 28, 2021. The mortality improvement scale was updated as of June 30, 2022 valuation and was adopted on October 27, 2022. Specific details regarding the development of the present actuarial assumptions can be found in the “*Report on the 2021 Recommended Actuarial Assumptions*”.

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.

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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>Age</u>	<u>Males</u>	<u>Rate</u>	<u>Age</u>	<u>Females</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>Age</u>	<u>Males</u>	<u>Rate</u>	<u>Age</u>	<u>Females</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>Age</u>	<u>Males</u> <u>Rate</u>	<u>Age</u>	<u>Females</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>Age</u>	<u>Males</u>	<u>Rate</u>	<u>Age</u>	<u>Females</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 8.24% on an arithmetic basis and 7.57% on a geometric basis. Using a 30-year horizon, the expected annual rate of return for the total portfolio is 8.49% on an arithmetic basis and 7.83% on a geometric basis.

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

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, 2022 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.

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 \$194,838 as of June 30, 2022. It is assumed to increase annually by the assumed annual rate of inflation of 2.4%.

¹ The average annual rate of increase in the Consumer Price Index (CPI) for the last 30 years ending with March 31, 2022 was 2.44%.

² The COLA percentage is one-half of the increase in the CPI 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%.

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 most recent 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 Tiers 1-5, 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, the FAS calculation is based on 5 years. Pensionable earnings can be no more than the Governor's salary, which is \$250,000 as of 6/30/2022.

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.

3. Service Retirement

The service retirement benefits are payable for life generally as follows:

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:

For New York State service prior to 7/1/1959 and all out-of-state service:

1/100th of final average salary (FAS) per year for each of the first 25 years of service, plus 1/120th of FAS per year for each of the next 10 years of service, plus 1/140th of FAS per year for each year of NYS service in excess of 35, *plus*

For New York State service subsequent to 7/1/1959:

1/50th of final average salary (FAS) per year for each of the first 25 years of NYS service, plus 1/60th of FAS per year for each of the next 10 years of NYS service, plus 1/70th 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.

Career Plan

If 20 or more years of NYS service: 2% of final average salary (FAS) per year of NYS service after July 1, 1959, plus 1.8% of FAS per year of NYS service prior to that date, plus 1% of FAS per year of out-of-state service. Out-of-state service is allowed only up to a maximum of 10 years, and only to the extent that it does not raise the total service credit to greater than 35 years. The maximum pension permitted is 75% of FAS.

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, provides to 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. The maximum pension, as a result of Article 19, can be 79% of FAS.

Tier 2: 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: $1\frac{2}{3}\%$ of FAS per year of NYS service (if less than 20 years) or 2% of FAS per year of NYS service (if 20 to 30 years). There is no additional benefit for more than 30 years of service. 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 $\frac{1}{15}$ th for each of the first 2 years under age 62 and $\frac{1}{30}$ th for each of the next 5 years.

Tier 4: $1\frac{2}{3}\%$ of FAS per year of NYS service (if less than 20 years), or 2% of FAS per year of NYS service (if 20 to 30 years), plus $1\frac{1}{2}\%$ 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: $1\frac{2}{3}\%$ of FAS per year of NYS service (if less than 25 years), or 2% of FAS per year of NYS service (if 25 to 30 years), plus $1\frac{1}{2}\%$ 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: $1\frac{2}{3}\%$ of FAS per year of NYS service (if less than 20 years), 1.75% of FAS per year of NYS service (if credited with 20 years) or 35% plus 2% per year of NYS service in excess of 20 years (if beyond 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 Jan. 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.) 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.

¹ The law limits the amount of salary that can be used in the calculation of the Paragraph 2 Death 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).

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; 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.

Appendix K

Presentation to the Board: **Final Employer Contribution Rate**

Richard A. Young, Chief Actuary
Melody Prangley, Deputy Chief Actuary
July 26, 2023



Final Employer Contribution Rate (ECR)

June 30, 2022 Actuarial Valuation

9.76% of Pay

ECR Components

Normal Rate	9.37%
Expense Rate	0.26%
Group Life Rate	0.13%
Excess Benefit Plan Rate	0.00%
Final 6/30/2022 ECR	9.76%

When the 9.76% ECR Applies



September

October

November

Employer Contributions

Collection Date	Employer Contribution	ECR
Fall 2019	\$1.8 billion	10.62%
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%

Preliminary 6/30/2023 Assets



Market Value of Assets

As of:	Market Value of Assets (in Billions)
June 30, 2019	\$122.5
June 30, 2020	\$120.5
June 30, 2021	\$148.1
June 30, 2022	\$132.0
June 30, 2023*	\$137.0

Five-Year Period 2018 – 2023 (in Billions)		
Benefit Payments and Expenses	Employer Contributions Collected	Member Contributions Collected
\$39.1	\$8.5	\$0.8

THE FISCAL YEAR JUST COMPLETED

- NYSTRS long-term target investment return is 6.95%.
- Equity returns for the 2022–23 fiscal year were strong (US and international).
- **2022–23 fiscal year benchmark rates of return:**

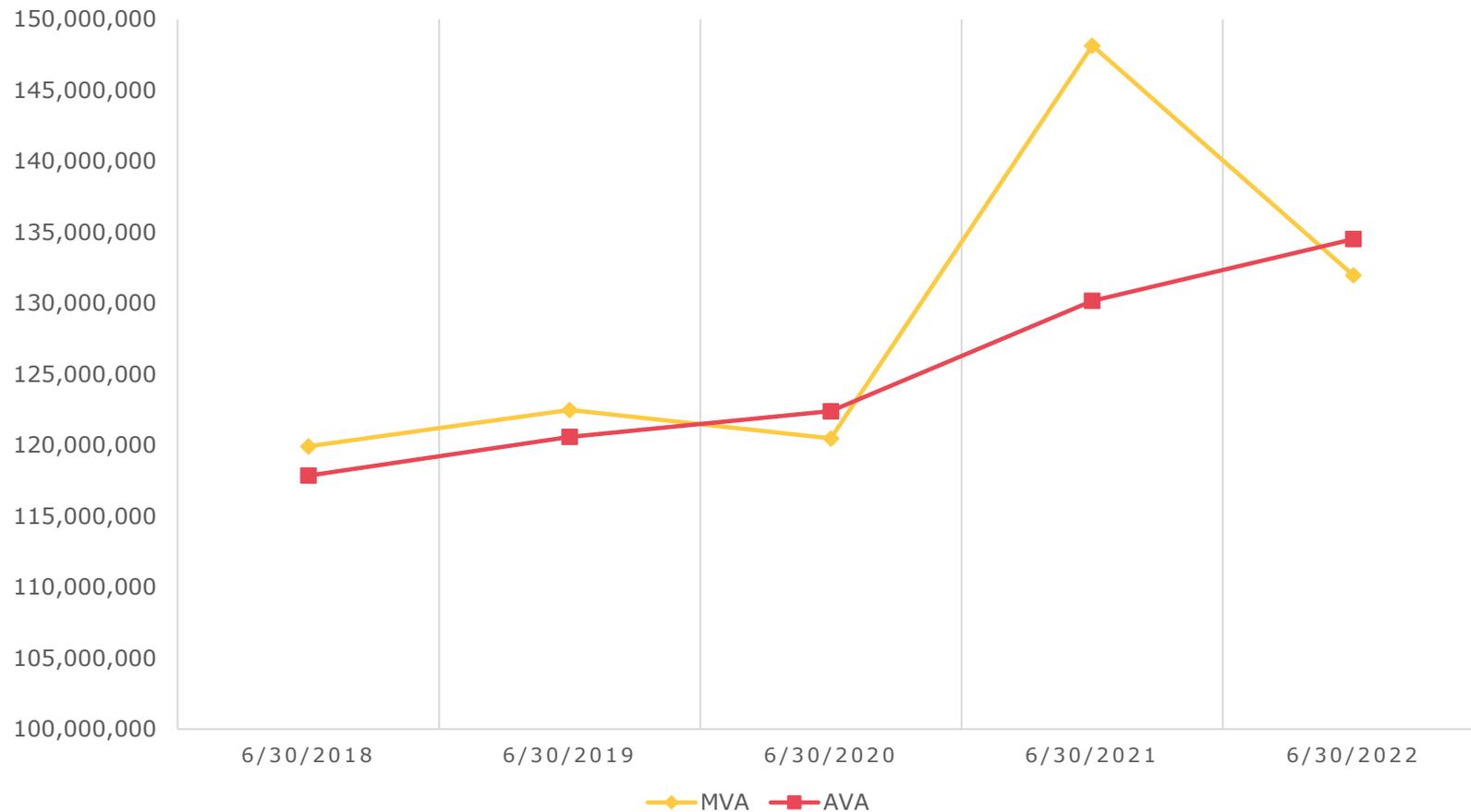
Domestic Equity Index	S&P 1500	19.2%
International Equity Index	ACWI ex-US	12.7%
Fixed Income Index	Barclay's US Aggregate	-0.8%

NYSTRS' 2023 rate of return finalized in October 2023

Rates of Return

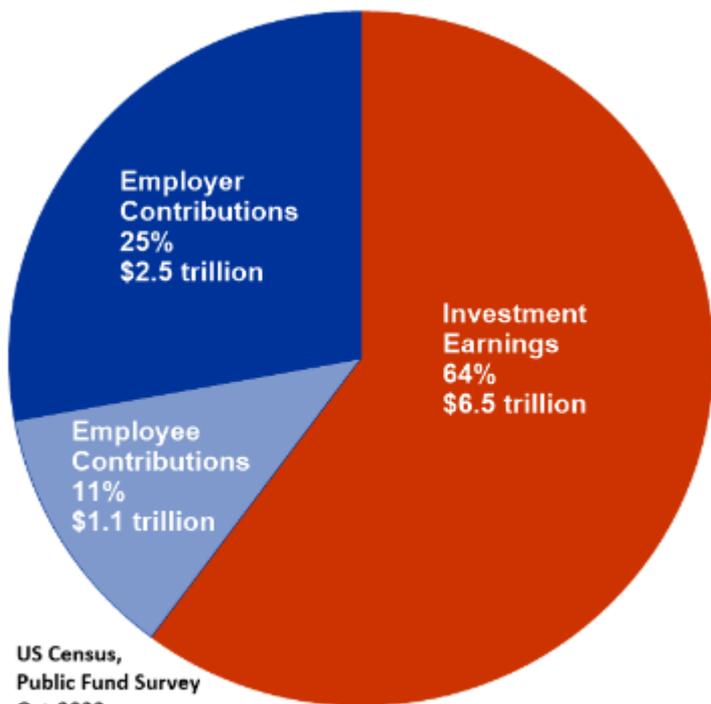
Fiscal Year	Rate of Return (net of fees)
2017 – 2018	9.0%
2018 – 2019	7.1%
2019 – 2020	3.5%
2020 – 2021	29.0%
2021 – 2022	-7.1%
5-year average:	7.7%

Actuarial Value of Assets Development

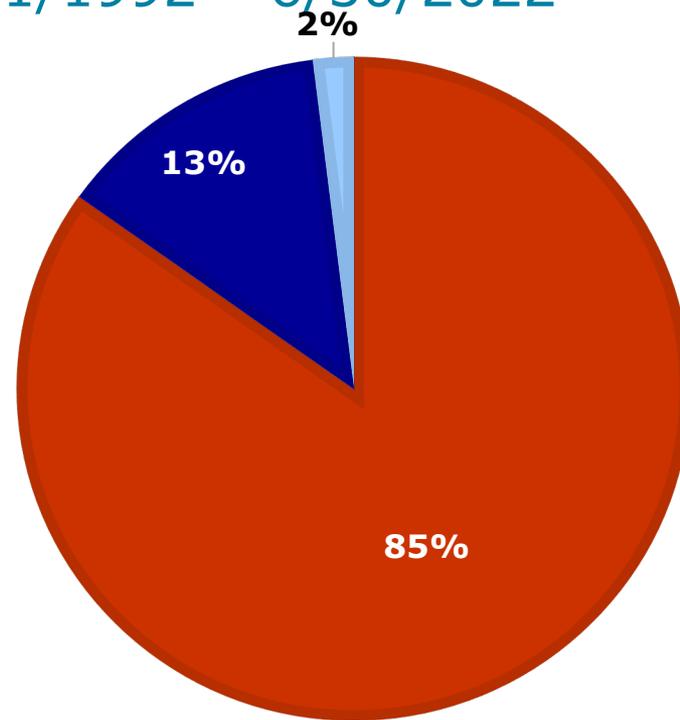


Sources of Income: 30 Years

NYSTRS
7/1/1992 – 6/30/2022



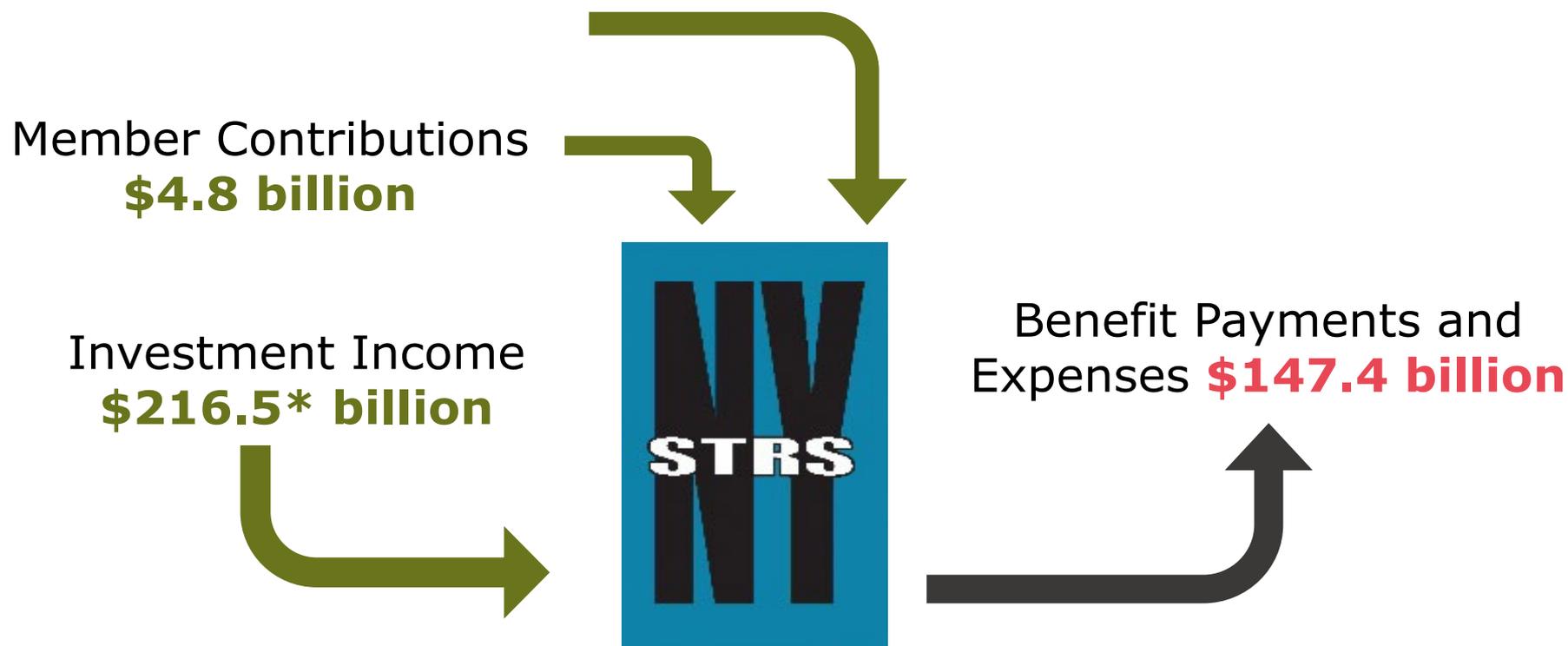
US Census,
Public Fund Survey
Oct-2022



- Net Investment Income
- Employer Contributions
- Member Contributions



Asset Summary: 30 Years 1993 - 2023



Approximate Market Value of Assets - 1993: \$29.5 B

Approximate Market Value of Assets - 2023: \$137.0 B*

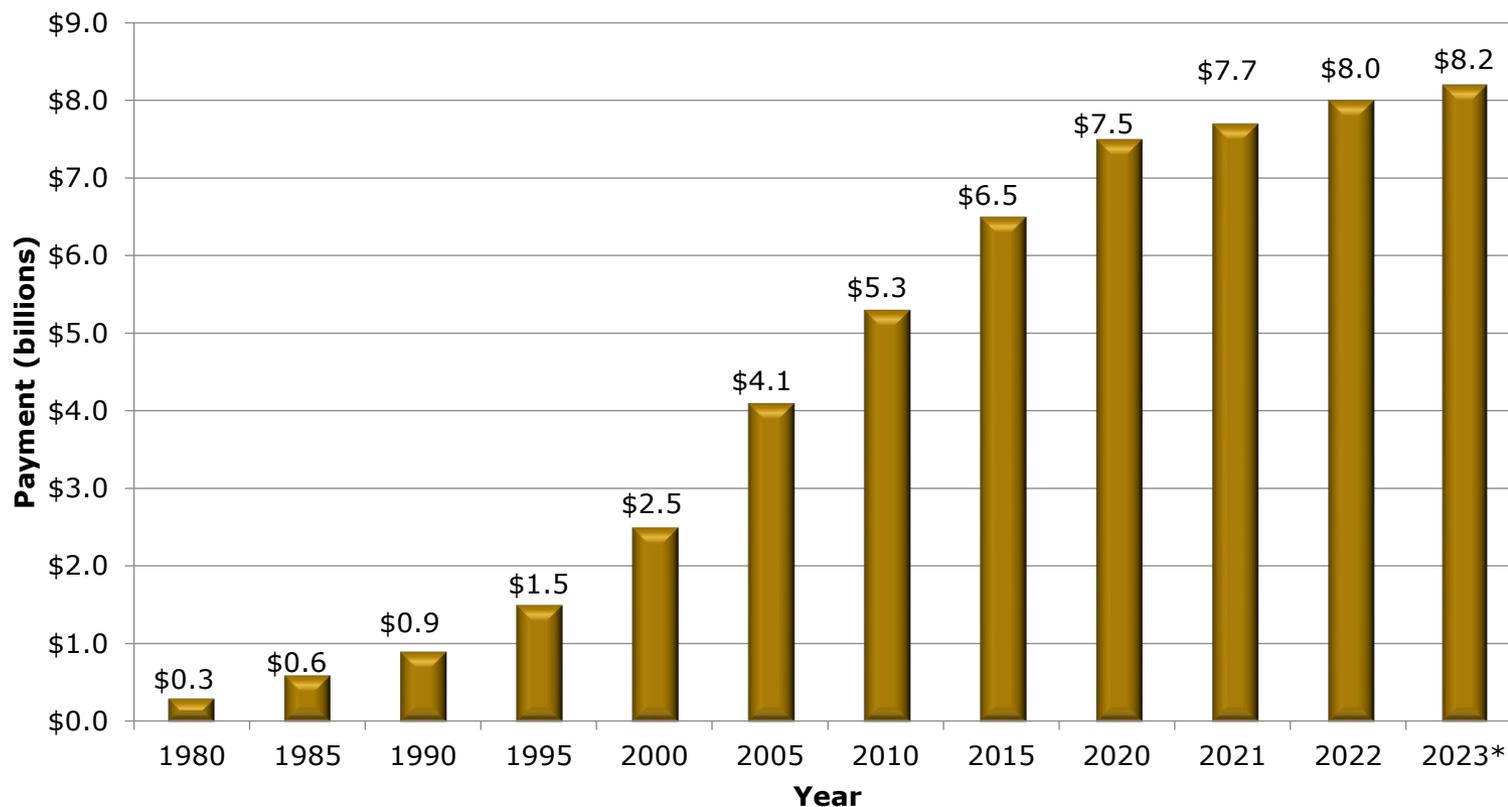
*Based on estimated 6/30/2023 Real Estate and Private Equity values.



Funded Ratio History

FYE	Funded Ratio Based on MVA	Funded Ratio Based on AVA
6/30/2017	99.8%	97.7%
6/30/2018	100.9%	99.2%
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%

Annual Benefit Payments

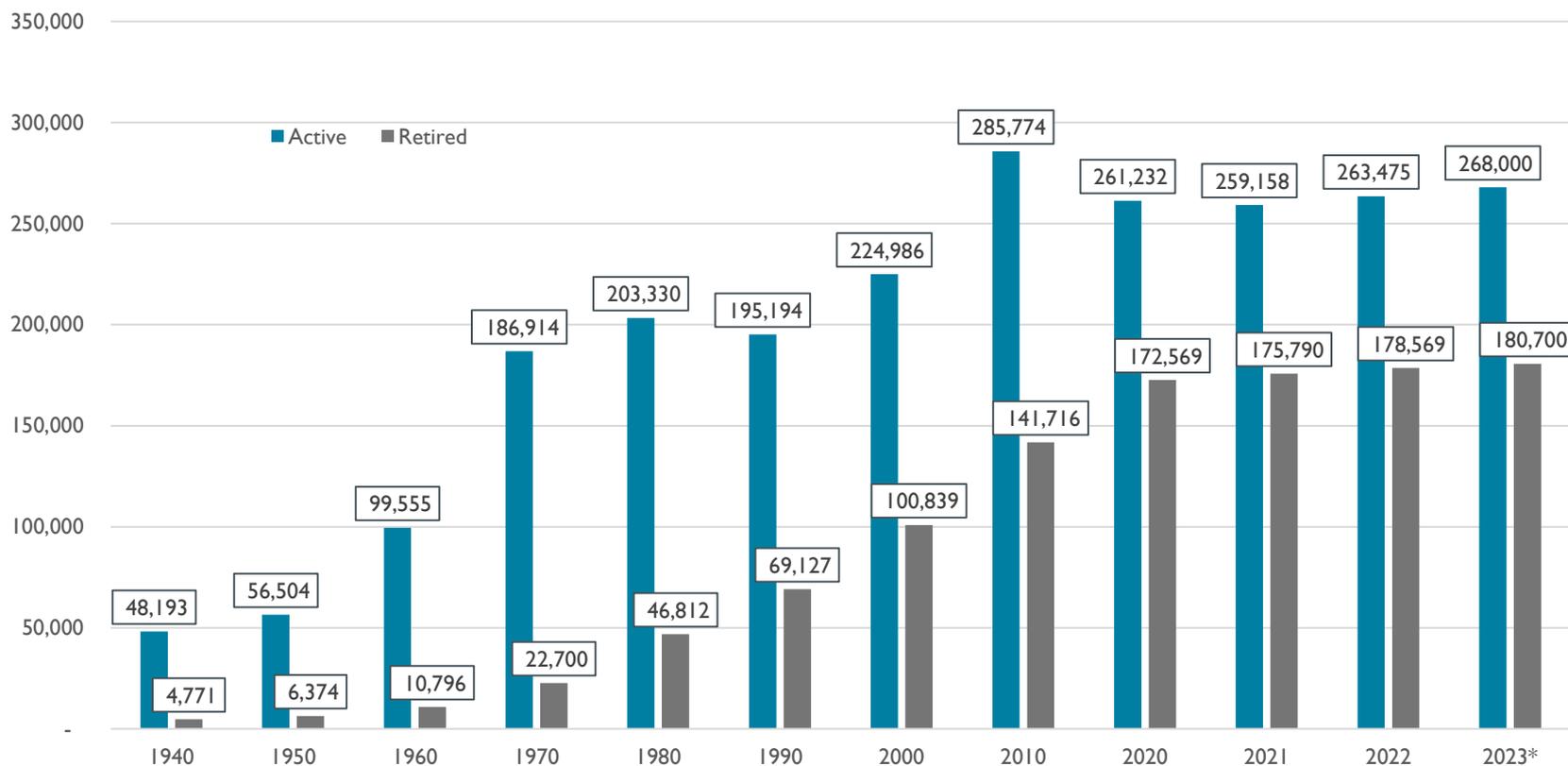


* estimated

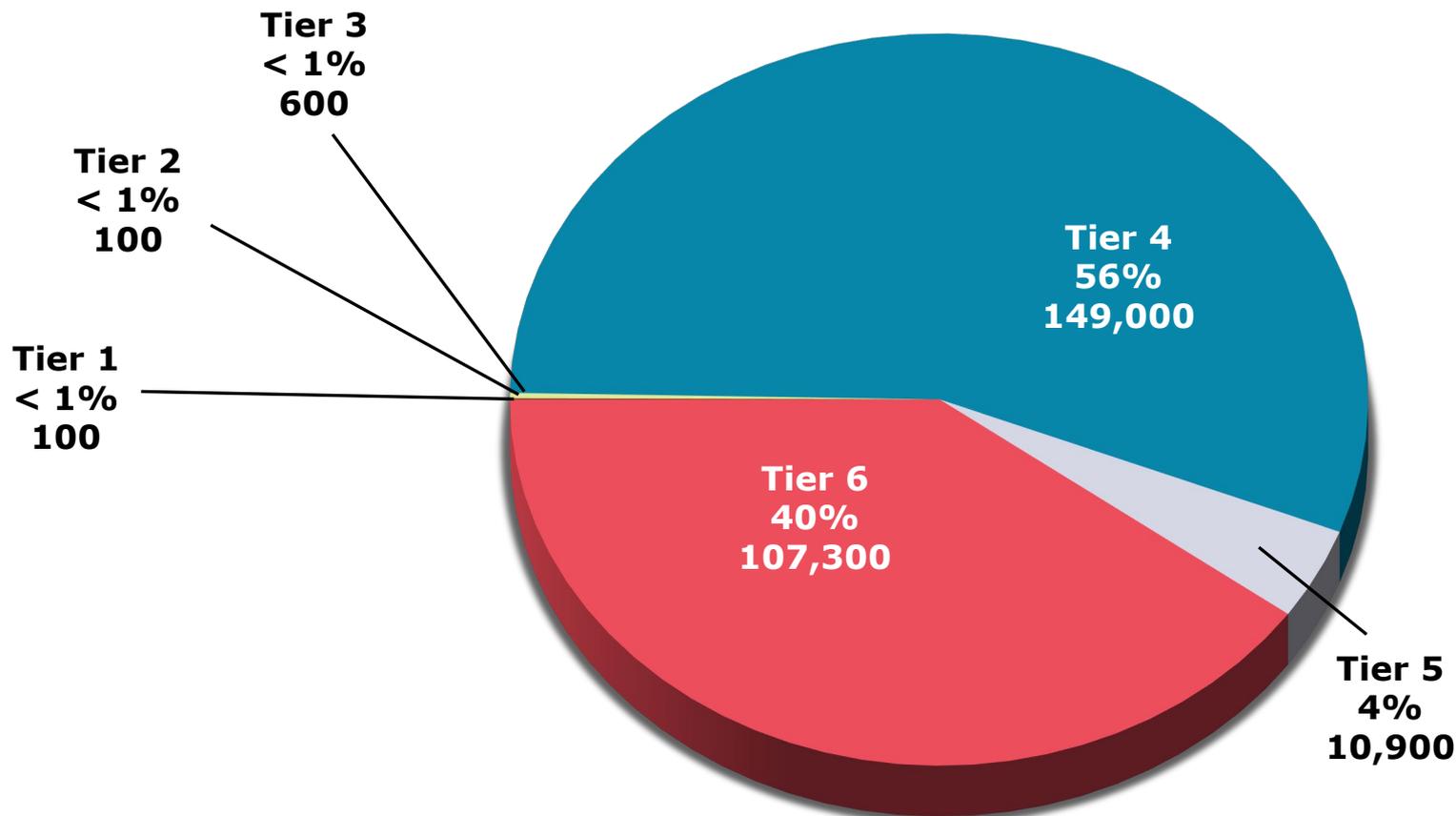


Preliminary 6/30/2023 Data

Active and Retired Member Counts



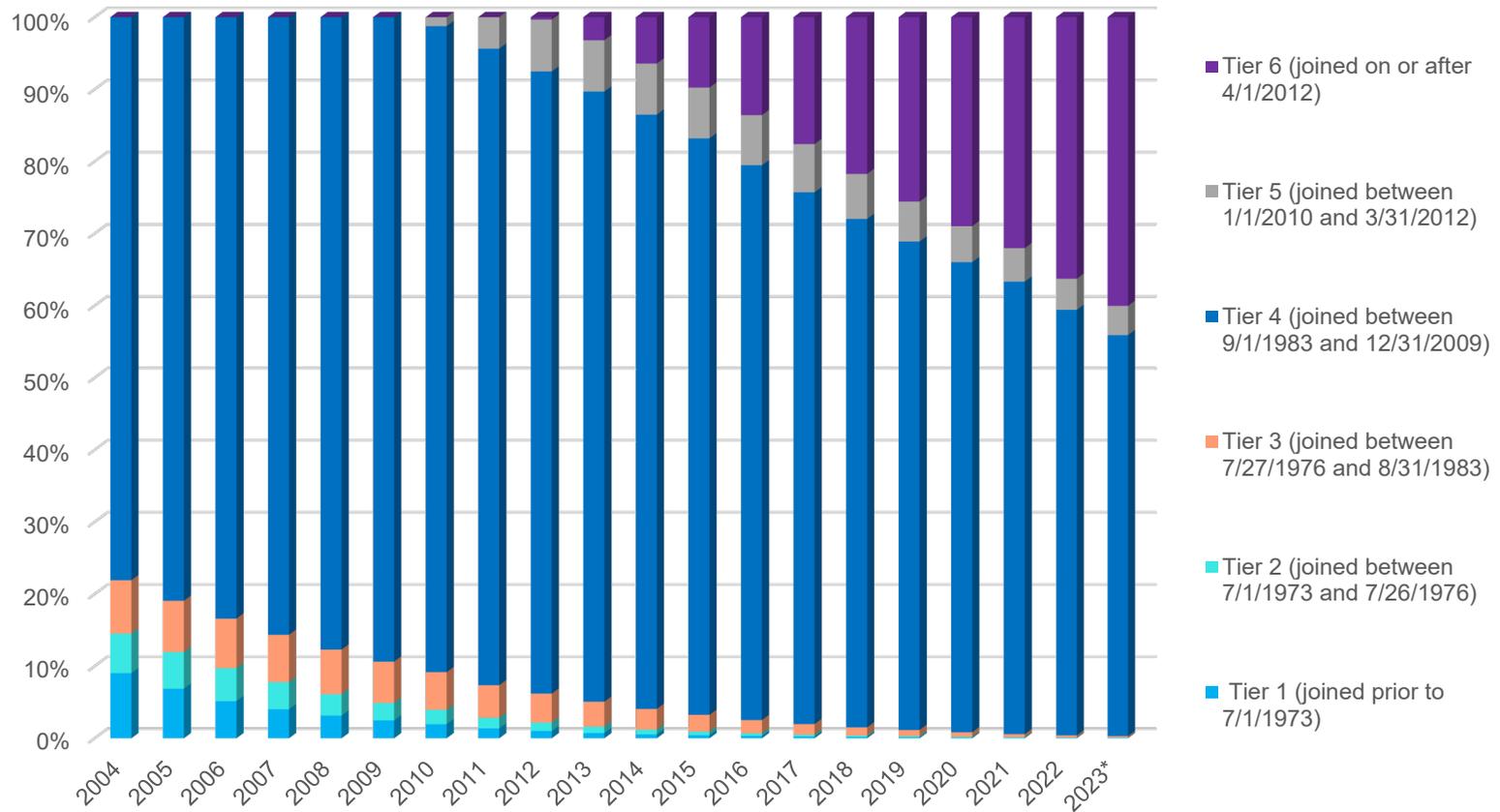
Distribution of Active Members by Tier as of June 20, 2023*



* estimated

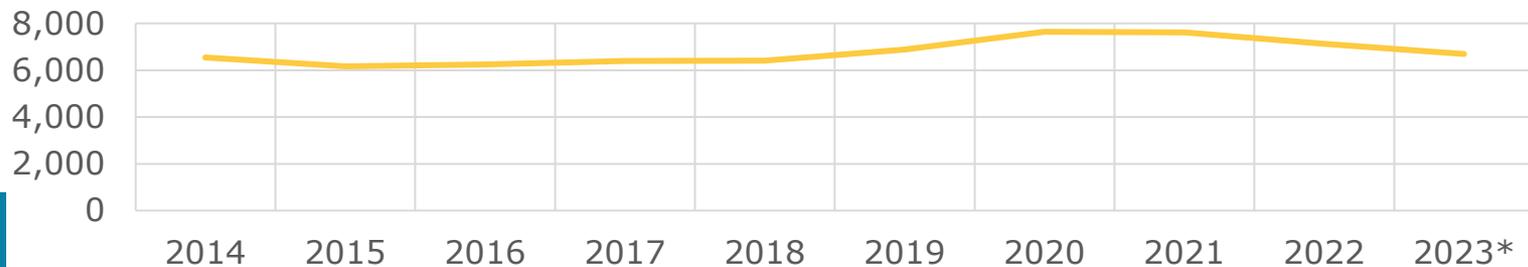
Number of Active Members by Tier

Distribution of Active Members by Tier, as of June 30th, for the Last 20 Years



Number of Retirements

Retired in Fiscal Year Ended	Number of Service Retirements	Number of Disabled Retirements	Total Number of Retirements
2014	6,432	115	6,547
2015	6,031	130	6,161
2016	6,121	124	6,245
2017	6,299	97	6,396
2018	6,301	115	6,416
2019	6,792	98	6,890
2020	7,531	111	7,642
2021	7,537	80	7,617
2022	7,025	110	7,135
2023*	6,600	100	6,700



Monthly COLA Increases

	Commencing September 2023	Commencing September 2022
CPI Percentage Change for Year ended March 31	4.98%	8.54%
Applicable COLA Percentage	2.5%	3.0%
Maximum Monthly COLA Increase based on Annual Benefit Amount of \$18,000	\$37.50	\$45.00
Cumulative Maximum Monthly COLA (back to Sept. 2001)	\$481.50	\$444.00

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.



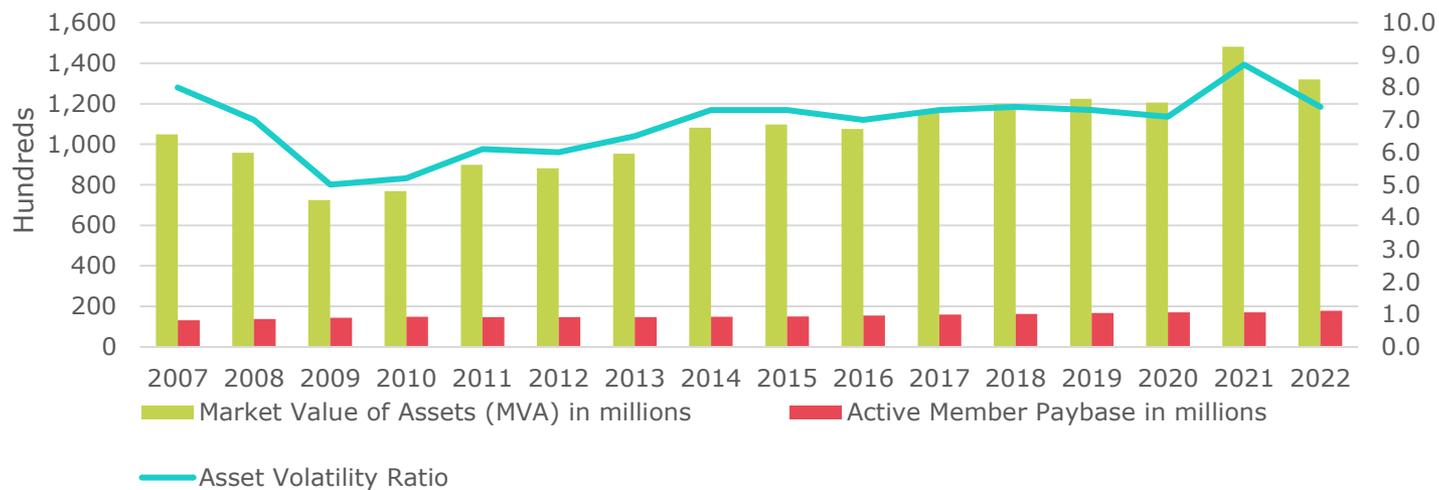
Risk Measures 6/30/2022

Actuarial Standards of Practice

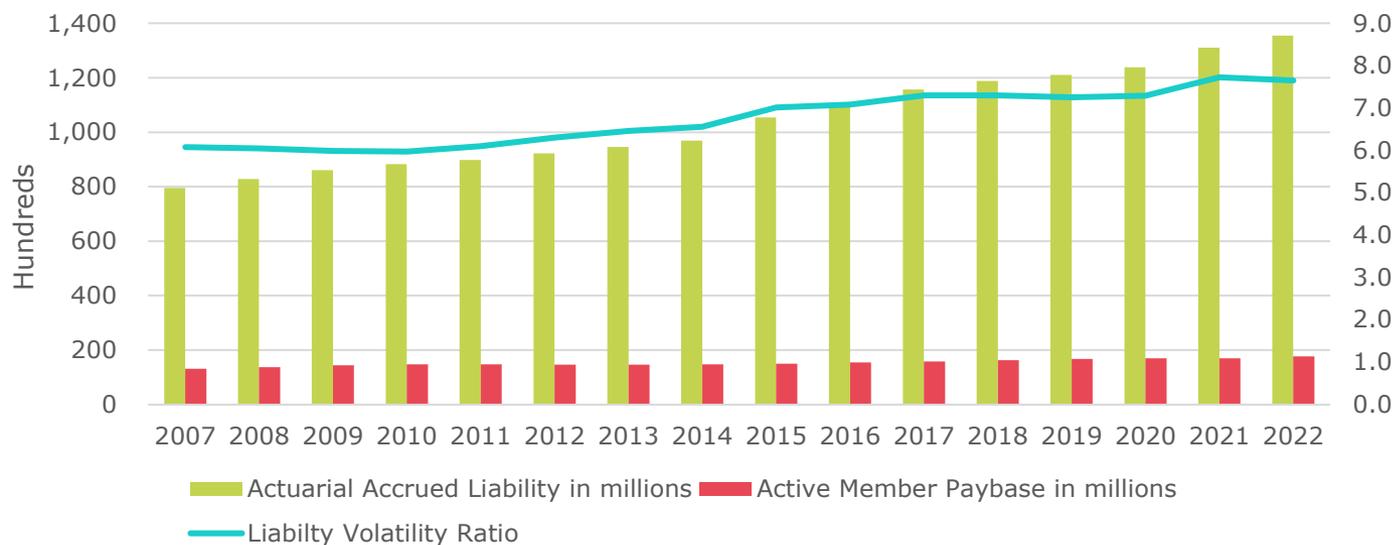
Actuarial standard of practice 51

- ASOP 51 requires various risk disclosures when measuring pension plan obligations and calculating pension contributions
- It is important to understand how measurements may change over time
- The 6/30/2022 NYSTRS risk measures are all indicative of, and consistent with, a well-funded Retirement System

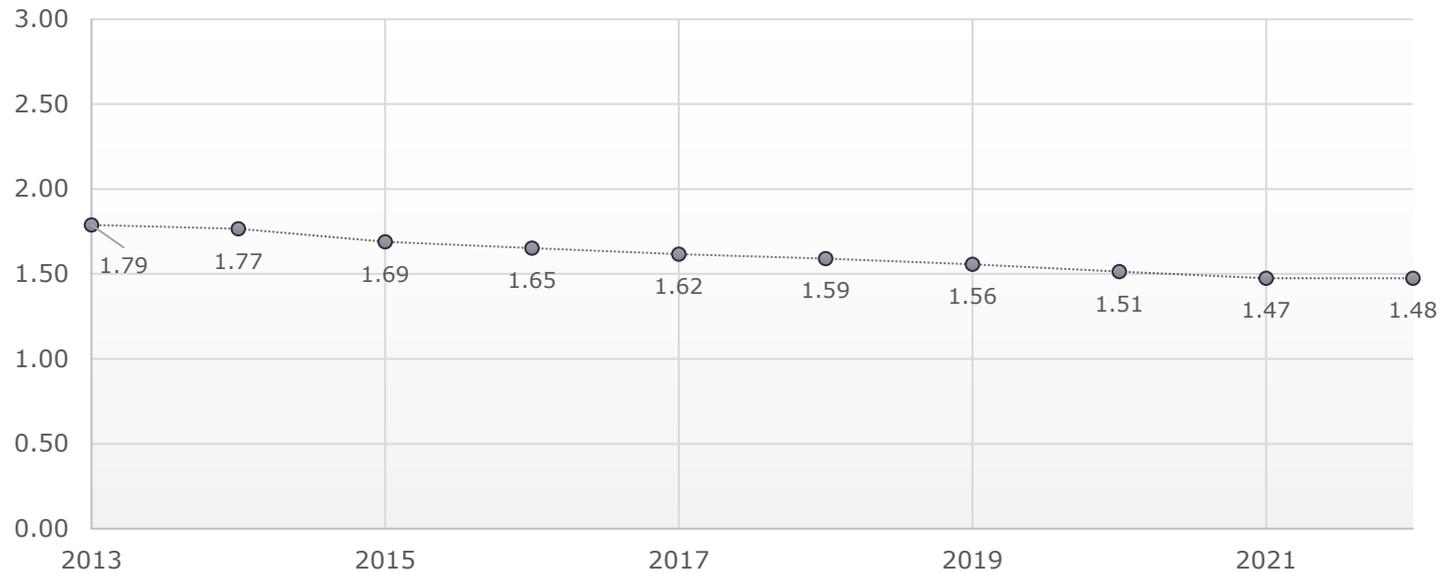
Volatility Ratio



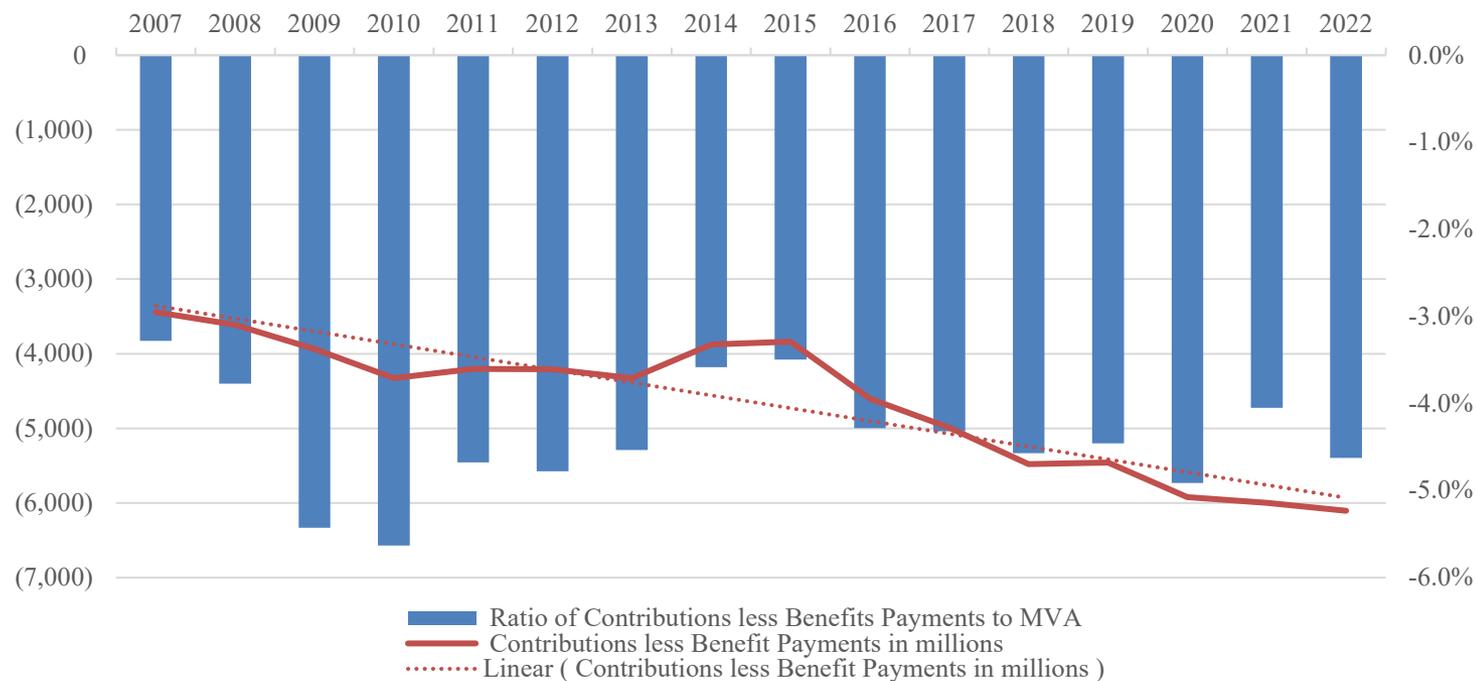
Volatility Ratio (Cont'd)



Active-to-Retiree Ratio



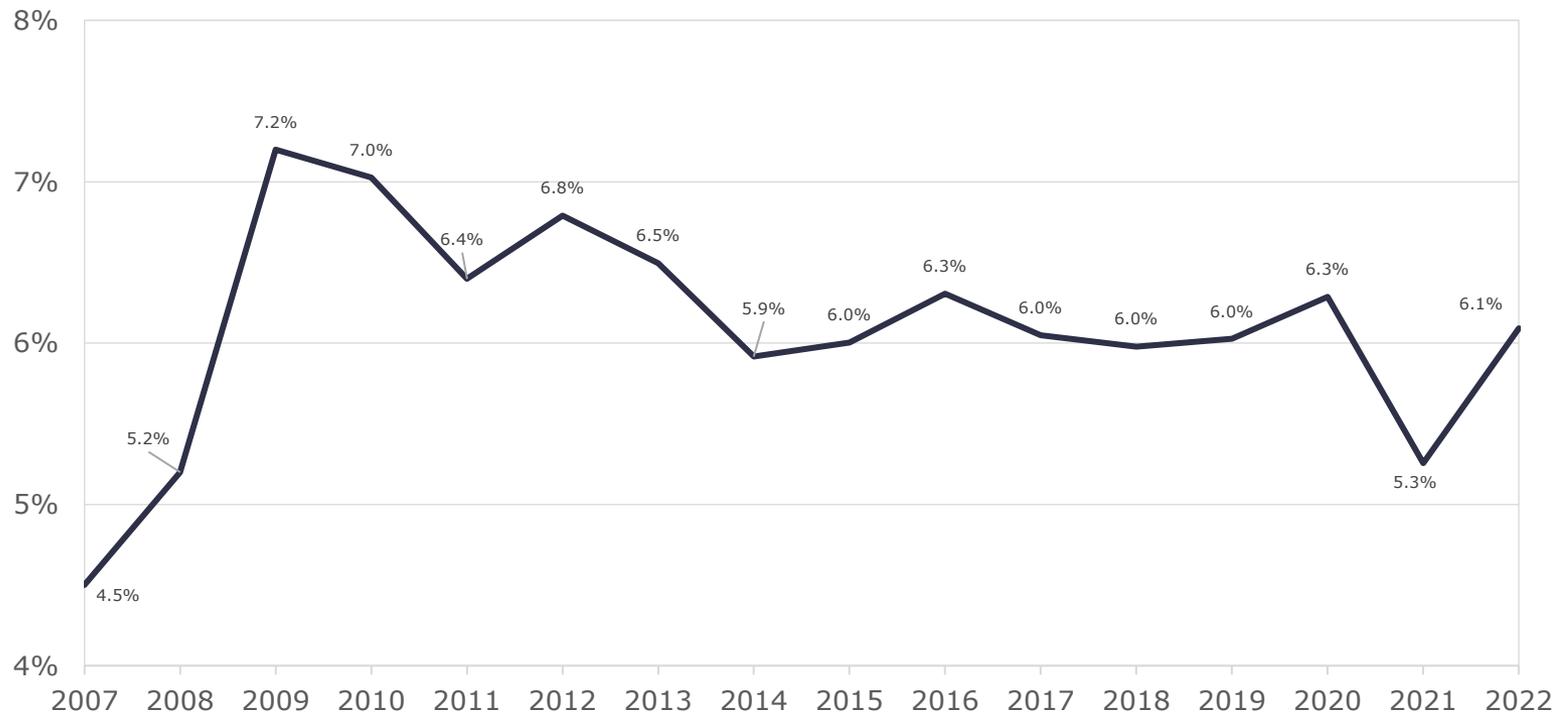
Cash Flow Ratio



Asset Reconciliation (in Billions)

6/30/2022 Market Value of Assets	\$132.0
+Employer Contribution	\$1.9
+Member Contribution	\$0.2
-Benefit Payments and Expenses	(\$8.3)
+Investment Income	\$11.2
6/30/2023 Market Value of Assets*	\$137.0

Benefit Payments As a Percentage of Assets



Sensitivity Analysis

Assumption	Adjustment	Adjusted ECR
Current		9.76%
Assumed Rate of Return	Decrease from 6.95% to 6.70%	12.83%
Assumed Rate of Return	Decrease from 6.95% to 6.45%	16.00%
Salary Scale	Decrease of 10%	8.82%
Salary Scale	Increase of 10%	10.68%
Service Retirement Rates	Decrease of 10%	9.08%
Service Retirement Rates	Increase of 10%	10.28%
Healthy Annuitant Mortality	Decrease of 10%	11.47%
Healthy Annuitant Mortality	Increase of 10%	8.18%

Sensitivity Analysis

- The ECR is sensitive to changes in the actuarial assumptions and is very sensitive to changes in the assumed rate of return assumption
- Prolonged periods of experience different than expected can lead to notable increases in the ECR

ASOP 4 – New Risk Measure

- First effective for NYSTRS for the June 30, 2023 actuarial valuation (report to be issued in July 2024). A new risk measure will be included – the Low-Default Risk Obligation Measure (LDROM).
- This will **NOT** replace how we currently report our funded ratio. This will be an additional risk measurement. There is no change to actual plan funding.
- Our funded ratio, and actual plan funding, are based on liabilities measured using our long-term assumed rate of return. The LDROM will be based on liabilities measured using low-risk bond return rates (Treasuries, corporate bonds).
- This will result in a plan liability which is higher, and therefore a funded ratio which is lower, than what we currently report. It will fluctuate annually as low-risk bond return rates fluctuate.

LDRROM – What does this Tell Us?

- The difference between the Accrued Liability and the LDRROM represents the expected savings to employers of investing in a diversified portfolio as opposed to investing all assets in low-risk bonds.
- Provides an appreciation for how much of the “cost” of benefits is covered by expected investment returns.
- NYSTRS LDRROM funded ratio at 6/30/23 is estimated to be approximately 75 – 80%. A more precise number will be available when 6/30/23 valuation results are completed.

Other ASOP4 Changes

- Disclose a reasonable ADC (actuarially determined contribution)
- Assess the implications of the System's funding policy
- Determine annual actuarial gains and losses, at least investment vs. other

NYSTRS is already doing these



"You're right. We should have built the castle first, *THEN* the moat."

Questions ????



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

Retirement Board Retreat

The Retirement Board of the NYS Teachers' Retirement System held its annual retreat at The Abbey Inn in Peekskill, New York on July 27, 2023.

The following individuals were in attendance:

Board: Juliet Benaquisto, Elizabeth Chetney, Phyllis Harrington, Eric Iberger, David Keefe, Jennifer Longtin, Ruth Mahoney, Christopher Morin, Oliver Robinson and Nicholas Smirensky

Staff: Thomas Lee, Paul Cummins, Mike Federici, Kathy Ebert, Richard Young, Don Ampansiri, Dave Gillan, Margaret Andriola, Matt Albano, Emily Ekland, Han Yik, Danny Malavé, Miriam Dixon, Gerald Yahoudy, Vijay Madala, Beth Dellea, Stacey Lesser Meehan

Guest speakers:

Julie Becker, Benita Harper – Aon Investment Consulting
Dr. Marcie Schorr-Hirsch, Smarter Wisdom Consulting

The meeting began at 9:30 a.m.

J. Cullins and B. Harper from Aon led the Retirement Board through its annual self-evaluation and a discussion on succession planning.

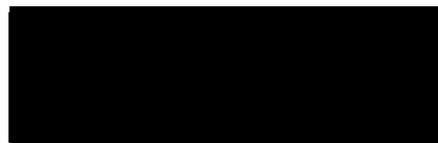
The meeting adjourned for lunch at 12:30 p.m.

The meeting reconvened at 1:30 p.m. and Dr. Schorr-Hirsch facilitated a workshop for the Board and Executive Staff.

T. Lee led a review of Board Committee charters and organizational updates.

The meeting adjourned at 4:45 p.m.

Respectfully submitted,



Thomas K. Lee