

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, via WebEx, on January 26, 2022.

The following individuals were in attendance via WebEx:

Committee Members: Elizabeth Chetney, David Keefe, Christopher Morin, Nicholas Smirensky

Board Members: Juliet Benaquisto, Eric Iberger, Ruth Mahoney, Oliver Robinson

NYSTRS' Staff: Thomas Lee, Edward Rezny, Joseph Indelicato Jr., Noreen Jones, Dave Gillan, Paul Cummins, Gerald Yahoudy, Michael Gregoire, Michael Federici, Richard Young, Ken Kasper, Danny Malavé, Matt Albano

Risk Advisors: Sean Atkinson, Steve Huber, Peter Cosgrove

The Committee meeting was called to order by C. Morin, Chair, at 8:30 a.m.

The following items were discussed:

1. Approval of the minutes of October 27, 2021

Upon motion of D. Keefe, seconded by N. Smirensky and unanimously carried, the meetings minutes of the October 27, 2021 were approved.

2. Investment Key Risk Indicators and Investment Risk Report

M. Albano reviewed the investment risk Key Risk Indicators and the Investment Risk Report (Appendix A).

3. DFS Update

M. Albano provided an update on the items completed and items outstanding with regard to recommendations made by DFS during its 2017 review (Appendix B).

There being no further business, and with unanimous consent, the Committee adjourned at 8:40 a.m.

Respectfully submitted,



Thomas K. Lee

# Appendix A

## Investment Risk Update

### Risk Management

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**Risk Committee Meeting: January 26, 2022**

**Matt Albano, CFA, CIMA<sup>®</sup>**

Public market data as of 11/30/2021; Private asset data as of 9/30/2021



**Risk Management  
Investment Risk Board Report  
January 2022**

**Investment Risk - Key Risk Indicators**

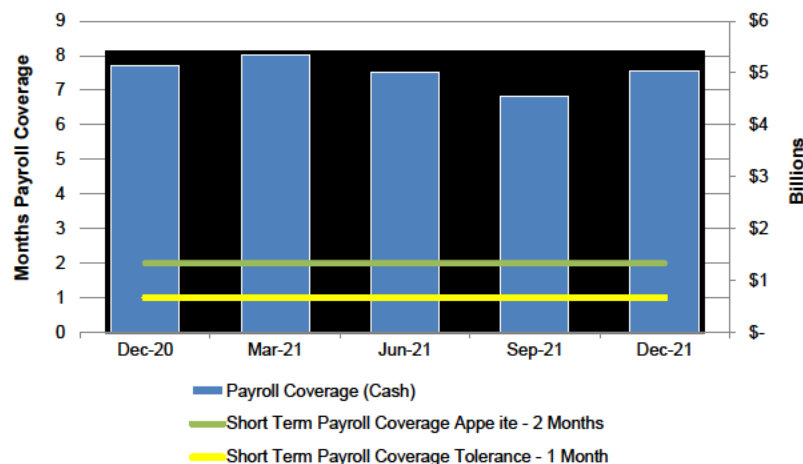
Updates:

- All key risk indicators (KRIs) are within established risk appetites this quarter.
- Total Plan Risk; Tail Risk; and Risk Contributions by Asset Class, Sector, Geography, and Factor are as expected.

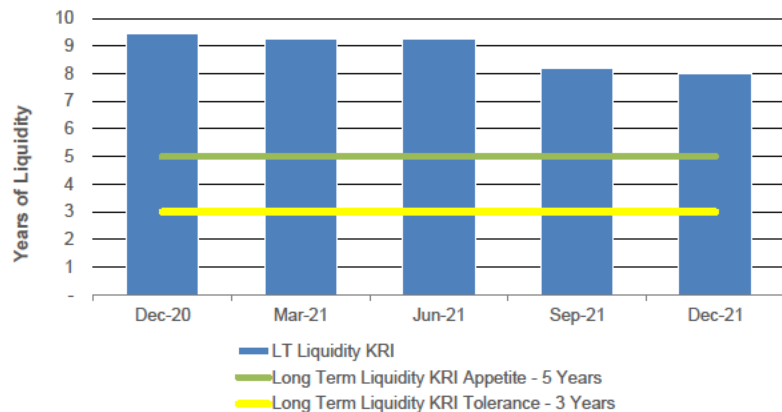
Key Risk Indicator	Outside Tolerance	Risk Tolerance	Risk Appetite	Current Assessment
Asset Allocation (Market Risk Management)	One or More Asset Classes Out of Bounds	One or More Asset Classes Outside of Policy During Transition Period	All Asset Classes within Policy Range	All Asset Classes within Policy Range
Net Benefit Payments as % of Assets (Liquidity)	>10%	>5 - 10%	<= 5%	4.12%
Short Term Liquidity (Liquidity)	<= 1 Month	1 - 2 Months	>= 2 Months	7.6 Months
Medium Term Liquidity (Liquidity)	<= 10 Months	10 - 12 Months	>= 12 Months	12.4 Months
Stressed Contingency Funding Liquidity (Liquidity)	<= 18 Months	18 - 24 Months	>= 24 Months	27 Months
Stressed Long Term Liquidity (Liquidity)	<= 3 Years	3 - 5 Years	>= 5 Years	8 Years
Funded Ratio: Market Value of Total Plan Assets (Unfunded Liability)	<80% or >120%	80 - 90% or 110 - 120%	90 - 110%	97.3% (6/30/2020)
ECR Volatility (Unfunded Liability)	$\Delta$ +/- >3%	$\Delta$ +/- 2 - 3%	$\Delta$ +/- 2%	0.27% (6/30/2020)
ECR Level (Unfunded Liability)	<4% or >17%	4 - 6% or 12 - 17%	6 - 12%	9.8% (6/30/2020)
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 (10/28/2021)

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Funding Liquidity - Short Term Payroll Coverage				
Short Term Liquidity KRI (Months)	Current Qtr.	Appetite	Tolerance	Outside Tolerance
		7.6	≥ 2 months	1-2 months

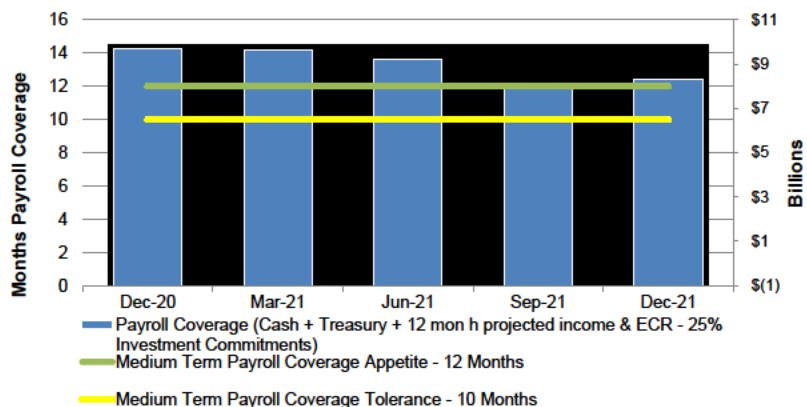


Stressed Long Term Funding Liquidity - Allocation to Liquid Assets				
Stressed Long Term Liquidity KRI (Years)	Current Qtr.	Appetite	Tolerance	Outside Tolerance
		8.0	≥ 5 Years	3-5 Years



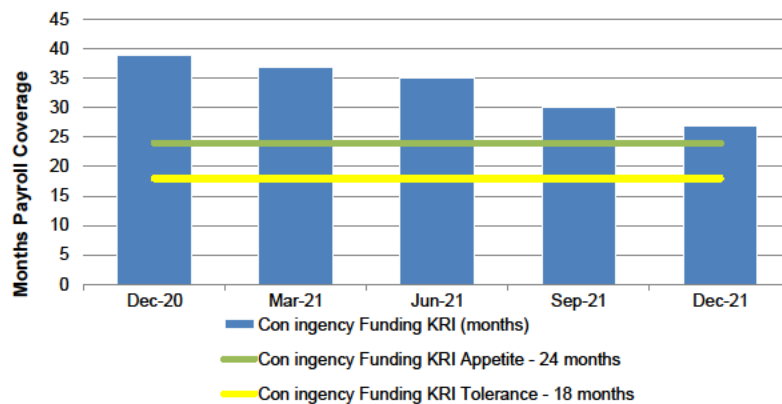
The Stressed Long Term Liquidity KRI assumes a hypothetical 40% portfolio loss then calculates years of required cash flow coverage from remaining public market assets and 12 months \*estimated net cash flows (\*includes stressed projections for: portfolio income, employer contributions and unfunded capital calls)

Funding Liquidity - Medium Term Payroll Coverage				
Medium Term Liquidity KRI (Months)	Current Qtr.	Appetite	Tolerance	Outside Tolerance
		12.4	≥ 12 months	10-12 months



US Treasuries included in payroll coverage observe the minimum allocation bound. Capital calls of 25% are indicative of a "non-stressed" market environment. Income and employer contributions are 12 month projections from the most recent quarter date depicted.

Stressed Funding Liquidity - Contingency Funding Plan				
Stressed Contingency Funding Liquidity KRI (Months)	Current Qtr.	Appetite	Tolerance	Outside Tolerance
		27.0	≥ 24 months	18-24 months

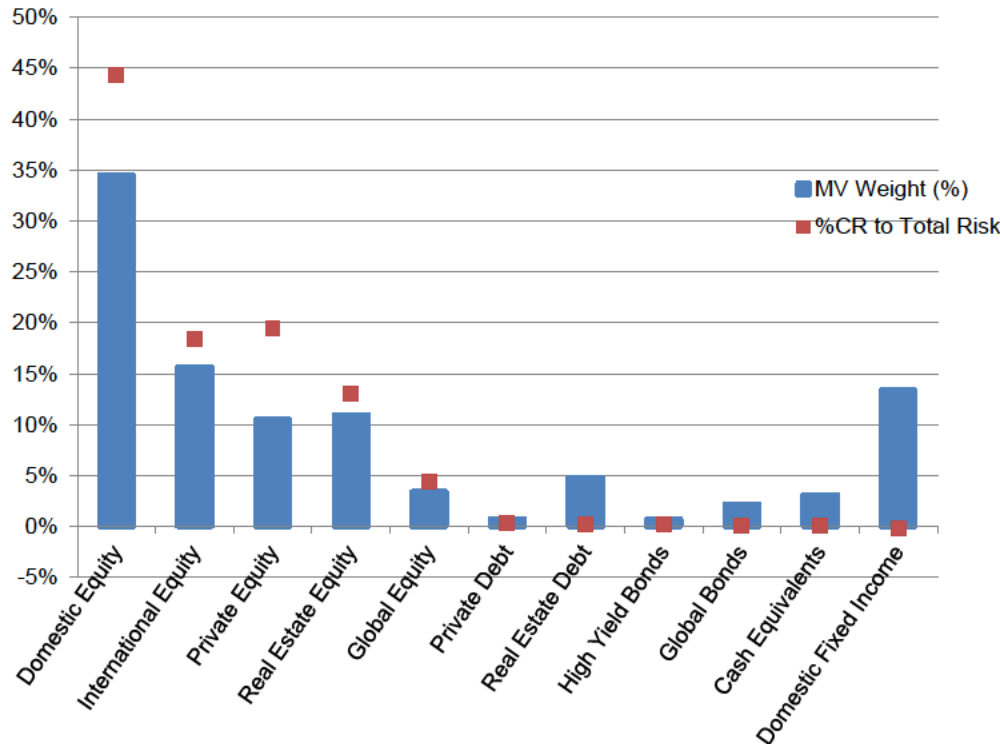


The Stressed Contingency Funding Liquidity KRI seeks to evaluate how many months of payroll can be made during a GFC like scenario before NYSTRS' CFP is triggered. GFC loss is experienced over 12 months with asset classes returning capital market assumptions years 2-5. Employer contributions are capped at 17%.

## Risk Management Investment Risk Board Report January 2022

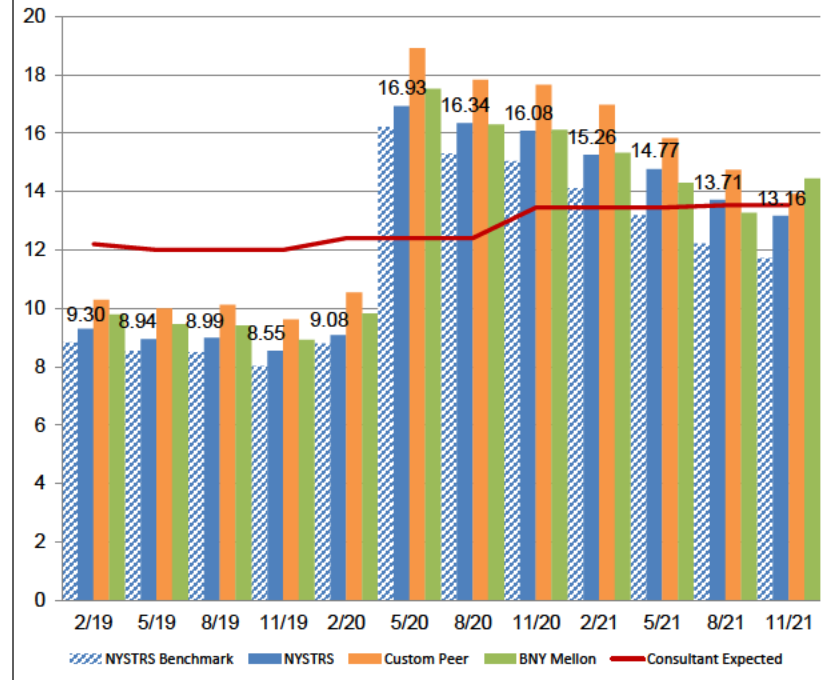
### Total Predicted Risk by Asset Class

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



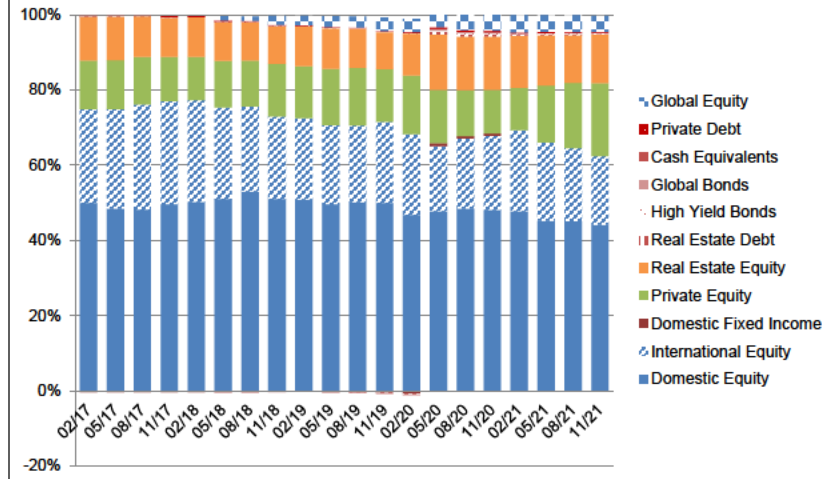
### Total Predicted Risk and Peer Comparison

Long term expected risk target 13.53%; short term predicted risk 13.16%



Portfolio Name	Market Value (Millions \$)	Weight (%)	%CR to Total Risk	Total Plan Risk Cont.	Total Predicted Risk
<b>Total Portfolio</b>	<b>\$ 147,256</b>	<b>100%</b>	<b>100%</b>	<b>13.16</b>	<b>13.16</b>
Domestic Equity	\$ 50,798	34.50%	44.31%	5.83	17.50
International Equity	\$ 23,075	15.67%	18.40%	2.42	17.10
Private Equity	\$ 15,485	10.52%	19.47%	2.56	29.34
Real Estate Equity	\$ 16,163	10.98%	12.98%	1.71	19.45
Global Equity	\$ 5,032	3.42%	4.33%	0.57	17.17
Private Debt	\$ 1,103	0.75%	0.28%	0.04	8.54
Real Estate Debt	\$ 7,009	4.76%	0.20%	0.03	1.98
High Yield Bonds	\$ 1,022	0.69%	0.19%	0.03	5.06
Global Bonds	\$ 3,260	2.21%	0.08%	0.01	2.74
Cash Equivalents	\$ 4,591	3.12%	0.00%	0.00	0.06
Domestic Fixed Income	\$ 19,717	13.39%	-0.25%	-0.03	2.48

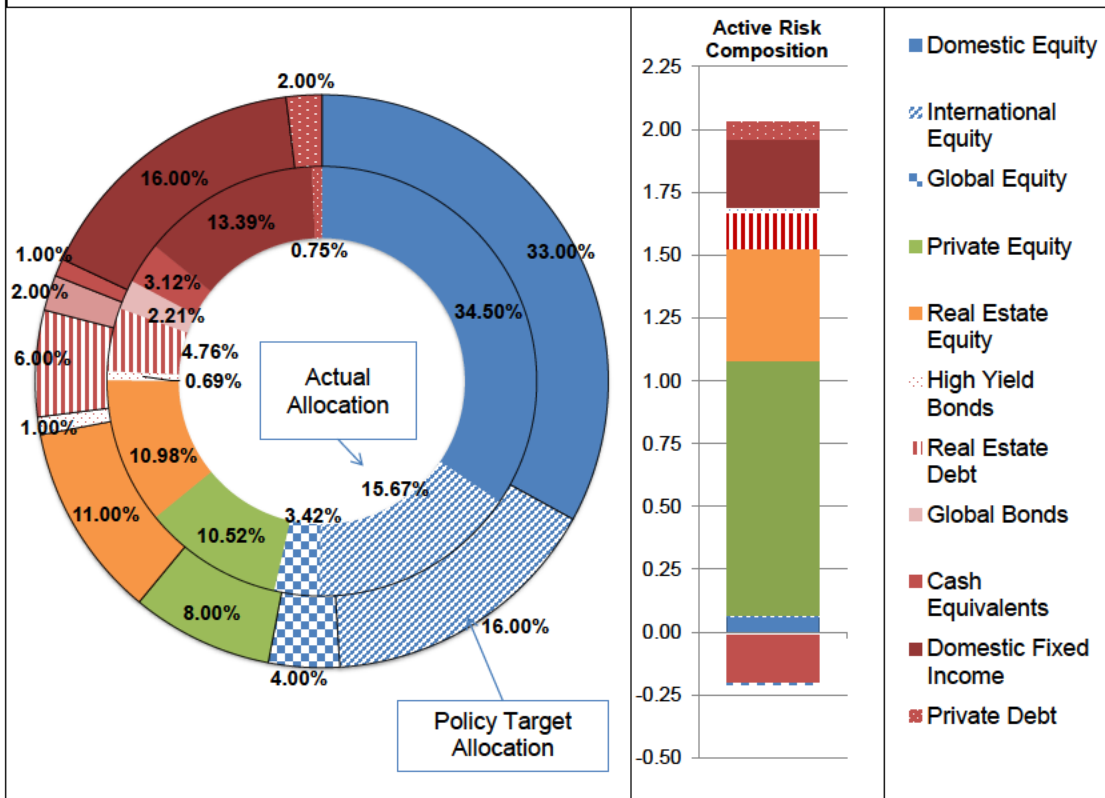
### Historical Total Predicted Risk Contribution



## Risk Management Investment Risk Board Report January 2022

### Active Predicted Risk

Active predicted risk 1.82; a decrease of 2 bps from last quarter.



### 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.

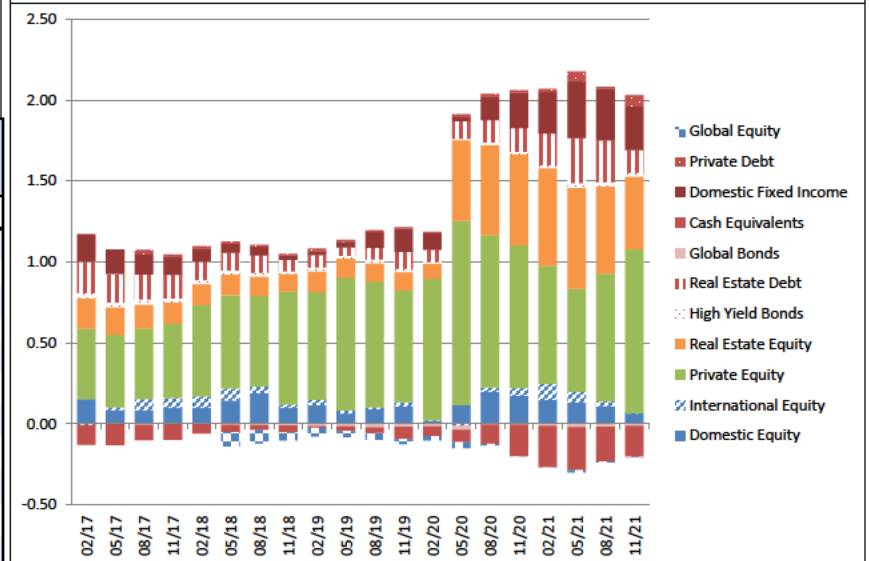
### Observations:

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.

Portfolio Name	Weight (%)	BMK Weight (%)	Active Weight (%)	Active Risk Cont.	% CR to Active Risk	Active Predicted Risk
<b>Total Portfolio</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>1.82</b>	<b>100%</b>	<b>1.82</b>
Domestic Equity	34.50%	33.00%	1.50%	0.06	3.5%	0.08
International Equity	15.67%	16.00%	-0.33%	0.00	0.1%	0.38
Global Equity	3.42%	4.00%	-0.58%	0.00	-0.2%	2.06
Private Equity	10.52%	8.00%	2.52%	1.01	55.5%	7.97
Real Estate Equity	10.98%	11.00%	-0.02%	0.45	24.7%	6.20
High Yield Bonds	0.69%	1.00%	-0.31%	0.02	1.2%	0.38
Real Estate Debt	4.76%	6.00%	-1.24%	0.14	7.8%	2.69
Global Bonds	2.21%	2.00%	0.21%	-0.01	-0.8%	0.53
Cash Equivalents	3.12%	1.00%	2.12%	-0.19	-10.4%	0.06
Domestic Fixed Income	13.39%	16.00%	-2.61%	0.27	14.7%	1.33
Private Debt	0.75%	2.00%	-1.25%	0.07	4.0%	7.08

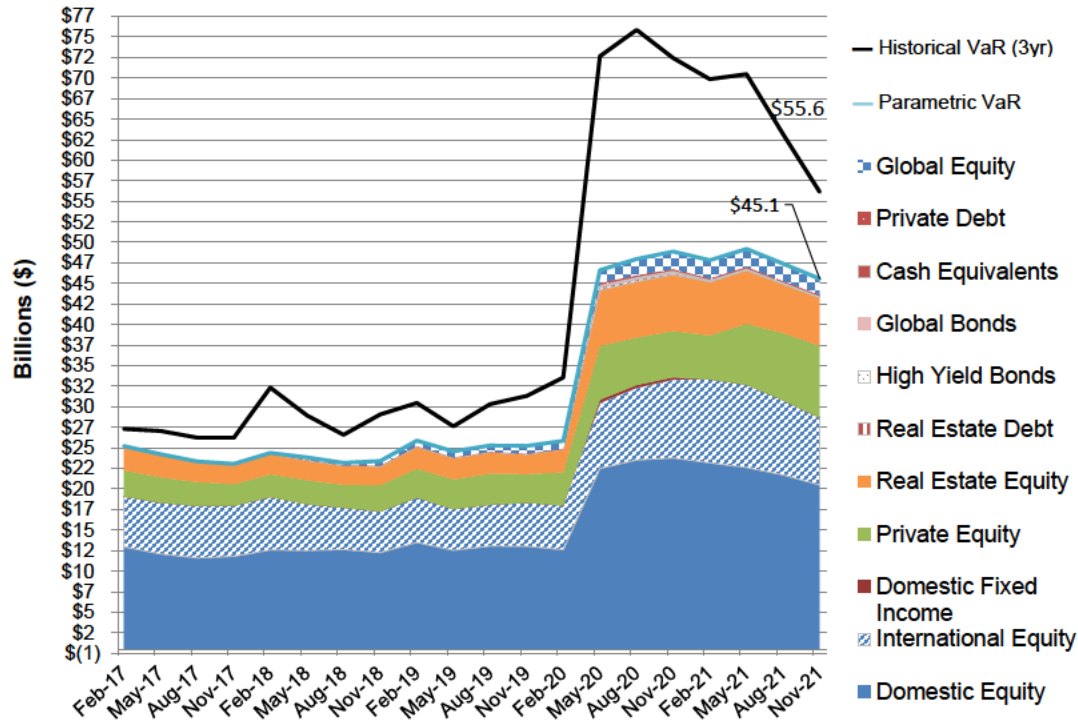
### Historical Active Risk Contribution



## Risk Management Investment Risk Board Report January 2022

### Value at Risk Contribution by Asset Class

VaR metrics remain elevated as a result of recent market volatility. 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
<b>Total Portfolio</b>	<b>\$51,767</b>	<b>-\$6,696</b>	<b>\$45,071</b>	<b>100%</b>
Domestic Equity	\$20,679		\$19,970	44.31%
International Equity	\$9,179		\$8,294	18.40%
Private Equity	\$10,571		\$8,777	19.47%
Real Estate Equity	\$7,314		\$5,850	12.98%
High Yield Bonds	\$120		\$86	0.19%
Real Estate Debt	\$322		\$88	0.20%
Global Bonds	\$208		\$38	0.08%
Cash Equivalents	\$6		-\$2	0.00%
Domestic Fixed Income	\$1,138		-\$111	-0.25%
Private Debt	\$219		\$127	0.28%
Global Equity	\$2,010		\$1,952	4.33%

### 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.

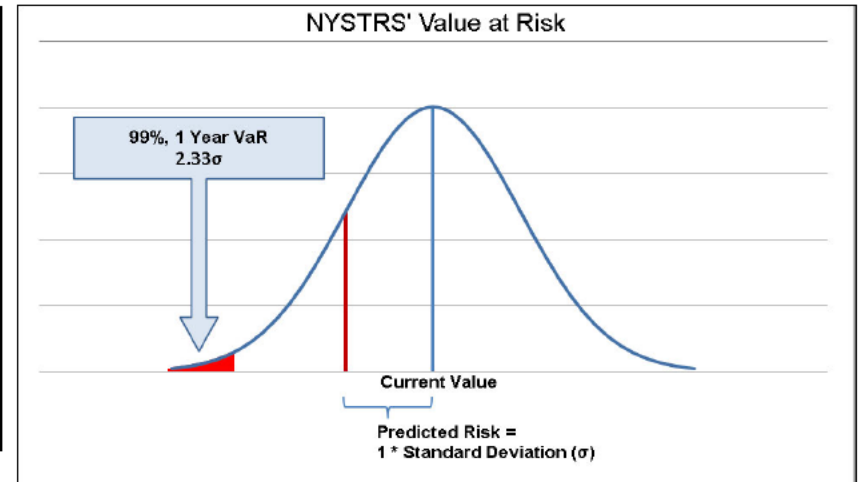
### Methods Used:

- ▶ *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.

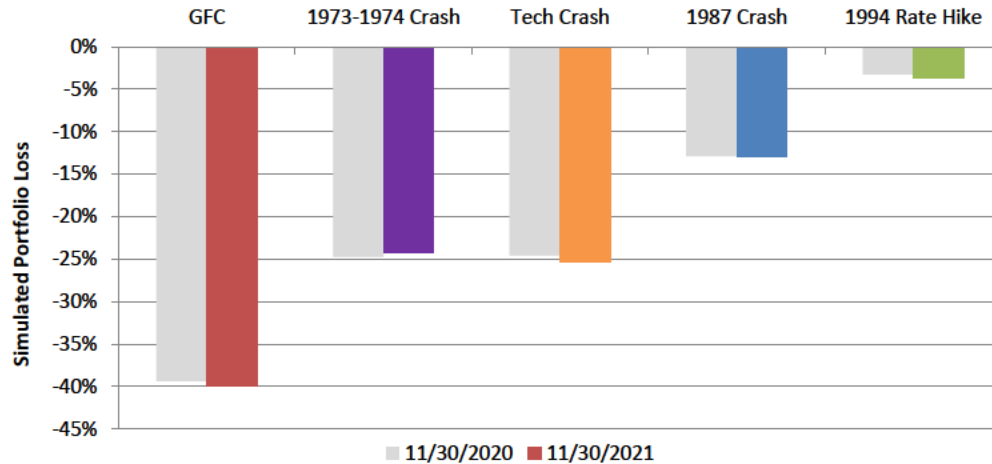
Historical Simulation VaR assumes past returns are indicative of future returns which may not be realistic. The specific return period analyzed directly impacts results which may or may not capture typical volatility, market extremes, or cyclicity.



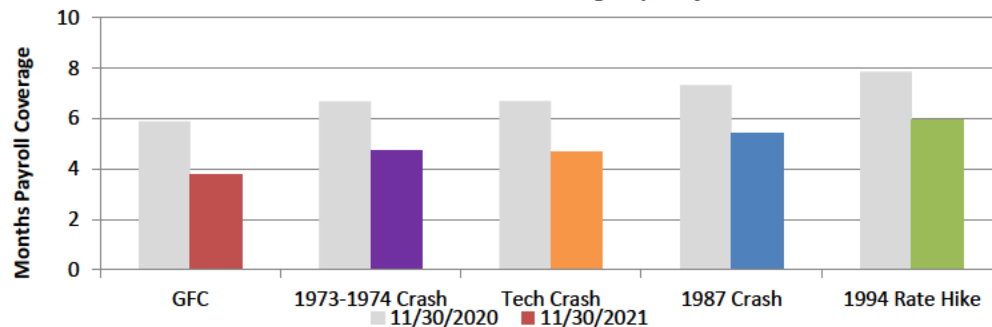
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**Historical Scenario Analysis**

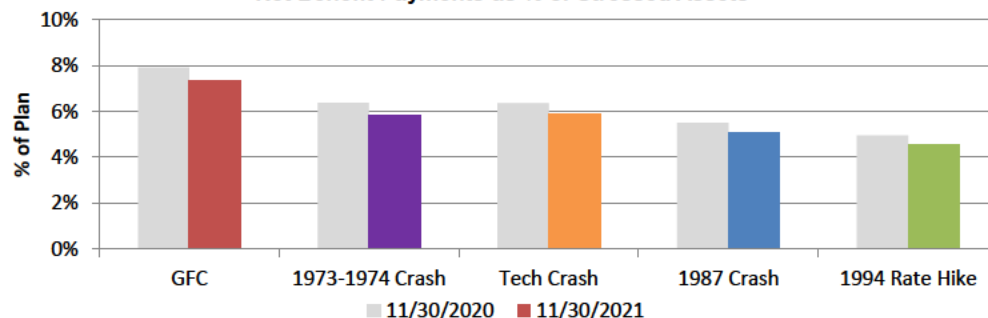
Scenario analysis is in line with expectations. Net Benefit Payments as a % of Assets in the most severe scenario is approximately 7%.



**Historical Scenario Funding Liquidity**



**Net Benefit Payments as % of Stressed Assets**



**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 Stock Market Crash: (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 U.S. Treasury 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	
	11/30/2020	11/30/2021
Cash + U.S. Treasuries	3.3 to 5.3	3.6 to 5.8
Portfolio Income/Maturities	8.4	7.1
Employer Contributions	2.7	2.6
Capital Calls	-8.5	-9.5
<b>Total Payroll Coverage</b>	<b>6 to 8</b>	<b>4 to 6</b>

**Net Benefit Payments as % of Assets:**

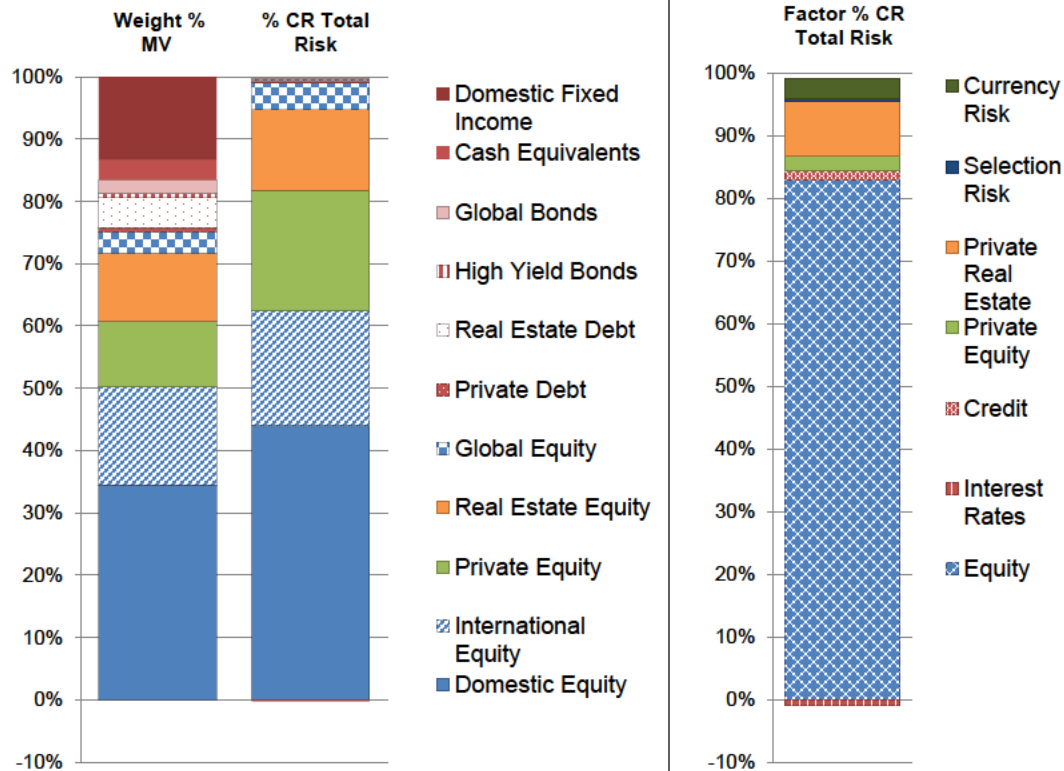
The bottom chart depicts how each historical scenario would impact net benefit payments as a percentage of assets. Figures are representative of each scenarios market bottom and do not incorporate expected cash flows or market recovery. (\*Net Benefit Payments=Annual Benefit Payments-Employer & Employee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



## Risk Management Investment Risk Board Report January 2022

### Total Predicted Risk by Risk Factor

As expected, equity markets are the largest contributor to the Plan's total risk while interest rates slightly diversify away 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.

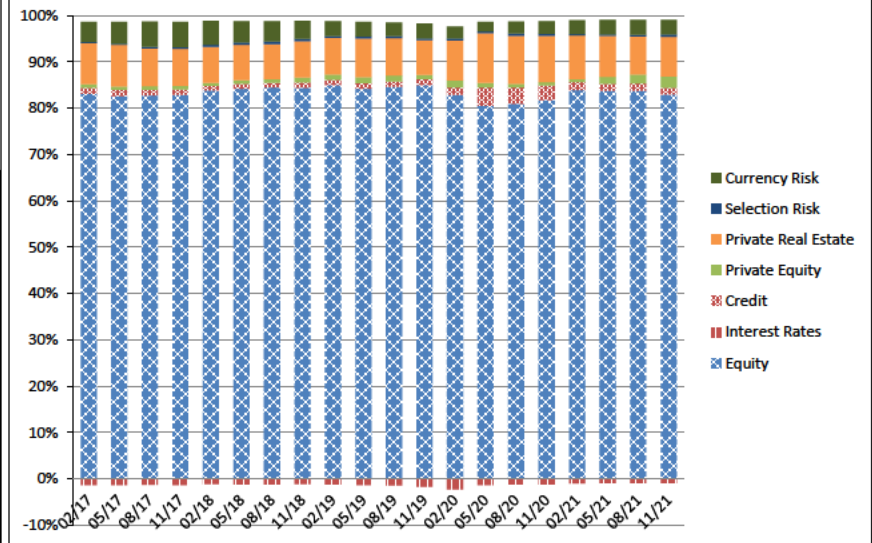
All of NYSTRS holdings are modeled according to their exposures to individual risk factors.

### Observations:

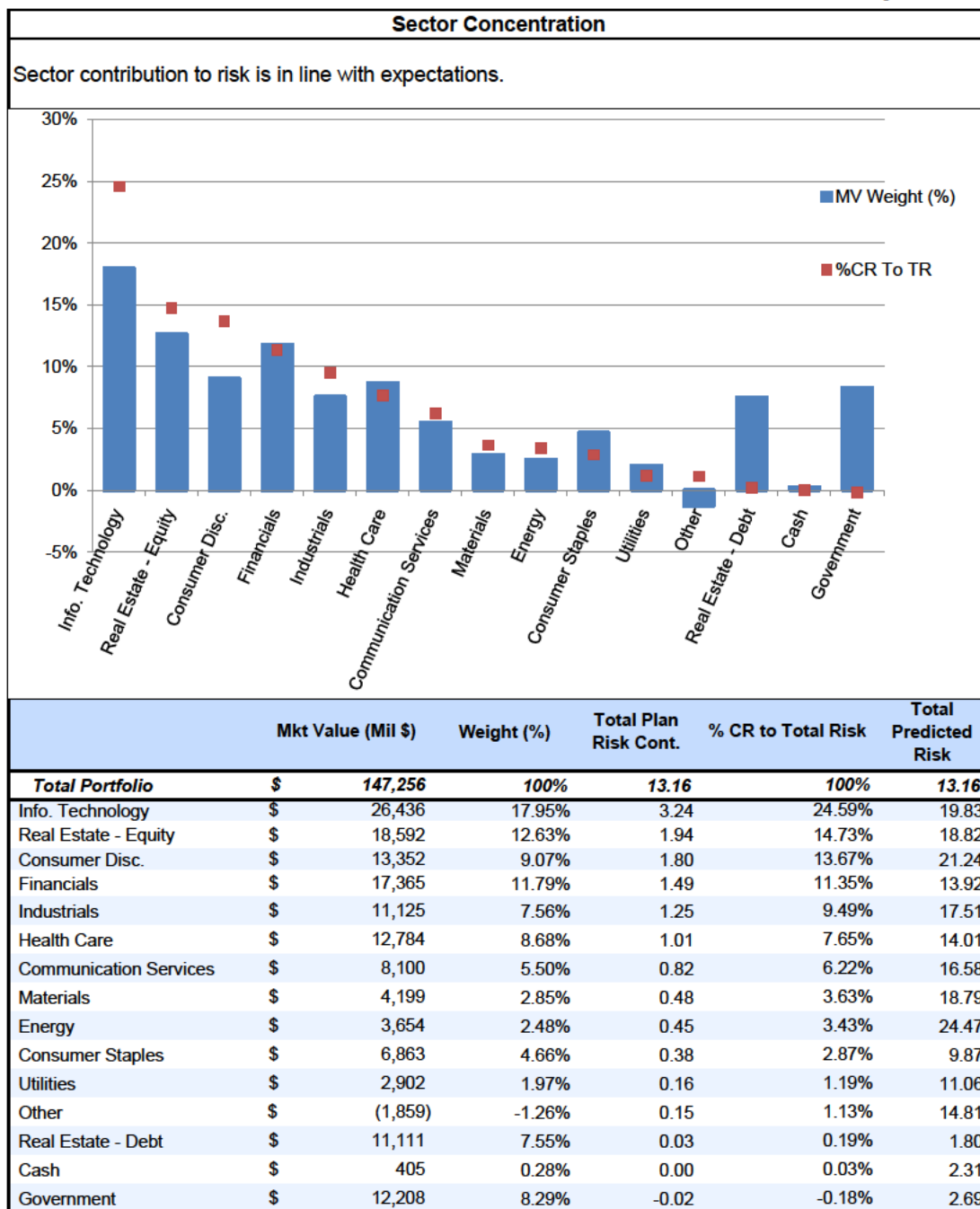
As expected, Total Plan risk is primarily driven by the equity markets and NYSTRS' exposure to interest rates reduces Total Plan risk.

Risk Source	Total Plan Risk Cont.	%CR to Total Risk	BMK Risk Cont.	BMK %CR to Total Risk	% CR to Active Risk
<b>Total Risk</b>	<b>13.16</b>	<b>100%</b>	<b>11.71</b>	<b>100.00%</b>	<b>100%</b>
Local Market Risk	12.73	96.73%	11.35	96.90%	96.94%
Common Factor Risk	12.67	96.30%	11.28	96.26%	90.53%
Equity	11.12	84.48%	9.57	81.69%	69.76%
Interest Rates	-0.12	-0.94%	-0.17	-1.45%	6.40%
Credit	0.20	1.51%	0.38	3.22%	-7.47%
Private Equity	0.33	2.48%	0.12	1.00%	25.90%
Private Real Estate	1.16	8.78%	1.38	11.79%	-4.05%
Selection Risk	0.06	0.43%	0.08	0.65%	6.41%
Currency Risk	0.43	3.27%	0.36	3.10%	3.06%

### Historical Risk Factor Contribution to Total Risk



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**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. <sup>1</sup>

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.

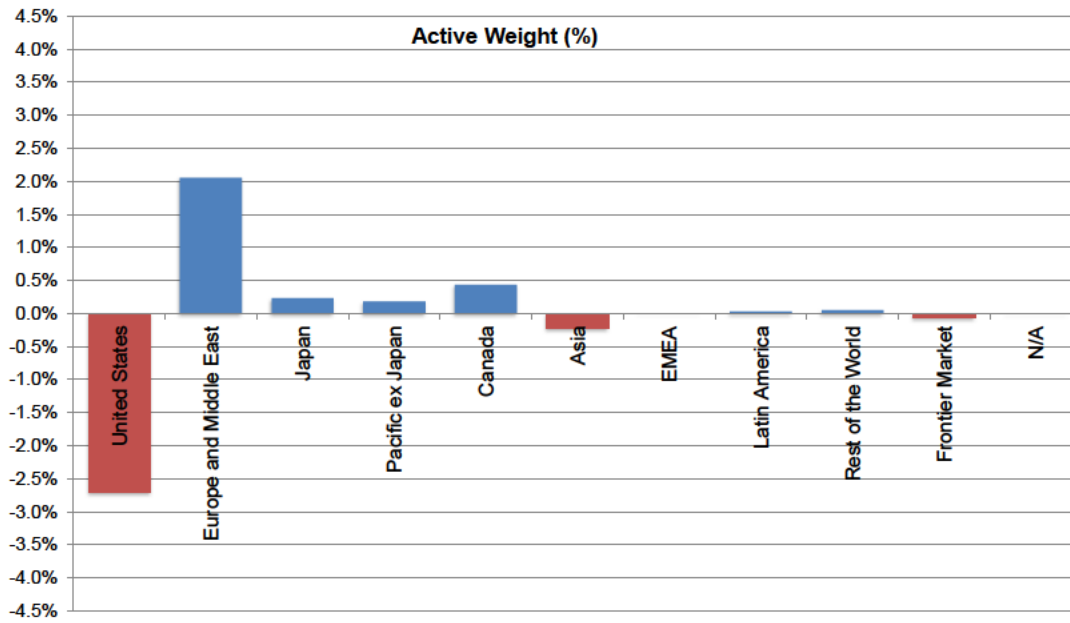
<sup>1</sup>Investopedia

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

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**Geographic Region Concentration**

Total developed and emerging market regions are within 1.0% of benchmark.



**Observations:**

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

Geographic Region*	Mkt Value (Mil \$)	Weight (%)	Bmk Weight (%)	Active Weight (%)	Total Plan Risk Cont.	Total Predicted Risk
<b>Total Portfolio</b>	\$ 147,256	100%	100%	0%	13.16	13.16
<b>Total Developed</b>	\$ 137,566	93.42%	93.22%	0.20%	12.23	13.11
United States	\$ 111,170	75.49%	78.20%	-2.71%	9.61	12.91
Europe and Middle East	\$ 16,570	11.25%	9.20%	2.05%	1.80	17.83
Japan	\$ 4,445	3.02%	2.79%	0.23%	0.30	14.17
Pacific ex Japan	\$ 2,376	1.61%	1.43%	0.18%	0.26	18.77
Canada	\$ 3,005	2.04%	1.60%	0.44%	0.26	15.02
<b>Total Emerging</b>	\$ 8,827	5.99%	6.18%	-0.19%	0.90	18.65
Asia	\$ 7,189	4.88%	5.11%	-0.23%	0.66	17.71
EMEA	\$ 928	0.63%	0.62%	0.01%	0.13	25.70
Latin America	\$ 710	0.48%	0.45%	0.03%	0.11	35.46
<b>Total Other</b>	\$ 863	0.59%	0.59%	-0.01%	0.02	5.39
Rest of the World	\$ 610	0.41%	0.36%	0.05%	0.00	1.80
Frontier Market	\$ 254	0.17%	0.23%	-0.06%	0.02	17.77
N/A	\$ (1)	0.00%	0.00%	0.00%	0.01	-

\*See appendix for countries included in each geographic region.

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**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 Data 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

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

\*MSCI.com/market-classification

# Appendix B

## DFS Update Risk Committee January 2022

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MATT ALBANO, CFA

RISK OFFICER

# Overview

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## Report on Examination:

- 1 Recommendation related to Risk Management
- 1 Completed; 0 outstanding

## Management Letter:

- 11 Recommendations related to Risk Management
- 8 Completed; 3 In Progress

# Report on Examination

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Status 1/2021	Status 1/2022	DFS Recommendation	Deliverable / Notes
		NYSTRS to review its fidelity bond coverage and increase it accordingly.	<b>Completed:</b> NYSTRS increased its fidelity bond coverage in accordance with the DFS recommendation effective with the December 2017 insurance renewal.



# Management Letter Update

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Status 1/2021	Status 1/2022	DFS Recommendation	Deliverable / Notes
		A. Governance Structure: Risk Committee of the Board of Trustees	<b>Completed:</b> The Retirement Board formally established a Risk Committee of the Board its January 2020 meeting.
		B. Organizational Structure: Independence of the RM Department	<b>Completed:</b> Discussed at the summer 2019 Board retreat and at the April 2020 Risk Committee meeting. The Risk Management Department charter has been updated to include a provision for acting as a resource for and providing updates to the Risk Committee of the Board for NYSTRS' material enterprise, information security and investment risks. The Risk Management function will continue to report to the Executive Director and Chief Investment Officer.

# Management Letter Update

Status 1/2021	Status 1/2022	DFS Recommendation	Deliverable / Notes
		C. Framework of Key Risk Indicators (KRI) and Tolerance Thresholds	<p><b>Completed:</b> Key risk indicators (KRI) for liquidity and asset allocation governance which measures market risk management, have been incorporated into quarterly Risk Committee reports. Each of the KRIs is reported alongside established appetite and tolerance levels. In addition to the KRIs recommended by DFS, KRIs for the ECR, ECR volatility, funded ratio, the valuation process, and information security have been presented and will be reported on an annual basis. Additional KRIs are being developed to address non-investment risks.</p> <p>DFS noted that NYSTRS did not have a KRI for Value at Risk (VaR). NYSTRS includes VaR measures in the quarterly investment risk report but has opted not to develop a formal KRI for VaR as the reporting is informational in nature.</p>

# Management Letter Update

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Status 1/2021	Status 1/2022	DFS Recommendation	Deliverable / Notes
		D. Market Risk Stress Testing	<b>Completed:</b> Four market risk scenarios were first presented to the Investment Committee of the Board in October 2017 and have been incorporated into the quarterly reporting package since January 2018.
		E. Model Validation	<b>Completed:</b> NYSTRS phased out the Barra Integrated Model (BIM) model in favor of the MSCI Multi Asset Class (MAC) model. Assessment of MSCI's validation process for the MAC risk model was completed in January 2020.
		F. Contingency Funding Plan ("CFP")	<b>Completed:</b> A formal Contingency Funding Plan (CFP) was put in place July 2017. The CFP considers key liquidity requirements and stress scenarios. NYSTRS has updated the CFP to incorporate DFS recommendations.

# Management Letter Update

Status 1/2021	Status 1/2022	DFS Recommendation	Deliverable / Notes
		G. Spreadsheet Management	<b>Completed:</b> Liquidity risk stress test spreadsheet has been secured.
			<b>In Progress:</b> <b>1/2022 Update:</b> Spreadsheet inventory and risk assessment framework have been drafted. Department survey is being prepared to send to select departments as part of the pilot program.

# Management Letter Update

Status 1/2021	Status 1/2022	DFS Recommendation	Deliverable / Notes
		H. Management Agreement Compliance Monitoring	<p><b>In Progress:</b> This recommendation is dependent upon the modernization of NYSTRS' public market investment infrastructure, specifically implementation of the new order management system / investment book of record (OMS/IBOR) solution. Following a thorough RFP process, a product was selected to replace NYSTRS' legacy OMS and IBOR.</p> <p><b>1/2022 Update:</b> Implementation is underway. Timeframes are subject to change, but the current expectation is to complete the transition of internally managed portfolios to the new system by June 30, 2022. Externally managed, public market, portfolios are also included in the implementation plan and will be added following the internal portfolios.</p>

# Management Letter Update

Status 1/2021	Status 1/2022	DFS Recommendation	Deliverable / Notes
		I. Risk Appetite Statement	<b>Completed:</b> A comprehensive set of risk appetite statements was presented to the Board's Risk Committee in July 2020 for review and discussion at the October 2020 Committee meeting.
		J. Risk Management Department Policies and Procedures Manual	<b>Completed:</b> The formal structure of the manual has been established and all completed items have been included. The one outstanding item requested by DFS is the Critical Spreadsheet Inventory; that item is in process as noted above.
		K. Internal Audit Coverage of the RM Department	<b>In Progress:</b> <b>1/2022 Update:</b> Internal Audit issued an RFP and selected a third party in 2021 to perform a System wide Risk Management maturity review. The review is projected to be complete during the first half of 2022.

**NEW YORK STATE  
TEACHERS' RETIREMENT SYSTEM  
INVESTMENT COMMITTEE MEETING  
January 26, 2022**

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

A meeting of the Investment Committee of the Retirement Board was held, via WebEx, on January 26, 2022. Nicholas Smirensky, Chair, called the meeting to order at 8:40 a.m.

ATTENDANCE via WebEx:

Investment Committee

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

Board Members

Juliet Benaquisto, Eric Iberger, Phyllis Harrington, Oliver Robinson

Staff

Thomas Lee, Joseph Indelicato Jr., Dave Gillan, Gerald Yahoudy, Miriam Dixon, Richard Young, Mike Gregoire, Ed Rezny, Ken Kasper, Paul Cummins, Michael Federici, Danny Malavé, Matt Albano, Brad Woolworth, Noreen Jones, Andrew Feldman, Margaret Andriola, Chris Brown, Kevin Maloney, Heidi Brennan, Aaron VanDerwiell, Lei Zhang, Nathan Lee, Tedd Johnson, Ryan Ranado, Mike Morrell, Rick, Jensen, Bruce Woolley, Dave Tessitore, Don Ampansiri, Eric Ma, Matt Tice, Vijay Madala, Adam Kinney, Yiselle Ruoso, Rebecca Kannan, Ann Piazza, Justin Milanese, Stacey Lesser Meehan

System Consultants

Callan – Tom Shingler, Millie Viqueria, Jay Kloepfer, Ho Hwang, Sally Haskins, Lauren Sertich, Jonathan Gould

StepStone – Scott Schwind

Visitors

Tom Cosmer - Pinebridge

John Daley – NYSSBA

McCyril Espanol – WithIntelligence (f/k/a Pageant Media)

Bernard Tuchman - DivestNY



## Approval of Minutes

### A. Approval of Minutes of October 27, 2021 and December 28, 2021 Investment Committee Meetings

There being no additions or corrections to the minutes of the October 27, 2021 and December 28, 2021 meetings, the minutes were approved with a motion made by E. Chetney, seconded by D. Keefe and unanimously carried.

The Committee heard reports and updates from staff and reviewed the following information regarding the System's investments and performance:

### Review of Investments

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. 17-18)
5. Private Equity/Debt Update (Appendix E, p. 19)

### Presentations

#### A. Consultant Update

J. Kloepfer and M. Viqueria from Callan gave an update on capital market projections and an update on ownership and leadership changes within the Callan organization.

#### B. AEW US REIT Completion Strategy

Upon motion of E. Chetney, seconded by C. Morin and unanimously carried, the Committee went into Executive Session at 10:03 a.m. to hear a real estate presentation. D. Gillan and E. Ma recommended approval of AEW Capital

Management as an investment manager for a US REIT strategy. J.T. Straub, Jay Struzziery, Gina Szymanski, Russ Devlin, Robert Oosterkamp, Oliver Jones and Jon Martin from AEW gave a presentation to the Committee on their strategy.

The Committee came out of Executive Session at 10:50 a.m.

### Policy Review and Action

#### 1. Consent Agenda Recommendation Items (Appendix F, p. 20)

Upon motion of D. Keefe, seconded by R. Mahoney and unanimously carried by the Board, the following resolutions were moved and approved together, as consent agenda items:

##### a. Renew Consultant

- Callan – General Investment Consultant

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the contract with Callan LLC to act as a general investment consultant and advise on (i) asset allocation, (ii) manager research & monitoring, and (iii) provide Board & staff education for a period of one year, commencing May 1, 2022, at an annual fee not to exceed \$493,319.

- Callan – Real Estate Consultant

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the contract with Callan LLC to serve as the System's real estate consultant and to perform such assignments as may be determined by the Executive Director and Chief Investment Officer or his designees in connection therewith, for the one year period commencing February 1, 2022 at an annual retainer not to exceed \$237,312 and at fees for individual fund due diligence not to exceed \$36,050 per domestic fund and \$46,350 per international fund, plus expenses, together with other services in accordance with the terms of the existing contract.

##### b. Renew Managers

Upon motion of C. Morin, seconded by R. Mahoney and unanimously carried by the Board, the following resolutions were moved and approved together,

as consent agenda items:

- Ariel Investments LLC

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the agreement with Ariel Investments LLC to manage a portion of the System's assets as an MSCI ACWI ex-US international equity manager for a period of one year, effective April 10, 2022.

- Arrowstreet

WHEREAS, Arrowstreet Capital LP was hired as an international equity manager on July 18, 2017 and as a global equity manager on March 26, 2019; now be it therefore

RESOLVED, That, the Executive Director and Chief Investment Officer is authorized to renew the agreement with Arrowstreet Capital LP for a period of one year, effective March 26, 2022, to manage (i) a portion of the System's assets as an international equity manager benchmarked to the MSCI ACWI ex-US index, and (ii) a portion of the System's assets as a global equity manager benchmarked to the MSCI ACWI index.

- Bank of NY Mellon (Securities Lending)

RESOLVED, the Executive Director and Chief Investment Officer is authorized to renew the agreement with The Bank of New York Mellon to act as an agency securities lender for a portion of the System's public securities assets for a period of one year, effective March 17, 2022.

- Black Rock Financial Management, Inc. (CMBS)

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the agreement with Black Rock Financial Management, Inc. to manage a portion of the System's assets in Commercial Mortgage Backed Securities ("CMBS"), for a period of one year, effective April 3, 2022.

- Cohen & Steers Capital Mgt – Multi Strategy

RESOLVED, That the System's Executive Director and Chief Investment Officer is authorized to renew the agreement with Cohen & Steers Capital Management, Inc. to manage a portion of the System's portfolio to be actively invested in the securities of real estate investment trusts ("REITs") and real estate operating companies ("REOCs") for a period of one year, effective February 12, 2022.

- Columbia Management Investment Advisers LLC

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the agreement with Columbia Management Investment Advisers, LLC to manage a portion of the System's assets as an active U.S. high yield manager benchmarked to the ICE BofAML BB-B US High Yield Constrained Index (HUC4) (f/k/a Bank of America Merrill Lynch BB-B U.S. High Yield Constrained Index) for a period of one year, effective March 6, 2022.

- J.P. Morgan Investment Management Inc.

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the agreement with J.P. Morgan Investment Management Inc. to manage a portion of the System's assets as an active U.S. high yield manager benchmarked to the ICE BofAML BB-B US High Yield Constrained Index (HUC4) (f/k/a Bank of America Merrill Lynch BB-B U.S. High Yield Constrained Index) for a period of one year, effective March 5, 2022.

- Raith Capital Partners

RESOLVED, That the System's Executive Director and Chief Investment Officer is authorized to renew the agreement with Raith Capital Partners, LLC to act as a Debt separate account advisor and in such role to advise on the acquisition, management and exit of public and private opportunistic commercial real estate debt opportunities for a period of one year, effective February 7, 2022.

- Rhumblin Advisors

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the agreement with Rhumblin Advisors LP to manage a portion of the System's assets as a passive international equity manager, benchmarked to the MSCI ACWI ex-US Index, for a period of one year commencing March 30, 2022.

- Xponance (f/k/a FIS Group)

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the agreement with Xponance (formerly known as FIS Group, Inc. with a name change to Xponance effective 4/1/20) to manage a portion of the System's assets as a manager of international equity managers, benchmarked to the ACWI ex-US Index, for a period of one year commencing April 25, 2022.

2 Resolution on Updated stock Proxy Voting Section of IPM

Upon motion of D. Keefe, seconded by E. Chetney, the members of the Investment Committee voted unanimously to recommend the following item to the Retirement Board:

RESOLVED, That the Investment Policy Manual, as presented to the Retirement Board reflecting changes to the Stock Proxy Voting section are approved.

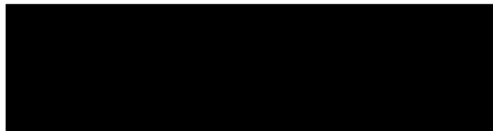
3 Resolution on AEW Capital Management LP

Upon motion of D. Keefe, seconded by R. Mahoney, the members of the Investment Committee voted unanimously to recommend the following item to the Retirement Board:

RESOLVED, That the Executive Director and Chief Investment Officer, or his designees, is authorized to contract with AEW Capital Management, L.P. for a period of one year to manage a portion of the System's assets as a Domestic Real Estate Public Securities manager benchmarked to the applicable property sector sleeve of the FTSE NAREIT Equity index.

There being no other business and upon unanimous motion the meeting adjourned at 10:55 a.m.

Respectfully submitted,

A solid black rectangular box redacting the signature of Thomas K. Lee.

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Thomas K. Lee

**Investment Committee Meeting Minutes - List of Appendices**

	<u>PAGE</u>
A. Investment Committee Executive Summary	8
B. Public Equities Report	15
C. Fixed Income Report	16
D. Real Estate Report	17
E. Private Equity/Debt Report	19
F. Investment Committee Agenda	20

# **Investment Committee Executive Summary**

## **Office of the CFO: Investment Operations Department**

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**Investment Committee Meeting: January 26, 2022**

**Margaret Andriola, CIPM, CPA**



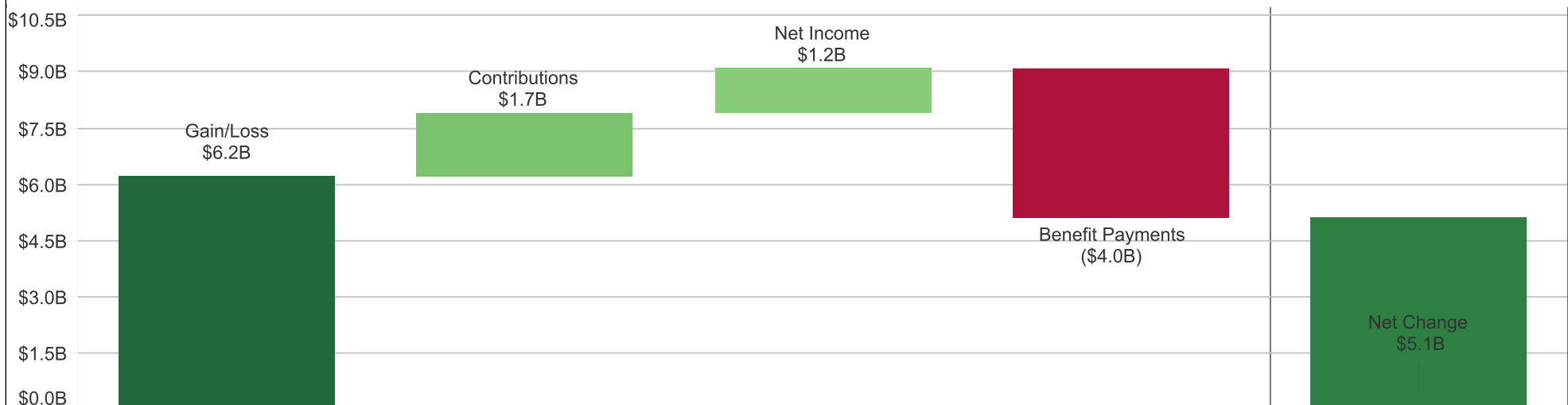
# Investment Committee Executive Summary

## Market Value Summary ('000s)

Asset Category	Asset Class	December 31, 2021		September 30, 2021		December 31, 2020	
		Net Asset Value	% Net Asset Value	Net Asset Value	% Net Asset Value	Net Asset Value	% Net Asset Value
Equity	Domestic Equity	\$53,046,331	35.0%	\$48,697,594	33.7%	\$47,843,812	35.7%
	International Equity	\$24,090,138	15.9%	\$23,691,492	16.4%	\$24,022,754	18.0%
	Global Equity	\$5,264,148	3.5%	\$5,020,854	3.5%	\$4,524,222	3.4%
	Real Estate Equity	\$16,387,778	10.8%	\$15,363,641	10.6%	\$12,650,760	9.5%
	Private Equity	\$14,203,217	9.4%	\$14,967,742	10.4%	\$10,334,591	7.7%
	<b>Asset Category Subtotal</b>	<b>\$112,991,612</b>	<b>74.7%</b>	<b>\$107,741,322</b>	<b>74.6%</b>	<b>\$99,376,139</b>	<b>74.3%</b>
Fixed Income	Domestic Fixed Income	\$20,062,181	13.3%	\$19,156,275	13.3%	\$17,620,200	13.2%
	Global Bonds	\$3,216,147	2.1%	\$3,220,008	2.2%	\$2,917,887	2.2%
	High Yield	\$1,041,419	0.7%	\$983,396	0.7%	\$797,034	0.6%
	Real Estate Debt	\$7,598,189	5.0%	\$7,495,727	5.2%	\$7,130,701	5.3%
	Private Debt	\$1,239,531	0.8%	\$1,175,555	0.8%	\$863,440	0.6%
	Cash & Short Term Debt	\$5,209,933	3.4%	\$4,623,814	3.2%	\$5,125,665	3.8%
<b>Asset Category Subtotal</b>	<b>\$38,367,399</b>	<b>25.3%</b>	<b>\$36,654,776</b>	<b>25.4%</b>	<b>\$34,454,927</b>	<b>25.7%</b>	
<b>Total Plan</b>		<b>\$151,359,011</b>	<b>100.0%</b>	<b>\$144,396,098</b>	<b>100.0%</b>	<b>\$133,831,067</b>	<b>100.0%</b>

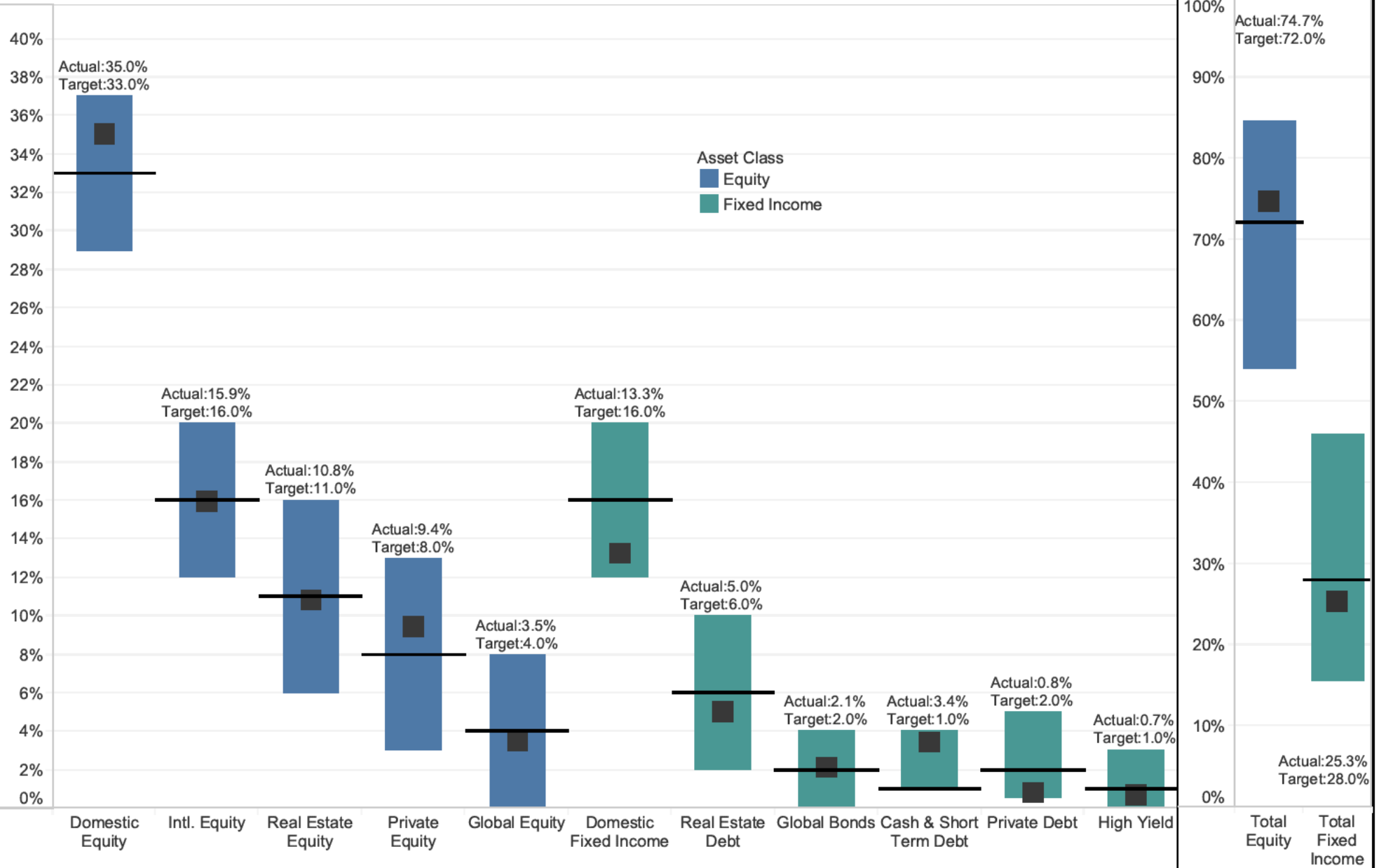
Due to rounding, numbers may not sum to 100%.

## Components of Change in Total Investments FYTD: 7/1/2021 to 12/31/2021 \$146.3B to \$151.4B

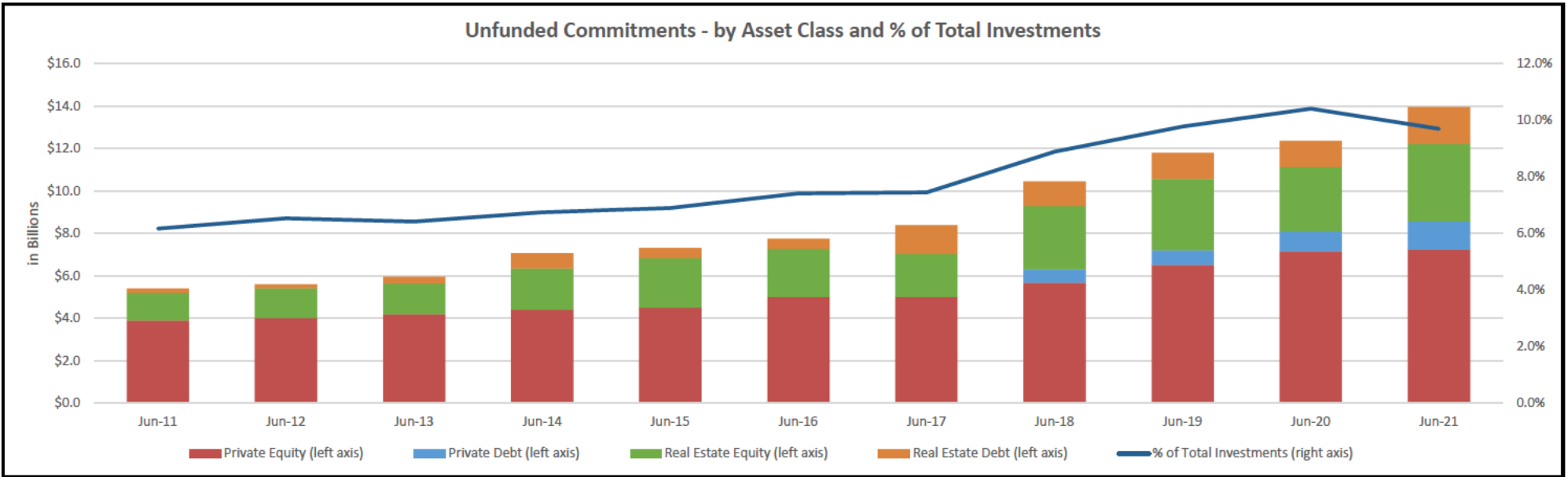
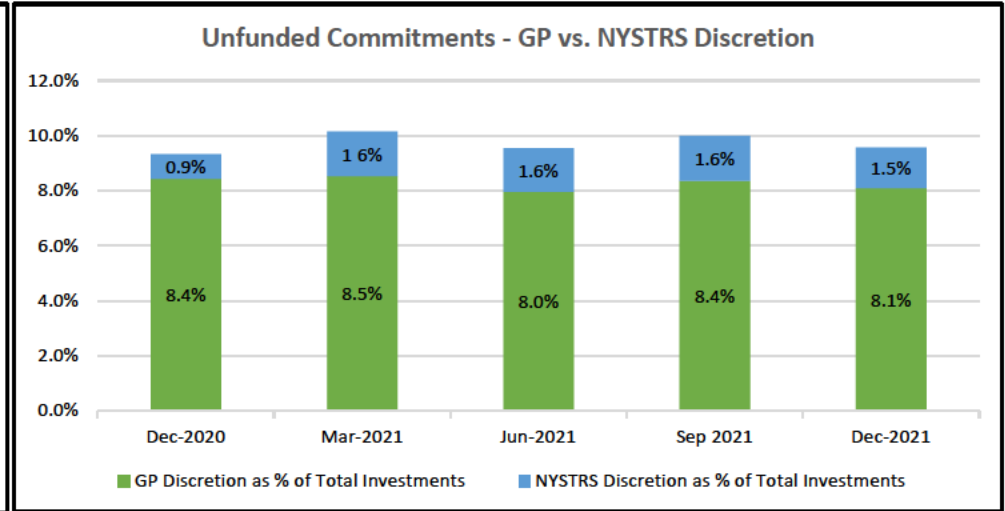
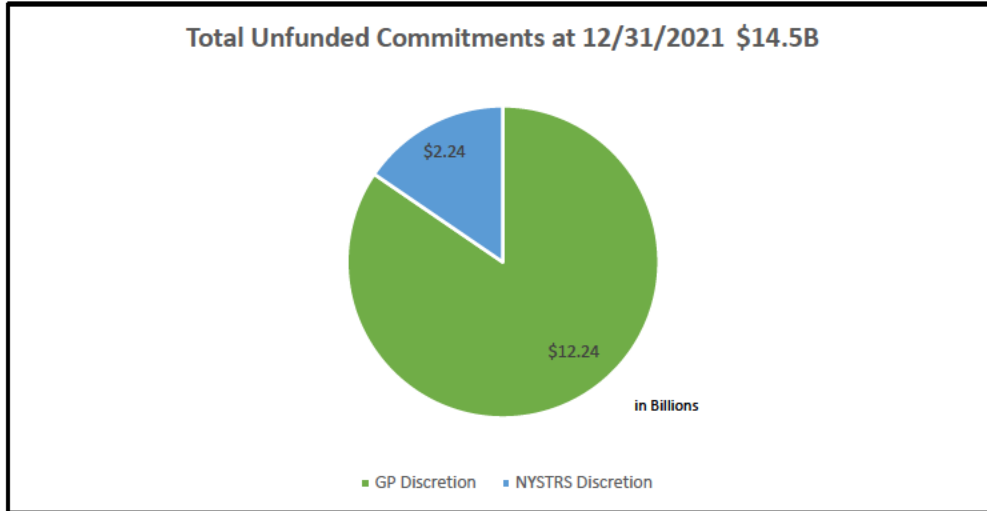




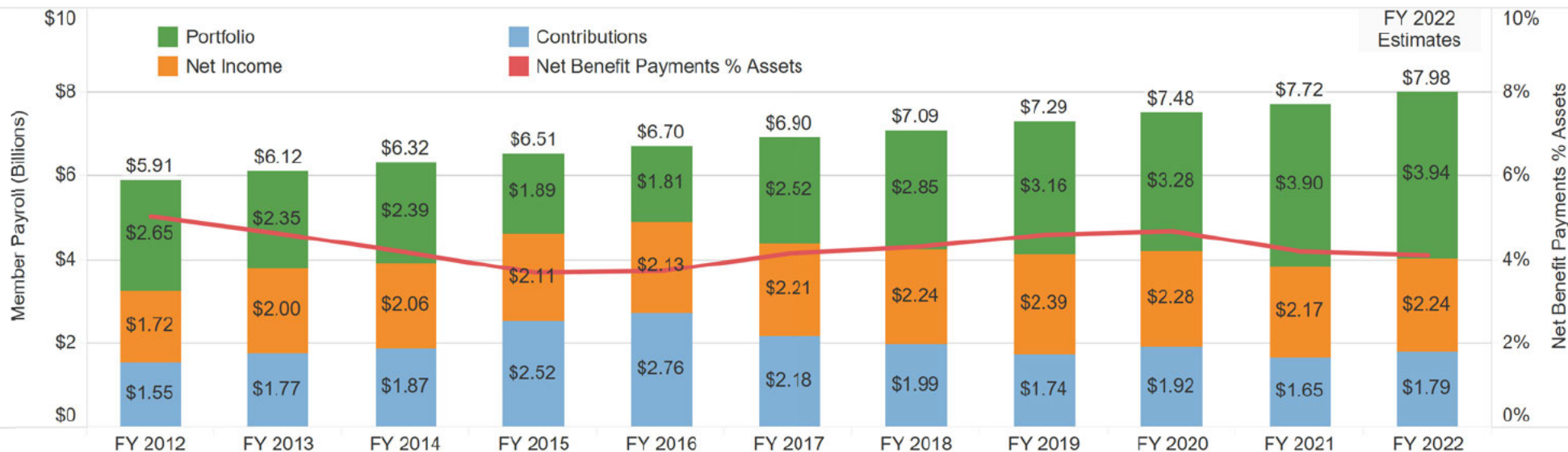
## NYSTRS' Asset Allocation: \$151.4B (December 31, 2021)



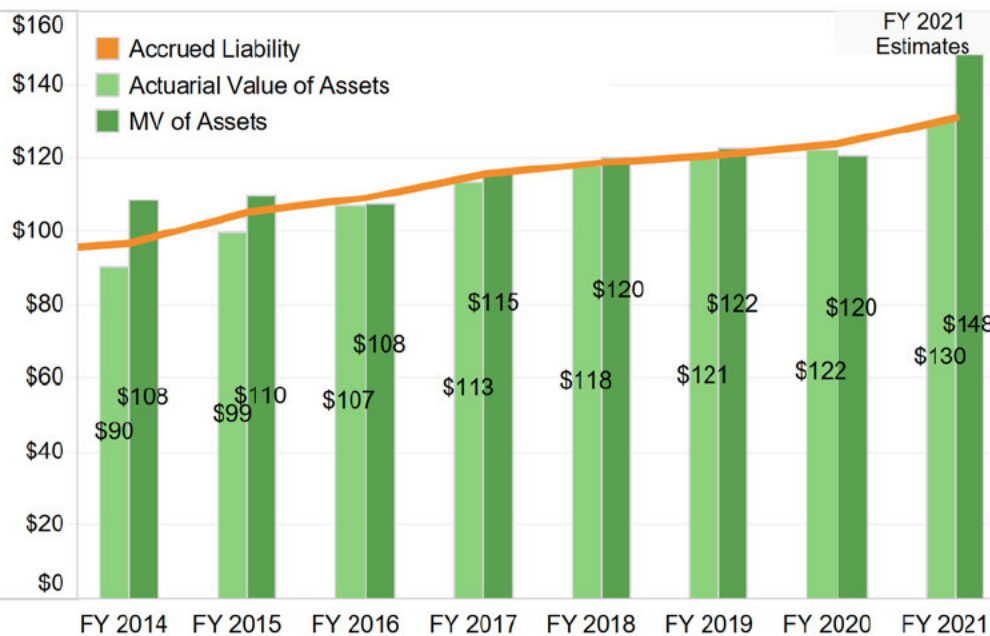
### Unfunded Commitments - Private Assets



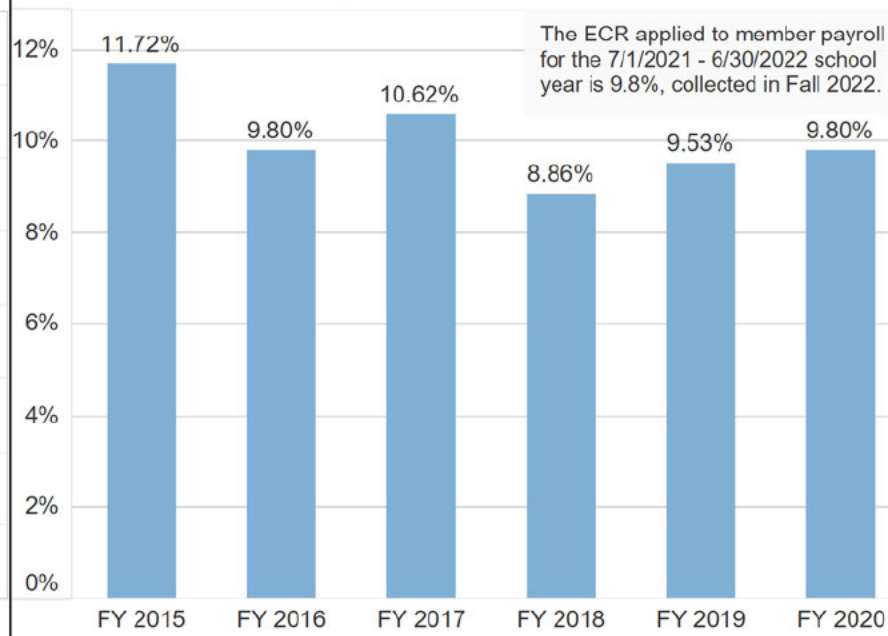
## Member Payroll Funding Sources



## Assets & Actuarial Accrued Liability



## Employer Contribution Rate



# Investment Committee Executive Summary

## Public Market Performance as of December 31, 2021

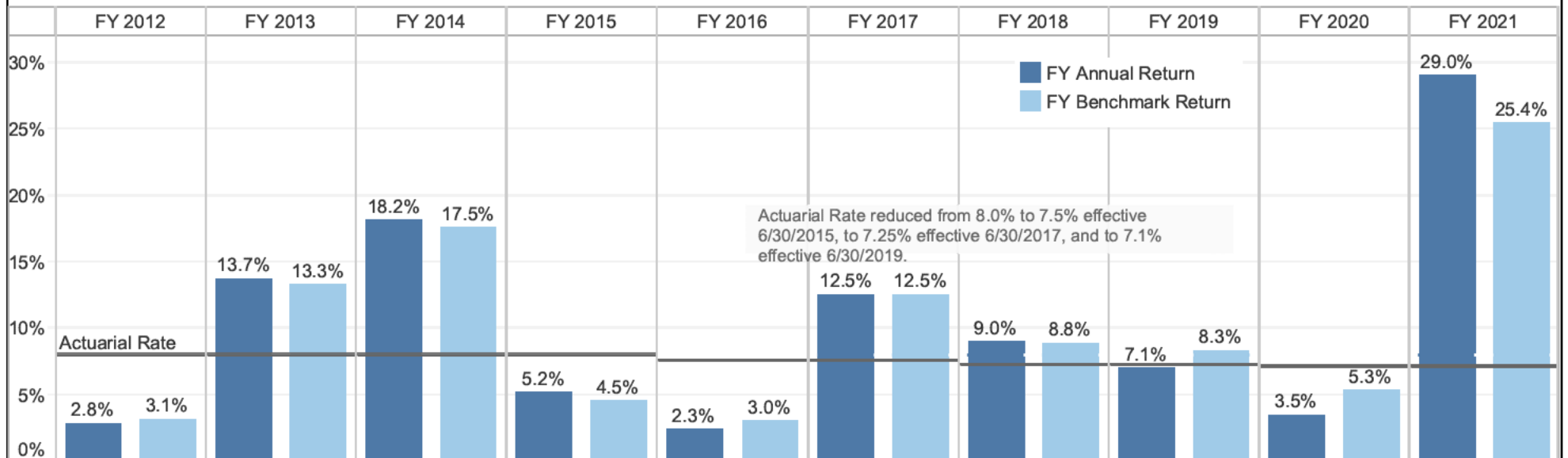
Asset Class	Current QTR	
	Net Return	Excess Return
Domestic Equity	10.7%	0.0%
International Equity	1.7%	-0.2%
Global Equity	4.7%	-1.9%
Private Equity	N/A	N/A
Real Estate Equity	12.2%	-2.7%
Domestic Fixed Income	-0.5%	-0.6%
Global Bonds	-0.2%	-0.1%
High Yield Bonds	0.7%	0.0%
Private Debt	N/A	N/A
Real Estate Debt	-0.6%	0.1%
Short Term	0.0%	0.0%

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

## Total Fund Performance as of September 30, 2021

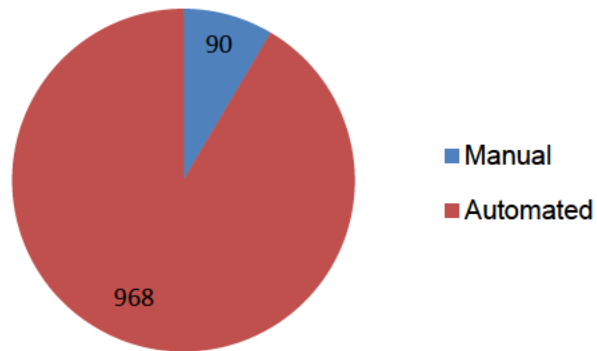
Asset Class	QTR		FYTD		10YR	
	Net Return	Excess Return	Net Return	Excess Return	Net Return	Excess Return
Domestic Equity	0.3%	-0.1%	0.3%	-0.1%	16.4%	-0.1%
International Equity	-2.8%	0.2%	-2.8%	0.2%	8.0%	0.5%
Global Equity	-0.9%	0.2%	-0.9%	0.2%	N/A	N/A
Private Equity	7.3%	5.5%	7.3%	5.5%	17.8%	-3.8%
Real Estate Equity	5.4%	-1.1%	5.4%	-1.1%	11.0%	1.6%
Domestic Fixed Income	0.1%	0.0%	0.1%	0.0%	2.6%	-0.5%
Global Bonds	0.0%	0.0%	0.0%	0.0%	N/A	N/A
High Yield Bonds	0.8%	-0.1%	0.8%	-0.1%	N/A	N/A
Private Debt	3.8%	2.0%	3.8%	2.0%	N/A	N/A
Real Estate Debt	0.7%	0.3%	0.7%	0.3%	5.2%	0.6%
Short Term	0.0%	0.0%	0.0%	0.0%	0.7%	0.3%
<b>Total Fund</b>	<b>1.0%</b>	<b>0.4%</b>	<b>1.0%</b>	<b>0.4%</b>	<b>11.2%</b>	<b>0.1%</b>

## Annual Performance

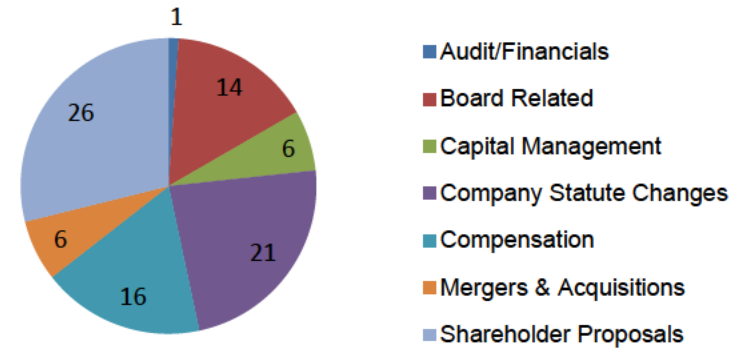


## Proxy Voting Summary: 10/1/2021 - 12/31/2021

## Total Proxy Proposals - 1,058



## Manual Proposals - 90



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 the 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.

**Company Statute Changes** - 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: 2, Environment: 2, Governance: 8, and Social: 14



## Public Equity MD Update Investment Committee January 26th, 2022

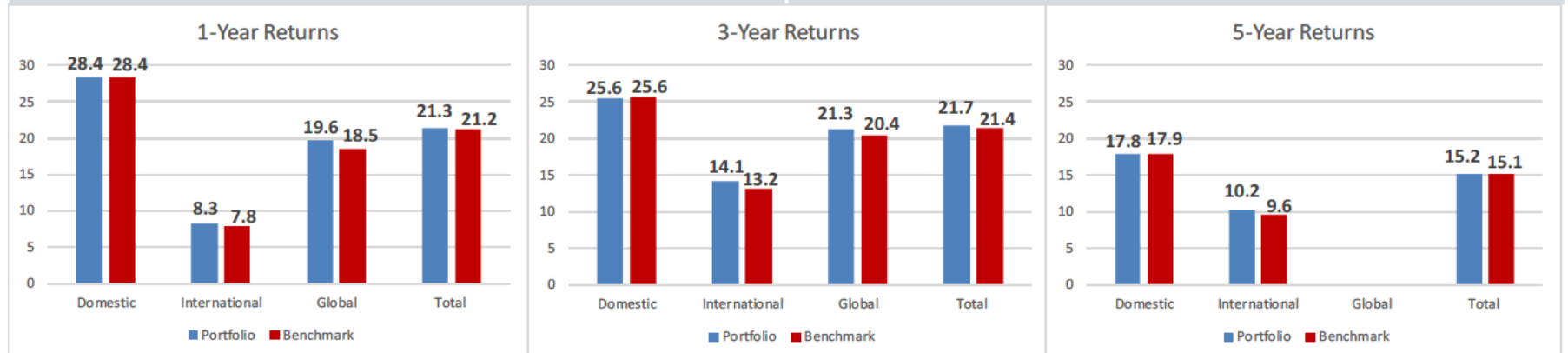
Portfolio Values				Asset Allocation			
Portfolio Values (000)	12/31/21	12/31/20	Difference	Asset Allocation	Range	Target	Actual 12/31/21
Domestic Equity	\$53,046,331	\$47,843,812	\$5,202,519	Domestic:	29-37%	33.0%	35.0%
International Equity	\$24,090,138	\$24,022,754	\$67,384	International:	12-20%	16.0%	15.9%
Global Equity	\$5,264,148	\$4,524,222	\$739,926	Global:	0-8%	4.0%	3.5%
<b>Total Public Equity</b>	<b>\$82,400,617</b>	<b>\$76,390,788</b>	<b>\$6,009,829</b>				

### Public Equity Portfolio Values:

- During the one-year period ended 12/31/21:
  - o \$7.4B (including dividends swept) was raised from domestic equities.
  - o \$1.9B was raised from international equities.
  - o \$150M was raised from global equities.
- Hence, the public equity portfolio increased in value by \$15.5B for the one-year period.

### Asset Allocation

- Although modestly above target, public equities remain well within asset allocation ranges.
- \$674M was raised from the domestic portfolio during the quarter.



### Commentary:

- All managers remain in good standing and are performing within our range of expectations.
- We are working to implement the divestment and restriction lists.
- Staffing: two recent departures from the team.



# Fixed Income MD Update Investment Committee

### Investment Committee Meeting: January 26, 2022

Internally Managed	Externally Managed
<p><b><u>Short Term Bonds (STB) \$5.2bn</u></b></p> <ul style="list-style-type: none"> <li>• 3.4% vs. 1% target and 1-4% range</li> <li>• Return: 0.02% versus flat BM return</li> <li>• Market participants now expect a March rate hike by the Fed</li> <li>• Diversified, high-quality holdings</li> </ul>	<p><b><u>U.S. High Yield (HY) \$1.0bn</u></b></p> <ul style="list-style-type: none"> <li>• 0.7% vs. 1% target and 0-3% range</li> <li>• Net return: 0.68% versus BM return of 0.73%</li> <li>• Underperformance from holding cash and security selection within industrials (media, automotive, and leisure)</li> </ul>
<p><b><u>Domestic Fixed Income (DFI) \$20.1bn</u></b></p> <ul style="list-style-type: none"> <li>• 13.3% vs. 16% target and 12-20% range</li> <li>• Return: -0.52% versus BM return of 0.05%</li> <li>• Underperformance largely from lack of long duration holdings as the yield curve flattened; positive sector allocation</li> <li>• Focused on high quality and lower interest rate risk (duration)</li> </ul>	<p><b><u>Global Bonds (GB) \$3.2bn</u></b></p> <ul style="list-style-type: none"> <li>• 2.1% vs. 2% target and 0-4% range</li> <li>• Net return: -0.16% versus BM return of -0.05%.</li> <li>• Underperformance largely from underweight in longer maturity global treasuries; corporate and securitized performance was mixed across managers and sectors</li> </ul>
<ul style="list-style-type: none"> <li>• <u>Staffing</u>: Assistant Manager focused on corporate credit joined in November; seeking to fill a staff role focused on external managers</li> <li>• <u>Loose Monetary Policy</u> during COVID has supported most asset classes; global central banks (including the Fed) are increasingly signaling tighter policy in reaction to persistently high inflation.</li> <li>• <u>Other Macroeconomic and Geopolitical Risks</u> <ul style="list-style-type: none"> <li>• Inflation (CPI, commodities, housing, wages)</li> <li>• COVID and repeated outbreak waves</li> <li>• Global supply chain disruptions</li> <li>• Labor market shortages and dislocations</li> <li>• Uncertain US fiscal policy</li> <li>• China: growth concerns (property market) and tensions with US</li> </ul> </li> </ul>	

# Commercial Real Estate (CRE) Investments - Managing Director Update

<b>CRE Equity</b>	<b><u>12/31/21 Value</u></b>	<b><u>Target</u></b>	<b><u>Range</u></b>	<b><u>Actual</u></b>	<b><u>w/Commit</u></b>	
	<b>\$16,388</b>	<b>11%</b>	<b>6%-16%</b>	<b>10.8%</b>	<b>13.3%</b>	
<b>Performance for Periods Ended September 30, 2021</b>						
<b>Strategy (Inception Date)</b>	<b>Net Asset Value</b>	<b>Current Quarter</b>	<b>1 Year</b>	<b>5 Year</b>	<b>10 Year</b>	<b>Since Inception</b>
Direct Properties (2/90)	\$5,841	7.5%	16.8%	7.4%	11.1%	9.7%
Core Funds (7/85)	\$1,616	3.9%	10.3%	3.6%	7.5%	6.8%
Value Added (12/89)	\$1,499	14.1%	39.9%	18.7%	17.6%	12.1%
Opportunistic (3/99)	\$2,156	6.6%	24.0%	9.8%	10.8%	11.2%
U.S. RE Securities (7/95)	\$3,151	1.7%	34.4%	8.9%	11.9%	12.0%
Global RE Securities (9/17)	\$1,526	-0.8%	30.3%	-	-	6.4%
Timber (12/98)	\$300	0.4%	5.1%	3.1%	4.6%	4.2%
<b>Total CRE Equity Portfolio</b>	<b>\$16,089</b>	<b>5.4%</b>	<b>22.7%</b>	<b>8.5%</b>	<b>11.0%</b>	<b>8.5%</b>
NCREIF-ODCE (Spliced)	-	6.4%	13.6%	6.9%	9.4%	6.6%

## Return Drivers:

- Returns rebounded strongly over the past year, led by industrial and residential across all geographies and structures (direct investments, funds and REITS). We saw strong returns in our mixed-use development in Seattle, our life science asset in Boston, and our recent large investment in cold storage. The System's office assets and our remaining mall were the largest detractors from performance.

## Market Conditions

- Increased inflation levels are a concern as long term leases in the commercial markets typically have fixed escalation clauses, so there is a lag on picking up higher rents. Residential assets have shorter term leases that can benefit from higher inflation rates in the near term.
- Demand fundamentals in multi-family remain solid, and most research suggests a further growth in rents on the horizon, however affordability considerations in certain markets suggest a moderation in these rent growth projections.
- Property values for all sectors have rebounded to pre-pandemic levels with the exception of office, where long-term demand uncertainty remains, and lodging, where the delayed return of business travel has been a key driver.

Appendix D

## Portfolio Focus:

- Acquisitions continues to focus on property sectors such as industrial and multifamily assets where near to mid-term growth expectations continue to be relatively strong.

## Fourth Quarter Investment Activity:

- The System closed on \$325 million of commitments to commingled funds with industrial and cold storage development strategies and has been actively pursuing multifamily properties benefitting from "Eds and Meds" demand drivers for the direct portfolio.



# Commercial Real Estate (CRE) Investments - Managing Director Update <sup>18</sup>

<b>CRE Debt</b>	<b><u>12/31/21 Value</u></b>	<b><u>Target</u></b>	<b><u>Range</u></b>	<b><u>Actual</u></b>	<b><u>w/Commit</u></b>	
	<b>\$7,598</b>	<b>6%</b>	<b>2%-10%</b>	<b>5.0%</b>	<b>6.3%</b>	
<b>Performance for Periods Ended <u>September 30, 2021</u></b>						
<b>Strategy (Inception Date)</b>	<b>Net Asset Value</b>	<b>Current Quarter</b>	<b>1 Year</b>	<b>5 Years</b>	<b>10 Years</b>	<b>Since Inception</b>
Mortgages (7/85)	\$3,564	0.4%	3.0%	4.2%	4.8%	8.2%
Commercial MBS (4/01)	\$1,872	0.5%	5.7%	3.9%	4.8%	5.1%
Core Plus Strategies (8/04)	\$1,582	1.3%	6.7%	5.6%	5.0%	5.5%
Opportunistic Debt Strategies (9/01)	\$490	1.8%	4.4%	7.1%	10.8%	0.5%
<b>Total CRE Debt Portfolio</b>	<b>\$7,508</b>	<b>0.7%</b>	<b>4.4%</b>	<b>4.5%</b>	<b>5.2%</b>	<b>8.1%</b>
Giliberto-Levy Custom Index (Spliced)	-	0.4%	3.2%	4.5%	4.6%	8.3%

## Return Drivers:

- Returns over the past year were driven by the strong performance in the CMBS, senior mezzanine and bridge loan allocations.

## Market Conditions:

- The recent U.S. treasury selloff has increased the 10-year treasury yield to its highest rate since the beginning of the pandemic. First mortgage yields have followed albeit with tighter credit spreads (3.00% all in yields for 10-year terms). However, yields continue to remain low relative to historical levels. Inflation expectations and Federal Reserve tightening should continue to put upward pressure on 10-year U.S. treasury yields and corresponding mortgage coupons.
- CMBS spreads widened substantially at the start of the pandemic, however, narrowed considerably during 2020 and fully recovered in 2021. Since the end of 2021, the 10-year investment grade single asset single borrower all-in yields widened approximately 50 basis points from 2.75% to 3.50% due primarily to the recent increase in the 10-year Swap rate in 2022.

## Portfolio Focus:

- Continue to focus on senior mezzanine loans and bridge loans on transitional assets to take advantage of the floating rate market and to supplement yields available in the first mortgage and investment grade CMBS space. The goal in the mezzanine/bridge space is to produce all in net yields of 5.00%-6.00%.
- When available, continue to add CMBS risk retention bonds that can be acquired at yields in excess of 5.0% due to liquidity restrictions.

## Fourth Quarter Investment Activity:

- The System allocated a \$300 million commitment to Blackrock for investment grade CMBS investments.

# Private Equity/Debt MD Update

## Investment Committee

### January 26, 2022

19

## Appendix E

Private Equity – 8% Target (3-13%)	Private Debt – 2% Target (0.5-5%)																																				
<ul style="list-style-type: none"> <li>12/31/21 - \$14.2bn or approx. 9.4% vs. target</li> <li>\$6.8bn unfunded</li> </ul>	<ul style="list-style-type: none"> <li>12/31/21 - \$1.2bn or approx. 0.8% vs. target</li> <li>\$1.3bn unfunded</li> </ul>																																				
<p><b><u>Performance (as of 9/30/21, time-weighted)</u></b></p> <table border="1"> <thead> <tr> <th>Yrs</th> <th>TWRReturn</th> <th>S&amp;P500 +5%</th> </tr> </thead> <tbody> <tr> <td><b>QTR</b></td> <td>7.3%</td> <td>1.8%</td> </tr> <tr> <td>1</td> <td>51.1%</td> <td>35.0%</td> </tr> <tr> <td>3</td> <td>24.8%</td> <td>21.0%</td> </tr> <tr> <td>5</td> <td>21.8%</td> <td>21.9%</td> </tr> <tr> <td>10</td> <td>17.8%</td> <td>21.6%</td> </tr> <tr> <td>15</td> <td>14.5%</td> <td>15.4%</td> </tr> <tr> <td>20</td> <td>14.4%</td> <td>14.5%</td> </tr> </tbody> </table>	Yrs	TWRReturn	S&P500 +5%	<b>QTR</b>	7.3%	1.8%	1	51.1%	35.0%	3	24.8%	21.0%	5	21.8%	21.9%	10	17.8%	21.6%	15	14.5%	15.4%	20	14.4%	14.5%	<p><b><u>Performance (as of 9/30/21, time-weighted)</u></b></p> <table border="1"> <thead> <tr> <th>Yrs</th> <th>TWRReturn</th> <th>S&amp;P/LSTA +3%</th> </tr> </thead> <tbody> <tr> <td><b>QTR</b></td> <td>3.8%</td> <td>1.8%</td> </tr> <tr> <td>1</td> <td>21.4%</td> <td>11.4%</td> </tr> <tr> <td>3</td> <td>9.5%</td> <td>7.1%</td> </tr> </tbody> </table>	Yrs	TWRReturn	S&P/LSTA +3%	<b>QTR</b>	3.8%	1.8%	1	21.4%	11.4%	3	9.5%	7.1%
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### **Market Overview:**

- Fundraising extremely strong, driven by large/mega funds coming back to market sooner than expected creating allocation challenges for many investors;
- Record amount of global buyout deals in 2021; pricing remains elevated driven largely by technology assets;
- Portfolio valuations as of 9/30/21 continued to trend upward helping to drive returns;

### **Other Items:**

- Secondary Sale Update
- Recruiting for Open Positions



Investment Committee Meeting – Agenda p. 25

January 26, 2022

COMMITTEE MEMBERS

Nicholas Smirensky, Chair

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

**MINUTES**

- A. Approval of Minutes of October 27, 2021 and December 28, 2021 Meetings  
pp. 26-39

**STAFF UPDATES**

- |   |            |
|---|------------|
| A. Investment Comm Exec Summary – M. Andriola pp. 40-46 | 10 minutes |
| B. Public Equities Update – P. Cummins p. 47            | 15 minutes |
| C. Fixed Income Update – M. Federici p. 48              | 15 minutes |
| E. Real Estate Update – D. Gillan p. 49                 | 15 minutes |
| F. Private Equity/Debt Update – G. Yahoudy p. 51        | 15 minutes |

**PRESENTATIONS**

- A. AEW US REIT Completion Strategy (**Executive Session motion**)  
pp. 52-112
- B. General Consultant Update – Callan pp. 113-127

**INVESTMENT COMMITTEE ACTION REQUIRED**

- A. **Consent Agenda Recommendation Item 1-2** pp. 128-139
1. Renew Consultant
    1. Callan – General Investment Consultant p. 128
    2. Callan – Real Estate Consultant p. 129
  2. Renew Managers:
    - a. Ariel Investments LLC p. 130
    - b. Arrowstreet p. 131
    - c. Bank of New York Mellon (Securities Lending) p. 132
    - d. BlackRock Financial Management, Inc (CMBS) p. 133
    - e. Cohen & Steers Capital Mgt-Multi Strategy p. 134
    - f. Columbia Management Investment Advisers LLC p. 135
    - g. J.P. Morgan Investment Management Inc p. 136
    - h. Raith Capital Partners p. 137
    - i. Rhumblin Advisors LP p. 138
    - j. Xponance (f/k/a FIS Group) p. 139
  3. Resolution on Updated Stock Proxy Voting Section of IPM p. 140
  4. Resolution on AEW Capital Management LP p. 141

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, via WebEx, on January 26, 2022. The meeting was called to order at 11:00 a.m. by Elizabeth Chetney, Chair.

The following individuals were in attendance via WebEx:

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

Board Members: Phyllis Harrington, Jennifer Longtin, Christopher Morin,  
Nicholas Smirensky

Upon motion of D. Keefe, seconded by R. Mahoney and unanimously carried, the meeting minutes of October 27, 2021 were approved.

E. Chetney, Chair, reported that the System's Medical Board had met monthly over the prior three months and that there was one disability denial resolution to be brought to the Board at the Board meeting on January 27.

Upon motion of D. Keefe, seconded by R. Mahoney, and unanimously carried, the Committee went into Executive Session at 11:01 a.m. to discuss a particular disability denial recommendation.

The Committee came out of Executive Session, with unanimous consent, at 11:07 a.m. and since there was no further business the meeting adjourned.

Respectfully submitted,

A solid black rectangular box redacting the signature of Thomas K. Lee.

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Thomas K. Lee

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

Executive Committee Meeting

A meeting of the Executive Committee of the Retirement Board of the New York State Teachers' Retirement System was held, via WebEx, on January 26, 2022.

The following individuals were in attendance via WebEx:

Committee Members: David Keefe, Phyllis Harrington, Christopher Morin, Oliver Robinson

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

NYSTRS' Staff: Thomas K. Lee, Joseph Indelicato Jr, Rebecca Kannan, Vijay Madala

The meeting was called to order by D. Keefe, Chair, at 11:15 a.m.

The following items were discussed:

1. Approval of minutes from October 28, 2021 meeting

Upon motion of P. Harrington, seconded by O. Robinson and unanimously carried, the minutes of the October 28, 2021 meeting were approved.

2. Signatory Authority

- a. Resolution to Delegate Signatory Authority for Financial and Legal Document Execution

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

WHEREAS, Pursuant to Section 5 of Article II of the Retirement System's Bylaws, the Executive Director and Chief Investment Officer of the Retirement System is authorized to conduct the affairs of the Retirement System and to provide for the execution of all financial and legal documents as authorized by the Retirement Board; and

WHEREAS, In order to assure the proper and efficient operation of the Retirement System, it is necessary and desirable to provide for the delegation by the Executive Director and Chief Investment Officer of the authority to execute financial and legal documents to employees of the Retirement System; and

WHEREAS, the Retirement Board believes it is desirable to amend and restate the delegation resolution and, among other things, identify the employees of the Retirement System to whom the authority to execute financial and legal documents has been delegated by a separate resolution which may hereafter be amended as required; now therefore be it

I

Financial and Legal Documents

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to approve and execute financial and legal documents relating to the Retirement System, including those related to the administration of the Retirement System and its investments, or may delegate such authority to any other Executives or signatory designee of the Retirement System identified by said separate resolution; and be it

II

Identification of Signatories

RESOLVED, That, for the purposes of Section 5 of Article II of the Retirement System's Bylaws, the Retirement Board shall approve by separate resolution, the employees of the Retirement System to whom authority has been delegated by the Executive Director and Chief Investment Officer to approve and execute financial and legal documents, which resolution shall be reauthorized by the Retirement Board as necessary; and be it

III

Approval and Execution

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to duly enact Retirement System policy regarding the signatory process, including but not limited to the number of required signatures or approvals, and such policy may be set forth in the Administrative Policy Manual or other written policy as may be determined by Executive Director and Chief Investment Officer; and be it

IV

Rescission of All Prior Inconsistent Resolutions

RESOLVED, That all prior resolutions of the Retirement Board inconsistent with this resolution are hereby rescinded effective January 27, 2022; provided, however, that nothing herein shall affect the validity of any action previously authorized, approved or ratified by the Retirement Board.

b. 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 July 28, 2021, 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; and be it

RESOLVED, the attachment entitled Signatory Authorization Grid- Financial and Legal Documents (Appendix A, p. 7) 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 between regular meetings of the Retirement Board, 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 next regular meeting of the Retirement Board; 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 January 27 2022 and, upon taking effect, shall supersede the identifying resolution previously adopted by the Retirement Board on July 28, 2021.

c. Resolution Identifying Warrant 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 adopted at its regular meeting on October 26, 1995, amended and restated periodically thereafter, and most recently on July 28, 2021 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 B, p. 8) dated July 28, 2021; 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, between regular meetings of the Retirement Board, the Executive Director and Chief Investment Officer shall have the authority to designate in writing 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 next regular meeting of the Retirement Board; 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 January 27, 2022 and, upon taking effect, shall supersede the identifying resolution previously adopted on July 28, 2021.

3. Rules and Regulations

J. Indelicato provided an overview of staff recommendations for amendments to



the System's rules and recommendations Parts 5000.1 and 5004.5 (Appendix C, pp. 9-11)

A. Resolution on Rules and Regulations Section 5000.1

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

WHEREAS, members have had the option to utilize the United States Postal Service (USPS) registered or certified mail to file a form/application or send moneys to the System and this method allowed the item to be deemed received on the day mailed versus the day received by the System ("same day filing"), and

WHEREAS, Chapter 329 of the Laws of 2021 amended Education Law §508, subdivision 19, and expanded the list of mailing methods to be accepted for same day filing provided such postal mail service method has a tracking service confirming and producing in writing the date of the mailing, and

WHEREAS, the proposed amendments to section 5000.1 of the Rules and Regulations be amended to reflect the implementation of Chapter 329 of the Laws of 2021, be it therefore

RESOLVED, That, effective immediately, the existing section 5000.1 of the Rules and Regulations of the New York State Teachers' Retirement System be amended, a copy of which is annexed hereto and made a part thereof as Appendix D, pp. 12-13.

B. Resolution on Rules and Regulations Section 5004.5

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

WHEREAS, the rate of interest on member loans for members in Tiers 3 through 6 is defined to be one percent less than the valuation rate of interest as reflected in section 5004.5 of the Rules and Regulations, and

WHEREAS, the valuation rate of interest was lowered by the Retirement Board upon the recommendation of the Actuary at the Board Meeting on October 28, 2021, be it therefore

RESOLVED, That, effective July 1, 2022, the existing section 5004.5 of the Rules and Regulations of the New York State Teachers' Retirement System be amended, a copy of which is annexed hereto and made a part thereof as Appendix E, pp. 14-15.

4. Business Continuity Plan Update and Disaster Response

Upon motion of P. Harrington, seconded by C Morin and unanimously carried, the Committee went into Executive Session at 11:21 a.m. to hear Business Continuity Plan and Disaster Response updates, given by R. Kannan and V. Madala.

The Committee came out of Executive Session at 11:30 a.m.

a. Resolution on Business Continuity Plan

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

RESOLVED, That the Business Continuity Plan, as presented to the Retirement Board reflecting changes through January 2022 is approved and accepted.

b. Resolution on Disaster Response

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

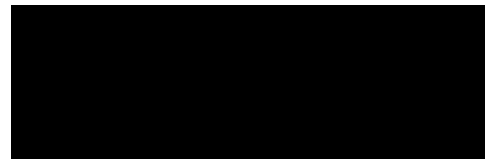
RESOLVED, That the Disaster Response Plan, as presented to the Retirement Board reflecting changes through January 2022 is approved and accepted.

5. Finance Reports

The Committee members reviewed the Statement of Fiduciary Net Position, Statement of Changes in Fiduciary Net Position and Schedule of Administrative Expenses, a copy of which is annexed hereto and made a part hereof as Appendix F, pp. 16-20.

With unanimous consent, the meeting adjourned at 11:40 a.m.

Respectfully submitted,

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

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Thomas K. Lee

New York State Teachers' Retirement System  
**Signatory Authorization Grid - Financial and Legal Documents**

7

Effective as of January 27, 2022

Department	Executive	Designees	
		Deputy / Managers / Counsel	Assistant Managers / Counsel
Administration	Miriam Dixon	Rebecca Kannan Jason Freeman	Shana Gainey
Fixed Income	Michael Federici	Aaron Vanderwiel	Joseph Wood (1)
Information Technology	Michael Gregoire	Vijay Madala Mark Gallagher Sarah Garrand	N/A
Internal Audit	Kenneth Kasper	N/A	Bruce Woolley Lei Zhang
Member Relations	Edward Rezny	Michael Contento Beth Dellea Erica Mortimore Shannon Bonesteel Heidi Brennan Heidi Travis	Colleen Laven Andy Whitney Cori Bichteman Timothy Mack
Office of the Actuary	Richard Young	Melody Prangle (1)	N/A
Office of the Chief Financial Officer	Noreen Jones	Margaret Andriola Christopher O'Grady	Christopher Brown David Robertson
Office of the General Counsel	Joseph Indelicato	Don Ampansiri Ben Lee Yiselle Ruoso	Janet Graham Adam Kinney
Private Equity	Gerald Yahoudy	Brad Woolworth Nicholas Chladek	N/A
Public Equities	Paul Cummins	David Tessitore Nathan Lee	Jennifer Wilcox
Real Estate	David Gillan	Kevin Maloney Michael Morrell	Andrew Bartell Jason Kearney Adrean Kreig
Risk Management	N/A	Matthew Albano	Matthew Tice

(1) New/promoted manager. Becomes eligible upon completion of new manager review period.

Changes from Prior Grid		
Department	Name	Comments
<b>Additions:</b>		
Fixed Income	Joseph Wood	Appointed to Assistant Manager of Fixed Income
<b>Deletions:</b>		
Public Equities	Frederick Herrmann	Separated from employment
Fixed Income	Michael Wolfe	Separated from employment
<b>Other:</b>		
Public Equities	Paul Cummins	Promoted to Managing Director of Public Equities
Fixed Income	Michael Federici	Promoted to Managing Director of Fixed Income
Risk Management	Matthew Albano	Promoted to Risk Officer
Public Equities	David Tessitore	Promoted to Manager of Trading
Private Equity	Nicholas Chladek	Promoted to Manager of Private Equity (International)
Office of the CFO	David Robertson	Added as a signatory

New York State Teachers' Retirement System  
**Signatory Authorization Grid - Disbursement Warrants**

Effective as of January 27, 2022

Signatory Group		Executive	Deputy / Managers / Counsel	Assistant Managers / Counsel	Other Professionals
A	All Types	Joseph Indelicato Richard Young	Don Ampansiri Ben Lee Yiselle Ruoso Melody Prangley (1) Matthew Albano	Janet Graham Adam Kinney Matthew Tice	N/A
Signatory Group		Executive	Deputy / Managers	Assistant Managers	Other Professionals
B	Real Estate	David Gillan	Kevin Maloney Michael Morrell	Andrew Bartell Jason Kearney Adrean Kreig	N/A
C	Fixed Income	Michael Federici	Aaron VanDerwiel	Joseph Wood (1)	James Bone Dawn Sherman Mark Wood Michael Wollner (2) Endurance Aku (2)
D	Public Equities	Paul Cummins	David Tessitore Nathan Lee	Jennifer Wilcox	N/A
E	Private Equity	Gerald Yahoudy	Brad Woolworth Nicholas Chladek	N/A	N/A
F	Finance	Noreen Jones	Margaret Andriola Christopher O'Grady	Tedd Johnson David Robertson Christopher Brown Matthew Tice	N/A
G	Employee Payroll	Miriam Dixon	Rebecca Kannan	Shana Gainey	N/A

(1) New/promoted manager. Becomes eligible upon completion of new manager review period.

(2) New/promoted staff. Becomes eligible upon completion of probationary review period.

**Changes from Prior Grid**

Group	Name	Comments
<b>Additions:</b>		
C	Joseph Wood	Appointed as Assistant Manager of Fixed Income
C	Endurance Aku	Appointed as an Investment Officer 1
<b>Deletions:</b>		
D	Frederick Herrmann	Separated from employment
C	Michael Wolfe	Separated from employment
G	Ryan Warren	Transferred to the Risk Management Department
<b>Other:</b>		
D	Paul Cummins	Promoted to Managing Director of Public Equities
C	Michael Federici	Promoted to Managing Director of Fixed Income
A	Matthew Albano	Promoted to Risk Officer
D	David Tessitore	Promoted to Manager of Trading
E	Nicholas Chladek	Promoted to Manager of Private Equity (International)

**Signatory Group Authority**

Type of Disbursement	Warrant Type	Approver	Authorizer	
		Any Amount	Any Amount	Under Threshold*
Real Estate	B	B Group	A Group	B Group (Exec)
Fixed Income	C	C Group	A Group	C Group (Exec)
Public Equities	D	D Group	A Group	D Group (Exec)
Private Equity	E	E Group	A Group	E Group (Exec)
Finance	F	F Group	A Group	F Group
Employee Payroll	G	G Group	A Group	G Group (Exec)

**\*The threshold for authorizing warrants is \$250,000****Signatories cannot sign as approver and authorizer on the same warrant**

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

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**TO:** Retirement Board

**FROM:** Joseph J. Indelicato, Jr.

**SUBJECT:** Amendments to the System's Rules and Regulations

**DATE:** January 19, 2022

**CC:** T. Lee, E. Rezny, R. Young

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Staff from Member Relations, Finance, Actuary and Legal reviewed the System's Rules and Regulations. Based on the summary of provisions below, staff requests Retirement Board approval of the following amendments to the System's rules and regulations Parts 5000 and 5004. A mark-up and clean copy of the proposed amendments accompany this memo for your consideration.

**Part 5000 – General Provisions**

The proposed regulation amends Section 5000.1, specifically paragraph (a), to reflect implementation of Chapter 329 of the Laws of 2021. Chapter 329 was a System program bill enacted into law on October 31, 2021 authorizing the acceptance of certain alternate methods of postal mail for the submittal of forms/applications to be sent and moneys to be deposited with the System.

Prior to Chapter 329, members had the option to utilize the United States Postal Service (USPS) registered or certified mail to file a form/application or send moneys to the System and this method allowed the item to be deemed received on the day mailed versus the day received by the System. We have come to know this as "same day filing".

Chapter 329 allows members to not only utilize USPS registered or certified mail for same day filing, but other methods of postal mail, provided such method has a tracking service confirming the date of such mailing. System staff has created a list of common methods and it is attached here for your review.

The proposed regulation makes the necessary changes to the regulation to reflect this update. The list of acceptable forms of tracked mail will be made available to the membership.

**Part 5004 – Loan Interest**

For purposes of implementing the valuation rate of interest adopted by the Retirement Board at its October 2021 meeting in accordance with paragraph b of subdivision 9 of Section 501 of the Education Law, staff recommends a revised section 5004.5 of the System Rules and Regulations which shall reflect a rate of interest on member loans for members in Tiers 3 through 6 at one percent less than the valuation rate of interest or 5.95 effective July 1, 2022.

Mail to be stamped with “For Purposes of C.329.L.2021 (vendor name)”:

**DHL EXPRESS:**

- DHL Express 9:00
- DHL Express 10:30
- DHL Express 12:00
- DHL Express Worldwide
- DHL Express Envelope
- DHL Import Express 10:30
- DHL Import Express 12:00
- DHL Import Express Worldwide

**FEDERAL EXPRESS (FedEx):**

- FedEx First Overnight
- FedEx Priority Overnight
- FedEx Standard Overnight
- FedEx 2 Day
- FedEx International Next Flight Out
- FedEx International Priority
- FedEx International First
- FedEx International Economy

**UNITED PARCEL SERVICE (UPS):**

- UPS Ground
- UPS Next Day Air Early A.M.
- UPS Next Day Air
- UPS Next Day Air Saver
- UPS 2<sup>nd</sup> Day Air
- UPS 2<sup>nd</sup> Day Air A.M.
- UPS Worldwide Express Plus
- UPS Worldwide Express

**UNITED STATES POSTAL SERVICE (USPS):**

- USPS Certified Mail
- USPS Registered Mail
- USPS Priority Mail
- USPS Priority Express
- USPS First Class Mail w/Delivery Confirmation
- USPS First Class Mail w/Certificate of Mailing  
\*Proof of mailing would be provided by the member by submitting their PS Form 3817 to the System which would be obtained by the USPS at the time of the mailing.

Section 5000.1 GENERAL PROVISIONS.

(a) All applications for membership, retirement, optional selections, loans, refunds, military service credit, prior service credit, transfer, and designation of beneficiary shall be made on appropriate forms to be furnished by the System and must be received at the System's office to be effective. Provided, however, whenever a statute requires that a document must be filed or moneys deposited with the System within a prescribed period of time or by a specified date in order for a member to be eligible for service credit or a benefit from the System, the document shall be deemed filed or the moneys deposited with the System on the day they are mailed either through (i) the United States Postal Service, provided the mailing is by registered or certified mail, or (ii) such other equivalent postal mail service specifically permitted by the System, provided a tracking service confirms and produces in writing a date of mailing.

Notwithstanding these provisions no such document shall be deemed filed or moneys deposited with the System on the mailing date unless actually received by the System as the result of such mailing.



Section 5000.1 GENERAL PROVISIONS.

(a) All applications for membership, retirement, optional selections, loans, refunds, military service credit, prior service credit, transfer, and designation of beneficiary shall be made on appropriate forms to be furnished by the System and must be received at the System's office to be effective. Provided, however, whenever a statute requires that a document must be filed or moneys deposited with the System within a prescribed period of time or by a specified date in order for a member to be eligible for service credit or a benefit from the System, the document shall be deemed filed or the moneys deposited with the System on the day they are mailed **either** through **(i)** the United States Postal Service, provided the mailing is by registered or certified mail, **or (ii) such other equivalent postal mail service specifically permitted by the System, provided a tracking service confirms and produces in writing a date of mailing.**

Notwithstanding these provisions no such document shall be deemed filed or moneys deposited with the System on the [~~day of~~] mailing **date** unless actually received by the System as [~~a~~] **the** result of such mailing.

Section 5004.5 INTEREST ON LOANS.

(b) For Tier 3 through 6 members, the rate of interest payable on loans shall be 1 percent less than regular interest pursuant to Education Law Section 501(9)(b); however, in no event shall the rate be less than set forth in Retirement and Social Security Law Sections 517(c) or 613(c). Whenever there is a change in the interest rate it shall be applicable to loans made or renegotiated after the date of such change in the interest rate. Effective July 1, 1991, for Tier 3 through 6 members, the rate of interest payable on loans shall be at the rate of 7 percent per annum. Effective July 1, 2016, for Tier 3 through 6 members, the rate of interest payable on loans shall be at the rate of 6.50 percent per annum. Effective July 1, 2018, for Tier 3 through 6 members, the rate of interest payable on loans shall be at the rate of 6.25 percent per annum. Effective July 1, 2020, for Tier 3 through 6 members, the rate of interest payable on loans shall be at the rate of 6.1 percent per annum. Effective July 1, 2022, for Tier 3 through 6 members, the rate of interest payable on loans shall be at the rate of 5.95 percent per annum.

Section 5004.5 INTEREST ON LOANS.

(b) For Tier 3 through 6 members, the rate of interest payable on loans shall be 1 percent less than regular interest pursuant to Education Law Section 501(9)(b); however, in no event shall the rate be less than set forth in Retirement and Social Security Law Sections 517(c) or 613(c). Whenever there is a change in the interest rate it shall be applicable to loans made or renegotiated after the date of such change in the interest rate. Effective July 1, 1991, for Tier 3 through 6 members, the rate of interest payable on loans shall be at the rate of 7 percent per annum. Effective July 1, 2016, for Tier 3 through 6 members, the rate of interest payable on loans shall be at the rate of 6.50 percent per annum. Effective July 1, 2018, for Tier 3 through 6 members, the rate of interest payable on loans shall be at the rate of 6.25 percent per annum. Effective July 1, 2020, for Tier 3 through 6 members, the rate of interest payable on loans shall be at the rate of 6.1 percent per annum. **Effective July 1, 2022, for Tier 3 through 6 members, the rate of interest payable on loans shall be at the rate of 5.95 percent per annum.**

NEW YORK STATE  
TEACHERS' RETIREMENT SYSTEM

MEMORANDUM

TO: T. Lee

FROM: Office of the CFO / Finance Department

DATE: January 26, 2022

SUBJECT: Retirement Board Package

Attached are the System's quarterly financial statements and related schedules for the quarters ended December 31, 2021 and 2020.

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. Schedule of Administrative Expenses (Unaudited)



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

17

December 31, 2021 and 2020

<b>Assets</b>	<b>2021</b>	<b>2020</b>
Investments at fair value:		
Domestic equity	\$ 53,013,278,193	\$ 47,811,423,648
International equity	24,026,403,060	23,960,568,395
Global equity	5,251,981,689	4,520,211,504
Real estate equity	16,373,564,605	12,635,508,111
Private equity	14,203,216,518	10,334,591,257
Domestic fixed income	19,971,378,201	17,533,866,926
High-yield bonds	1,029,530,150	788,346,564
Global bonds	3,274,182,648	2,972,583,774
Real estate debt	7,592,725,026	7,130,498,282
Private debt	1,239,530,588	863,439,583
Cash equivalents	5,406,493,587	5,125,192,594
Total investments	<u>151,382,284,265</u>	<u>133,676,230,638</u>
Receivables:		
Employer	845,156,726	826,786,619
Member	68,432,451	59,972,583
Investment income	259,690,372	240,493,533
Investment sales	105,809,830	119,323,043
Total receivables	<u>1,279,089,379</u>	<u>1,246,575,778</u>
Other assets:		
Securities lending collateral, invested	415,304,873	365,238,516
Member loans	235,807,636	251,699,553
Net investment in capital assets	21,946,413	24,859,709
Miscellaneous assets	85,980,968	19,842,576
Total other assets	<u>759,039,890</u>	<u>661,640,354</u>
Total assets	<u>153,420,413,534</u>	<u>135,584,446,770</u>
Deferred outflows of resources:		
Changes in net OPEB liability	10,903,816	7,517,798
Changes in net pension liability	21,766,822	17,742,531
Total deferred outflows of resources	<u>32,670,638</u>	<u>25,260,329</u>
<b>Liabilities</b>		
Securities lending collateral, due to borrowers	413,454,360	363,741,367
Investment purchases payable	379,341,703	194,478,316
Mortgage escrows and deposits, net of investments	9,201,820	4,136,563
Net OPEB liability	47,187,493	51,932,884
Other liabilities	141,018,173	161,613,886
Total liabilities	<u>990,203,549</u>	<u>775,903,016</u>
Deferred inflows of resources:		
Changes in net OPEB liability	4,276,117	6,811,423
Changes in net pension liability	32,275,181	645,618
Total deferred inflows of resources	<u>36,551,298</u>	<u>7,457,041</u>
<b>Net position restricted for pensions</b>	<b><u>\$152,426,329,325</u></b>	<b><u>\$134,826,347,042</u></b>



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

18

December 31, 2021 and 2020

<b>Additions:</b>	<b><u>2021</u></b>	<b><u>2020</u></b>
Investment income:		
Net appreciation in fair value of investments	\$ 6,228,243,320	\$ 16,271,296,508
Interest	388,163,282	386,796,632
Dividends	663,964,028	616,741,682
Real estate, net operating income	258,198,123	188,293,707
Securities lending, gross earnings	1,725,431	1,962,973
Other (net)	7,242,098	12,233,613
	<u>7,547,536,282</u>	<u>17,477,325,115</u>
Less: Investment expenses	197,317,397	160,690,856
Securities lending:		
Broker rebates	(586,468)	(932,803)
Management fees	306,328	392,952
(Appreciation) depreciation on collateral	(18,727)	1,197,592
Net investment income	<u>7,350,517,752</u>	<u>17,315,976,518</u>
Contributions:		
Employer	876,296,426	853,411,824
Member	80,620,267	71,091,286
Transfers	2,829,988	6,118,070
Total contributions	<u>959,746,681</u>	<u>930,621,180</u>
Net additions	<u>8,310,264,433</u>	<u>18,246,597,698</u>
<b>Deductions:</b>		
Retirement benefit payments, periodic	3,951,745,267	3,832,168,830
Beneficiary payments	36,692,854	26,198,549
Return of contributions	9,813,706	8,925,307
Administrative expenses	34,140,644	32,463,349
Total deductions	<u>4,032,392,471</u>	<u>3,899,756,035</u>
<b>Net increase in net position</b>	4,277,871,962	14,346,841,663
<b>Net position restricted for pensions, beginning of year</b>	<u>148,148,457,363</u>	<u>120,479,505,379</u>
<b>Net position restricted for pensions, end of period</b>	<u><b>\$152,426,329,325</b></u>	<u><b>\$134,826,347,042</b></u>



NEW YORK STATE TEACHERS' RETIREMENT SYSTEM  
 Schedule of Administrative Expenses (Unaudited)  
Compared to Budget Appropriations for 2021-2022

	Budget Appropriations 2021-2022	Expenses and Encumbrances YTD 12/31/2021	Remain Balance 12/31/2021	Actual Expenses YTD 12/31/2021
<b>Salaries:</b>				
Salaries	\$ 37,280,024	\$ 17,227,884	\$ 20,052,140	\$ 17,227,884
Overtime salaries	38,000	11,702	26,298	11,702
Social Security	2,635,917	1,136,514	1,499,403	1,136,514
Subtotal Salaries	39,953,941	18,376,100	21,577,841	18,376,100
<b>Benefits</b>				
Employees retirement	5,002,923	2,778,776	2,224,147	2,778,776
Dental insurance	290,627	131,149	159,478	131,149
Health insurance	6,604,475	3,126,004	3,478,471	3,123,786
OPEB contribution	6,000,000	3,000,000	3,000,000	3,000,000
Convalescence	60,000	28,500	31,500	28,500
Subtotal Benefits	17,958,025	9,064,429	8,893,596	9,062,211
Total salaries and benefits	57,911,966	27,440,529	30,471,437	27,438,311
<b>Building occupancy:</b>				
Building security and vending	435,000	347,852	87,148	122,304
Building supplies and expenses	128,500	39,388	89,112	39,388
Heat, light and power	367,500	206,992	160,508	206,992
Insurance	400,000	(6,729)	406,729	(6,729)
Municipal assessments	227,500	53,717	173,783	53,492
Office supplies and expenses	187,450	73,484	113,966	25,000
Storage	56,000	59,746	(3,746)	22,729
Telephone	555,000	267,793	287,207	206,513
Total building occupancy	2,356,950	1,042,243	1,314,707	669,689
<b>Computer:</b>				
IT Hardware Purchases	600,000	339,821	260,179	260,146
IT Software Purchases	675,000	139,918	535,082	121,868
Software and support services	4,057,500	2,569,536	1,487,964	1,693,718
Computer supplies	20,000	—	20,000	—
Total computer	5,352,500	3,049,275	2,303,225	2,075,732



NEW YORK STATE TEACHERS' RETIREMENT SYSTEM  
 Schedule of Administrative Expenses (Unaudited) (Continued)

Compared to Budget Appropriations for 2021-2022

	Budget Appropriations 2021-2022	Expenses and Encumbrances YTD 12/31/2021	Remaining Balance 12/31/2021	Actual Expenses YTD 12/31/2021
<b>Personnel and meeting:</b>				
Board - meetings, travel and education	100,000	30,752	69,248	30,752
Delegates meeting	65,000	1,304	63,696	1,304
Dues	310,011	154,393	155,618	154,393
Library	42,364	21,043	21,321	20,359
Overtime meals	695	383	312	383
Personnel expenses	75,000	87,583	(12,583)	78,942
Pre-retirement seminars	90,000	(3,584)	93,584	(3,584)
Staff schooling	521,385	38,794	482,591	38,794
Travel and automobile expense	155,900	10,908	144,992	10,908
Tuition assistance	50,000	14,737	35,263	14,737
Welfare fund	8,750	1,505	7,245	505
<b>Total personnel and meeting</b>	<b>1,419,105</b>	<b>357,818</b>	<b>1,061,287</b>	<b>347,493</b>
<b>Professional and governmental services:</b>				
Auditors - financial	420,000	418,388	1,612	418,076
Auditors - insurance department	160,000	—	160,000	—
Disability medical examinations	80,000	51,113	28,887	51,113
Postage and cartage	785,150	514,629	270,521	514,629
Professional fees and services	1,465,600	1,213,151	252,449	339,674
Publications	165,000	88,347	76,653	84,224
Statutory custodian charges	133,000	68,750	64,250	68,750
<b>Total professional and governmental services</b>	<b>3,208,750</b>	<b>2,354,378</b>	<b>854,372</b>	<b>1,476,466</b>
<b>Capital improvement program:</b>				
Depreciation - building and improvements	2,007,872	975,204	1,032,668	975,204
Depreciation - equipment	157,167	73,084	84,083	73,084
Amort./depreciation - computer micro	1,284,577	553,970	730,607	553,970
Building improvement expense	125,000	18,470	106,530	2,991
Building maintenance contracts	713,000	560,761	152,239	412,422
Equipment	121,000	166	120,834	166
Equipment maintenance	74,838	60,879	13,959	60,879
Computer equipment maintenance	387,788	43,860	343,928	43,860
Fleet maintenance	30,000	10,377	19,623	10,377
Capital contingency	348,756	—	348,756	—
<b>Total capital improvement program</b>	<b>5,249,998</b>	<b>2,296,771</b>	<b>2,953,227</b>	<b>2,132,953</b>
<b>Total Administrative Expenses</b>	<b>\$ 75,499,269</b>	<b>\$ 36,541,014</b>	<b>\$ 38,958,255</b>	<b>\$ 34,140,644</b>





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, via WebEx, on January 26, 2022. The meeting was called to order by Christopher Morin, Chair, at 11:40 a.m.

The following individuals were in attendance via WebEx:

Committee Members: Juliet Benaquisto, Christopher Morin, Oliver Robinson  
Thomas Lee, Joseph Indelicato Jr.

Board Members: Elizabeth Chetney, Phyllis Harrington, Eric Iberger, David Keefe, Jennifer Longtin, Ruth Mahoney, Nicholas Smirensky

NYSTRS Staff: Rebecca Kanaan, Joseph Indelicato Jr.

Upon motion of J. Benaquisto, seconded by O. Robinson and unanimously carried, the minutes from the October 27, 2021 meeting were approved.

The Committee went into Executive Session with a motion made by J. Benaquisto, seconded by O. Robinson and unanimously carried at 11:45 a.m. to hear a report on Annual Disclosure Statements.

The meeting came out of Executive Session and, there being no further business, adjourned at 11:56 a.m.

Respectfully submitted,

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

Thomas K. Lee