

NORTH CAROLINA  
DEPARTMENT OF STATE TREASURER



BRADFORD B. BRINER  
STATE TREASURER OF NORTH CAROLINA

## ALM Study

December 17, 2025



# Board Meeting Topics



Projections for  
candidate portfolios  
and peers



Risk positioning



Strategic Guidelines



Benchmarking and risk  
budget

## Primary Goals

- Illustrate key trade-offs (opportunity and risks)
- Confirmation of the Board's view on appropriate absolute risk operating range, expressed in equity and debt allocation
- Confirmation of approach to "Strategic Guidelines" and benchmarking
- Set stage for IPS to be approved at February 25, 2026 meeting

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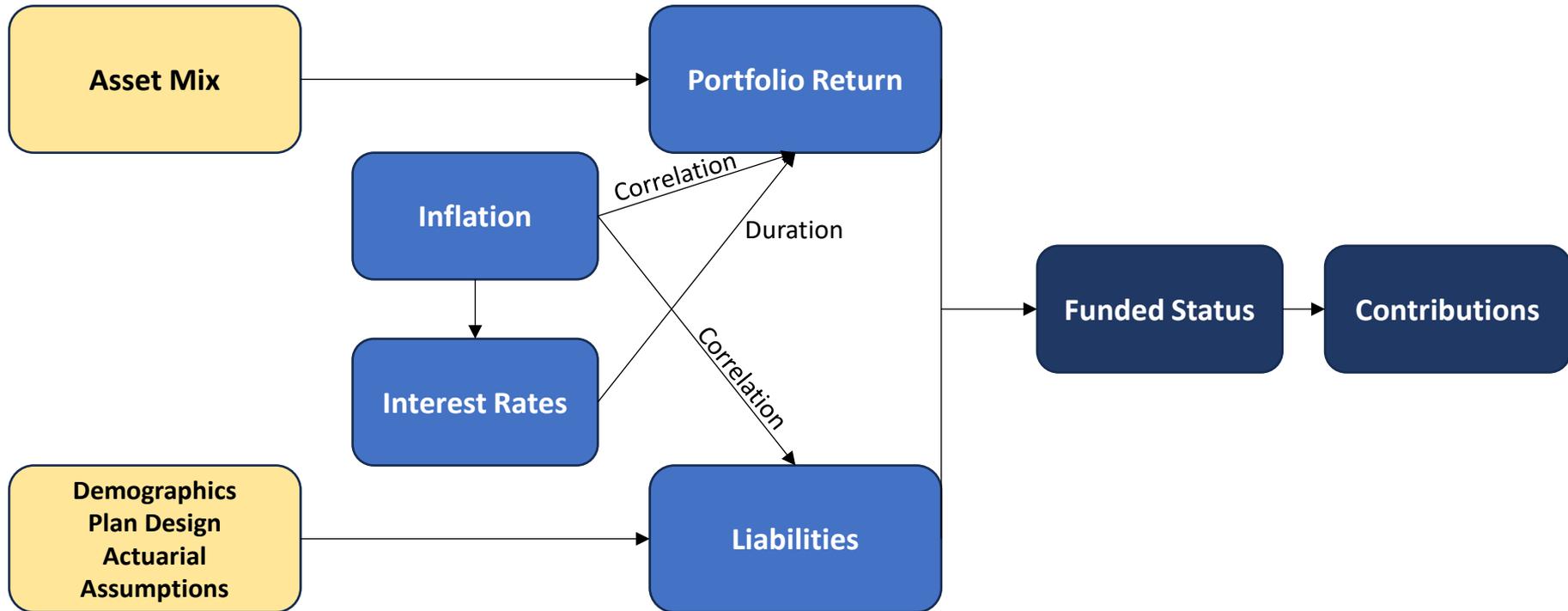


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# Part 1: Projections and Risk Positioning



# Mechanical Relationships in an ALM Study



- The expected investment return is used as the discount rate for valuations (“actuarial assumed rate of return”)
- After the strategic asset allocation is set, then the actuarial assumed rate of return is determined



# Focus of Projections

## Candidate Portfolios & Peers

- Current SAA
- Public Pension Fund Peers
- Large E&F Universe
- MP1 (Similar volatility as Public Peers)
- MP2 (~6.5% expected return with lower risk)

## Comparisons

- ❖ Reference Portfolios (Blends of ACWI Index and US Treasuries >5 Years Maturity)
- ❖ Optimized Portfolios (Constraints reflect NC statutory limits, peer allocations, and sub-asset class structures)



# Absolute Risk Operating Range

- At least biennially, the Board approves an absolute risk operating range expressed in equity and debt allocation equivalency terms.
- The absolute risk operating range must meet **all of the following criteria**:
  - The range is deemed appropriate in seeking to maximize long-term returns.
  - The risk is not considered undue relative to other similarly situated U.S. public pension funds.
  - The Board takes into consideration all of the factors affecting the funding of the Retirement Systems and each of the Retirement Systems' ability to meet its financial obligations.
- The Board uses the absolute risk operating range to recommend investment return assumptions to TSERS Board, LGERS Board, and Gallagher



# Screens for “Similarly Situated” Public Peers

	TSERS	Minimum	Average	Maximum
<b>AUM (B)</b>	\$89	\$51	\$112	\$230
<b>Active / Total Beneficiaries</b>	1.19	0.94	1.38	2.15
<b>Funded Ratio %</b>	89%	78%	87%	100%
<b>Net Benefit Paid / Total Assets %</b>	1.5%	0.7%	2.6%	4.6%
<b>Historical Return Volatility</b>	7%	7%	9%	10%
<b>Historical Funded Ratio Volatility</b>	3%	0%	4%	12%



# Public Peers

Plan Name	Assets	Funded Ratio
NY State & Local ERS	230,040,928	95.6%
Texas Teachers	212,520,448	77.8%
Florida RS	191,571,248	80.7%
New York State Teachers	137,814,208	98.6%
Wisconsin RS	132,132,800	100.0%
Ohio PERS	104,040,952	82.9%
Virginia RS	102,879,008	82.6%
Georgia Teachers	99,312,536	78.2%
University of California	96,053,528	82.5%
Ohio Teachers	91,313,224	82.8%
North Carolina Teachers and State Employees	88,619,072	88.8%
New York City ERS	80,653,520	82.5%
LA County ERS	76,664,000	80.9%
New York City Teachers	69,597,752	85.5%
Washington PERS Plan 2/3	58,592,000	97.3%
Illinois Municipal	55,198,764	95.8%
Missouri Teachers	51,430,824	87.2%



# Endowments and Foundations Universe

Endowments and Foundations  
Asset Allocation based on 2024  
NACUBO Survey Results

E&F Universe:

- Over \$5 Billion AUM
- 29 Participants

Endowment	Assets
Harvard University	56.9
Yale University	44.2
Stanford University	40.8
Texas Permanent University Fund	39.5
Princeton University	34.1
University of California System	29.5
Massachusetts Institute of Technology	27.4
University of Pennsylvania	24.8
University of Notre Dame	22.6
University of Michigan	19.2
Columbia University	15.9
University of Virginia	15.5
Northwestern University	14.3
Washington University in St. Louis	13.2
John Hopkins University	13.1
Duke University	12.3
Cornell University	11.8
University of North Carolina	11.1

(in billions)



## Key Assumptions and Constraints

	Exp Rtn (Arith)	Vol	Illiquid	Min	Max
Global Public Equity	7.8%	17.7%	0.0%	20.0%	80.0%
Private Equity	10.0%	21.7%	100.0%	0.0%	30.0%
Private Equity Buy-Out US	9.1%	25.7%	100.0%	30.0%	85.0%
Venture Capital US	12.4%	40.0%	100.0%	0.0%	35.0%
Distressed Debt (PE)	9.3%	27.6%	100.0%	0.0%	10.0%
Real Estate	8.3%	20.9%		0.0%	20.0%
Value Added Real Estate US	9.0%	21.7%	100.0%	20.0%	40.0%
Oppor. Real Estate US	10.6%	25.0%	100.0%	30.0%	75.0%
Core Real Estate US	7.3%	19.1%	80.0%	0.0%	50.0%
Credits (Non-IG)	6.4%	14.1%		0.0%	20.0%
Performing Corporate	5.5%	10.0%	TBD	0.0%	100.0%
Distressed Debt	9.3%	27.6%	100.0%	0.0%	35.0%
Asset Based Financing	7.2%	14.2%	50.0%	0.0%	75.0%



## Key Assumptions and Constraints

	Exp Rtn (Arith)	Vol	Illiquid	Min	Max
<b>IG Fixed Income &amp; Cash</b>	<b>5.2%</b>	<b>7.0%</b>	<b>0.0%</b>	<b>20.0%</b>	<b>40.0%</b>
US Treasuries 5yr+	5.3%	8.4%	0.0%	10.0%	50.0%
IG Corporate Credits US 5yr+	5.9%	10.9%	0.0%	10.0%	50.0%
Mortgages US	4.9%	6.0%	0.0%	10.0%	50.0%
IG Non Core Cash	3.6%	1.7%	0.0%	0.0%	10.0%
Bloomberg US Aggregate	5.0%	5.9%	0.0%	0.0%	100.0%
<b>Pension Cash</b>	<b>3.6%</b>	<b>1.7%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>10.0%</b>
<b>Real Assets</b>	<b>7.1%</b>	<b>10.1%</b>		<b>0.0%</b>	<b>20.0%</b>
US TIPS	4.3%	3.6%	0.0%	0.0%	10.0%
Private Natural Resources	7.8%	14.5%	TBD	0.0%	75.0%
Private Infrastructure	8.4%	19.5%	100.0%	0.0%	75.0%
<b>Multi-Strategy</b>	<b>4.6%</b>	<b>8.4%</b>	<b>50.0%</b>	<b>0.0%</b>	<b>15.0%</b>

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## Part 2: Strategic Guidelines, Benchmarking and Risk Budgeting



# Detailed Model Portfolios and Peer Allocations

	SAA	MP_1	MP_2	Peers NCRS	Peers E&F
<b>Global Public Equity</b>	<b>42.0%</b>	<b>32.0%</b>	<b>30.0%</b>	<b>43.0%</b>	<b>27.9%</b>
<b>Private Equity</b>	<b>6.0%</b>	<b>12.0%</b>	<b>7.0%</b>	<b>13.0%</b>	<b>33.6%</b>
Private Equity Buy-Out US	2.7%	8.0%	5.0%	5.9%	19.5%
Venture Capital US	1.5%	4.0%	2.0%	3.2%	14.1%
Distressed Debt (PE)	1.8%			3.9%	
<b>Real Estate</b>	<b>8.1%</b>	<b>7.0%</b>	<b>7.0%</b>	<b>9.0%</b>	<b>5.7%</b>
Value Added Real Estate US	1.1%	2.0%	1.0%	1.2%	
Oppor. Real Estate US	2.0%	5.0%	3.0%	2.2%	5.7%
Core Real Estate US	5.0%	0.0%	3.0%	5.6%	
<b>Credit (Non-IG)</b>	<b>7.1%</b>	<b>9.0%</b>	<b>9.0%</b>	<b>7.5%</b>	<b>1.2%</b>
Performing Corporate	5.3%	3.0%	3.0%	5.6%	1.2%
Distressed Debt	1.8%	3.0%	3.0%	1.9%	
Asset Based Financing	0.0%	3.0%	3.0%	0.0%	



# Detailed Model Portfolios and Peer Allocations

	SAA	MP_1	MP_2	Peers NCRS	Peers E&F
<b>IG Fixed Income &amp; Cash</b>	<b>28.0%</b>	<b>25.0%</b>	<b>30.0%</b>	<b>19.0%</b>	<b>4.2%</b>
US Treasuries 5yr+	7.6%	8.3%	10.0%	5.1%	
IG Corporate Credits US 5yr+	8.8%	8.3%	9.0%	6.0%	4.2%
Mortgages US	8.8%	8.3%	10.0%	6.0%	
IG Non-Core Cash	2.8%		1.0%	1.9%	
<b>Pension Cash</b>	<b>1.0%</b>	<b>1.0%</b>	<b>1.0%</b>	<b>1.0%</b>	<b>2.2%</b>
<b>Real Assets</b>	<b>6.0%</b>	<b>11.0%</b>	<b>9.0%</b>	<b>5.5%</b>	<b>6.9%</b>
US TIPS	1.5%			1.4%	
Private Natural Resources	3.0%	5.5%	3.0%	2.8%	3.2%
Private Infrastructure	1.5%	7.0%	6.0%	1.4%	3.7%
<b>Multi-Strategy</b>	<b>2.0%</b>	<b>3.0%</b>	<b>7.0%</b>	<b>2.0%</b>	<b>18.3%</b>
<b>Illiquid Allocations</b>	<b>21.5%</b>	<b>37.0%</b>	<b>30.4%</b>	<b>29.0%</b>	<b>54.2%</b>



# SAA Targets and Allowable Ranges (MP1 Example)

Categories	Minimum	Targets	Maximum
<b>Equity</b>	<b>55%</b>	<b>62%</b>	<b>75%</b>
<i>Corporate Equity</i>	<i>23%</i>	<i>44%</i>	<i>66%</i>
<i>Real Asset Equity</i>	<i>6%</i>	<i>18%</i>	<i>28%</i>
<b>Debt</b>	<b>25%</b>	<b>35%</b>	<b>45%</b>
<i>Investment Grade</i>	<i>15%</i>	<i>25%</i>	<i>37%</i>
<i>Credit</i>	<i>3%</i>	<i>9%</i>	<i>14%</i>
<i>Cash</i>	<i>0%</i>	<i>1%</i>	<i>5%</i>
<b>Multi-Strategy</b>	<b>0%</b>	<b>3%</b>	<b>10%</b>
<b>Illiquidity</b>	<b>5%</b>	<b>--</b>	<b>40%</b>



## Expanded Equity Targets and Allowable Ranges (MP1 Example)

Categories	Minimum	Targets	Maximum
<b>Equity</b>	<b>55%</b>	<b>62%</b>	<b>75%</b>
<i>Corporate Equity</i>	23%	44%	66%
<i>Public Equity</i>	20%		48%
<i>Private Equity</i>	3%		18%
<b>Real Asset Equity</b>	6%	18%	28%
<i>Real Estate</i>	3%		10%
<i>Infrastructure and Natural Resources</i>	3%		18%



# Benchmarks and Risk Budget

## 1. Benchmarks

- Policy Benchmark=65%/35% Reference Portfolio
- Actuarial rate of return
- Hybrid Implementation Benchmark
  - Fixed Weights at Equity and Fixed Income level
  - Transitional Dynamic Weights at lower levels

## 2. Risk budget (Key Risk Indicators)

- Excess Returns versus Benchmarks, Volatility, Drawdown Risk and Sharpe Ratio
- Liquidity
- Funded Ratio and Funded Ratio CVAR
- Tracking Error, Information Ratio, and Relative Sharpe Ratio