

Investment Committee
Friday, August 8, 2025, 9:00 a.m.

Virtual Only

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AGENDA

- I. CALL TO ORDER AND ACCEPTANCE OF AGENDA – *(Committee Action)***
- II. ACCEPTANCE OF MINUTES (July 11, 2025) – *(Committee Action)***
- III. INTRODUCTION – *(Information Only)***
 - A. Mr. Van Orman – *Mr. Anderson*
- IV. INTERNAL MANAGEMENT (20 minutes) – *(Information Only)***
 - A. Trade Approvals and Escalations Procedures – *Mr. Anderson and Mr. Barakat, Weaver*
- V. STRATEGY REVIEW (90 minutes) – *(Committee Action)***
 - A. Asset Allocation – *Mr. Nankof and Mr. Goldthorpe, NEPC*
 - B. Public Markets – *Mr. Cox, Mr. Posch*
- VI. MANAGER UPDATE (5 minutes) – *(Information Only)***
 - A. Private Markets – *Mr. Collins, Mr. Zietlow*
- VII. QUARTERLY REPORTS (5 minutes) – *(Information Only)***
 - A. Contracts – *Mr. Anderson*
- VIII. DISCUSSION**
- IX. ADJOURNMENT**

**STATE INVESTMENT BOARD
INVESTMENT COMMITTEE
MEETING MINUTES OF THE
JULY 11, 2025, MEETING**

MEMBERS PRESENT: Thomas Beadle, State Treasurer, Chair
Joseph Heringer, Trust Lands Commissioner, Vice Chair
Scott Anderson, Chief Investment Officer
Eric Chin, Deputy Chief Investment Officer
Pete Jahner, External Representative
Dr. Prodosh Simlai, External Representative

STAFF PRESENT: Jin Xi Chen, Investment Intern
Jac Collins, Senior Investment Analyst
Cory Cox, Investment Analyst
Derek Dukart, Senior Investment Analyst
Jennifer Ferderer, Fiscal Investment Admin
Chirag Gandhi, Portfolio Manager
Shiv Khare, Investment Intern
Robbie Morey, Investment Accountant
George Moss, Portfolio Manager
Sarah Mudder, Communications/Outreach Director
Matt Posch, Portfolio Manager
Emmalee Riegler, Procurement & Records Coordinator
Chad Roberts, Deputy Executive Director/Chief Retirement Officer
Jodi Smith, Executive Director
Nitin Vaidya, Chief Risk Officer
Alexander Weissman, Investment Analyst
Lance Zietlow, Portfolio Manager

GUESTS: Marc Gesell, Verus
Eileen Neill, Verus
Scott Whalen, Verus
Members of the Public

CALL TO ORDER

Treasurer Beadle called the State Investment Board (SIB) Investment Committee (IC) meeting to order at 9:03 a.m. on Friday, July 11, 2025. The meeting was held virtually.

The following members were present representing a quorum: Mr. Anderson, Treasurer Beadle, Mr. Chin, Commissioner Heringer, Mr. Jahner, and Dr. Simlai

AGENDA

The agenda was considered for the July 11, 2025, meeting.

IT WAS MOVED BY DR. SIMLAI AND SECONDED BY COMMISSIONER HERINGER AND CARRIED BY A VOICE VOTE TO APPROVE THE AGENDA FOR THE JULY 11, 2025, MEETING AS DISTRIBUTED.

AYES: MR. ANDERSON, MR. CHIN, COMMISSIONER HERINGER, MR. JAHNER, DR. SIMLAI, AND TREASURER BEADLE

NAYS: NONE

MOTION CARRIED

MINUTES

The minutes were considered for the June 13, 2025, meeting.

IT WAS MOVED BY MR. JAHNER AND SECONDED BY MR. CHIN AND CARRIED BY A VOICE VOTE TO APPROVE THE MINUTES FOR THE JUNE 13, 2025, MEETING AS DISTRIBUTED.

AYES: MR. ANDERSON, MR. CHIN, COMMISSIONER HERINGER, MR. JAHNER, DR. SIMLAI, AND TREASURER BEADLE

NAYS: NONE

MOTION CARRIED

FEE STUDY

Ms. Neill from Verus presented the Fee Study and noted that the investment management fees paid by the NDSIB were found to be reasonable and generally lower than comparable fees available in the market.

IT WAS MOVED BY MR. CHIN AND SECONDED BY DR. SIMLAI AND CARRIED BY A ROLL CALL VOTE TO ENTER INTO EXECUTIVE SESSION PURSUANT TO N.D.C.C. 44-04-18.4(2)(B) AS FINANCIAL INFORMATION THAT HAS NOT BEEN PREVIOUSLY PUBLICLY DISCLOSED AND THAT IF THE INFORMATION WERE TO BE DISCLOSED WOULD IMPAIR THE PUBLIC ENTITY'S FUTURE ABILITY TO OBTAIN NECESSARY INFORMATION OR WOULD CAUSE SUBSTANTIAL COMPETITIVE INJURY TO THE PERSON FROM WHICH THE INFORMATION WAS OBTAINED.

AYES: DR. SIMLAI, MR. CHIN, COMMISSIONER HERINGER, MR. JAHNER, MR. ANDERSON, AND TREASURER BEADLE

NAYS: NONE

MOTION CARRIED

The executive session began at 9:16 a.m. and ended at 9:48 a.m. The session was attended by Committee members, Mr. Gesell, Ms. Neill, and Mr. Whalen from Verus, and Ms. Chen, Mr. Collins, Mr. Cox, Mr. Dukart, Ms. Ferderer, Mr. Gandhi, Mr. Khare, Mr. Morey, Mr. Moss, Ms. Mudder, Mr. Posch, Ms. Smith, Mr. Vaidya, Mr. Weissman, and Mr. Zietlow from the Retirement and Investment Office (RIO).

MANAGER RECOMMENDATION

IT WAS MOVED BY MR. ANDERSON AND SECONDED BY DR. SIMLAI AND CARRIED BY A ROLL CALL VOTE TO ENTER INTO EXECUTIVE SESSION PURSUANT TO N.D.C.C. 44-04-19.2, 44-04-18.4 (2)(A) AND N.D.C.C. 44-04-18.4(2)(D) TO REVIEW AND DISCUSS CONFIDENTIAL COMMERCIAL INFORMATION AND TRADE SECRETS.

AYES: COMMISSIONER HERINGER, MR. ANDERSON, DR. SIMLAI, MR. CHIN, MR. JAHNER, AND TREASURER BEADLE

NAYS: NONE

MOTION CARRIED

The executive session began at 9:53 a.m. and ended at 10:33 a.m. The session was attended by Committee members, Ms. Chen, Mr. Collins, Mr. Cox, Mr. Dukart, Ms. Ferderer, Mr. Gandhi, Mr. Khare, Mr. Morey, Mr. Moss, Ms. Mudder, Mr. Posch, Ms. Smith, Mr. Vaidya, Mr. Weissman, and Mr. Zietlow.

IT WAS MOVED BY COMMISSIONER HERINGER AND SECONDED BY MR. JAHNER AND CARRIED BY A ROLL CALL VOTE TO APPROVE THE STAFF RECOMMENDATION TO HIRE PRIVATE MARKET MANAGER, PENDING LEGAL REVIEW AND DIRECT THE STAFF REPORT BACK A FUTURE COMMITTEE MEETING.

AYES: MR. CHIN, COMMISSIONER HERINGER, MR. JAHNER, MR. ANDERSON, DR. SIMLAI, AND TREASURER BEADLE

NAYS: NONE

MOTION CARRIED

The Committee recessed at 10:36 a.m. and reconvened at 10:44 a.m.

STRATEGY REVIEW

Mr. Zietlow delivered an update on private markets, covering several key areas: private equity investments and exits, global fundraising trends, investment strategies (including direct investments with general partners), overall investment activity, and allocations related to policy targets. He also reviewed private equity allocations by geography and sector, historical commitment and cash flow data for both the pension pool and the legacy fund, as well as performance metrics for each fund.

Mr. Moss and Mr. Gandhi provided an update on the internal investment program, specifically the cash overlay performance and fee savings.

INVESTMENT POLICY STATEMENT UPDATE

Mr. Chin provided the updated investment policy statements for approval for two client funds: Fire and Tornado and State Bonding. The IC recommends the approval of the policy statements by the State Investment Board.

IT WAS MOVED BY MR. ANDERSON AND SECONDED BY COMMISSIONER HERINGER AND CARRIED BY A ROLL CALL VOTE TO APPROVE THE INVESTMENT POLICY STATEMENTS AS PRESENTED AND AUTHORIZE TO PROCEED WITH EXECUTION.

AYES: COMISSIONER HERINGER, DR. SIMLAI, MR. ANDERSON, MR. JAHNER, MR. CHIN, AND TREASURER BEADLE

NAYS: NONE

MOTION CARRIED

DISCUSSION

Ms. Smith provided an update on the posting of the financial and performance reports as well as a staffing update for the operations/fiscal team, noting the senior investment operations manager position has closed, and the deputy CFO and accountant positions close later in the month.

ADJOURNMENT

With no further business to come before the committee, Treasurer Beadle adjourned the meeting at 11:43 a.m.

Prepared by:

Jennifer Ferderer, Assistant to the Board

Trade Approvals and Escalations Procedures – Compliance

Purpose

This document outlines a guided framework for decision-making for managing compliance alerts and escalations within the order management and compliance systems used by the North Dakota Retirement Investment Office (NDRIO). These systems include Aladdin, used for internal trading activities and compliance monitoring, and RADAR, a post-trade compliance monitoring system maintained by Northern Trust acting as custodian. This procedure serves as a roadmap to the roles and responsibilities of the Risk (e.g. Quant), Investments, Operations, and Investment Compliance teams in managing alerts, overrides, and rule exceptions.

Scope

This procedure applies to individuals involved in monitoring, reviewing, and resolving trade alerts and compliance-related issues within Aladdin and RADAR. This includes, but is not limited to, members of Investment Compliance, Portfolio Management, Risk, and Operations teams, as well as other stakeholders such as custodians and system administrators.

1. Aladdin Alert Types and Definitions

The following are some of the primary types of alerts and warnings that may appear in Aladdin:

- **Limit Warnings**
Soft thresholds approaching hard limits. These do not block trades and typically require no immediate action.
- **Informational Warnings**
Indicated by a yellow caution icon. These signal a soft threshold breach and may warrant review but not necessarily action.
- **Violations**
Breaches of hard thresholds or internal limits that halt trades and require a compliance override to proceed. These are typically marked in the system with a red stop sign icon to indicate that immediate attention and action is required from Portfolio Managers or the Compliance team.
- **OK Violations**
Displayed with a white checkbox. These indicate previously approved violations and allow the trade to proceed.
- **Improved Status Violations**
If a trade improves the status of an already violated situation, it will pass regardless of whether the violation remains.

2. Intraday Compliance Alerts - Internal Trading (Aladdin)

This process applies to hard stop violations in Aladdin during intraday trading that block trades and require compliance team overrides.

Escalation Steps

1. Initial Review

The Compliance team reviews the violation details and the Portfolio Manager's explanation

for the breach. This explanation may be noted directly in the system (e.g., Aladdin) or communicated through other channels such as Microsoft Teams, phone, or email.

2. Clarification Request

If the explanation is unclear or insufficient, the Compliance team contacts the Portfolio Manager for additional context or justification.

3. Override Evaluation and Escalation

The Compliance team assesses whether the violation can be overridden based on internal policies, regulatory requirements, and risk considerations. In cases of material violations or disagreements between Compliance and the Portfolio Manager, the issue is escalated to the Quant Risk team, Chief Investment Officer, or Deputy Chief Investment Officer for further review and input. If the violation is related to any portfolio actions that are directed by the team responsible for third party external fund management, then the issue will be escalated to the Chief Investment Officer.

General Escalation Guidelines (Subject to Exceptions)		
	Non-Material	Material
Not Caused by PM Action	Override & Inform Quant Risk Team	Escalate to Quant Risk Team
Caused by PM Action	Escalate to Quant Risk Team	Quant Risk Team to escalate to Chief Investment Officer

4. Decision and Documentation

Once a decision is made, based on the assessment and direction provided by the Risk team and the Chief Investment Officer, the override or rejection is entered into the system. The rationale, participants involved, and any conditions or follow-up actions are documented in the appropriate log or system (e.g., Aladdin).

3. Internal Overnight Alerts - Internal Trading (Aladdin)

Post-Trade Alerts – Aladdin

These are designed to notify Portfolio Managers, Operations, Risk, and Compliance teams of potential issues or pending items that require attention. These alerts may be triggered by market movements, trading activity, or limitations in how certain compliance rules are configured or implemented. In some cases, the rules cannot be enforced pre-trade and can only be monitored on a post-trade basis.

Review and Resolution Process

1. Alert Generation

A post-trade alert is automatically generated during the overnight compliance monitoring cycle.

2. Initial Review

The Compliance team conducts a preliminary review of the alert to determine its nature and if further investigation or escalation is warranted. This explanation may be noted directly in the system (e.g., Aladdin) or communicated through other channels such as Microsoft Teams, phone, or email.

3. Collaborative Assessment

If needed, the Compliance team may engage relevant parties such as Portfolio Managers, the Risk team, the Chief Investment Officer (CIO), or the Deputy CIO to discuss the alert, gather context, and assess potential implications.

4. Root Cause Analysis

The various teams including Compliance and Risk work together to identify whether the alert was triggered by external market conditions, internal trading decisions, or system rule limitations. This analysis helps inform whether any procedural or rule adjustments are needed.

5. Resolution Strategy

Based on the findings and the assessment and direction provided by the Quant Risk team and the Chief Investment Officer or Deputy CIO, the teams determine the appropriate course of action, which may include:

- Reversing the trade
- Logging the issue as a trade error
- Taking no immediate action but continuing to monitor the situation based on market conditions, rule limitations, or other relevant factors

4. External Manager Overnight Alerts - External Trading (Aladdin - RADAR)

1. Alert Generation

A post-trade alert is automatically generated during the overnight compliance monitoring cycle. These alerts are typically identified through RADAR, the primary post-trade compliance system maintained by Northern Trust. Aladdin may also generate alerts; however, full reliance on these alerts is deferred until reconciliation with RADAR rules is complete.

2. Initial Review

The Compliance team conducts a preliminary review of the alert to assess its nature and determine if further investigation or escalation is needed. Notes may be entered in RADAR or Aladdin, or tracked separately using internal logs or spreadsheets, depending on the issue and system availability.

3. Collaborative Assessment

If further context is needed, the Compliance team engages the Quant Risk team, the Chief Investment Officer (CIO), the Deputy CIO, and Northern Trust personnel. Northern Trust is directly responsible for creating, maintaining, and updating compliance rules.

within the RADAR system. This group, led by the Compliance team, works collaboratively to assess the alert, determine its cause, and evaluate any potential implications. Since the investment managers involved are external, any outreach or requests for clarification are typically coordinated by the Deputy CIO, Investment teams or Risk, most often via email.

4. Based on the findings and guided by the assessment and direction provided by the Quant Risk team and the Chief Investment Officer or Deputy CIO, the team determines the appropriate course of action. For alerts involving external managers, potential actions may include:
 - Requesting corrective action from the external manager, such as providing a formal explanation for the breach.
 - Logging the issue as a trade error, which also may require the external manager to submit supporting documentation or a remediation plan
 - Taking no immediate action but continuing to monitor the situation based on market conditions, rule limitations, or other relevant factors.

5. Documentation Requirements

- **Communication Logs**

Where appropriate, key decisions, communications, and escalations should be noted in the relevant system or tracking method to support transparency and follow-up.

- **Override and Rule Change Records**

It is generally helpful for the Compliance team to keep a record of overrides and any updates to compliance rules. This may include details such as:

- Rule ID
 - A brief description of the rule
 - Summary of the issue
 - Actions taken
 - Individuals or teams involved
- Significant exceptions will be reviewed by the Chief Investment Officer (CIO) and relevant risk teams. Those deemed material based on their scale, strategic importance, or potential impact may also be escalated to the Investment Committee (IC) for further evaluation and disclosure.

Procedure Implemented: September 1, 2025 (tentative)



ASSET-LIABILITY ANALYSIS AND ASSET ALLOCATION RECOMMENDATION

NORTH DAKOTA STATE INVESTMENT
BOARD – ALL PLANS

AUGUST 2025



PLAN AND ASSET ALLOCATION PROFILES



PROPRIETARY & CONFIDENTIAL

OVERVIEW

- **Today's discussion covers the Asset-Liability analysis for all six North Dakota pension plans.**
- **The plans' liability structure, funded status and discount rate (i.e., long-term return assumption) vary and are reviewed later in the deck; these factors were considered in the final recommendation**
- **Return expectations across the plans range from 6.50% to 7.25%; based on the NEPC March 31, 2025 capital market assumptions, it seems reasonable to expect that the long-term (30-year) return expectations could meet or exceed the current assumptions**
- **In addition to the Current policies for the plans, we have presented in this deck two specific implementable allocations (one lower risk and one similar risk) as alternative the current policies and compared to the PERS allocation policy.**

WORK PLAN / ROADMAP

North Dakota State Investment Board 2025 Pension Asset/Liability Project Plan

Step/Milestone	Estimated Timing
Collect all data relative to plan liabilities and structure	December 2024
Review of NEPC capital market assumptions, current policy expectations and plan objectives (with NDRIO Staff)	January 2025
Review, discuss, and consider revisions to portfolio/plan objectives (with NDRIO Staff)	February 2025
Discuss and identify potential alternatives to the current policy	May 2025
Scenario modeling for Current and Alternative Policies	May 2025
Review modeling results (with NDRIO Staff)	June 2025
Prepare draft of Board materials	July 2025
Board Materials and Recommendations Finalized	August 2025
Study Presented to Board and Decision Finalized	September Board Meeting

PENSION PLANS: CURRENT STATE

Plan	PERS	TFFR	Bismarck Police	Bismarck Employees	Grand Forks Employees	Grand Forks Parks
Plan Year	7/1 - 6/30	7/1 - 6/30	1/1 - 12/31	1/1 - 12/31	1/1 - 12/31	1/1 - 12/31
Actuary	GRS	GRS	VIA	VIA	Deloitte	Gallagher
Participants (Total)	<u>60,098</u>	<u>25,663</u>	<u>253</u>	<u>887</u>	<u>377</u>	<u>51</u>
Actives	25,799	11,945	135	497	28	15
Terminated Vesteds	18,667	4,025	24	90	21	7
Retirees & Beneficiaries	15,632	9,693	94	300	328	29
Payroll	1,544,827,229	879,276,401	9,780,723	32,259,505	1,856,650	618,445
Actuarial Accrued Liability	6,218,968,568	4,758,417,607	62,582,471	144,050,754	103,046,911	11,000,405
Market Value of Assets	4,265,287,349	3,351,007,841	52,210,532	124,700,636	80,547,761	8,670,232
Actuarial Value of Assets	4,247,191,213	3,408,483,045	52,210,532	124,700,636	82,913,131	8,670,232
Unfunded Actuarial Liability	1,971,777,355	1,349,934,562	10,371,939	19,350,118	20,133,780	2,330,173
Funded Status (AVA)	68.3%	71.6%	83.4%	86.6%	80.5%	78.8%
Discount Rate	6.50%	7.25%	7.25%	7.25%	7.00%	7.00%
Payroll Growth Rate	3.50%	3.25%	3.25%	3.25%	2.50%	2.00%
Normal Cost Rate	12.2%	12.3%	12.4%	11.4%	17.9%	6.3%
Remaining Amortization Period	30	19	15	15	11	7
Asset Valuation Method	5-Year Smoothing	5-Year Smoothing	None	None	5-Year Smoothing	None
COLA	None	Ad-hoc, but none assumed	Ad-hoc, but none assumed	Ad-hoc, but none assumed	None	None
Open/Closed	Partially Open	Open	Open	Open	Closed in 1996	Closed in 2010
Funding Policy	ER: Fixed Rate EE: Fixed Rate In 2026, Non-Public Safety funding policy changes to dynamic model of normal cost plus closed 30-yr amortization of unfunded liabilities ending 2056	ER: Fixed Rate EE: Fixed Rate Contribution sufficiency measured against normal cost plus closed 30-yr amortization of unfunded liabilities ending 2043 (19 yrs left as of '24)	ER: Fixed Rate EE: Fixed Rate Contribution sufficiency measured against normal cost plus closed 30-yr amortization of unfunded liabilities ending 2038 (15 yrs left as of '24)	ER: Fixed Rate EE: Fixed Rate Contribution sufficiency measured against normal cost plus closed 30-yr amortization of unfunded liabilities ending 2038 (15 yrs left as of '24)	ER: Normal cost plus amortization of unfunded liabilities based on closed 30-yr amortization of unfunded liabilities ending 2034 (11 yrs left as of '24) EE: Fixed Rate	ER: Normal cost plus amortization of unfunded liabilities based on closed 14-yr amortization of unfunded liabilities ending 2030 (7 yrs left as of '24) EE: Fixed Rate

CORE ASSET CLASS RETURN ASSUMPTIONS

	Asset Class	3/31/2025 10-Year Return	3/31/2024 10-Year Return	Delta
	Cash	3.9%	4.1%	-0.2%
	U.S. Inflation	2.6%	2.6%	-
Equity	U.S. Large-Cap Equity	6.4%	4.1%	+2.3%
	Non-U.S. Developed Equity	5.1%	4.3%	+0.8%
	Emerging Market Equity	7.7%	8.3%	-0.6%
	Global Equity*	6.5%	5.1%	+1.4%
	Private Equity*	8.8%	8.8%	-
Fixed Income	U.S. Treasury Bond	4.4%	4.4%	-
	U.S. Municipal Bond	4.0%	3.7%	+0.3%
	U.S. Aggregate Bond*	4.8%	4.8%	-
	U.S. TIPS	4.5%	4.7%	-0.2%
	U.S. High Yield Corporate Bond	6.5%	6.1%	+0.4%
	Private Debt*	8.3%	8.3%	-
Real Assets	Commodity Futures	4.4%	4.3%	+0.1%
	REIT	5.3%	6.1%	-0.8%
	Gold	4.5%	4.8%	-0.3%
	Real Estate - Core	5.6%	5.8%	-0.2%
	Private Real Assets - Infrastructure	5.8%	6.7%	-0.9%
Multi-Asset	60% S&P 500 & 40% U.S. Aggregate	6.1%	4.7%	+1.4%
	60% MSCI ACWI & 40% U.S. Agg.	6.1%	5.3%	+0.8%
	Hedge Fund*	6.5%	6.1%	+0.4%

*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

NDRIO ASSET ALLOCATION

LONG-TERM (30-YEAR) RETURN EXPECTATIONS ABOVE 7.25%

	PERS	TFFR	Bismarck Police	Bismarck Employees	Grand Forks Employees	Grand Forks Parks
Cash	0.0%	1.0%	0.0%	0.0%	1.0%	0.0%
Total Cash	0.0%	1.0%	0.0%	0.0%	1.0%	0.0%
Global Equity	51.0%	45.0%	46.0%	42.0%	55.0%	47.0%
Private Equity	7.0%	10.0%	5.0%	4.0%	5.0%	7.5%
Total Equity	58.0%	55.0%	51.0%	46.0%	60.0%	54.5%
US Aggregate Bond	16.0%	18.0%	22.0%	27.0%	17.0%	18.0%
US High Yield Corporate Bond	3.5%	4.0%	3.5%	3.5%	3.5%	3.8%
Private Debt - Direct Lending	3.5%	4.0%	3.5%	3.5%	3.5%	3.8%
Total Fixed Income	23.0%	26.0%	29.0%	34.0%	24.0%	25.5%
Real Estate - Core	8.3%	6.8%	9.0%	8.6%	5.3%	7.5%
Real Estate - Non-Core	2.7%	2.3%	3.0%	3.4%	1.8%	2.5%
Private Real Assets - Natural Resources	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Private Real Assets - Infrastructure	7.0%	8.0%	7.0%	7.0%	7.0%	9.0%
Total Real Assets	19.0%	18.0%	20.0%	20.0%	15.0%	20.0%

Expected Return 10 yrs (Geometric)	6.7%	6.8%	6.6%	6.5%	6.6%	6.7%
Expected Return 30 yrs (Geometric)	7.7%	7.7%	7.5%	7.5%	7.6%	7.7%
Standard Deviation	13.6%	13.2%	12.4%	11.6%	13.4%	13.1%
Sharpe Ratio (10 years)	0.20	0.22	0.21	0.22	0.20	0.21
Sharpe Ratio (30 years)	0.31	0.32	0.32	0.34	0.31	0.32

ALTERNATIVE ASSET ALLOCATION PROFILES

NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM

	Mix 1	Mix 2
Global Equity	40%	40%
Private Equity	15%	10%
Total Equity	55%	50%
US Aggregate Bond	16%	21%
US High Yield Corporate Bond	2.5%	2.5%
Private Debt - Direct Lending	7.5%	7.5%
Total Fixed Income	26%	31%
Real Estate - Core	8.3%	8.3%
Real Estate - Non-Core	2.7%	2.7%
Private Real Assets - Natural Resources	1.0%	1.0%
Private Real Assets - Infrastructure	7.0%	7.0%
Total Real Assets	19%	19%

10-Year Return	Volatility	Income Yield	Net Alpha
6.5%	18.2%	2.8%	0.5%
8.8%	25.8%	0.0%	1.0%

4.8%	5.8%	4.9%	0.3%
6.5%	11.3%	8.1%	0.3%
8.2%	11.0%	9.5%	1.0%

5.6%	14.7%	5.4%	0.0%
7.2%	25.0%	7.2%	0.5%
8.1%	32.5%	3.9%	0.5%
5.8%	10.6%	3.2%	0.5%

10-Year Expected Return (Geo)	7.0%	6.8%
30-Year Expected Return (Geo)	8.0%	7.8%
Asset Volatility	13.8%	12.6%
Sharpe Ratio (10 years)	0.22	0.23
Sharpe Ratio (30 years)	0.33	0.34
Portfolio Income Yield	3.73%	3.98%
Portfolio Alpha (Net)	0.52%	0.49%

Probability of 1-Yr Return Under 0%	30.5%	29.4%
Probability of 30-Yr Return Over 6.5%	58.5%	55.9%
95% 1-Year Max Drawdown	-14.7%	-13.0%

Liquidity Profile

Tier 1 (Daily Liquidity)	40%	40%
Tier 2 (Semi-liquid)	18.5%	23.5%
Tier 3 (Illiquid)	41.5%	36.5%

ASSET-LIABILITY ANALYSIS



PROPRIETARY & CONFIDENTIAL

PURPOSE OF ASSET-LIABILITY STUDY

- **Review the current/projected financial status of the plan over long-term horizon**
- **Determine appropriateness of current asset allocation with consideration of:**
 - Expected progress of liabilities and cash flows/liquidity needs
 - Path of funded status
- **Test sensitivity of plan (Assets and Liabilities) to various range of outcomes**
 - Market performance across range of economic environments
 - Contribution volatility
 - Range of liquidity environments
- **Consider appropriate asset mixes and expected return on assets**
 - Assess return target against tradeoff of volatility/range of outcomes
 - Analyze inclusion/exclusion of various asset classes/strategies

FIRST PRINCIPLES

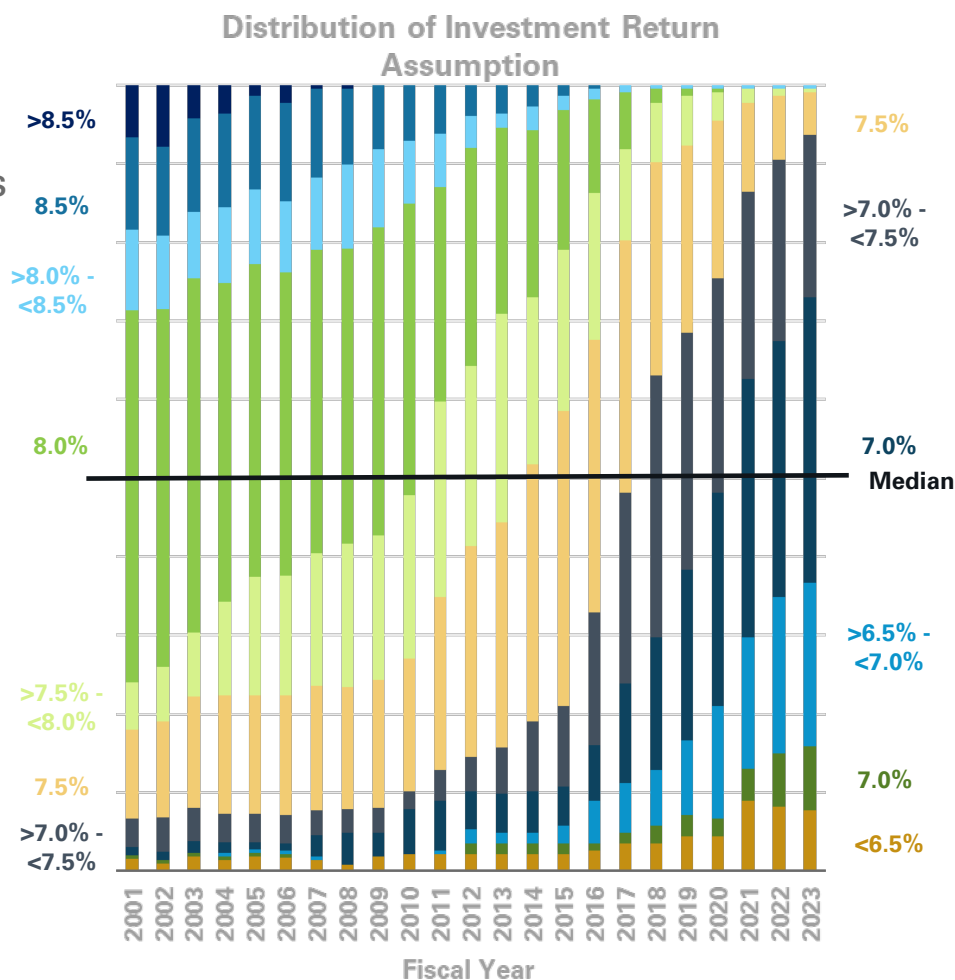
- All the complexities of pension plans boil down to the classic equation:

$$B + E = C + I$$

- Benefits (B), Expenses (E), Contributions (C), and Investment Earnings (I)
- The funding of pension benefits is made possible through the combination of member and employer contributions and returns on investment
- The long-term expected return on assets drives the selection of an appropriate discount rate for public pension liabilities
- Expected return on assets is based on assumptions – actual experience will likely depart from those assumptions
- Long-term nature of pension obligations positions well-funded pension plans to take advantage of long-term investment opportunities
- It is critical and healthy for pension trustees to regularly review fundamental characteristics of the pension plan:
 - Risk tolerance
 - Viability of long-term investment return
- Risk is multi-dimensional and should be considered from different perspectives – Risk is not just volatility!
 - Volatility, potential for drawdowns, illiquidity, exposure to economic factors, etc.
- Return expectations are generally lower than historical returns, forcing many investors to reconsider both return expectations and appropriate levels of risk

EXPECTED RETURN

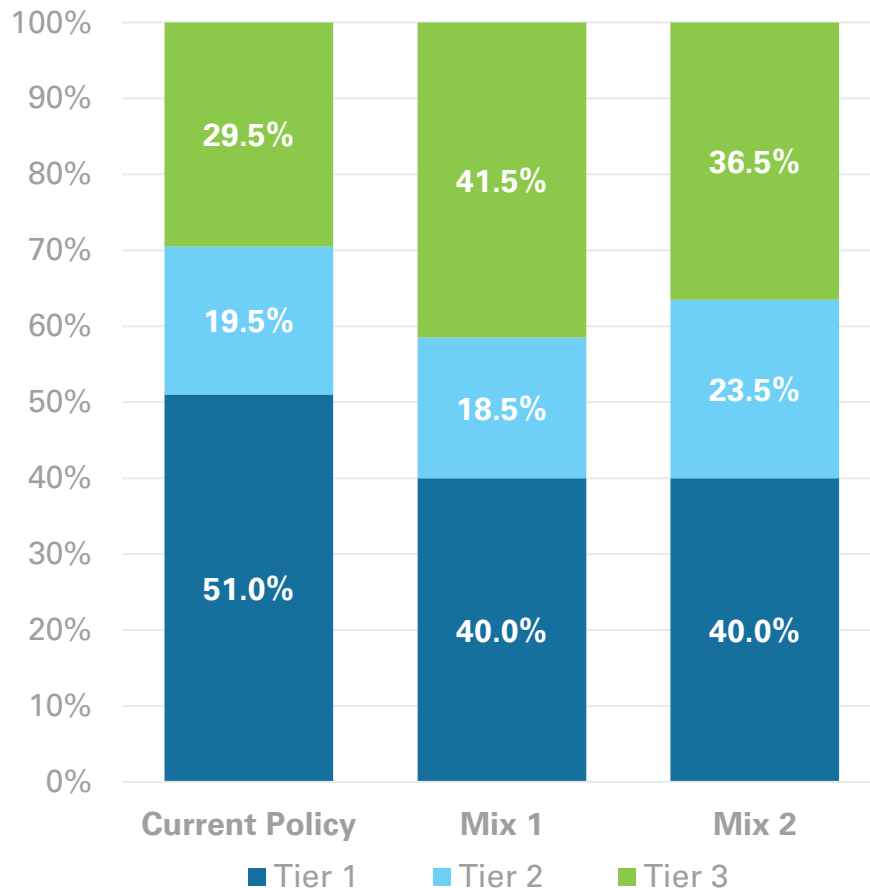
- **Expected return and liability discount rate are closely linked for public pension plans**
 - Corporate DB: stringent regulations
 - Going-concern of government entities has historically provided comfort in public plans taking longer term approach
 - Expected returns are forward-looking
- **Historical market environment has led to downward trend in EROAs for public pensions**
 - Median 2023 EROA = 7.0%
- **Low expected returns put pressure on assumptions and outcomes but...**
 - Market re-pricing and higher inflation may push return expectations higher looking forward



Source: Public Plans Data, NEPC

LIQUIDITY PROFILE

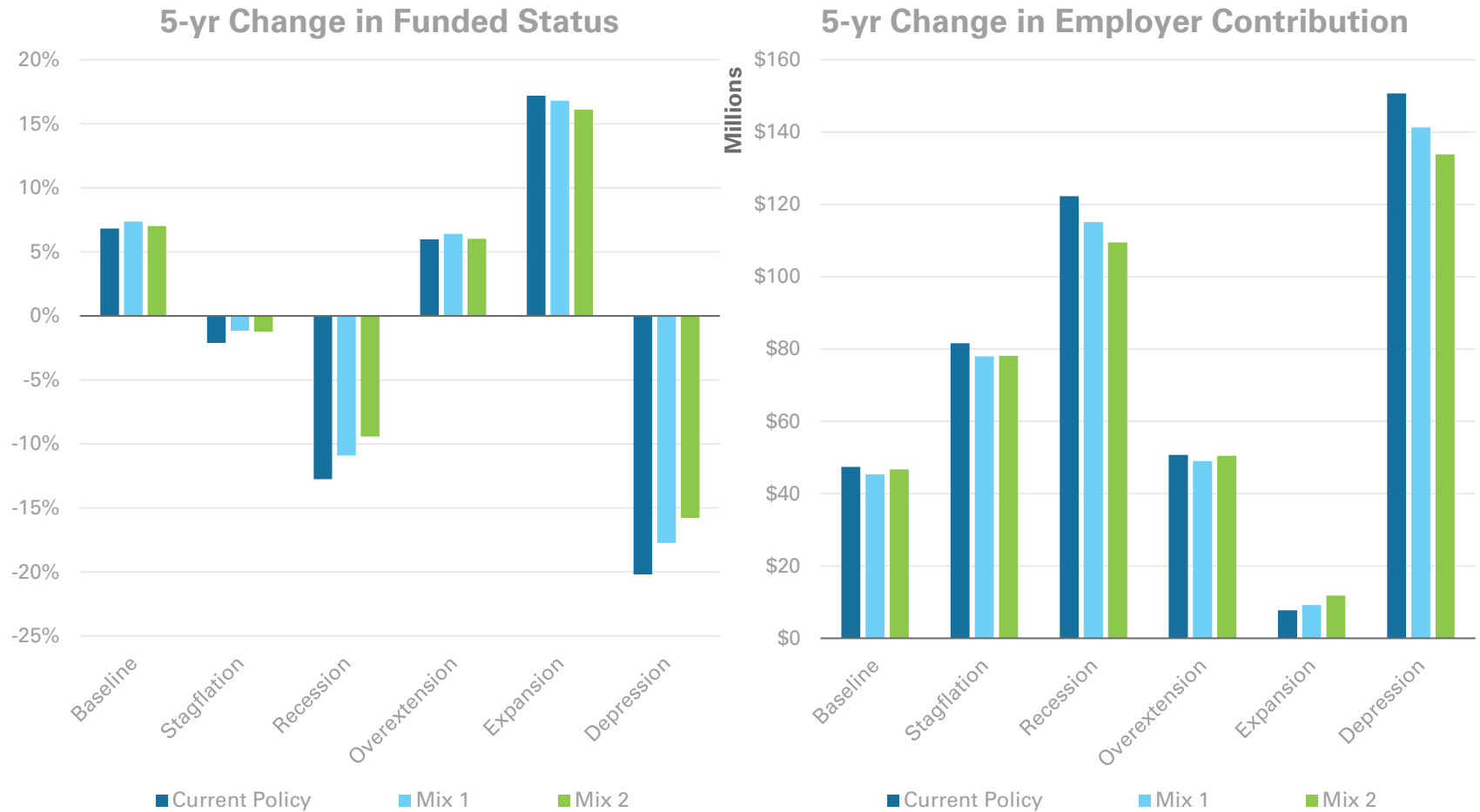
NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM



- **Net cash flow is expected to remain negative over next 10 years, averaging -1.3% outflow**
 - Public funds average between -2% and -4% net cash flow
- **Negative cash flow is typical for a mature pension plan**
- **Fixed contribution model provides consistent and predictable cash inflows**
- **NEPC believes the plan can take on the recommended increase in illiquids with no material impact in the plan's ability to meet its obligations**

ECONOMIC SCENARIO ANALYSIS

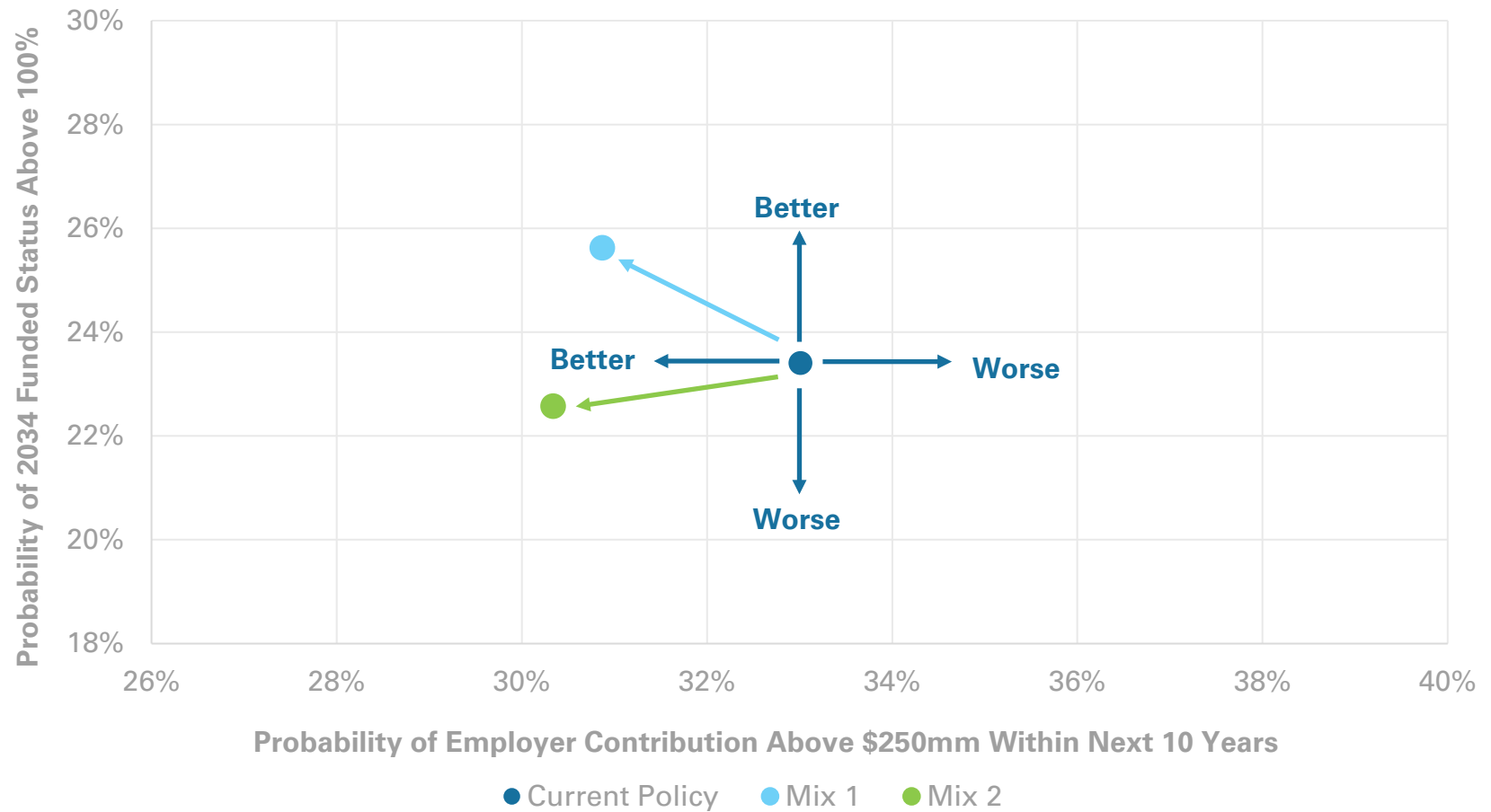
NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM



Notes: Scenarios reflect a 5-year market cycle. Change in funded ratio is relative to 68.3% as of July 1, 2024 and change in contribution is relative to \$137.4 million for FY2025

STOCHASTIC ANALYSIS

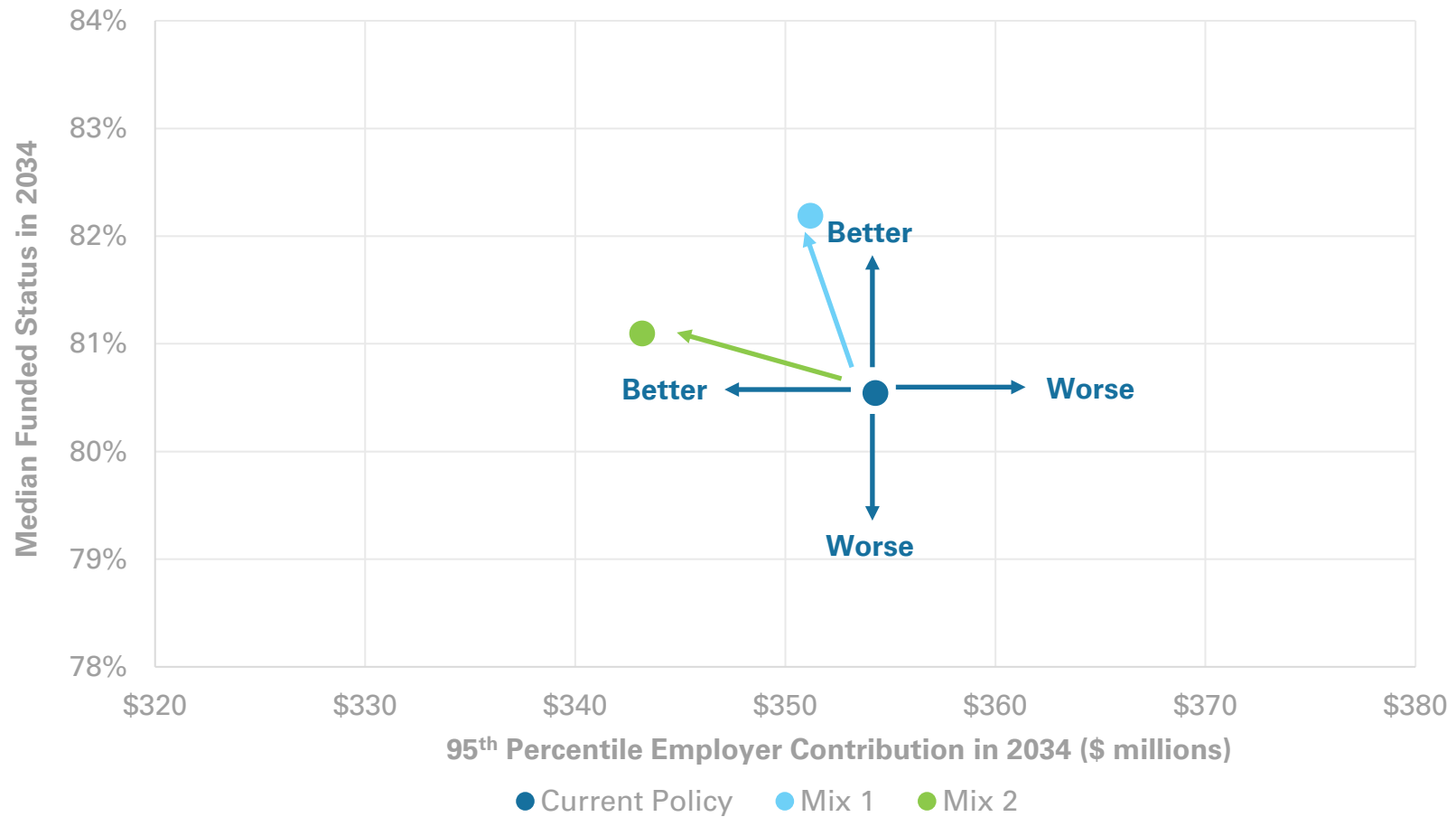
NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

STOCHASTIC ANALYSIS

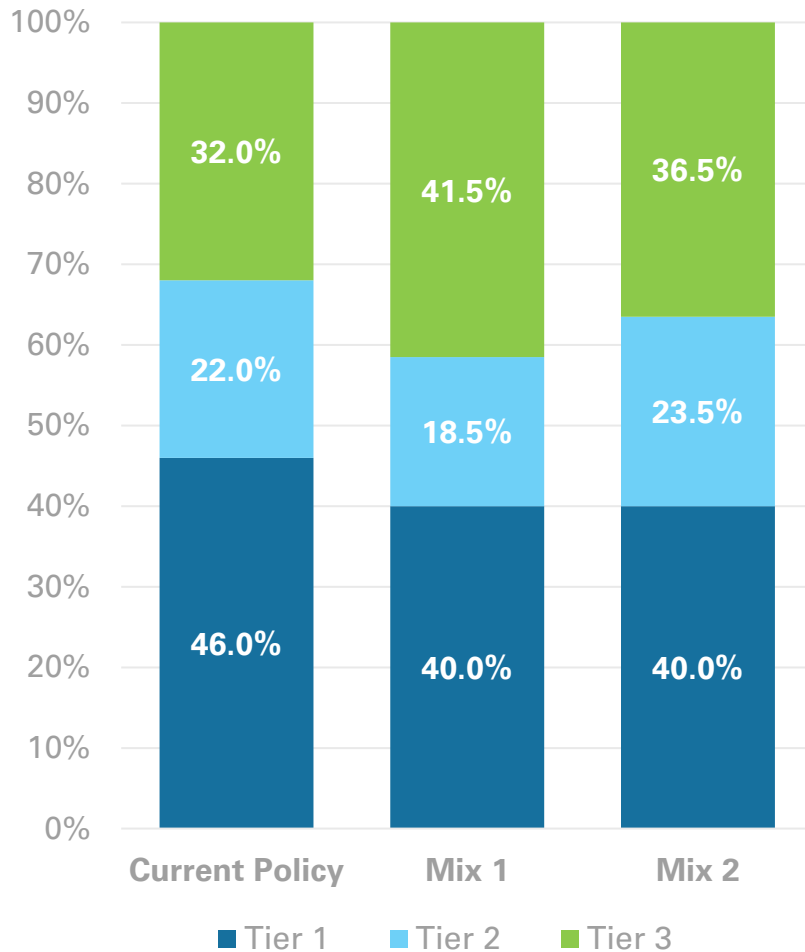
NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

LIQUIDITY PROFILE

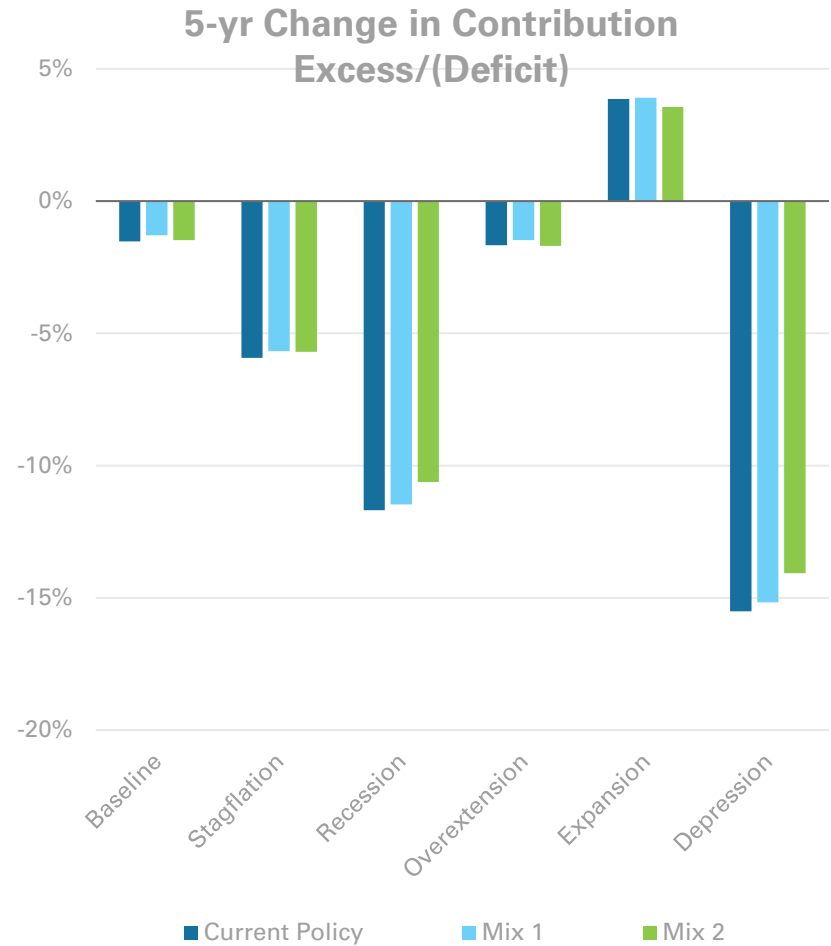
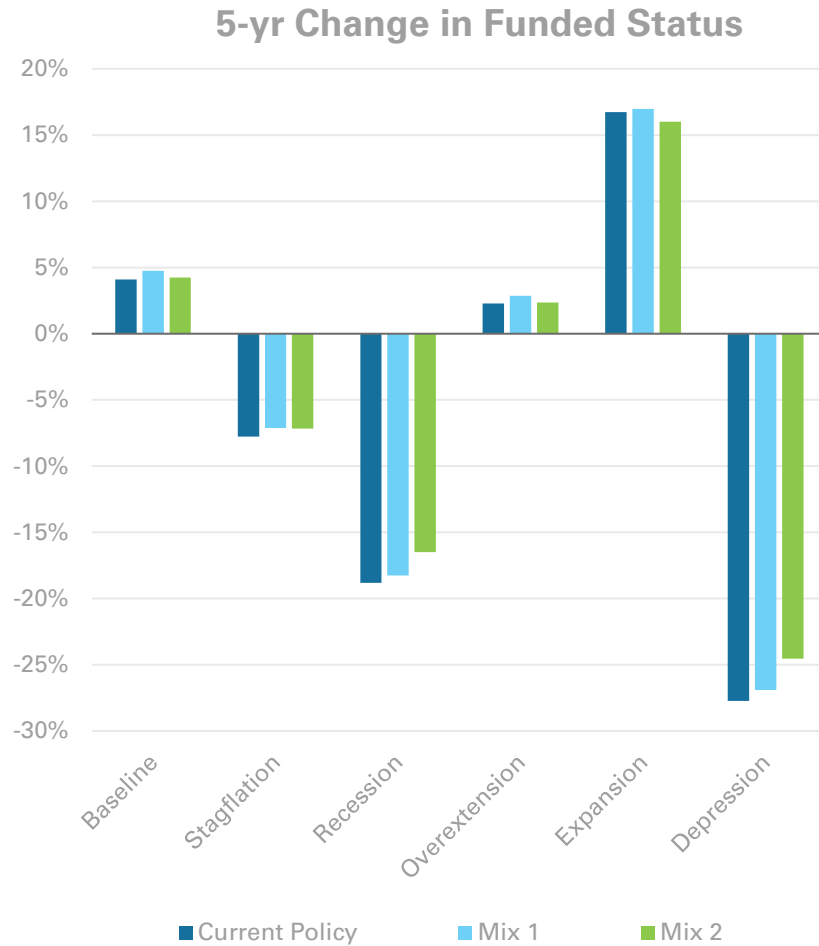
TEACHERS' FUND FOR RETIREMENT



- **Net cash flow is expected to remain negative over next 10 years, averaging -1.5% outflow**
 - Public funds average between -2% and -4% net cash flow
- **Negative cash flow is typical for a mature pension plan**
- **Fixed contribution model provides consistent and predictable cash inflows**
- **NEPC believes the plan can take on the recommended increase in illiquids with no material impact in the plan's ability to meet its obligations**

ECONOMIC SCENARIO ANALYSIS

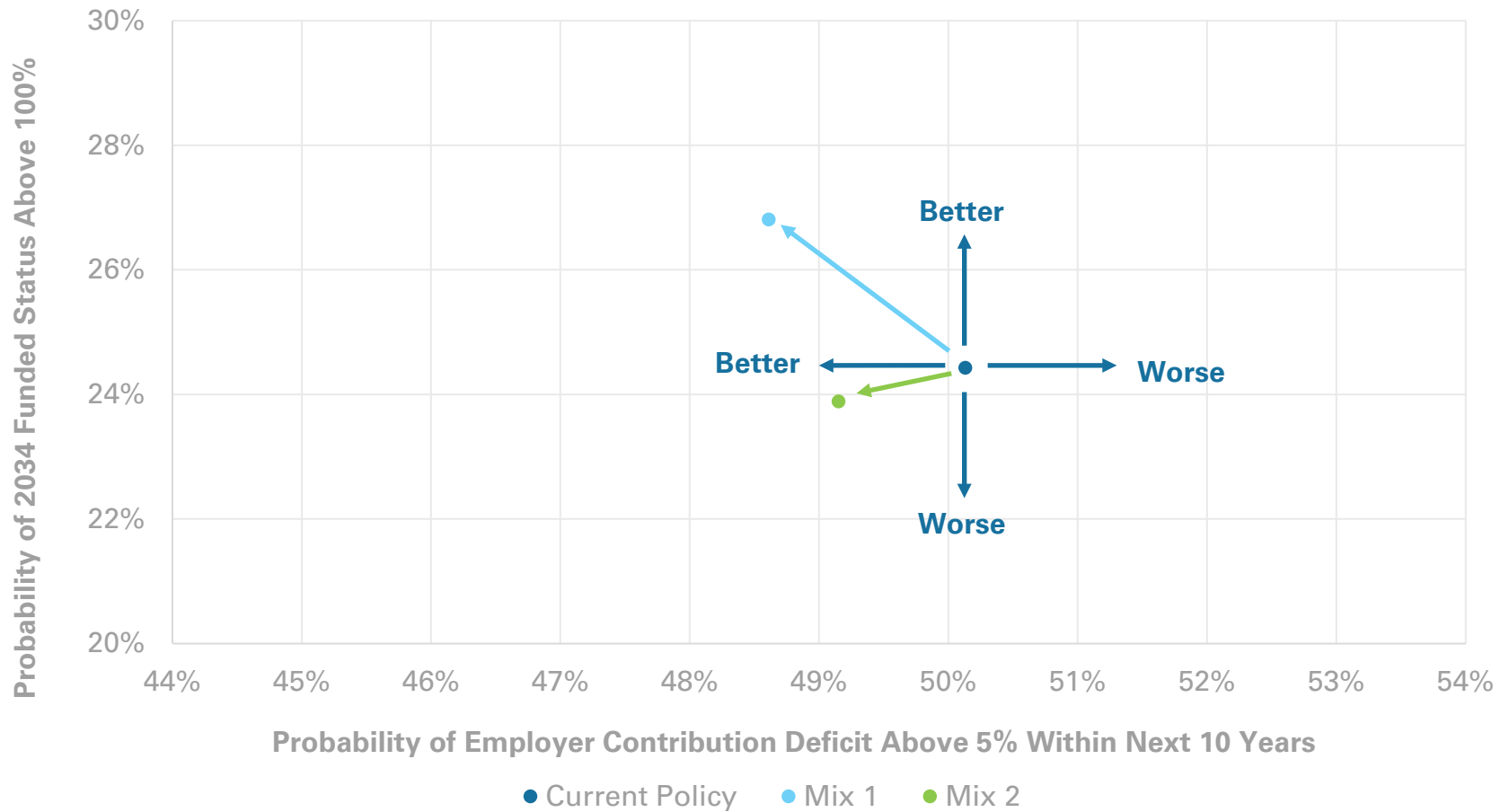
TEACHERS' FUND FOR RETIREMENT



Notes: Scenarios reflect a 5-year market cycle. Change in funded ratio is relative to 71.6% as of July 1, 2024 and change in contribution excess/(deficit) is relative to 0.3% for FY2025

STOCHASTIC ANALYSIS

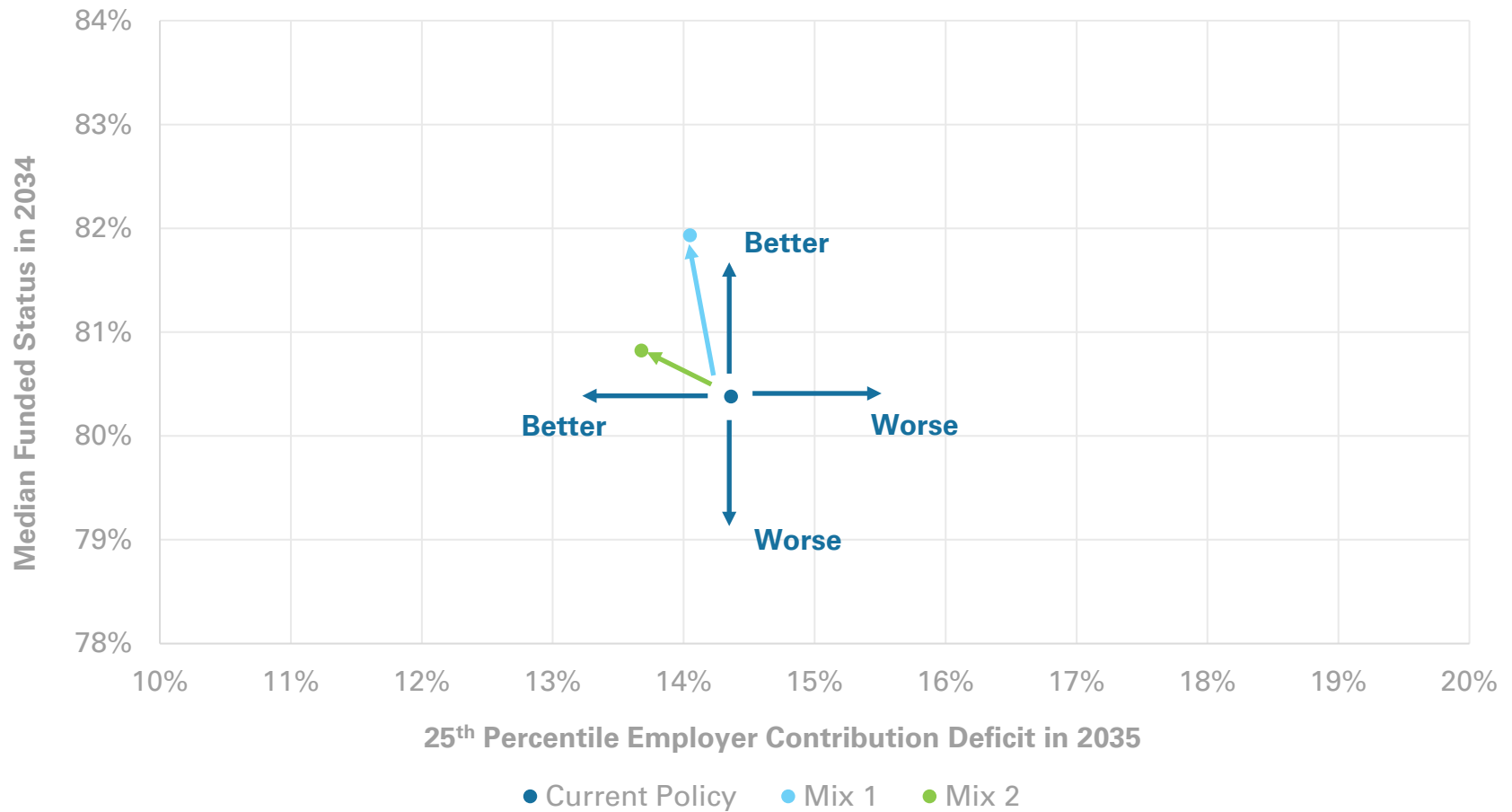
TEACHERS' FUND FOR RETIREMENT



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

STOCHASTIC ANALYSIS

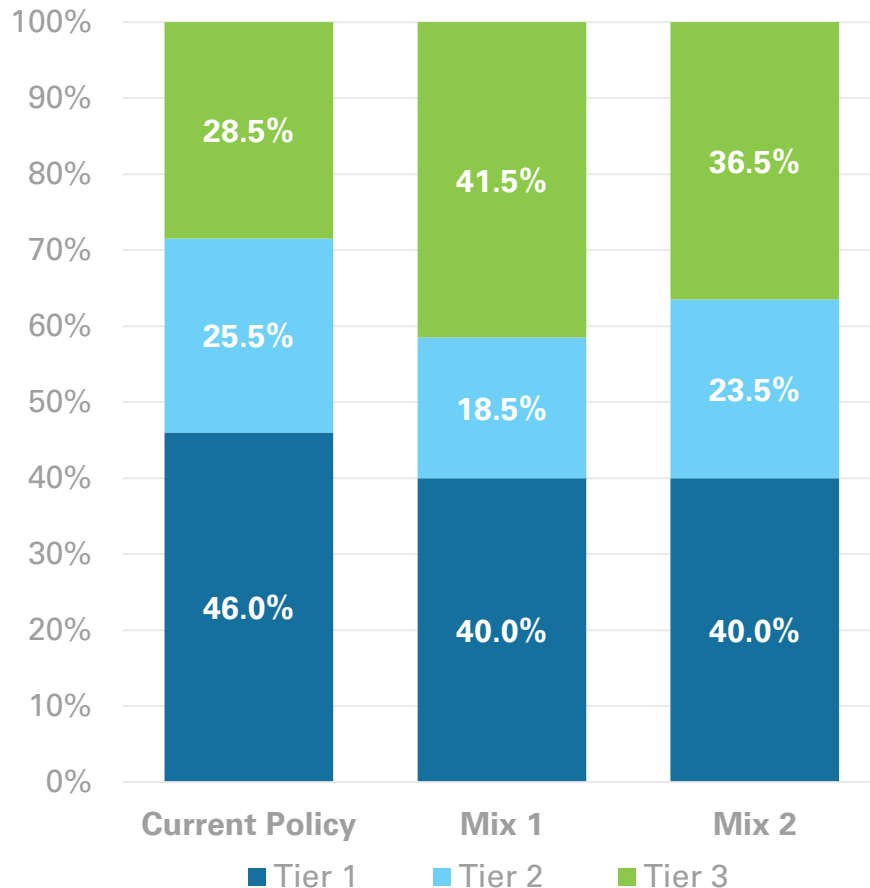
TEACHERS' FUND FOR RETIREMENT



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

LIQUIDITY PROFILE

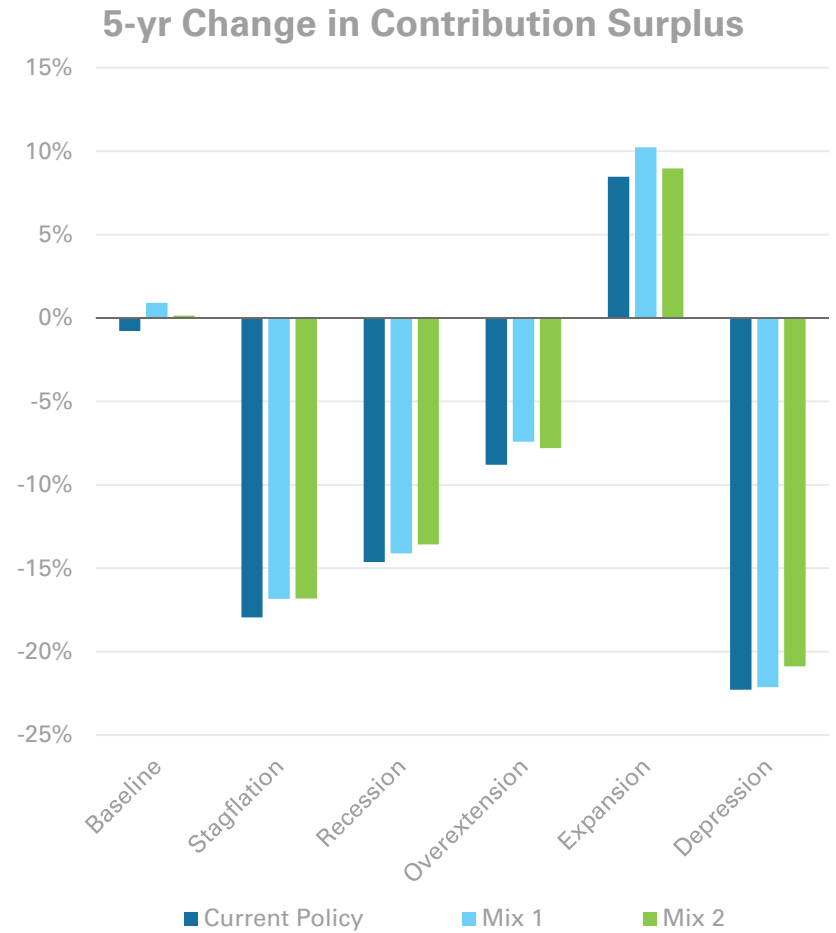
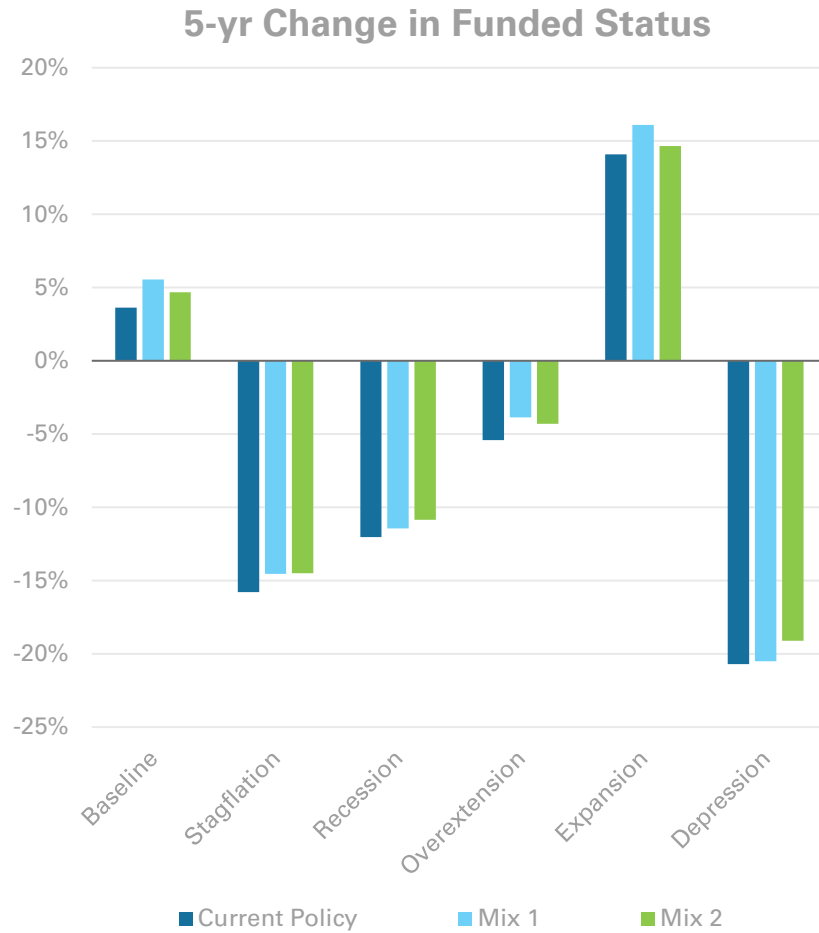
CITY OF BISMARCK POLICE PENSION FUND



- **Net cash flow is expected to remain negative over next 10 years, averaging -1.8% outflow**
 - Public funds average between -2% and -4% net cash flow
- **Negative cash flow is typical for a mature pension plan**
- **Fixed contribution model provides consistent and predictable cash inflows**
- **NEPC believes the plan can take on the recommended increase in illiquids with no material impact in the plan's ability to meet its obligations**

ECONOMIC SCENARIO ANALYSIS

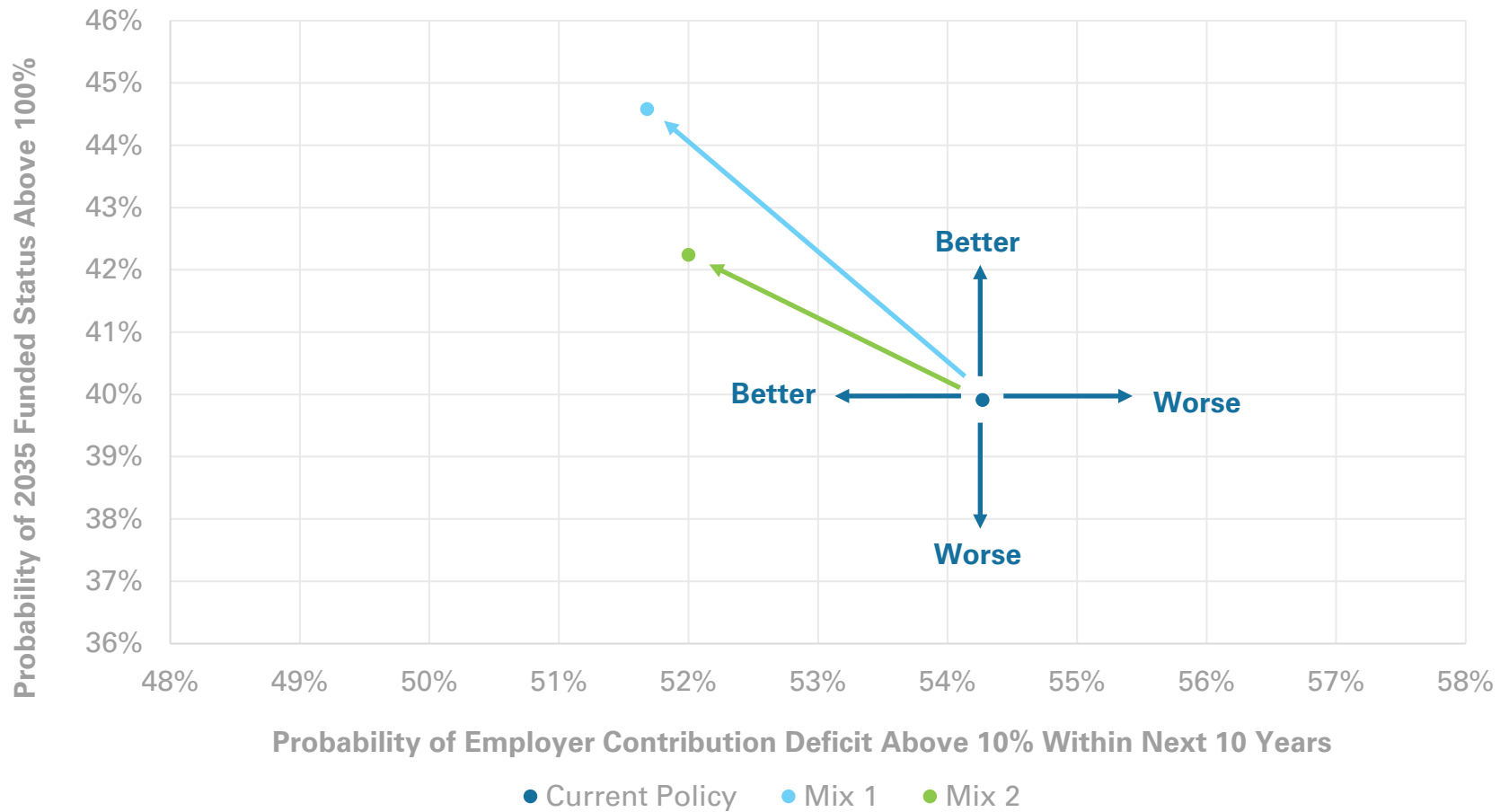
CITY OF BISMARCK POLICE PENSION FUND



Notes: Scenarios reflect a 5-year market cycle. Change in funded ratio is relative to 85.8% as of January 1, 2025 and change in contribution surplus is relative to 2.3% for 2025.

STOCHASTIC ANALYSIS

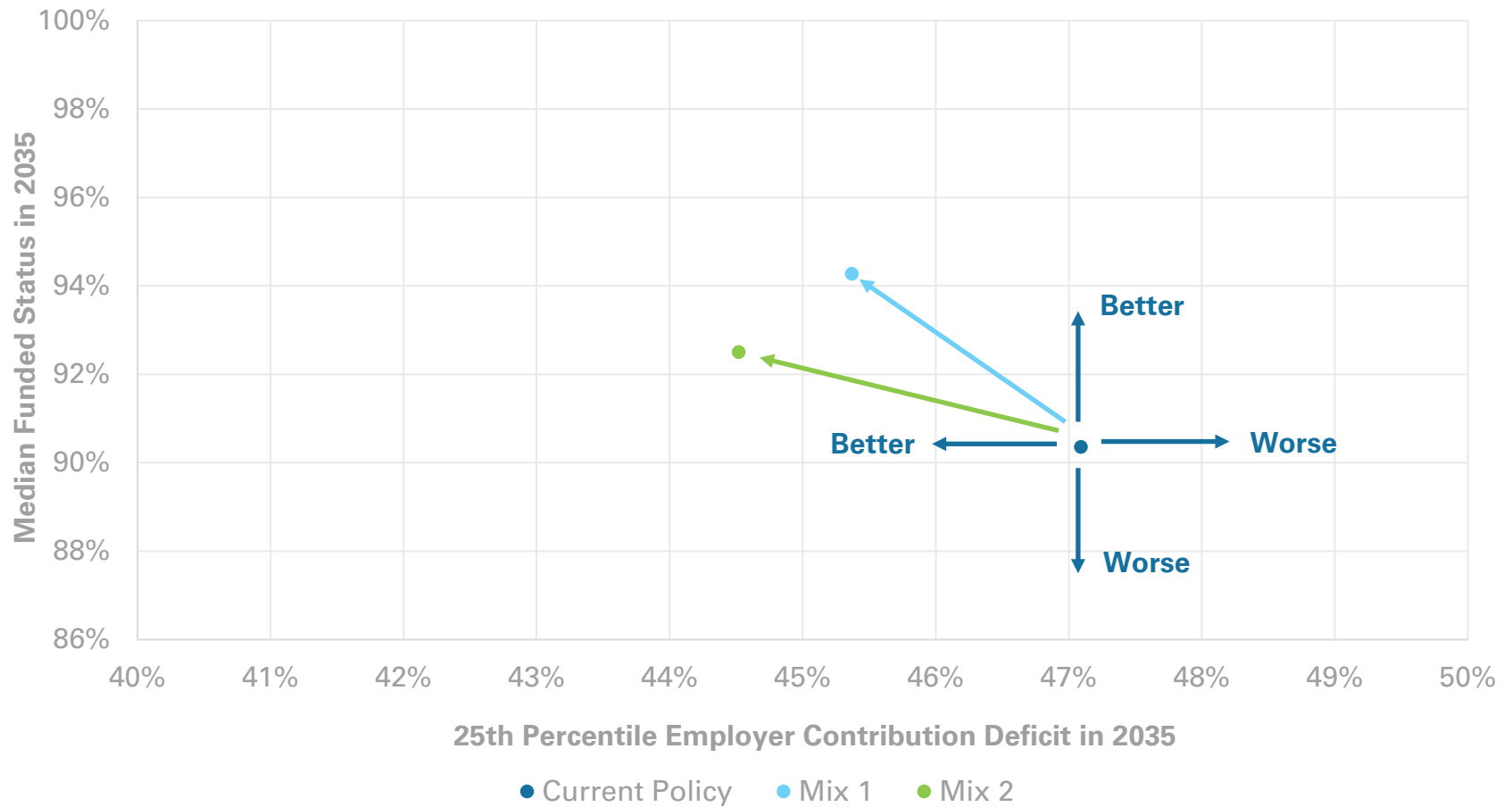
CITY OF BISMARCK POLICE PENSION FUND



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

STOCHASTIC ANALYSIS

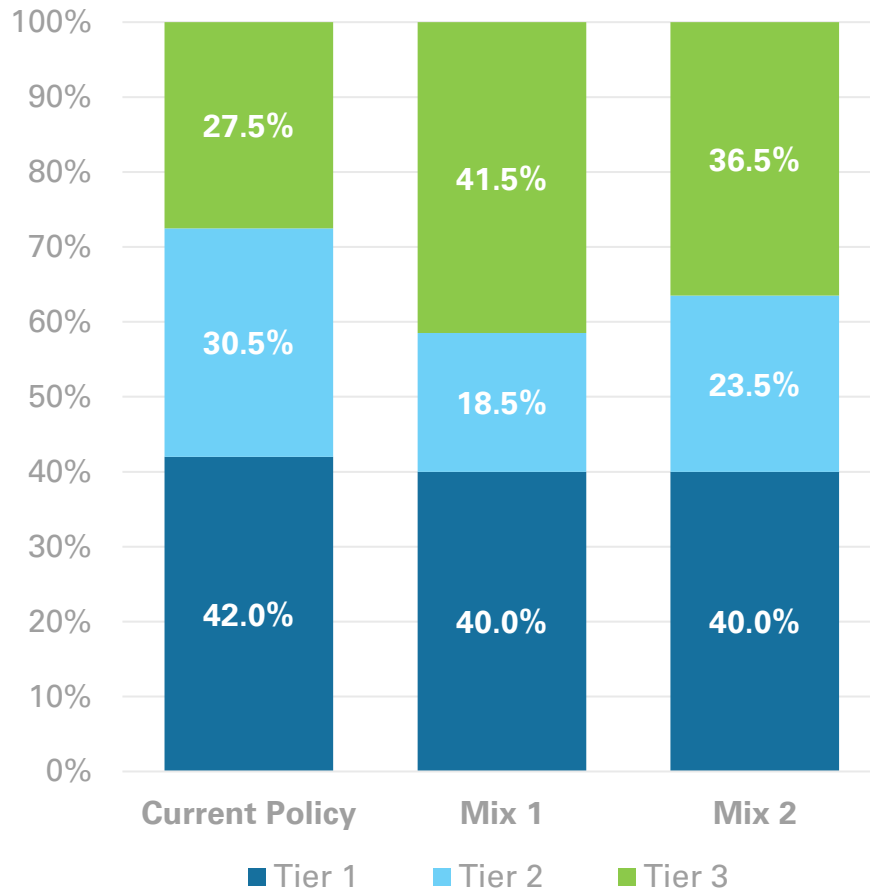
CITY OF BISMARCK POLICE PENSION FUND



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

LIQUIDITY PROFILE

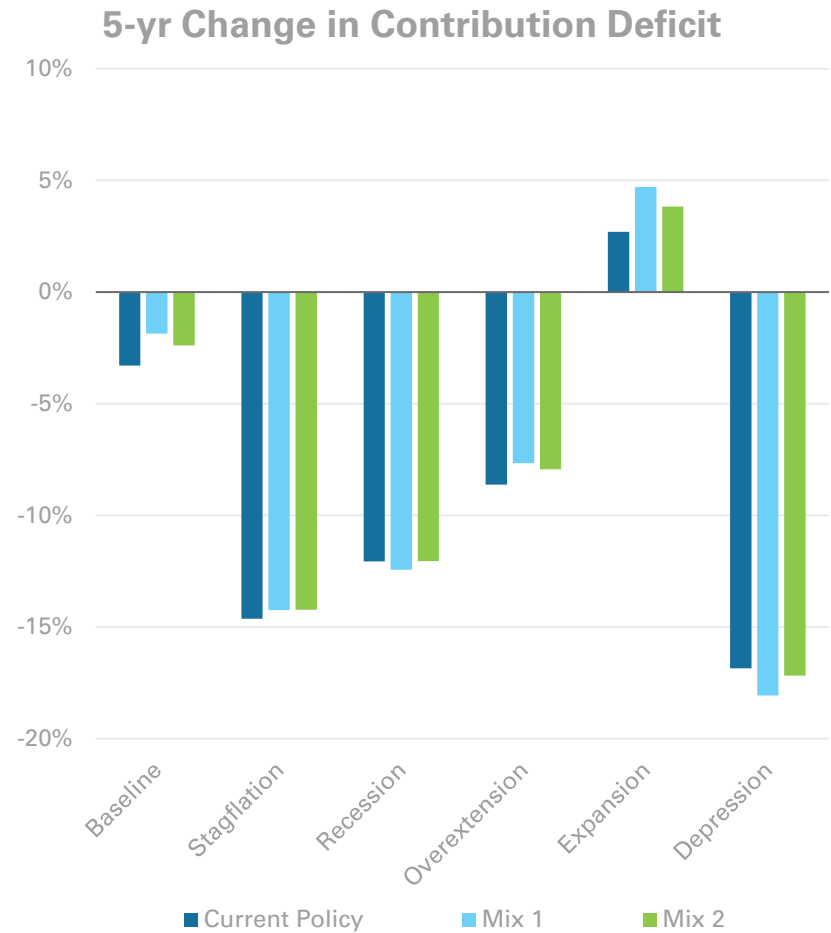
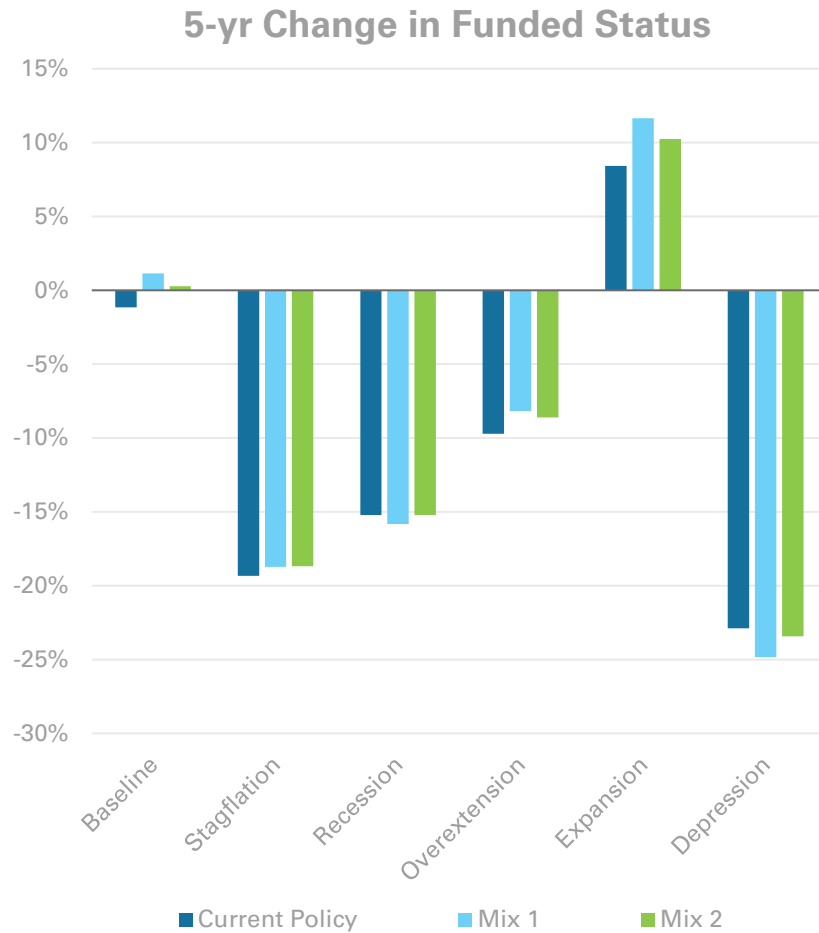
CITY OF BISMARCK EMPLOYEE PENSION FUND



- **Net cash flow is expected to remain negative over next 10 years, averaging -2.7% outflow**
 - Public funds average between -2% and -4% net cash flow
- **Negative cash flow is typical for a mature pension plan**
- **Fixed contribution model provides consistent and predictable cash inflows**
- **NEPC believes the plan can take on the recommended increase in illiquids with no material impact in the plan's ability to meet its obligations**

ECONOMIC SCENARIO ANALYSIS

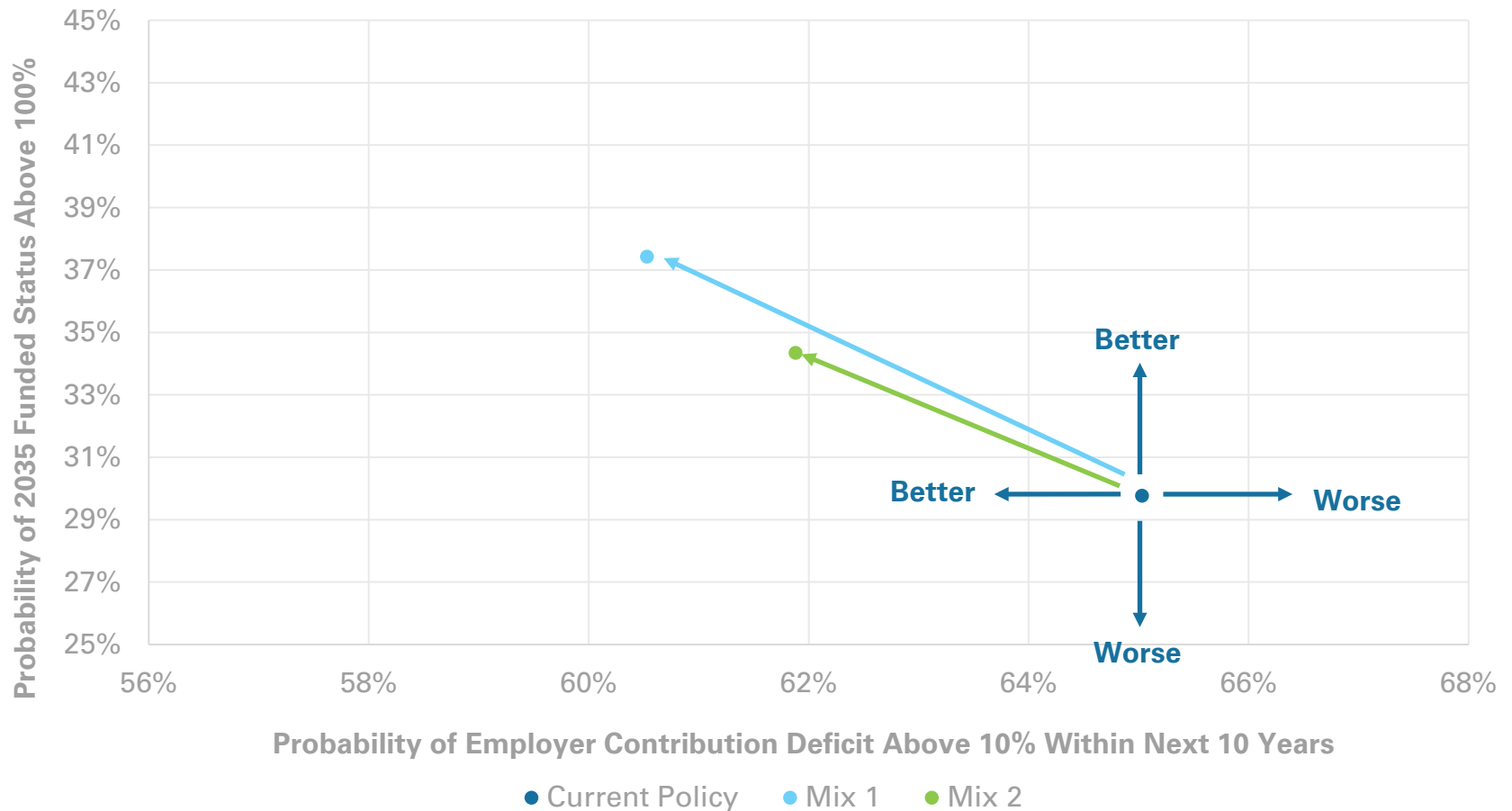
CITY OF BISMARK EMPLOYEE PENSION FUND



Notes: Scenarios reflect a 5-year market cycle. Change in funded ratio is relative to 87.3% as of January 1, 2025 and change in contribution deficit is relative to -2.0% for 2025.

STOCHASTIC ANALYSIS

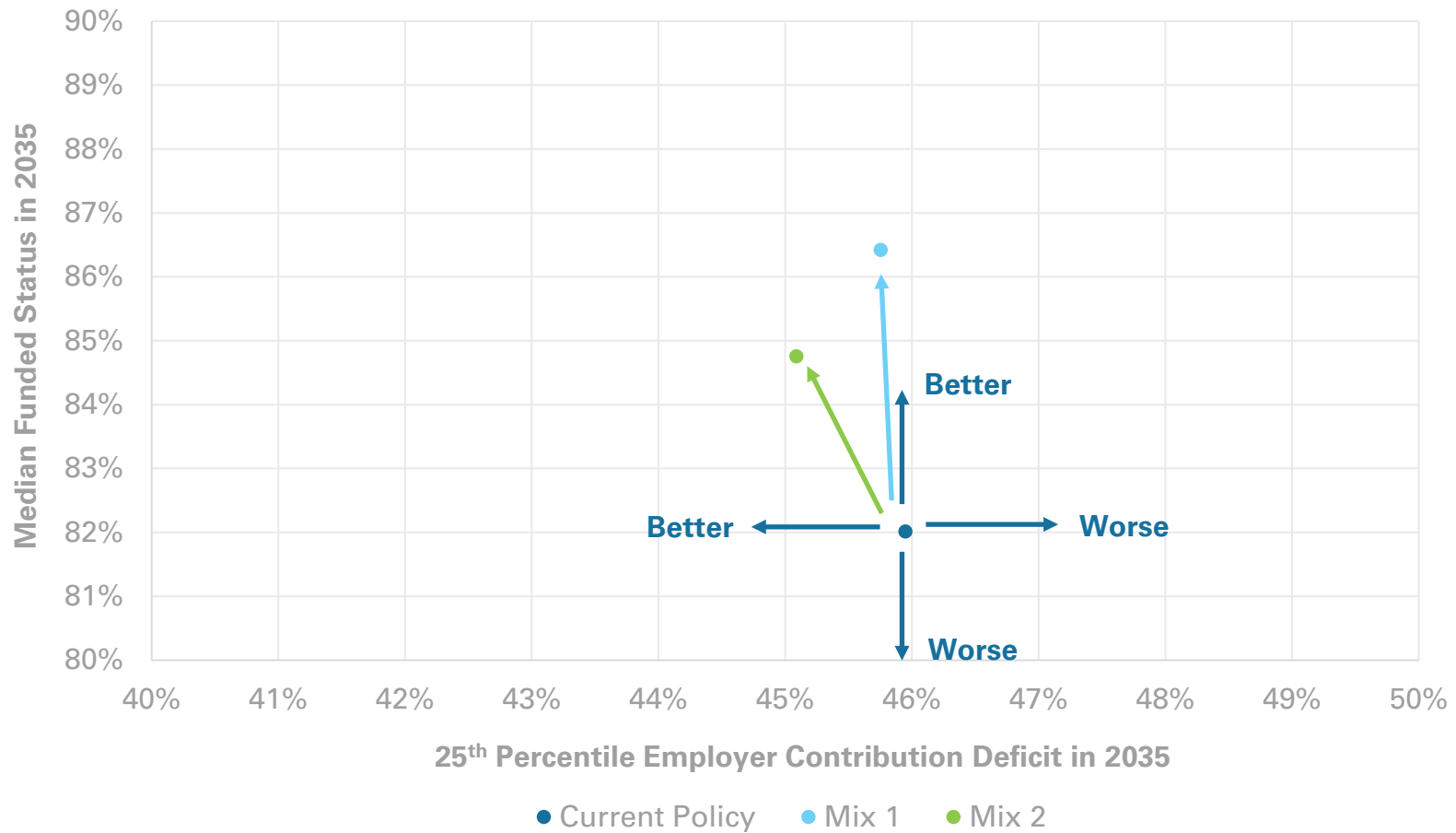
CITY OF BISMARCK EMPLOYEE PENSION FUND



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

STOCHASTIC ANALYSIS

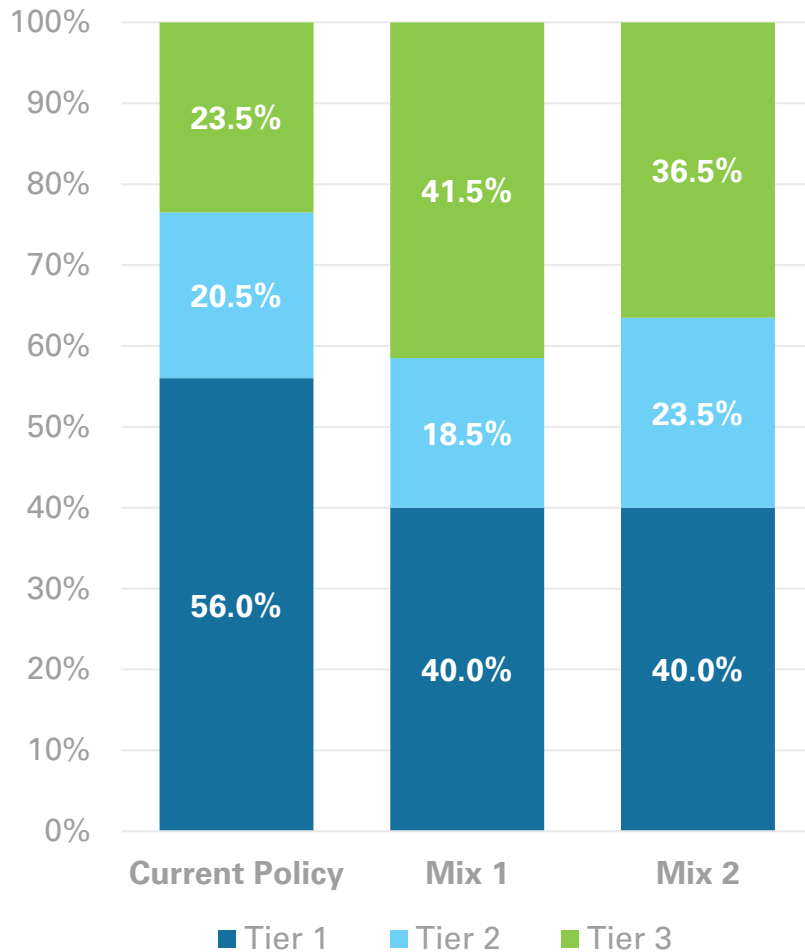
CITY OF BISMARCK EMPLOYEE PENSION FUND



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

LIQUIDITY PROFILE

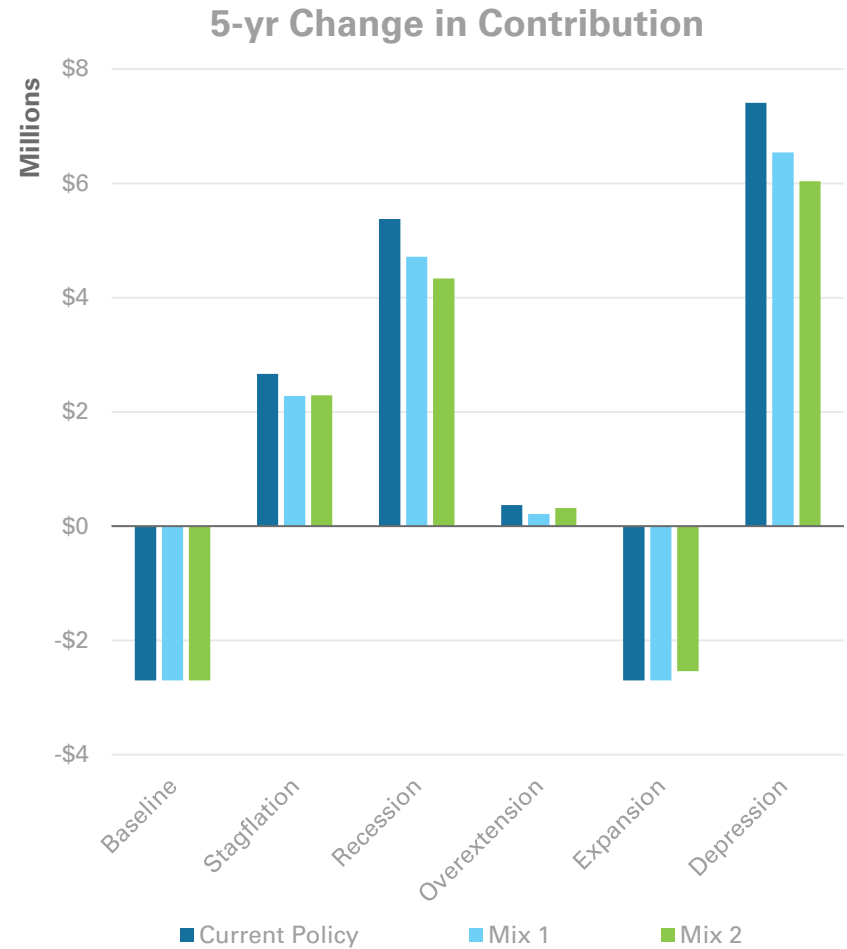
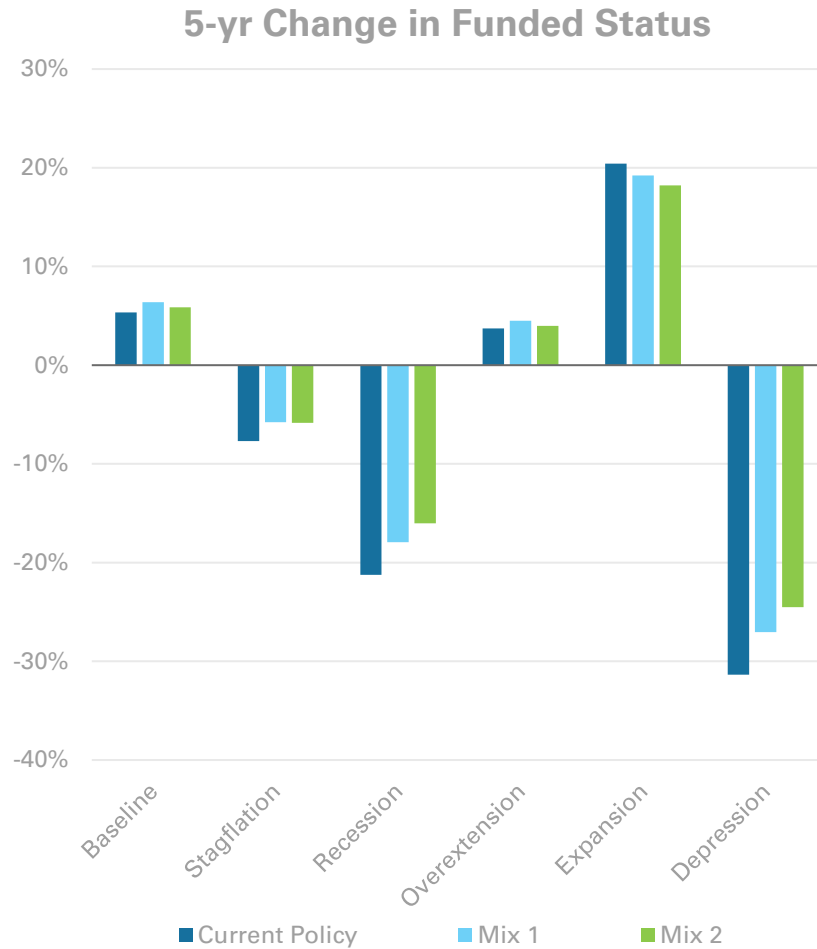
CITY OF GRAND FORKS EMPLOYEE PENSION FUND



- **Net cash flow is expected to remain negative over next 10 years, averaging -8.2% outflow**
 - Healthy steady-state outflow typically ranges from -2.0% to -4.0% of assets
- **Deeply negative cash flow is typical for a closed pension plan in its wind down phase**
- **Given the material negative cashflow profile and current wind-down phase of the plan, Mix 1 or Mix 2 are not appropriate**
- **Further analysis and discussion is needed to develop a recommendation**

ECONOMIC SCENARIO ANALYSIS

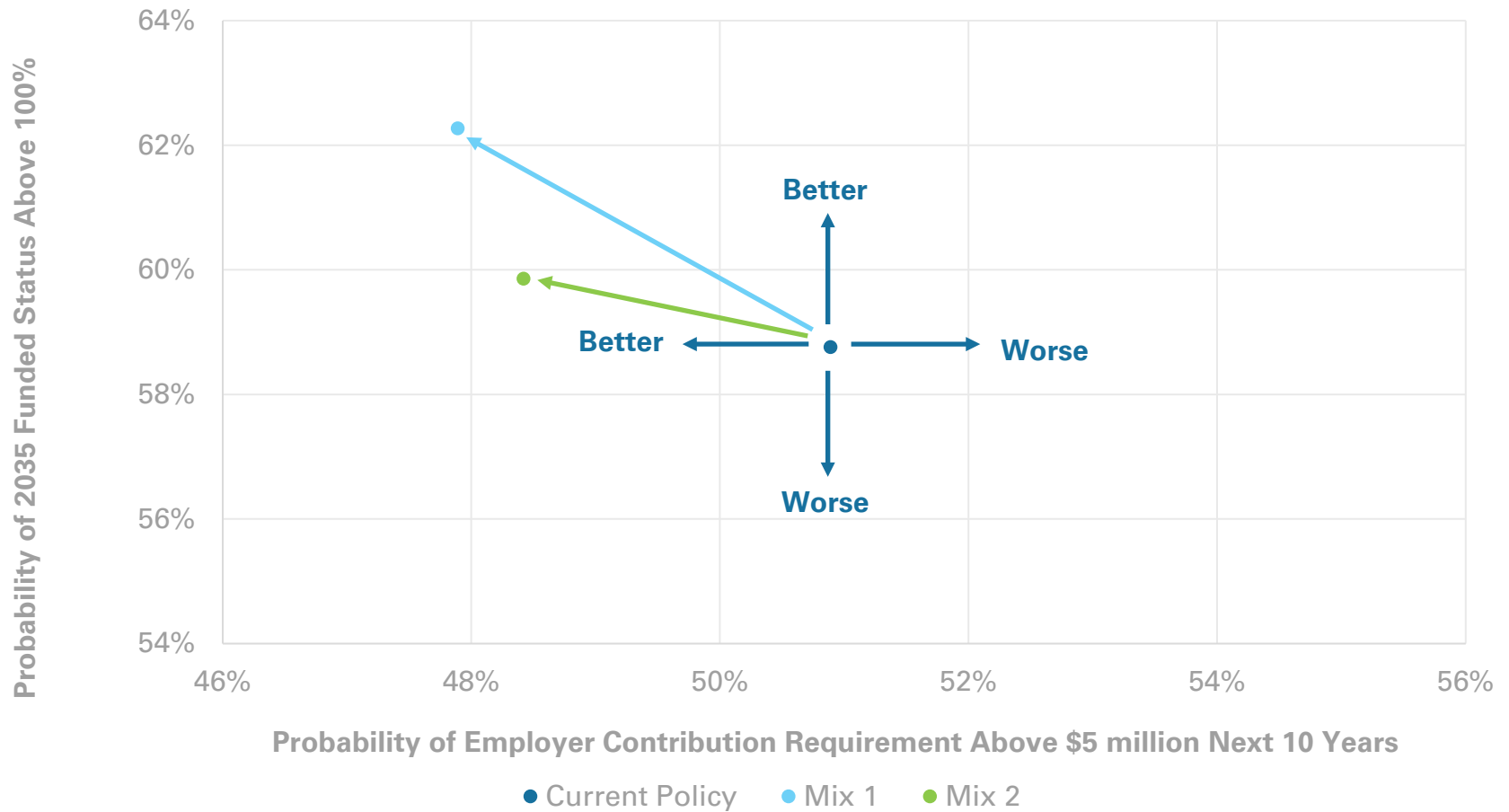
CITY OF GRAND FORKS EMPLOYEE PENSION FUND



Notes: Scenarios reflect a 5-year market cycle. Change in funded ratio is relative to 81.6% as of January 1, 2025 and change in contribution is relative to \$2.7 million for 2025.

STOCHASTIC ANALYSIS

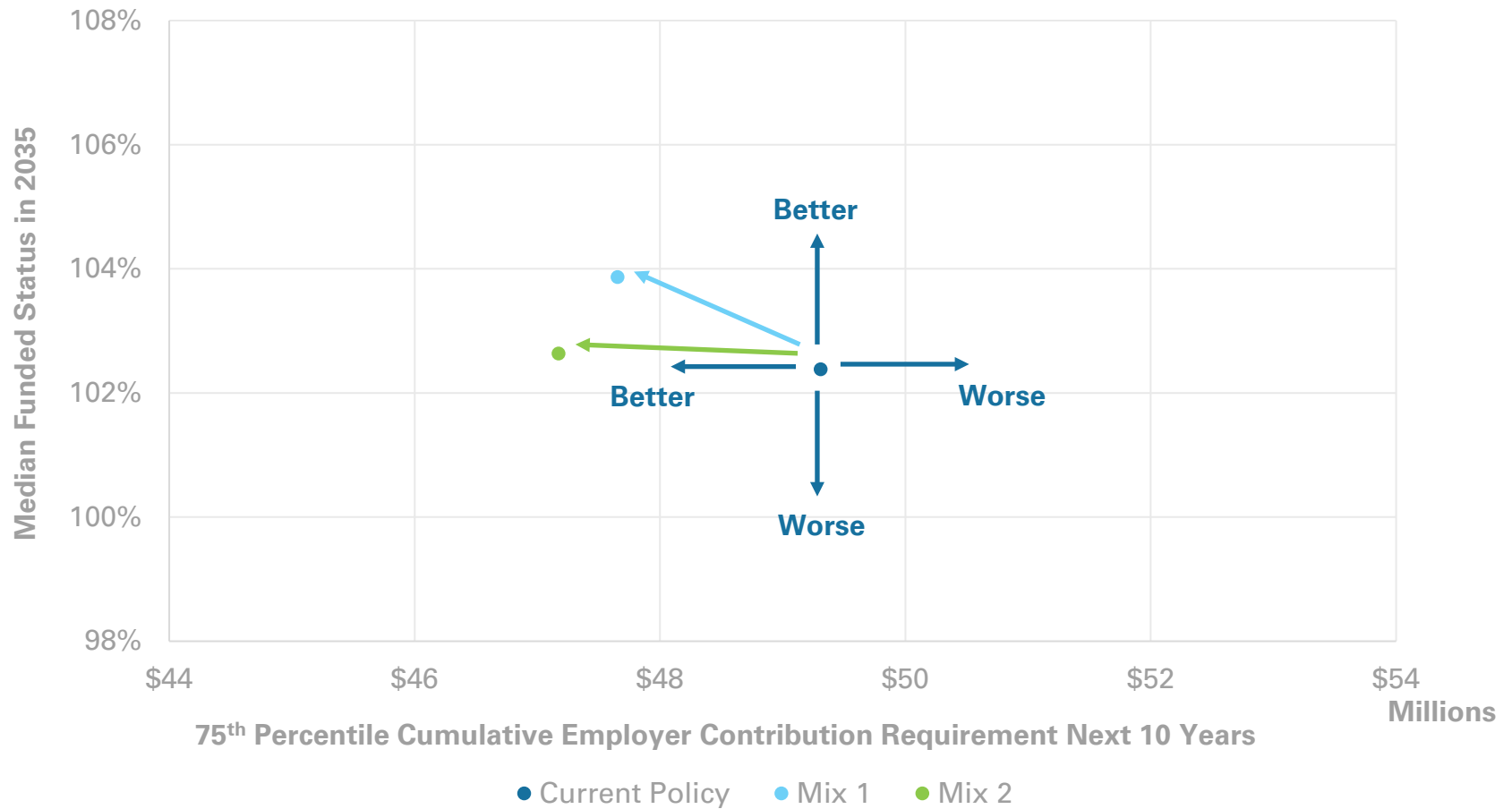
CITY OF GRAND FORKS EMPLOYEE PENSION FUND



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

STOCHASTIC ANALYSIS

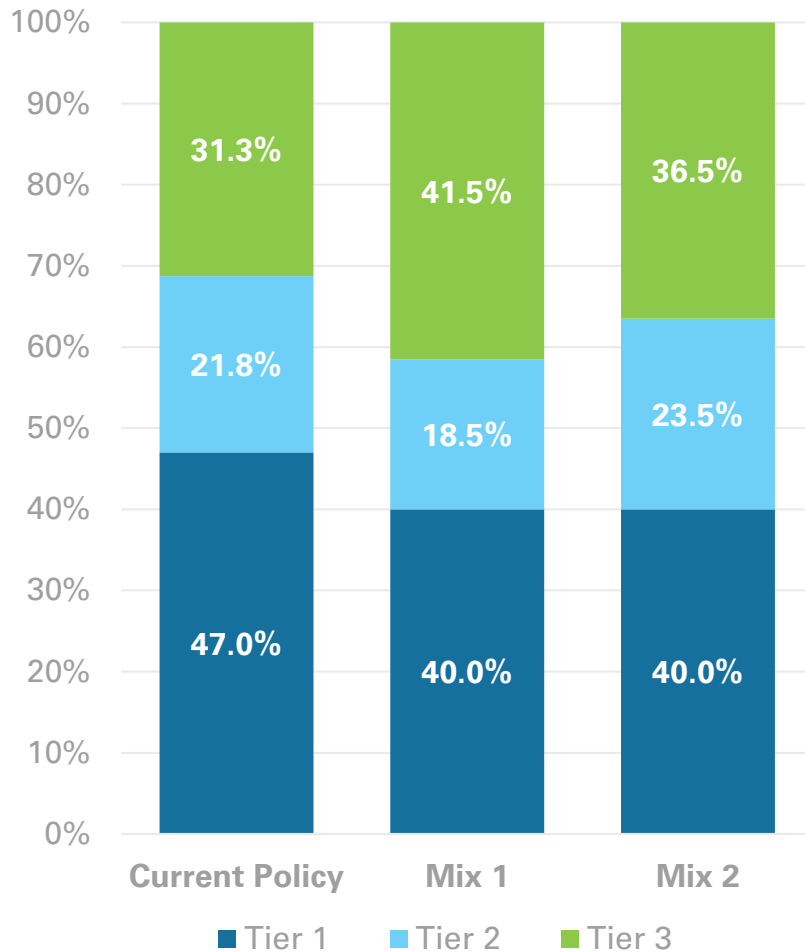
CITY OF GRAND FORKS EMPLOYEE PENSION FUND



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

LIQUIDITY PROFILE

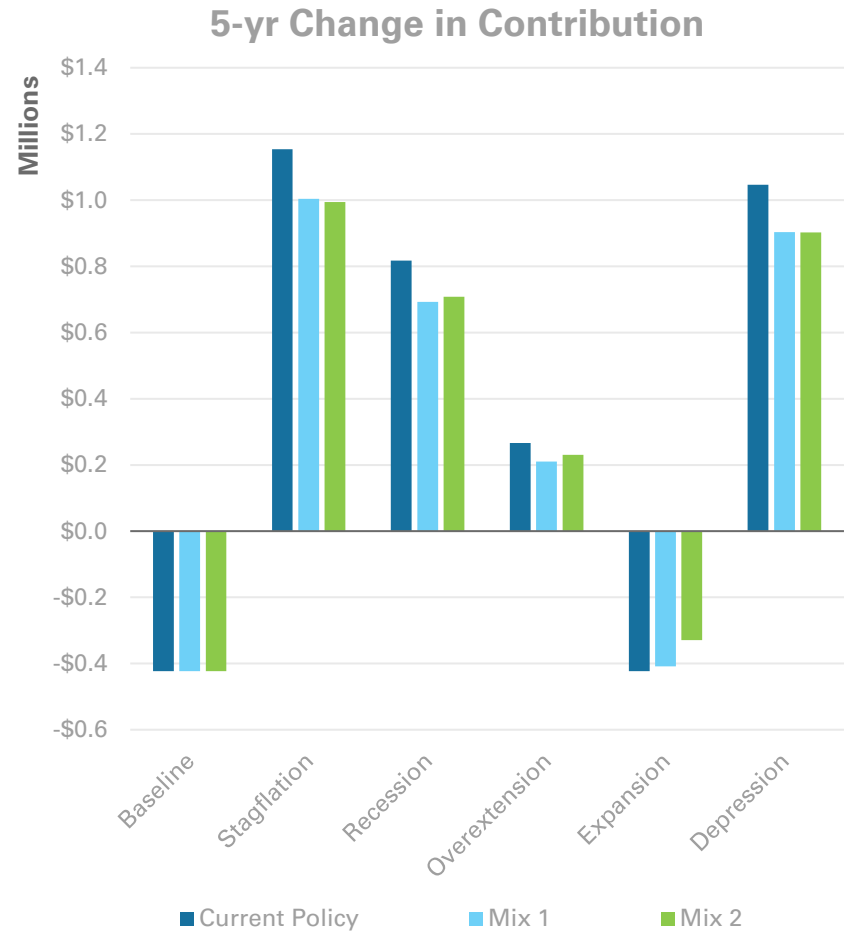
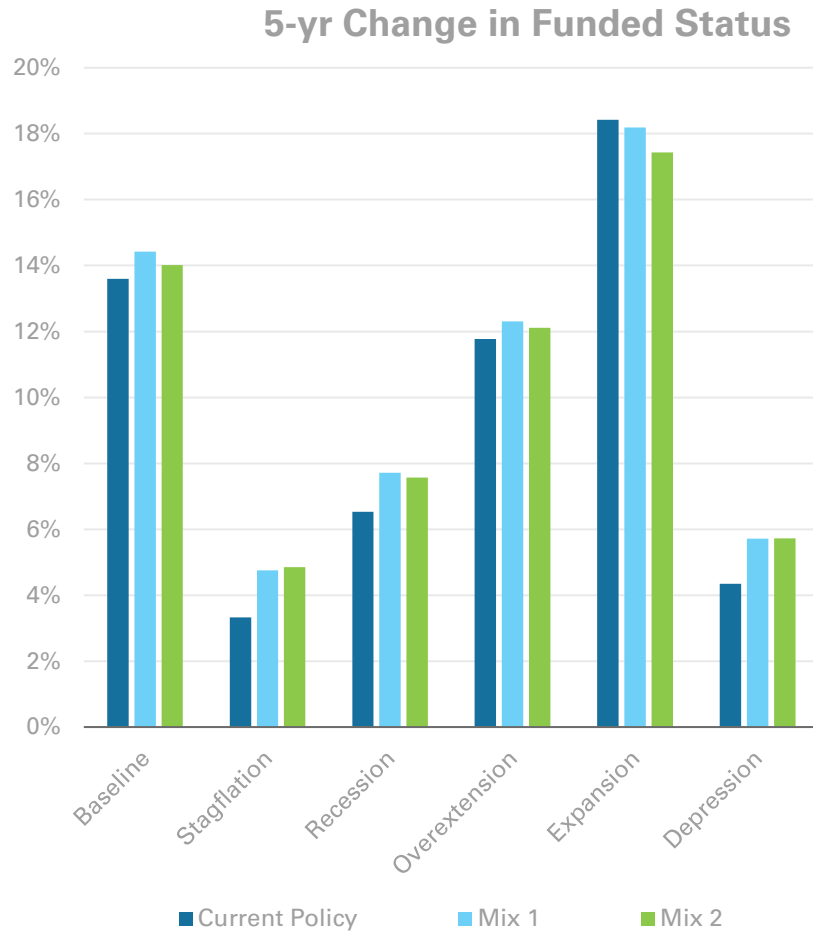
CITY OF GRAND FORKS PARKS DISTRICT PENSION FUND



- **Net cash flow is expected to worsen over next 10 years, from -3.9% to -9.5%**
 - Healthy steady-state outflow typically ranges from -2.0% to -4.0% of assets
- **Deeply negative cash flow is typical for a closed pension plan in its wind down phase**
- **Given the material negative cashflow profile and current wind-down phase of the plan, Mix 1 or Mix 2 are not appropriate**
- **Further analysis and discussion is needed to develop a recommendation**

ECONOMIC SCENARIO ANALYSIS

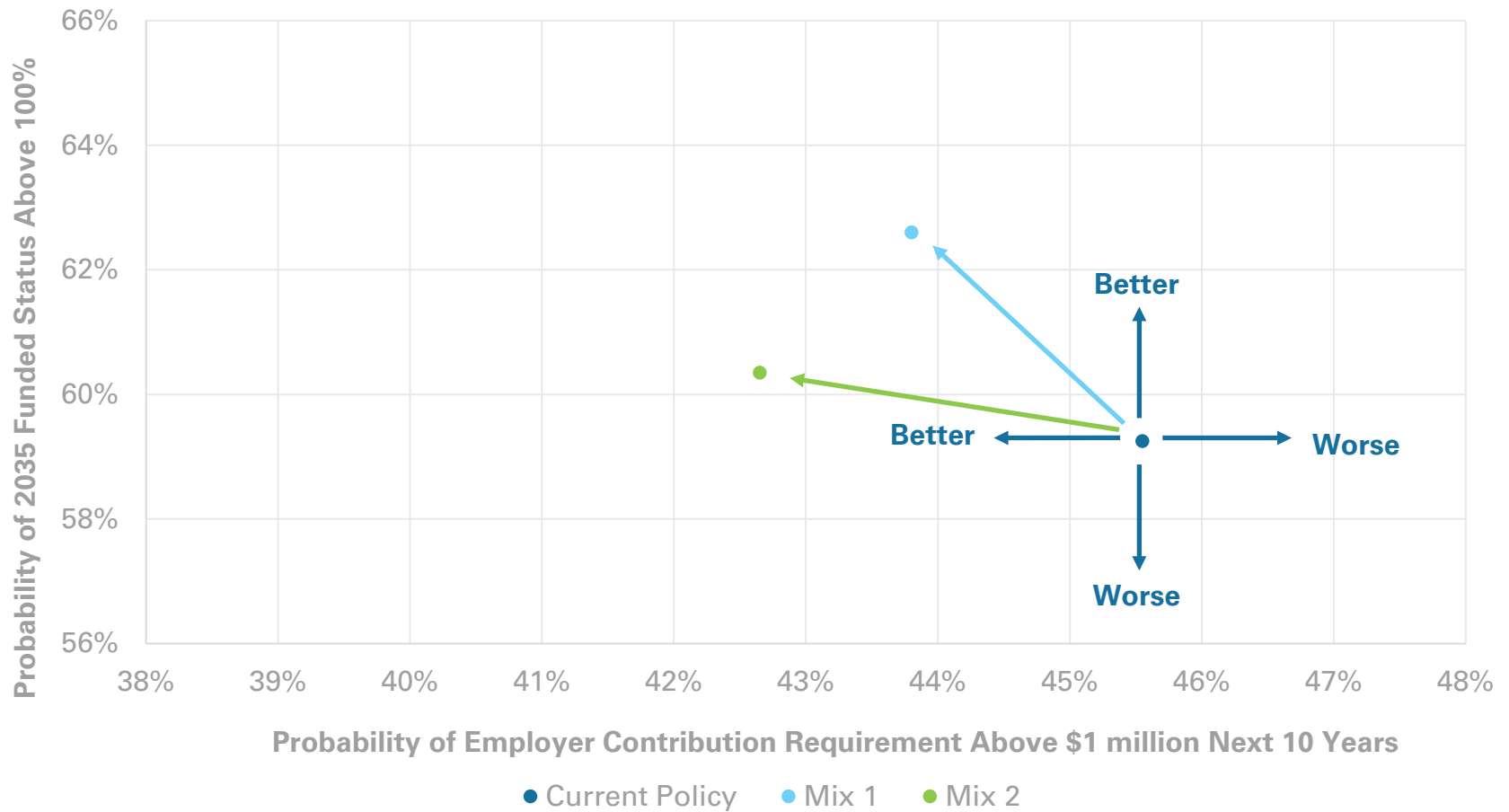
CITY OF GRAND FORKS PARKS DISTRICT PENSION FUND



Notes: Scenarios reflect a 5-year market cycle. Change in funded ratio is relative to 82.0% as of January 1, 2025 and change in contribution is relative to \$423 thousand for 2025.

STOCHASTIC ANALYSIS

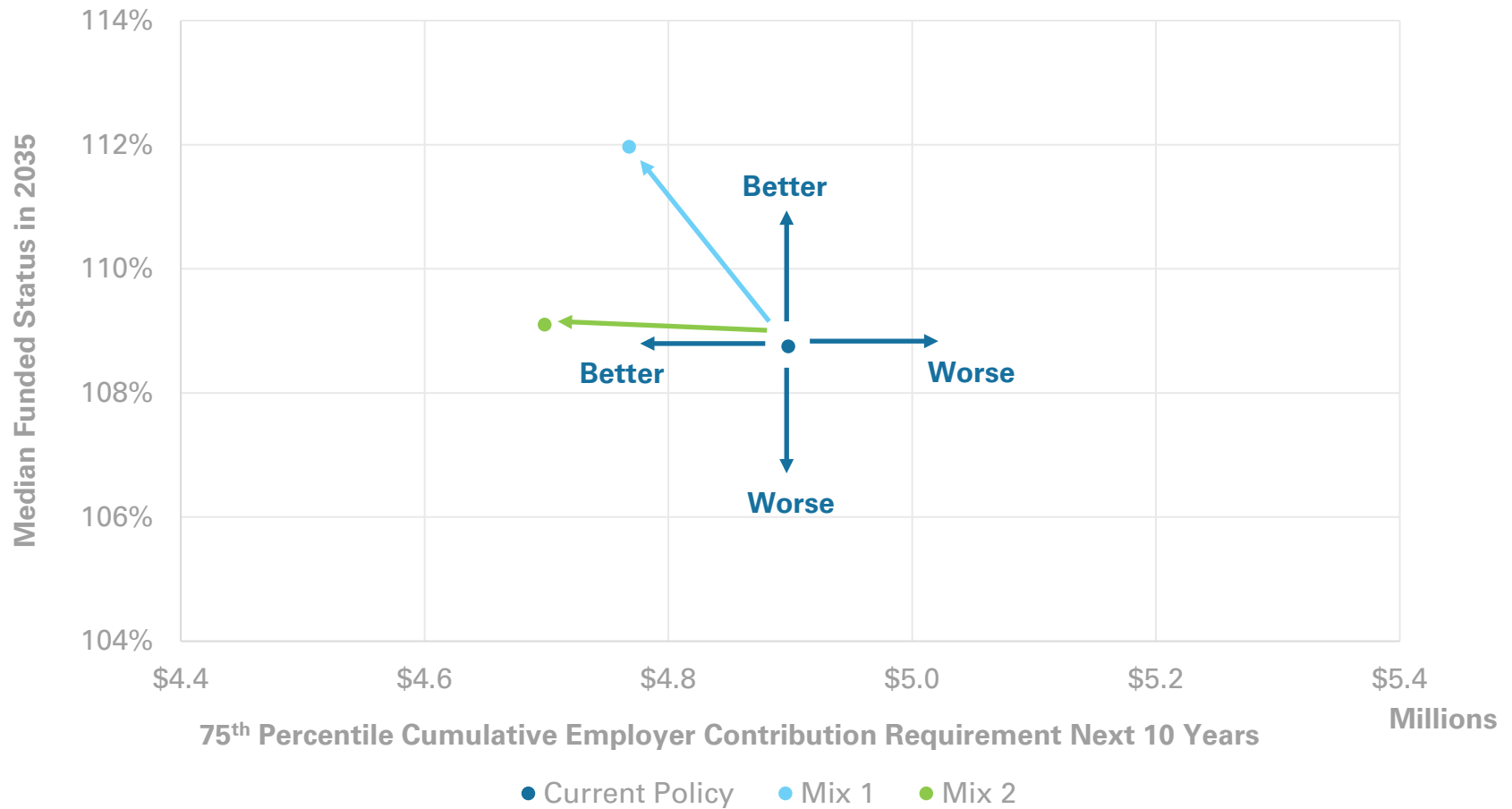
CITY OF GRAND FORKS PARKS DISTRICT PENSION FUND



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

STOCHASTIC ANALYSIS

CITY OF GRAND FORKS PARKS DISTRICT PENSION FUND



Notes: Reflects 10,000 simulations based on mean expected return equal to each allocation's 10-year arithmetic return and with each allocation's annual volatility

CONCLUSION AND RECOMMENDATION



PROPRIETARY & CONFIDENTIAL

CONCLUSIONS AND NEXT STEPS

ADOPT MIX 1 FOR PERS, TFFR AND BISMARCK PLANS; EXPLORE MORE LIQUID POLICIES FOR GRAND FORKS

	Mix 1	PERS	TFFR	Bismarck Police	Bismarck Employees	Grand Forks Employees	Grand Forks Parks
Cash	0.0%	0.0%	1.0%	0.0%	0.0%	1.0%	0.0%
Total Cash	0.0%	0.0%	1.0%	0.0%	0.0%	1.0%	0.0%
Global Equity	40%	51.0%	45.0%	46.0%	42.0%	55.0%	47.0%
Private Equity	15%	7.0%	10.0%	5.0%	4.0%	5.0%	7.5%
Total Equity	55%	58.0%	55.0%	51.0%	46.0%	60.0%	54.5%
US Aggregate Bond	16.0%	16.0%	18.0%	22.0%	27.0%	17.0%	18.0%
US High Yield Corporate Bond	2.5%	3.5%	4.0%	3.5%	3.5%	3.5%	3.8%
Private Debt - Direct Lending	7.5%	3.5%	4.0%	3.5%	3.5%	3.5%	3.8%
Total Fixed Income	26.0%	23.0%	26.0%	29.0%	34.0%	24.0%	25.5%
Real Estate - Core	8.3%	8.3%	6.8%	9.0%	8.6%	5.3%	7.5%
Real Estate - Non-Core	2.7%	2.7%	2.3%	3.0%	3.4%	1.8%	2.5%
Private Real Assets - Natural Resources	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Private Real Assets - Infrastructure	7.0%	7.0%	8.0%	7.0%	7.0%	7.0%	9.0%
Total Real Assets	19.0%	19.0%	18.0%	20.0%	20.0%	15.0%	20.0%

10-Year Expected Return (Geo)	7.0%	6.7%	6.8%	6.6%	6.5%	6.6%	6.7%
30-Year Expected Return (Geo)	8.0%	7.7%	7.7%	7.5%	7.5%	7.6%	7.7%
Asset Volatility	13.8%	13.6%	13.2%	12.4%	11.6%	13.4%	13.1%

- Mix 1 offers meaningfully better long-term returns than any of the current plans' policies
- Volatility for Mix 1 is similar to policies for PERS, TFFR and Grand Forks
- Volatility for Mix 1 is meaningfully higher than the Bismarck plan policies
- Mix 1 offers improved (combination of lower risk and higher return) plan financials over the long-term relative to the current policies for all six plans
- Given the unique liquidity needs for the Grand Forks' plans, we recommend further discussion to explore policies with a lower allocations to illiquid asset classes.

APPENDIX



ASSUMPTIONS AND METHODS

NORTH DAKOTA PUBLIC EMPLOYEES RETIREMENT SYSTEM

- **Deterministic and stochastic return projections are based on NEPC's 3/31/2025 capital market assumptions**
 - Reflects estimated return of 3.91% for the period 7/1/2024—12/31/2024 then NEPC's return expectations thereafter
- **Asset-liability projections follow a roll-forward methodology based on the July 1, 2024 Actuarial Valuation Report**
 - Benefit payment projection provided by GRS
 - Other than those described herein, all assumptions remain unchanged from the valuation
 - No gains or losses are assumed other than those attributed to investment experience
 - Asset-liability output reflects the roll-up of each plan within PERS modeled individually then aggregated
 - Main System, Judges, Public Safety w/ Prior Service, Public Safety w/o Prior Service
 - Main System liability projections reflect closing to new entrants effective 1/1/2025
 - Main System asset projections reflect \$65 million biennial cash infusion beginning in FY 2025
- **Employer contribution based on stated funded policy**
 - Main System:
 - For FY 2025 static contribution rate
 - Beginning FY 2026, employer contribution based on employer normal cost plus 30-year closed level percent of pay amortization
 - Judges and Public Safety plans:
 - Static contribution rate
- **Employee contribution rates assumed to remain level at current rates**

ASSUMPTIONS AND METHODS

TEACHERS' FUND FOR RETIREMENT

- **Deterministic and stochastic return projections are based on NEPC's 3/31/2025 capital market assumptions**
 - Reflects return of 4.12% for the period 7/1/2024—3/31/2025 then NEPC's return expectations thereafter
- **Asset-liability projections follow a roll-forward methodology based on the July 1, 2024 Actuarial Valuation Report**
 - Benefit payment projection provided by GRS
 - Other than those described herein, all assumptions remain unchanged from the valuation
 - No gains or losses are assumed other than those attributed to investment experience
- **Employer contribution based on statutory funding policy**
 - Statutory contribution rate of 12.75% until 100% funded, 7.75% thereafter
 - Actuarially Determined Contribution calculated in order to measure contribution excess/(deficit):
 - Normal cost plus amortization of unfunded liability plus administrative expenses
 - Level percent of payroll 30-year closed amortization of unfunded liability with 19 years remaining as of 7/1/2024 assumed to remain at 10 years once reached and remain open thereafter
- **Employee contribution base on statutory funding policy**
 - Statutory contribution rate of 11.75% until 100% funded, 7.75% thereafter

ASSUMPTIONS AND METHODS

CITY OF BISMARCK EMPLOYEE PENSION FUND

- **Deterministic and stochastic return projections are based on NEPC's 3/31/2025 capital market assumptions**
 - Reflects estimated return of 7.65% for the period 1/1/2024—12/31/2024 then NEPC's return expectations thereafter
- **Asset-liability projections follow a roll-forward methodology based on the January 1, 2024 Actuarial Valuation Report**
 - Benefit payment projection provided by VIA
 - Other than those described herein, all assumptions remain unchanged from the valuation
 - No gains or losses are assumed other than those attributed to investment experience
- **Employer contribution based on stated funded policy**
 - Fixed contribution rate: 10.4%
 - Actuarially Determined Contribution:
 - Level percent of payroll 30-year closed amortization of unfunded liability with 15 years remaining as of 1/1/2024
 - Used to estimate contribution sufficiency of fixed contribution
- **Employee contribution rates assumed to remain level at current rates**
 - Fixed contribution rate: 5.0%

ASSUMPTIONS AND METHODS

CITY OF BISMARK POLICE PENSION FUND

- **Deterministic and stochastic return projections are based on NEPC's 3/31/2025 capital market assumptions**
 - Reflects estimated return of 8.68% for the period 1/1/2024—12/31/2024 then NEPC's return expectations thereafter
- **Asset-liability projections follow a roll-forward methodology based on the January 1, 2024 Actuarial Valuation Report**
 - Benefit payment projection provided by VIA
 - Other than those described herein, all assumptions remain unchanged from the valuation
 - No gains or losses are assumed other than those attributed to investment experience
- **Employer contribution based on stated funded policy**
 - Fixed contribution rate: 14.5%
 - Actuarially Determined Contribution:
 - Level percent of payroll 30-year closed amortization of unfunded liability with 15 years remaining as of 1/1/2024
 - Used to estimate contribution sufficiency of fixed contribution
- **Employee contribution rates assumed to remain level at current rates**
 - Fixed contribution rate: 9.4%

ASSUMPTIONS AND METHODS

CITY OF GRAND FORKS EMPLOYEE PENSION FUND

- **Deterministic and stochastic return projections are based on NEPC's 3/31/2025 capital market assumptions**
 - Reflects estimated return of 10.9% for the period 1/1/2024—12/31/2024 then NEPC's return expectations thereafter
- **Asset-liability projections follow a roll-forward methodology based on the January 1, 2024 Actuarial Valuation Report**
 - Benefit payment projection provided by Deloitte
 - Active population assumed to fully wind down within the remaining amortization period
 - Other than those described herein, all assumptions remain unchanged from the valuation
 - No gains or losses are assumed other than those attributed to investment experience
- **Employer contribution based on actuarially determined contribution**
 - Employer normal cost share
 - Level dollar 30-year closed amortization of unfunded liability with 10 years remaining as of 1/1/2025
- **Employee contribution rate assumed to remain level as a percent of payroll**

ASSUMPTIONS AND METHODS

CITY OF GRAND FORKS PARKS DISTRICT PENSION FUND

- **Deterministic and stochastic return projections are based on NEPC's 3/31/2025 capital market assumptions**
 - Reflects estimated return of 7.8% for the period 1/1/2024—12/31/2024 then NEPC's return expectations thereafter
- **Asset-liability projections follow a roll-forward methodology based on the January 1, 2024 Actuarial Valuation Report**
 - Benefit payment projection provided by Gallagher
 - Active population assumed to fully wind down within the remaining amortization period
 - Other than those described herein, all assumptions remain unchanged from the valuation
 - No gains or losses are assumed other than those attributed to investment experience
- **Employer contribution based on actuarially determined contribution**
 - Employer normal cost share
 - Level dollar 14-year closed amortization of unfunded liability with 6 years remaining as of 1/1/2025
- **Employee contribution rate assumed to remain level as a percent of payroll**

INFORMATION DISCLAIMER

Past performance is no guarantee of future results.

NEPC, LLC is an investment consulting firm. We provide asset-liability studies for certain clients but we do not provide actuarial services. Any projections of funded ratio or contributions contained in this report should not be used for budgeting purposes. We recommend contacting the plan's actuary to obtain budgeting estimates.

The goal of this report is to provide a basis for substantiating asset allocation recommendations. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.

Information on market indices was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.

The projection of liabilities in this report uses standard actuarial projection methods and does not rely on actual participant data. Asset and liability information was received from the plan's actuary, and other projection assumptions are stated in the report.

All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.

This report is provided as a management aid for the client's internal use only. This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.

AFM PERFORMANCE & STRATEGY UPDATE

AFM Team
August 8th, 2025

NORTH
Dakota Be Legendary.

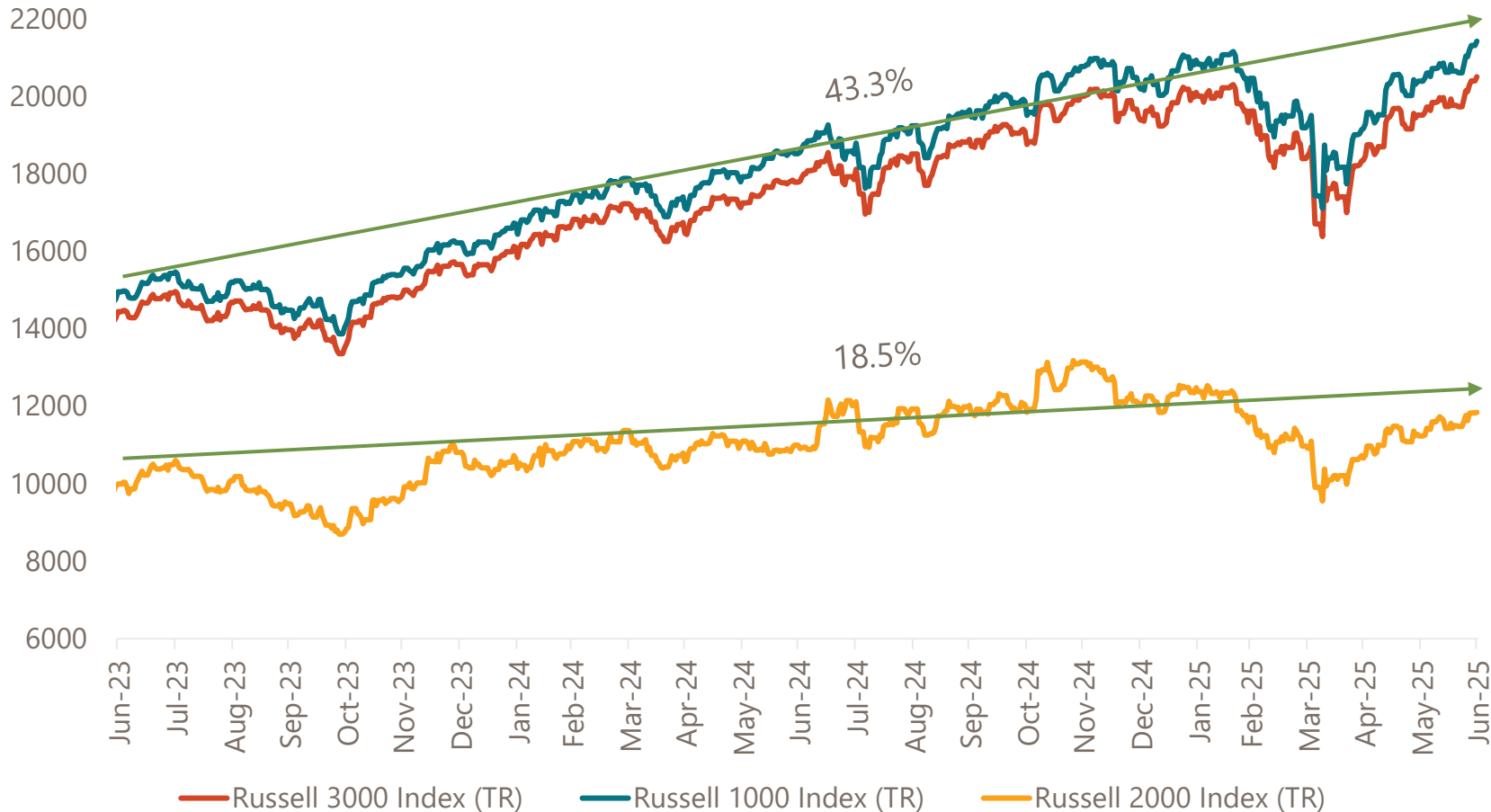
PUBLIC EQUITY



Retirement & Investment

EQUITY MARKETS – U.S.

**Russell 1000 & Russell 2000 Index
(June 30, 2023-June 30, 2025)**

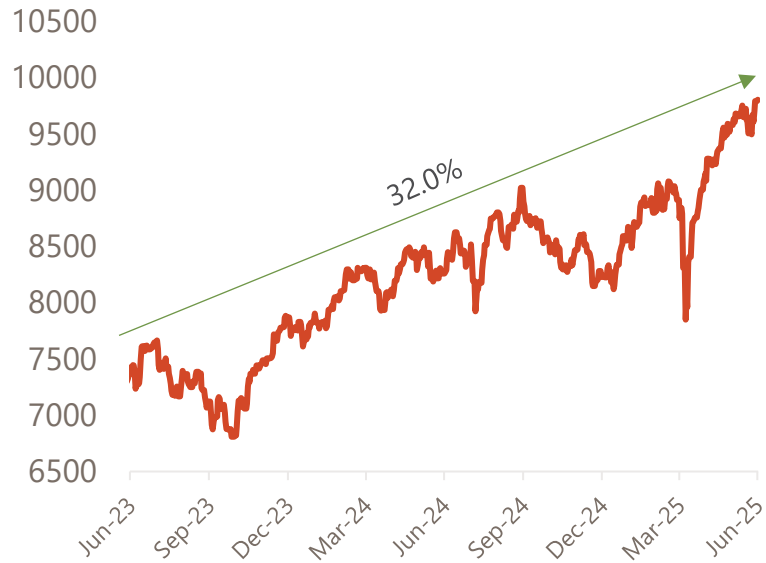


U.S. Markets

- Performance (June 30, 23 to June 30, 25):
 - Russell 3000: +41.2%
 - Russell 1000: +43.3%
 - Russell 2000: +18.5%
- Tariff uncertainty created volatility in global demand outlooks and currency markets, influencing firms with cross-border exposure
- Fluctuating inflation and ongoing ambiguity about the Fed's timeline for cutting interest rates fueled market volatility
- Equity market concentration in mega-cap stocks raised diversification concerns

EQUITY MARKETS – INTERNATIONAL

MSCI World ex US Index
(June 30th, 2023-June 30, 2025)



MSCI World ex US Small Cap Index
(June 30, 2023 - June 30, 2025)



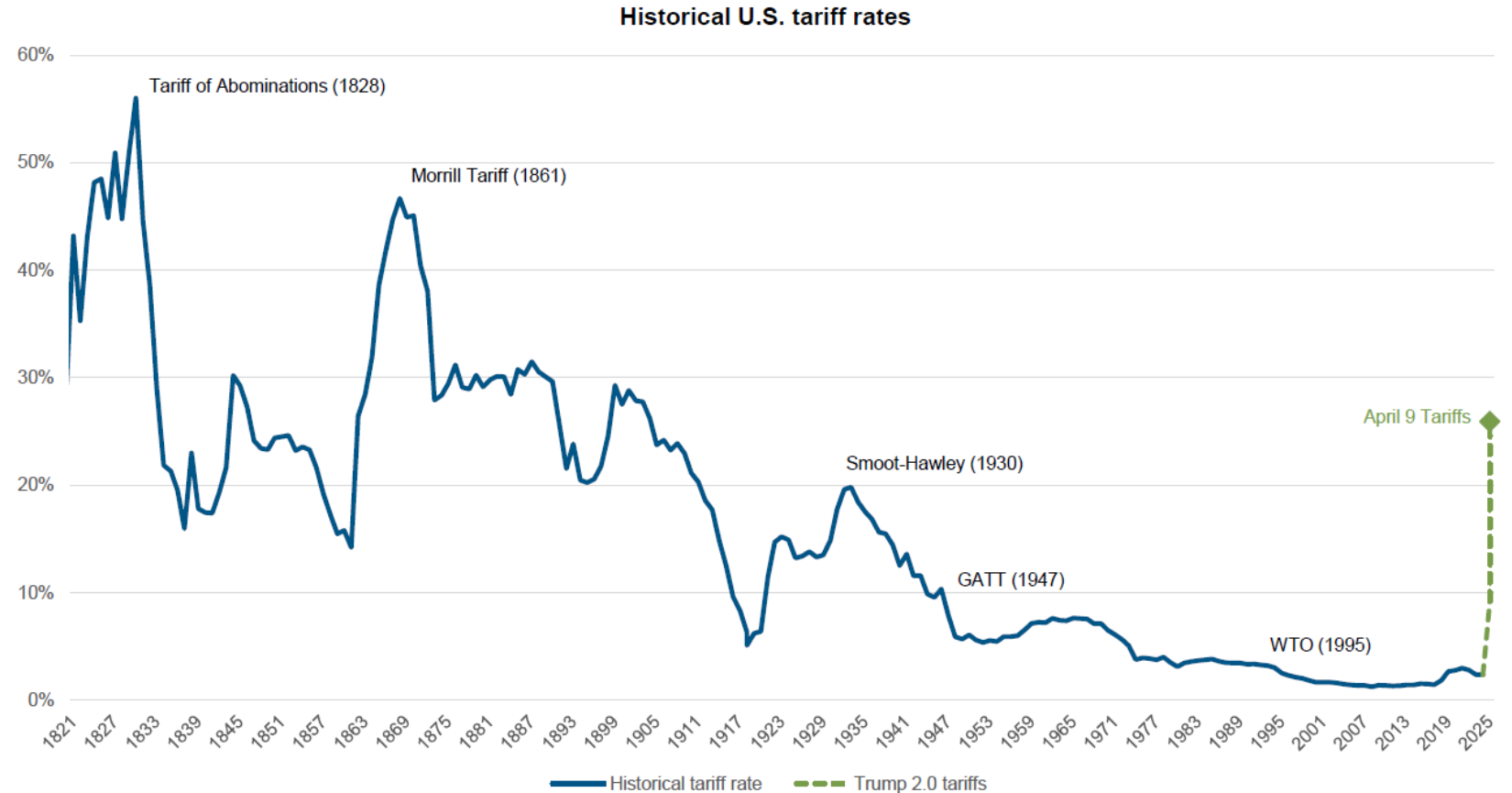
MSCI Emerging Markets Index
(June 30, 2023 - June 30, 2025)



- Performance (June 30, 23 to June 30, 25):
 - MSCI World Ex US Index +32.0%
 - MSCI World Ex US Small Index +32.5%
 - MSCI Emerging Markets Index +29.8%
- International markets benefited from a weaker US dollar
- Improved valuations relative to US market

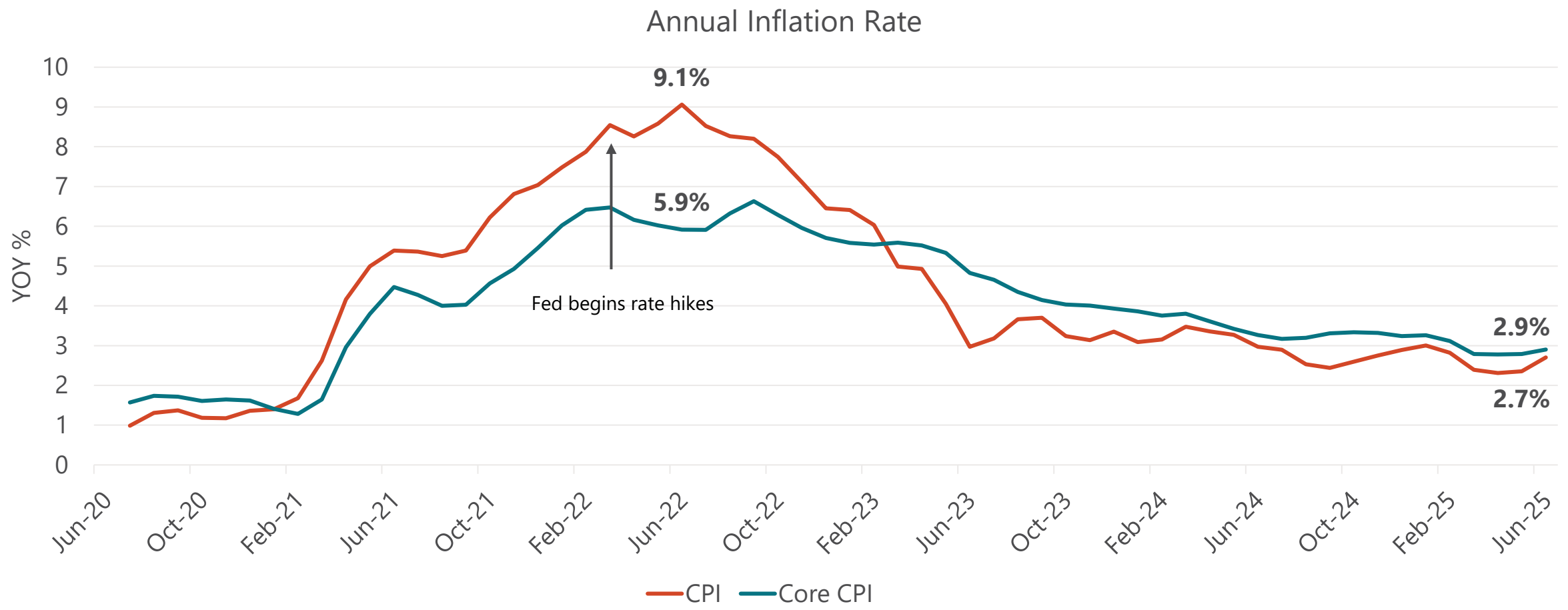
TARIFFS

- A 10% universal tariff was established on most imports; the de minimis exemption for small shipments was eliminated.
- "Reciprocal" Tariffs: Higher rates apply to countries with U.S. trade deficits, such as Canada (35%), China (30%) and India (25%).
- Agreements with partners like the European Union and Japan set their tariff rates at 15%.
- The policy aims to boost domestic manufacturing, protect national security, and rebalance trade.
- Tariffs have increased federal revenue but are projected to raise consumer prices and slow GDP growth.



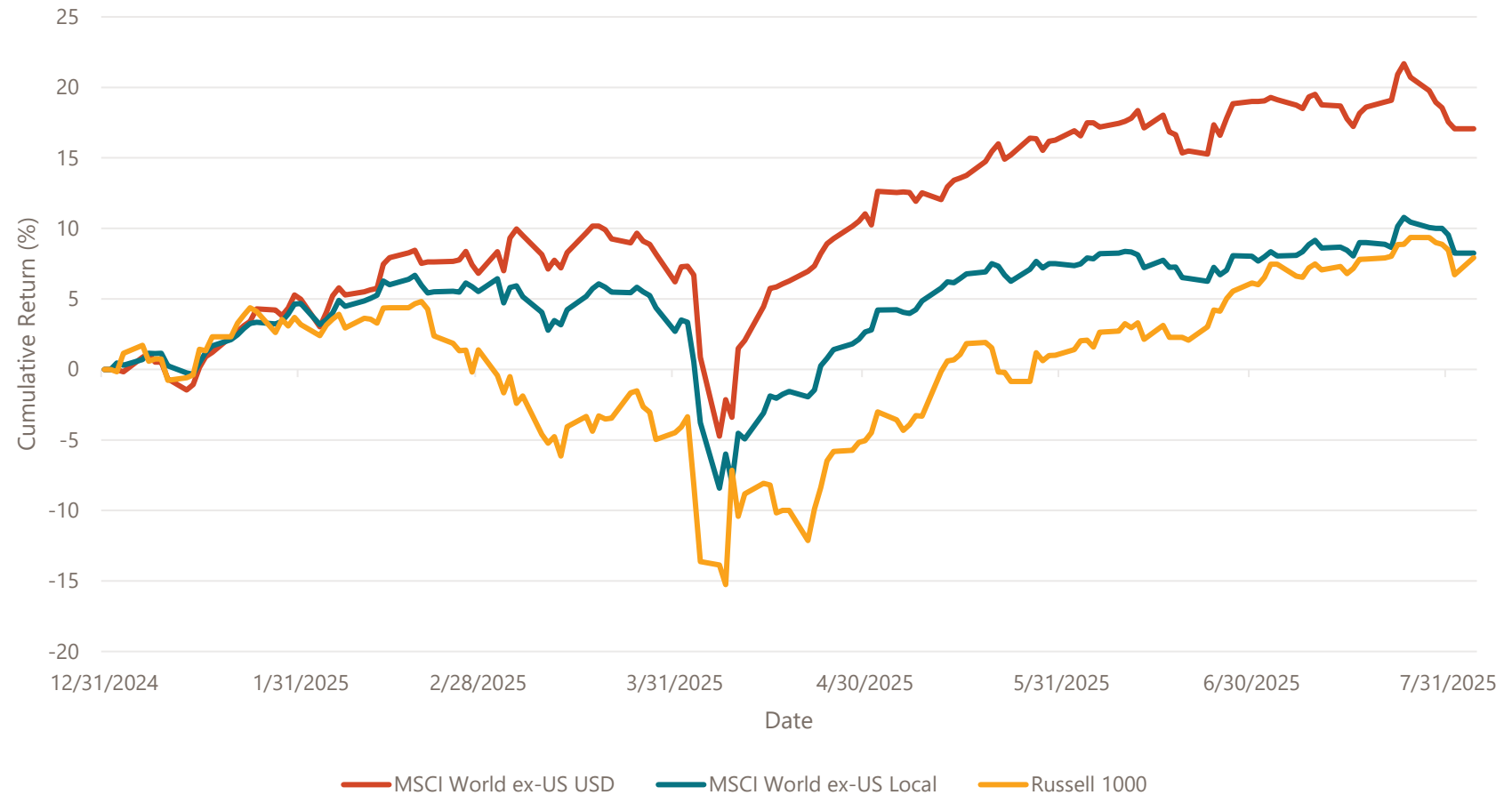
As of April 2025. Source: IMFWEO, NBER, St. Louis Fed, USITC, PIMCO

INFLATION



CURRENCY IMPACT

- A weakening US Dollar created a major tailwind for international returns
- International large cap stocks (+17%) have significantly outperformed US large cap stocks (+8%) for US-based investors
- In local currency terms, the performance similar
- The currency impact accounted for roughly half of the total return from international stocks



EQUITY PERFORMANCE

APRIL 30, 2025

Legacy Public Equity	YTD	1yr	3yr	5yr
Public Equity	0.4%	11.2%		
Legacy Public Equity Benchmark	0.2%	11.4%		
Excess Return	0.2%	-0.2%		
Domestic Large Cap	-5.0%	12.6%	12.8%	16.8%
Russell 1000 Index	-5.1%	11.9%	11.9%	15.4%
Excess Return	0.1%	0.7%	0.9%	1.4%
Domestic Small Cap	-9.9%	-2.7%	2.6%	8.5%
Russell 2000 Index	-11.6%	0.9%	3.3%	9.9%
Excess Return	1.7%	-3.6%	-0.7%	-1.4%
International Equity	8.8%	10.3%	8.1%	11.0%
MSCI ACWI Ex US IMI	8.5%	11.4%	7.6%	10.1%
Excess Return	0.3%	-1.1%	0.5%	0.9%

Performance calculated for the period ending April 30, 2025

EQUITY PERFORMANCE

JUNE 30, 2025

	1 YR PORTFOLIO RETURN	1 YR POLICY RETURN	1 YR ACTIVE RETURN	5 YR PORTFOLIO RETURN	5 YR POLICY RETURN	5 YR ACTIVE RETURN	5 YR TRACKING ERROR	5 YR INFORMATION RATIO
Domestic Equity								
All Cap - Russell 3000		15.3%			16.0%			
Two Sigma AE (1yr is since 08/2024)	19.0%	13.2%	5.8%					
Large Cap - Russell 1000		15.7%			16.3%			
LA Capital Enhanced	18.6%	15.7%	2.9%	17.6%	16.3%	1.3%	2.04%	0.66
T. Rowe Price US Structured Equity (1yr is since 12/2024)	3.4%	3.2%	0.3%					
Worldquant Millennium Advisors (1yr is since 05/2025)	10.9%	11.8%	-0.9%					
Small Cap - Russell 2000		7.7%			10.0%			
Wellington US Small Cap (1yr is since 12/2024)	-0.1%	-1.8%	1.7%					
International Equity								
Total Intl All Cap - MSCI ACWI ex-US IMI		17.8%			10.2%			
William Blair International Leaders	9.4%	17.8%	-8.4%	6.3%	10.2%	-3.9%	8.01%	-0.49
Arrowstreet International Equity (5yr is since 01/2022)	20.1%	17.8%	2.3%	14.0%	7.5%	6.5%	4.73%	1.38
Total Dev. Intl Small Cap - MSCI World ex-US Small		22.9%			9.8%			
DFA Intl. Small Cap Value Portfolio	29.9%	22.9%	6.9%	16.7%	9.8%	6.9%	5.19%	1.32
Emerging Markets - MSCI EM		15.3%			6.8%			
DFA EM All Cap Core (5yr is since 07/2023)	13.1%	15.3%	-2.2%	14.0%	13.9%	0.1%	3.49%	0.02

Performance calculated for the period ending June 30, 2025

EQUITY PORTFOLIO CHANGES

Additions:

- WorldQuant US Large Cap

Terminations:

- Atlanta Capital High Quality Small Cap

PUBLIC FIXED INCOME



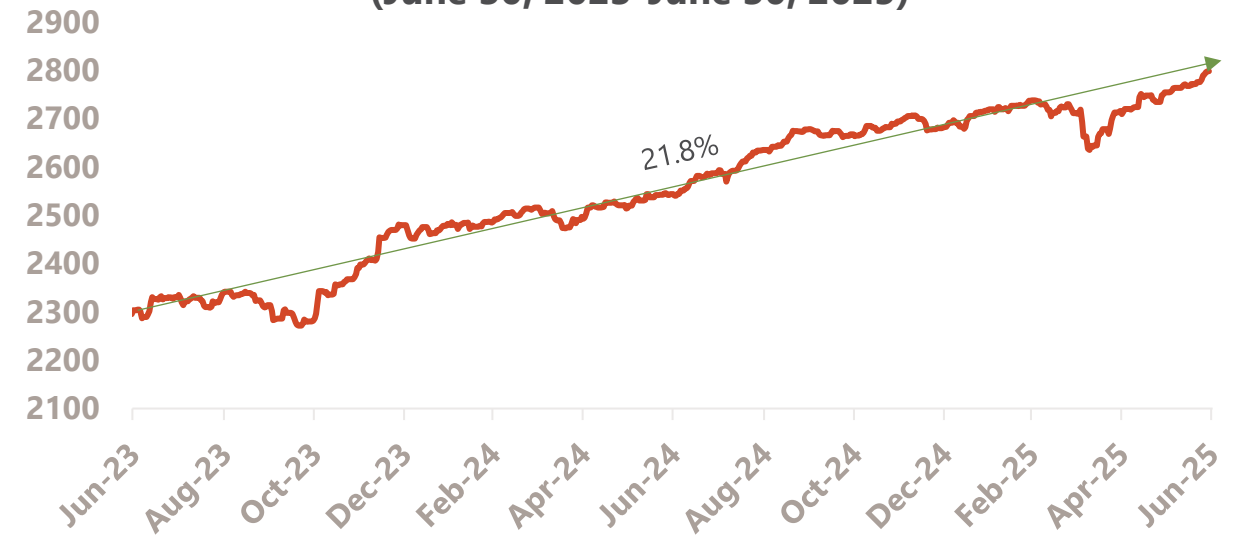
Retirement & Investment

FIXED INCOME MARKETS – U.S.

Bloomberg U.S. Aggregate Bond Index
(June 30, 2023-June 30, 2025)



Bloomberg U.S. High Yield 2% Issuer Cap
(June 30, 2023-June 30, 2025)

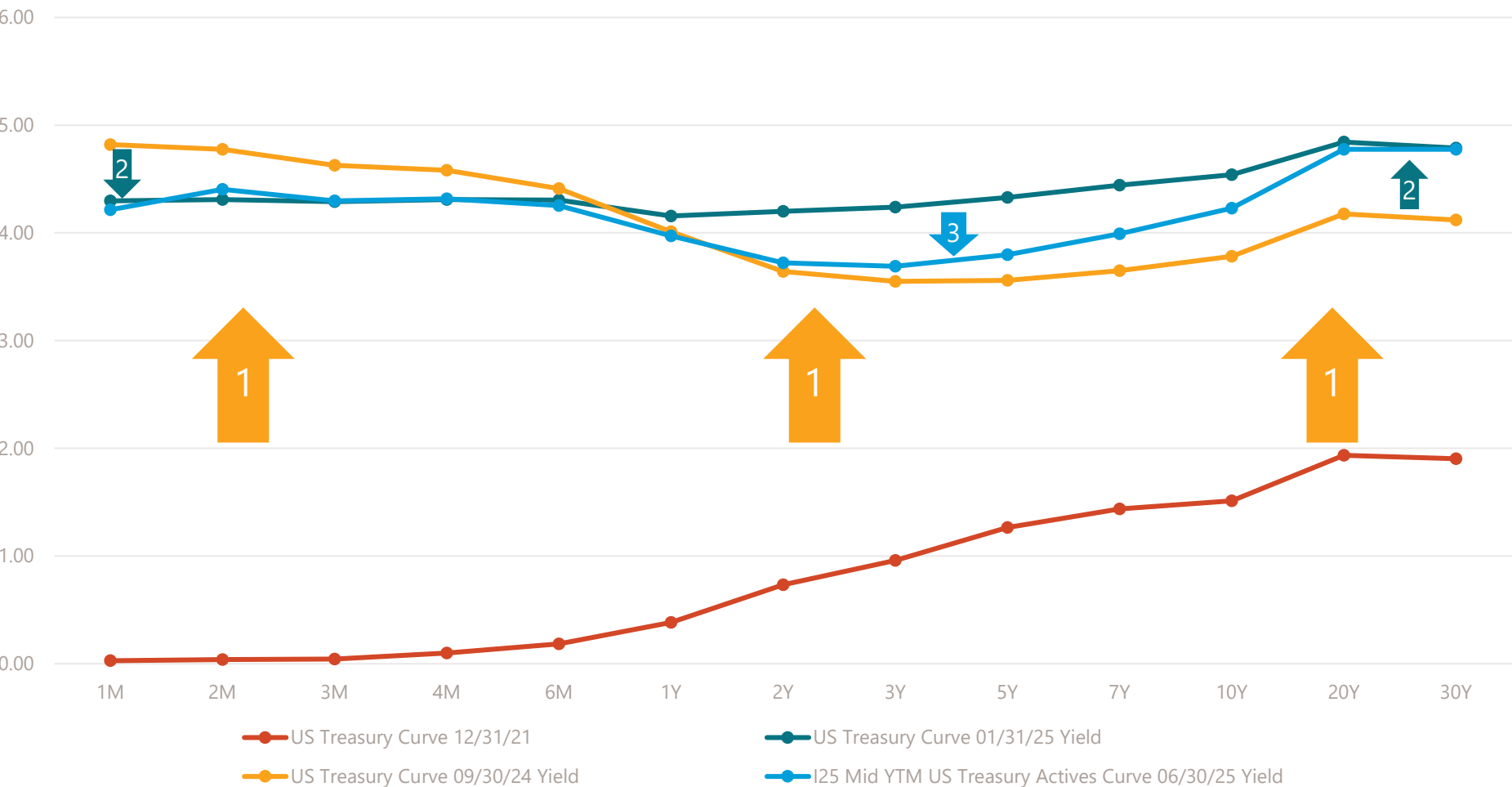


Performance (June 30, 23 to June 30, 25):

- Bloomberg US Aggregate: +8.9%
- Bloomberg US High Yield 2% Issuer Constrained: +21.8%
- Lower quality higher yielding fixed income assets continue to outperform investment-grade assets
- High yield credit spreads tightened

FIXED INCOME – US TREASURY YIELD CURVE

US Treasury Yield Curve Changes Since EOY 2021



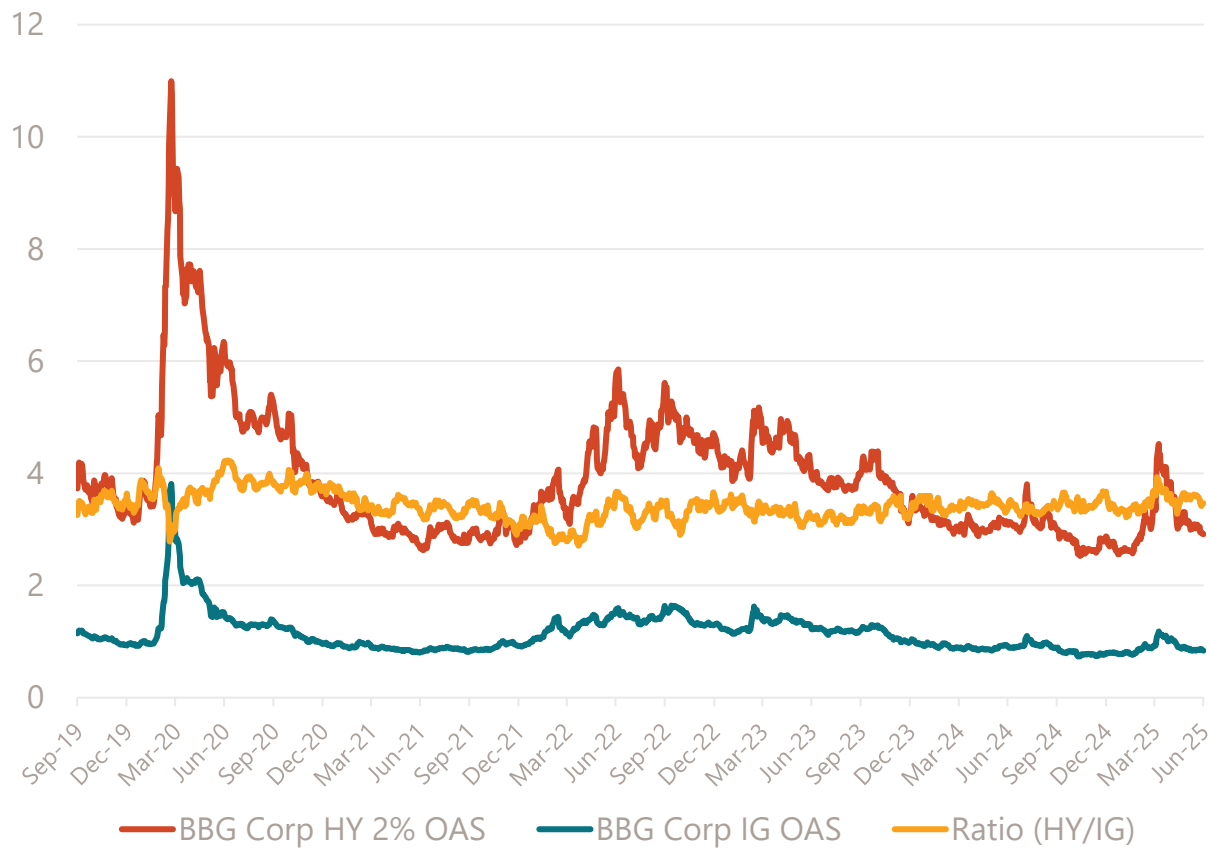
1. Inverted curve from rate hikes from inflation.
2. Short end decreases, long end increases.
3. Inflation expectation impacts middle of curve.



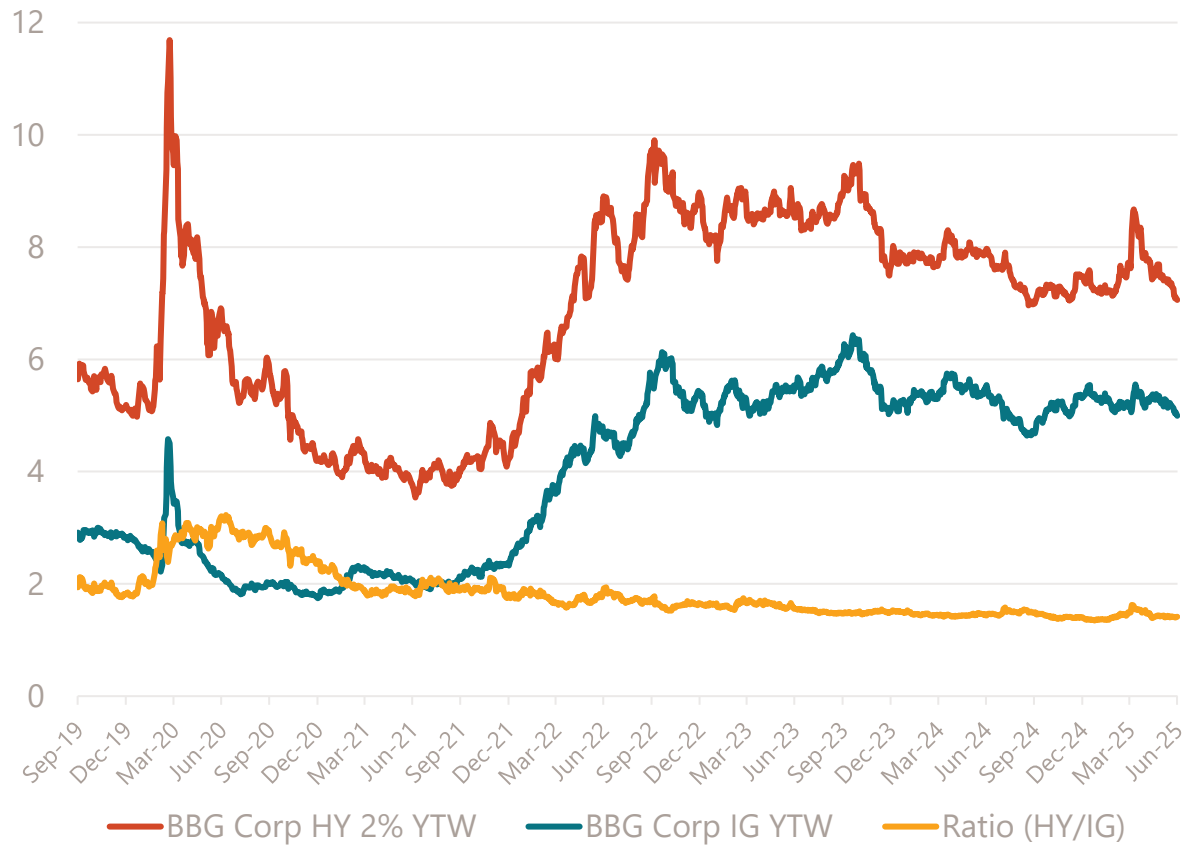
- As of 6/30/25, the US yield curve is >250bps higher across the entire curve since EOY 2021.
- ~50bps of Fed Funds rate cuts priced in by 12/2025.

FIXED INCOME – CORPORATE HY AND IG OAS AND YTW

Bloomberg HY and IG: Option Adjusted Spread



Bloomberg HY and IG: Yield-to-Worst



*The Bloomberg US Corporate IG Bond Index measures the investment grade, fixed-rate, taxable corporate bond market.
** BBG Corp IG OAD = ~6.0 and BBG Corp HY 2% OAD = ~3.0

FIXED INCOME PERFORMANCE

APRIL 30, 2025

Pension Fixed Income	YTD	1yr	3yr	5yr
Investment Grade	3.1%	8.4%	-2.4%	0.4%
Bloomberg Aggregate	3.2%	8.0%	-2.0%	-0.7%
Excess Return	-0.1%	0.4%	0.4%	1.1%
Below Investment Grade	1.1%	8.2%	7.2%	7.7%
Bloomberg High Yield 2% Issuer Constrained	1.0%	8.7%	6.2%	6.3%
Excess Return	0.1%	-0.5%	1.0%	1.4%
Insurance Short Term Fixed Income				
Short Term Fixed Income	2.0%	7.1%	5.0%	3.4%
Bloomberg 1-3 Gov/Credit	2.4%	6.8%	3.5%	1.6%
Excess Return	-0.4%	0.3%	1.5%	1.8%

Performance calculated for the period ending April 30, 2025

FIXED INCOME PERFORMANCE

JUNE 30, 2025

	1 YR PORTFOLIO RETURN	1 YR POLICY RETURN	1 YR ACTIVE RETURN	5 YR PORTFOLIO RETURN	5 YR POLICY RETURN	5 YR ACTIVE RETURN	5 YR TRACKING ERROR	5 YR INFORMATION RATIO
INVESTMENT GRADE FIXED INCOME								
Bloomberg Aggregate		6.1%			-0.7%			
Prudential Core Fixed Income	6.6%	6.1%	0.5%	-0.1%	-0.7%	0.7%	0.70%	0.92
PIMCO Core Plus	7.1%	6.1%	1.1%	0.1%	-0.7%	0.9%	0.97%	0.90
PIMCO Disco II	8.8%	6.1%	2.7%	6.7%	-0.7%	7.5%	5.60%	1.33
Western Asset Core Fixed Income	7.3%	6.1%	1.2%	-0.5%	-0.7%	0.3%	1.53%	0.16
Allspring Us Corporate Plus	7.8%	6.1%	1.7%	2.0%	-0.7%	2.7%	2.98%	0.90
BELOW IG FIXED INCOME								
Bloomberg High Yield 2% Issuer Constrained		10.3%			6.0%			
PineBridge High Yield (5 year is since 5/2024)	10.0%	10.3%	-0.3%	10.1%	10.7%	-0.6%	0.77%	-0.73
Nomura High Yield (5 year is since 5/2024)	10.3%	10.3%	0.0%	10.6%	10.7%	0.0%	0.22%	-0.18
SHORT TERM FIXED INCOME								
Bloomberg Gov/Credit 1-3yr		5.9%			1.6%			
Barings Active Short Duration	6.8%	5.9%	0.9%	3.6%	1.6%	2.0%	2.05%	0.96
JP Morgan Short Bond Fund	6.4%	5.9%	0.5%	2.3%	1.6%	0.7%	0.37%	1.93

Performance calculated for the period ending June 30, 2025

PRIVATE MARKETS MANAGER UPDATE

Private Credit Investment

- OrbiMed Royalty and Credit Opportunities V, L.P.
- Focus on royalty and credit opportunities on approved healthcare products and services.
- Commitment: \$35 million (Legacy Fund Only).

Private Equity Investment

- Chicago Pacific Founders Fund IV, L.P.
- Focus on growth equity and control buyouts in healthcare.
- Commitment: \$60 million total (Pension Pool: \$20 million/Legacy Fund: \$40 million).

INVESTMENT SERVICE CONTRACTS

Vendor	Execution Date	Description	Cost
Broadridge	4/7/2025	Proxy Voting Services	Transactional; \$17,500/year minimum
Hamilton Lane	4/14/2025	Amendment - Portfolio and Technology Administration Services Agreement	\$70,000 base; additional charges per portfolio
LSEG/FTSE/Russell	4/22/2025	Russell Index Data and Replication Licensing	AUM based; \$40,000/year minimum
Ned Davis Research	5/12/2025	Investment Strategy Research Publications	\$22,000
BCA Research	5/13/2025	Investment Strategy Research Publications	\$49,000
NDIT	5/23/2025	NDIT SOW - Investment Data Load	\$22,000 initial implementation; \$500 est. monthly fees
Nossaman	5/30/2025	Legal Engagement - Opening International Markets	Hourly

Report provided pursuant to Section IV Exhibit 2 of the SIB Governance Manual