NORTH Dakota | State Investment Board

Be Legendary. RETIREMENT & INVESTMENT

Investment Committee
Friday, May 9, 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 (April 17, 2025) – ***(Committee Action)***

III. STRATEGY REVIEW (90 minutes) – ***(Information Only)***
   A. Asset Allocation – *Mr. Nankof and Mr. Goldthorpe, NEPC*
   B. Investment Strategy Update – *Mr. Anderson*

(Break)

IV. MANAGER RECOMMENDATION[1] (60 minutes) – ***(Committee Action)***
   A. Private Markets – *Mr. Collins and Mr. Ziettlow*
   B. Public Markets – *Mr. Chin, Mr. Cox, and Mr. Posch*

V. MANAGER UPDATE (10 minutes) – ***(Information Only)***
   A. Private Markets – *Mr. Collins and Mr. Ziettlow*

VI. COMMITTEE SCHEDULE (5 minutes) – ***(Information Only)***
   A. Fiscal Year 2026 – *Mr. Anderson*

VII. DISCUSSION

VIII. ADJOURNMENT

[1] 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.

Any individual requiring an auxiliary aid or service, please contact the Retirement and Investment Office (701) 328-9885 at least three (3) days prior to the scheduled meeting.

STATE INVESTMENT BOARD
INVESTMENT COMMITTEE
MEETING MINUTES OF THE
APRIL 17, 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:	Jac Collins, Senior Investment Analyst Cory Cox, Investment Analyst Derek Dukart, Senior Investment Analyst Jennifer Ferderer, Fiscal Investment Admin Chirag Gandhi, Portfolio Manager Brian Hermanson, Investment Accountant Rachel Kmetz, Interim CFO/COO Robbie Morey, Investment Accountant George Moss, Portfolio Manager Sarah Mudder, Communication & Outreach Director Matt Posch, Portfolio Manager Chad Roberts, Deputy Executive Director/Chief Retirement Officer Jodi Smith, Interim Executive Director Nitin Vaidya, Chief Risk Officer Alexander Weissman, Investment Analyst Jason Yu, Risk Officer Lance Ziettlow, Portfolio Manager
GUESTS:	Members of the Public

CALL TO ORDER

Treasurer Beadle called the State Investment Board (SIB) Investment Committee (IC) meeting to order at 11:01 a.m. on Thursday, April 17, 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 April 17, 2025, meeting.

IT WAS MOVED BY MR. JAHNER AND SECONDED BY COMMISSIONER HERINGER AND CARRIED BY A VOICE VOTE TO APPROVE THE AGENDA FOR THE APRIL 17, 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 March 14, 2025, meeting.

IT WAS MOVED BY DR. SIMLAI AND SECONDED BY MR. CHIN AND CARRIED BY A VOICE VOTE TO APPROVE THE MINUTES FOR THE MARCH 14, 2025, MEETING AS DISTRIBUTED.

AYES: MR. ANDERSON, MR. CHIN, COMMISSIONER HERINGER, MR. JAHNER, DR. SIMLAI, AND TREASURER BEADLE
NAYS: NONE
MOTION CARRIED

STRATEGY REVIEW

Mr. Gandhi and Mr. Moss provided an update on the recent roll-out of the internal investment program, noting the successful onboarding of the Aladdin Order and Execution System (OEMS), and the implementation of the hyper-care phase.

Mr. Anderson discussed a new Trade Error procedure that would require reporting to the investment committee on the unlikely occurrence of a trade error. Mr. Anderson next presented investment performance through January, which included a discussion of the potential impact of the new US tariff policy.

Mr. Vaidya next provided a risk management and technology update presentation, including market risk monitoring, portfolio risk exposures, and an update on information technology systems. Mr. Vaidya ended with a timeline, noting which OEMS activities are completed or remaining.

MANAGER UPDATE

Mr. Chin, Mr. Cox and Mr. Posch provided an update on Equity 2.0, stating WorldQuant Millenium Institutional Advisors was hired for a $305 million mandate to manage US public market large cap equities (Pension $112 million, Legacy $180 million, Insurance $13 million).

QUARTERLY REPORTS

Mr. Anderson provided an overview of contracts signed during Quarter 1 of 2025. The report included vendor names, execution dates, descriptions, and costs of the contracts signed. Committee discussion followed.

DISCUSSION

The committee thanked staff for their continued efforts getting the internal investment program up and running.

ADJOURNMENT

With no further business to come before the Investment Committee, Treasurer Beadle adjourned the meeting at 1:21 p.m.

Prepared by:

Jennifer Ferderer, Assistant to the Board

NORTH DAKOTA ASSET ALLOCATION REVIEW

MAY 2025

NEPC, LLC

OVERVIEW

- **Today’s discussion represents an introduction for the Investment Committee to the review of the asset allocation policies for the six state pension systems**
- **The plans’ liability structure, funded status and discount rate (i.e., long-term return assumption) vary and are outlined on the next slide; these factors will all be analyzed throughout and 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)	60,098	25,663	253	887	377	51
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%
Equity	Non-U.S. Developed Equity	5.1%	4.3%	+0.8%
Equity	Emerging Market Equity	7.7%	8.3%	-0.6%
Equity	Global Equity*	6.5%	5.1%	+1.4%
Equity	Private Equity*	8.8%	8.8%	-
Fixed Income	U.S. Treasury Bond	4.4%	4.4%	-
Fixed Income	U.S. Municipal Bond	4.0%	3.7%	+0.3%
Fixed Income	U.S. Aggregate Bond*	4.8%	4.8%	-
Fixed Income	U.S. TIPS	4.5%	4.7%	-0.2%
Fixed Income	U.S. High Yield Corporate Bond	6.5%	6.1%	+0.4%
Fixed Income	Private Debt*	8.3%	8.3%	-
Real Assets	Commodity Futures	4.4%	4.3%	+0.1%
Real Assets	REIT	5.3%	6.1%	-0.8%
Real Assets	Gold	4.5%	4.8%	-0.3%
Real Assets	Real Estate - Core	5.6%	5.8%	-0.2%
Real Assets	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%
Multi-Asset	60% MSCI ACWI & 40% U.S. Agg.	6.1%	5.3%	+0.8%
Multi-Asset	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**

ASSET ALLOCATION MODELS

	PERS Current Policy	Mix 1	Mix 2	Income Yield	Net Alpha
US Leverage Cost	0%	0%	0%	4.4%	0.0%
Total Cash	**0%**	**0%**	**0%**		
Global Equity	51%	**40%**	**40%**	2.8%	0.5%
Private Equity	7%	**15%**	**10%**	0.0%	1.0%
Total Equity	**58%**	**55%**	**50%**		
US TIPS	0%	**4%**	**5%**	4.5%	0%
US Aggregate Bond	16%	**12%**	**16%**	4.9%	0.25%
US High Yield Corporate Bond	3.5%	**2.5%**	**2.5%**	8.1%	0.25%
Private Debt - Direct Lending	3.5%	**7.5%**	**7.5%**	9.5%	1.0%
Total Fixed Income	**23%**	**26%**	**31%**		
Real Estate - Core	8.3%	8.3%	8.3%	5.4%	0.0%
Real Estate - Non-Core	2.7%	2.7%	2.7%	7.2%	0.5%
Private Real Assets - Natural Resources	1.0%	1.0%	1.0%	3.9%	0.5%
Private Real Assets - Infrastructure	7.0%	7.0%	7.0%	3.2%	0.5%
Total Real Assets	**19%**	**19%**	**19%**		

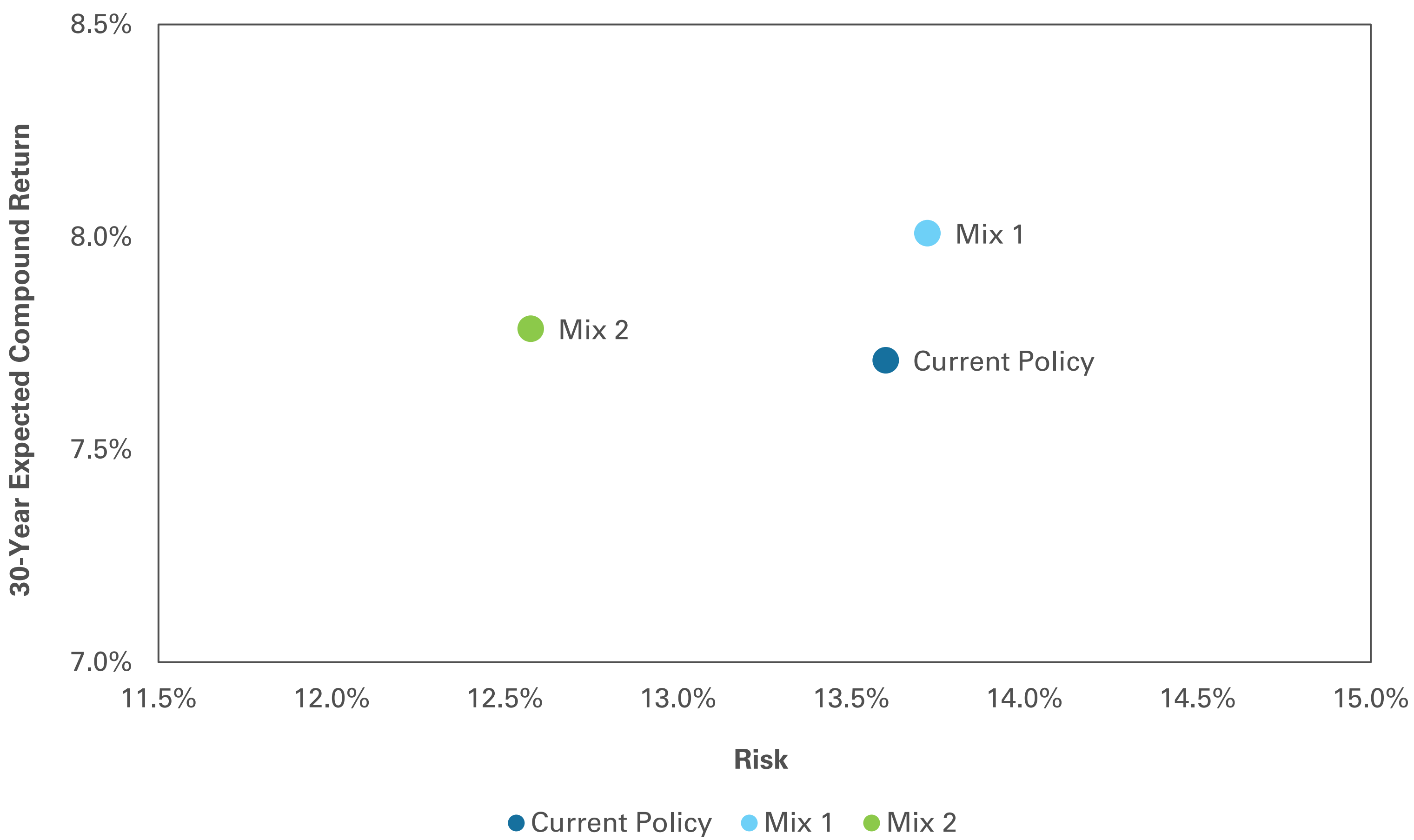
10-Year Expected Return (Geo)	**6.7%**	**7.0%**	**6.8%**
30-Year Expected Return (Geo)	**7.7%**	**8.0%**	**7.8%**
Asset Volatility	**13.6%**	**13.7%**	**12.6%**
Sharpe Ratio (10 years)	**0.20**	**0.22**	**0.23**
Sharpe Ratio (30 years)	**0.31**	**0.33**	**0.34**
Portfolio Income Yield	**3.73%**	**3.70%**	**3.97%**
Portfolio Alpha (Net)	**0.46%**	**0.49%**	**0.47%**

Probability of 1-Yr Return Under 0%	**31.0%**	**30.4%**	**29.3%**
Probability of 30-Yr Return Over 6.5%	**53.7%**	**58.5%**	**55.9%**
95% 1-Year Max Drawdown	**-14.7%**	**-14.6%**	**-12.9%**

Liquidity Profile

Tier 1 (Daily Liquidity)	**51%**	**48%**	**50%**
Tier 2 (Semi-liquid)	**19.5%**	**10.5%**	**13%**
Tier 3 (Illiquid)	**29.5%**	**41.5%**	**37%**

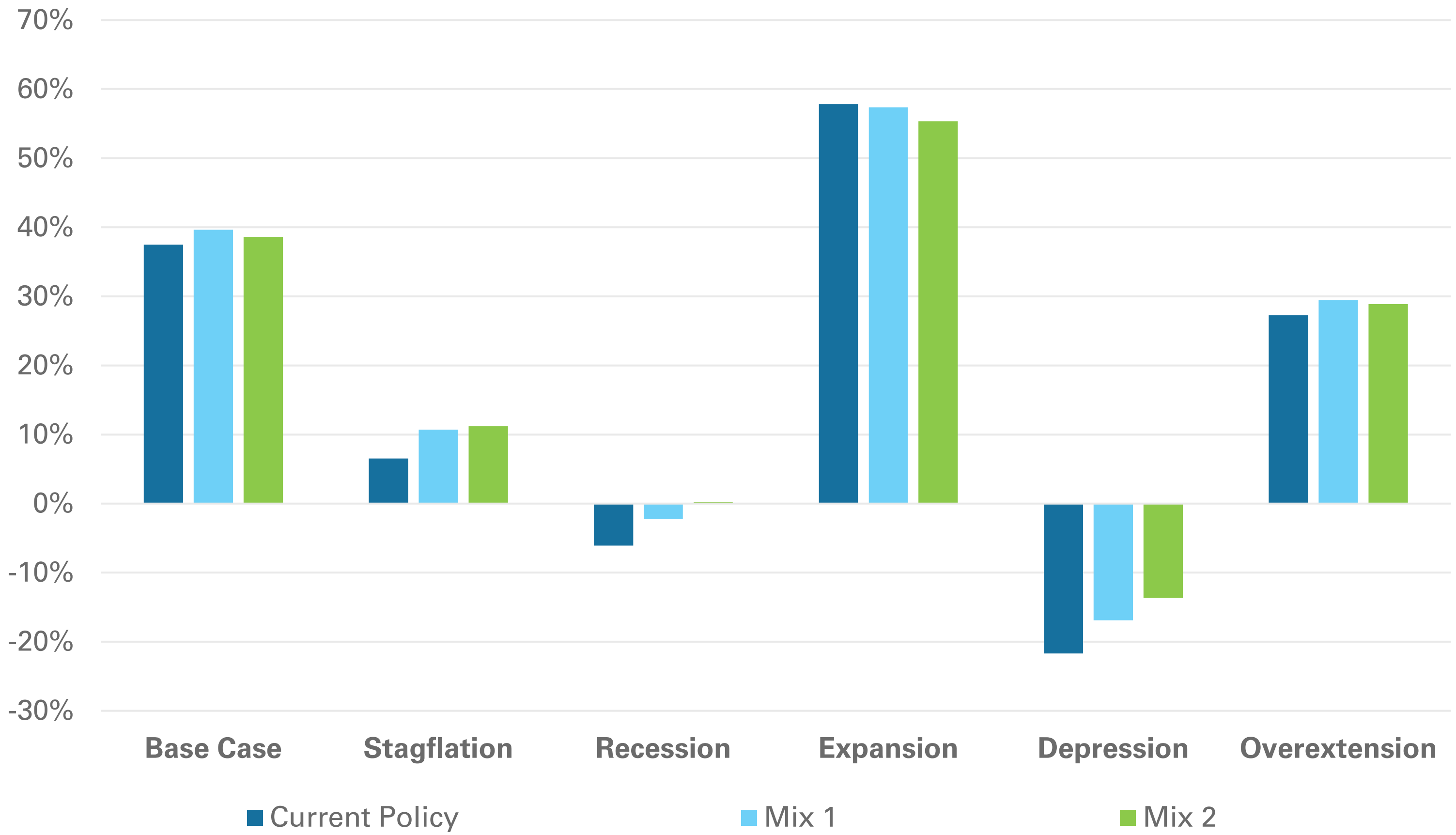
RISK RETURN CHART



- Returns represent the 30-year geometric return assumption for each model
- Risk represents the standard deviation

MACRO SCENARIOS

ALTERNATIVE ALLOCATIONS PERFORM WELL IN STRESS SCENARIOS



- Represents a 5-year cumulative return

NEPC CAPITAL MARKET ASSUMPTIONS

03/31/2025

ASSET CLASS ASSUMPTIONS

OVERVIEW

- **NEPC's capital market assumptions are available each quarter with this release reflecting March 31, 2025 market data**
  - The 3/31 capital market assumptions do not account for market volatility following the April 2nd tariff announcements
- **U.S. equity forecasts improved relative to the rest of the world as policy uncertainty acutely weighed on sentiment and equity prices**
- **Fixed income returns are mixed as market expectations shifted modestly lower, pulling down interest rate forecasts**
- **Even as credit spreads broadly remain below median levels, recent spread widening has improved forward-looking return expectations**
- **We encourage a dedicated safe-haven fixed income allocation to serve as a critical portfolio liquidity source and for downside protection**
  - We believe safe-haven assets are reasonably attractive today and encourage duration-neutral positioning relative to strategic targets

CAPITAL MARKET ASSUMPTION PRINCIPLES

HOW SHOULD RETURN ASSUMPTIONS BE INTERPRETED

- **NEPC return assumptions are meant to reflect a nominal return expectation for a buy-and-hold investor, net of fees, over a 10-year and 30-year investment horizon**
- **With this in mind, NEPC asset class return assumptions look to include all sources of return that flow to an asset class over time**
  - Each major contributing source of return is a building block in our models
- **NEPC's asset class models are designed to be forward-looking and not to replicate the past, which requires both model scrutiny and iteration**
- **Forecasting asset class returns, requires forward-looking assumptions about building block contributors and how they evolve over time**
- **Developing market trends require scrutiny and time to analyze data and research market shifts to understand whether they are cyclical or structural inputs contributing to an asset class's building blocks**

ASSET CLASS ASSUMPTIONS

DEVELOPMENT

- **Capital market assumptions are published for over 70 core asset classes and over 30 composites**
- **Market data as of 3/31/2025**
- **NEPC proprietary models used to develop return forecasts based on a building block approach**
- **The 10-year return outlook is intended to support strategic asset allocation analysis**
- **30-year return assumptions are used for actuarial inputs and long-term planning**

Asset Allocation Process

1. Finalize list of new asset classes
2. Calculate asset class volatility and correlation assumptions
3. Set model terminal values, growth, and inflation inputs
4. Model data updated at quarter-end
5. Review model outputs and produce asset class return assumptions
6. Assumptions released on the 15th calendar day after quarter-end

ASSET CLASS BUILDING BLOCKS

METHODOLOGY

- **Asset models reflect current and forecasted market data to inform expected returns**
- **Systematic inputs are paired with a long-term trend to terminal values**
- **Model inputs are aggregated to capture key return drivers for each asset class**
- **Building block inputs will differ across asset class categories**

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%
Equity	Non-U.S. Developed Equity	5.1%	4.3%	+0.8%
Equity	Emerging Market Equity	7.7%	8.3%	-0.6%
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Real Assets	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%
Multi-Asset	60% MSCI ACWI & 40% U.S. Agg.	6.1%	5.3%	+0.8%
Multi-Asset	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.

MACROECONOMIC

U.S. INFLATION ASSUMPTIONS

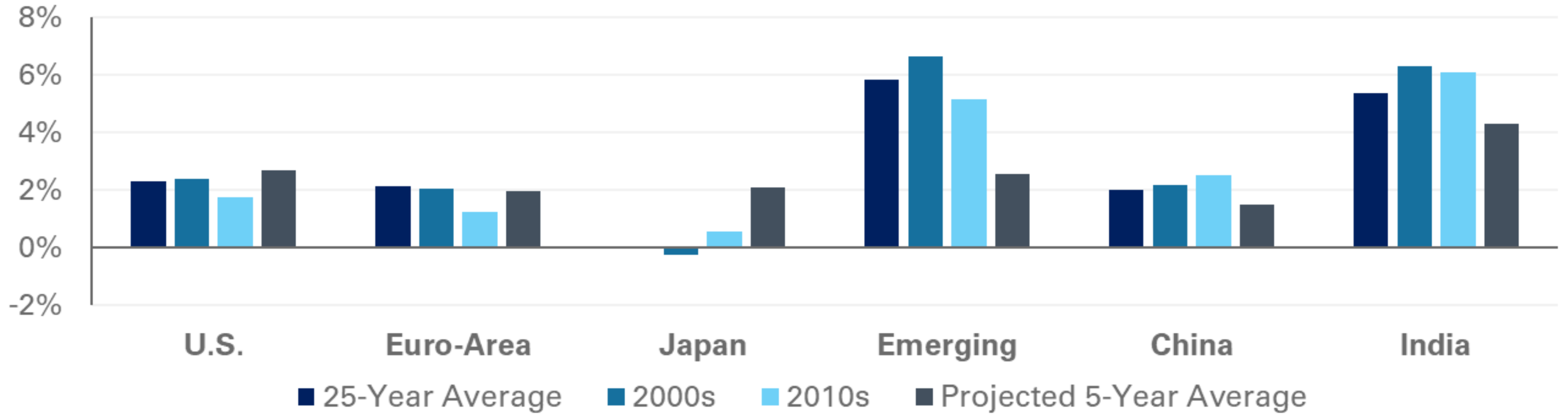
OVERVIEW

- **Inflation is a key building block to develop asset class assumptions**
- **Inflation assumptions are model-driven and informed by multiple inputs for both the U.S. and global assets**
- **NEPC's inflation assumption forecasts near-term paths for major Consumer Price Index (CPI) components including food, energy, core services, and shelter costs**
  - CPI is expected to converge with breakeven inflation forecast over the long-term
- **The composite inflation assumption reflects a blend of NEPC's inflation forecast and market-implied breakeven inflation rates**

U.S. Inflation Assumption		
Time Horizon	**Current**	**12-Month Change**
10-Year	2.6%	—
30-Year	2.7%	+0.1%

GLOBAL INFLATION

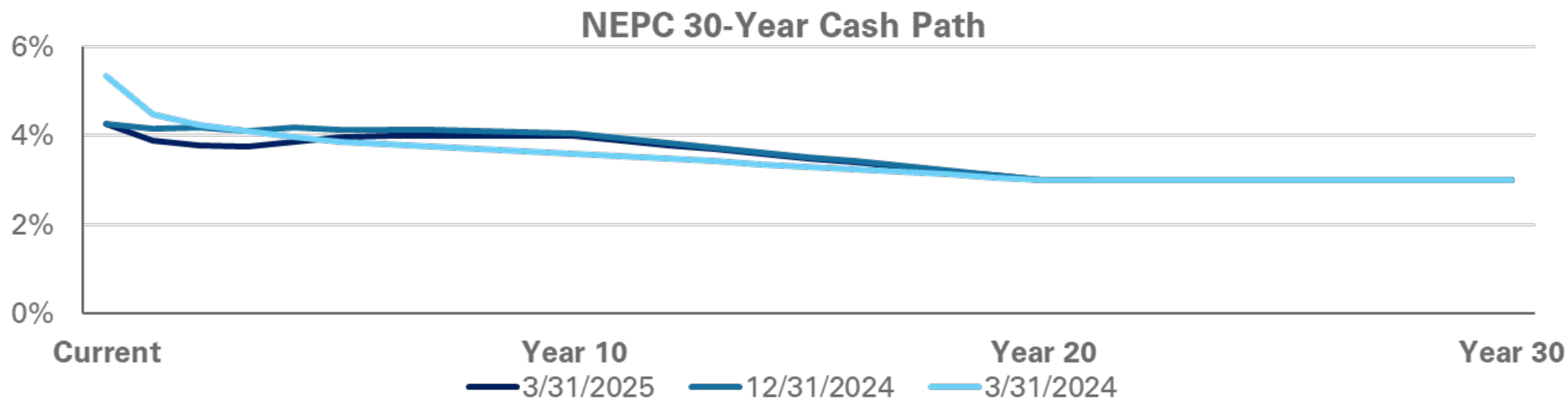
HISTORICAL INFLATION



- **Non-U.S. forecasts are guided by IMF forecasts, local consumer and producer price indices, and global interest rate curves**
- **Near-term inflation levels for developed markets are projected to be higher relative to history**
  - Long-term inflation assumptions reflect NEPC's path and central bank targets

Sources: IMF, FactSet, NEPC

U.S. CASH
EXPECTATIONS



- **Cash is a foundational input for all asset class return expectations that reflects forward expectations of inflation and real interest rates**
  - Cash + risk premia is an input for long-term asset class return projections

- **The composite cash assumption is built from a blend of NEPC's cash forecast and market forward pricing of short-term interest rates**

Time Horizon	Current	12-Month Change
10-Year	3.9%	-0.2%
30-Year	3.5%	—

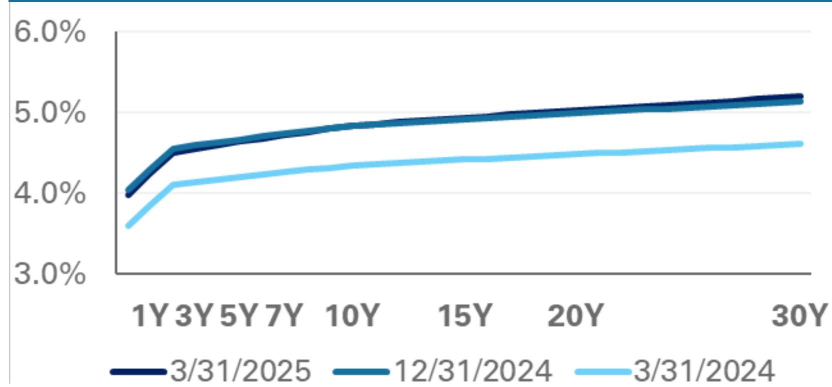
Sources: Bloomberg, FactSet, NEPC

GLOBAL INTEREST RATES

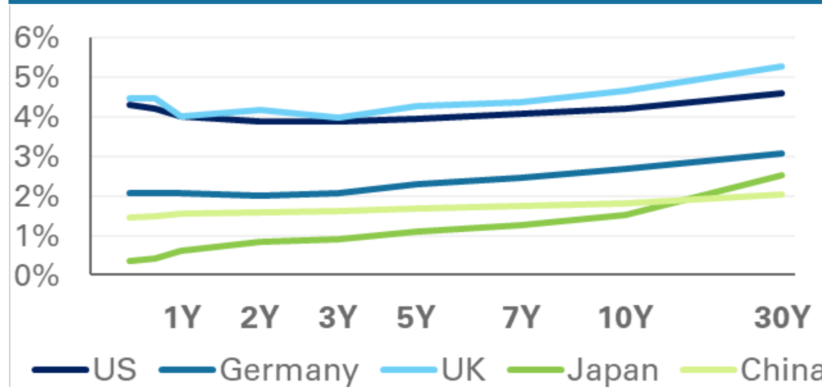
EXPECTATIONS

- **NEPC's outlook on U.S. interest rates has remained consistent over the past few years, generally above market expectations**
- **Market expectations shifted lower Q1 2025, contributing to a lower return outlook for base interest rates**
- **The outlook is less attractive for non-U.S. developed markets due to the nominal yield differential relative to the U.S.**
  - Differing regional growth and inflation conditions have led to diverging central bank actions

NEPC 10-Year Forward U.S. Treasury Curve



Global Yield Curves



Sources: FactSet, NEPC

PUBLIC EQUITY

PUBLIC EQUITY ASSUMPTIONS

OVERVIEW

- **U.S. large-cap expectations moved higher as markets absorbed the impact of DeepSeek news and persistent policy uncertainty, which have weighed on valuations and sentiment**
- **Despite strong price action during Q1, return forecasts in non-U.S. developed markets moved higher as market expectations reflect an improved earnings profile after Europe's fiscal policy announcements**
- **Emerging market forecasts moved lower, reflecting the impact of significant valuation expansion in China**
- **We recommend the MSCI ACWI IMI be adopted as the strategic asset allocation target and investment policy benchmark for public equity**
  - NEPC's strategic recommendation for public equity reflects benchmark-neutral regional weights relative to the MSCI ACWI IMI

PUBLIC EQUITY ASSUMPTIONS

BUILDING BLOCKS

Building Block	Description
Illiquidity Premium	The return expected for assets with illiquidity risk
Valuation	Represents P/E multiple contraction or expansion relative to long-term trend
Inflation	Market-specific inflation based on country-level revenue exposure
Real Earnings Growth	Market-specific real growth based on a weighted-average of country revenue exposure and GDP growth
Shareholder Yield	Income distributed to shareholders via dividend distributions and net share repurchases

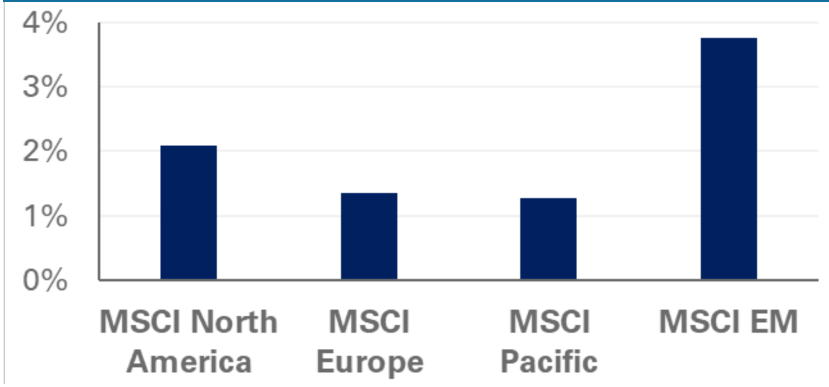
Asset Class	3/31/25 10-Yr Return	12-Month Change
U.S. Large-Cap Equity	6.4%	+2.3%
U.S. Small/Mid-Cap Equity	6.4%	+0.8%
Non-U.S. Developed Equity	5.1%	+0.8%
Non-U.S. Developed Small-Cap Equity	6.3%	-0.2%
Emerging Market Equity	7.7%	-0.6%
Emerging Market Small-Cap Equity	7.7%	-0.1%
Hedge Fund - Equity	6.1%	+0.6%
Global Equity*	6.5%	+1.4%
Private Equity*	8.8%	-

*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. Source: NEPC

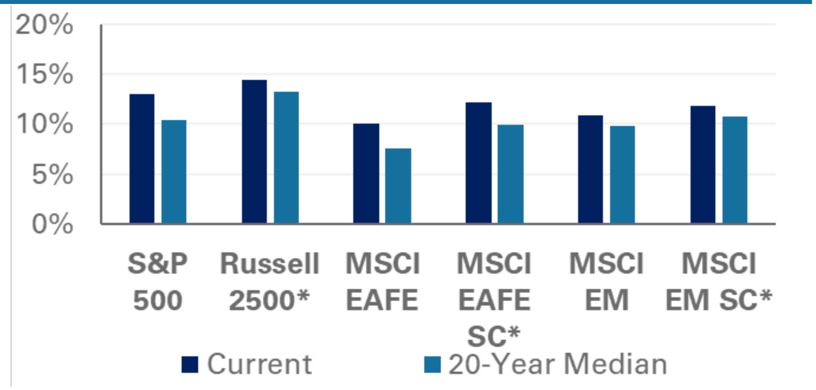
PUBLIC EQUITY
REAL EARNINGS GROWTH

- **U.S. equities benefit from higher sales growth forecasts, reflecting the resiliency and consistency of the U.S. consumer**
  - Relative to other markets, U.S. large cap companies have global revenue exposure that benefits from global growth rates
- **Cyclically-high profit margin levels temper real earnings growth forecasts given expectations for normalization**
  - Profit margin assumptions reflect a path towards long-term targets that consider the shift in index composition through time

Expected 5-Year Real Growth



Profit Margins Relative Median

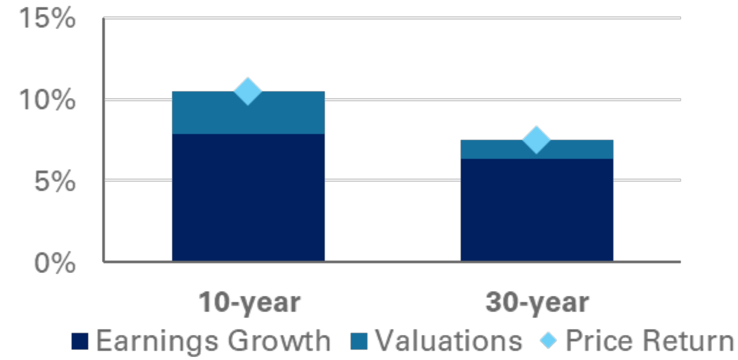


Sources: S&P, Russell, MSCI, FactSet, NEPC
Note: *Small cap indices margins based on EBITDA margins

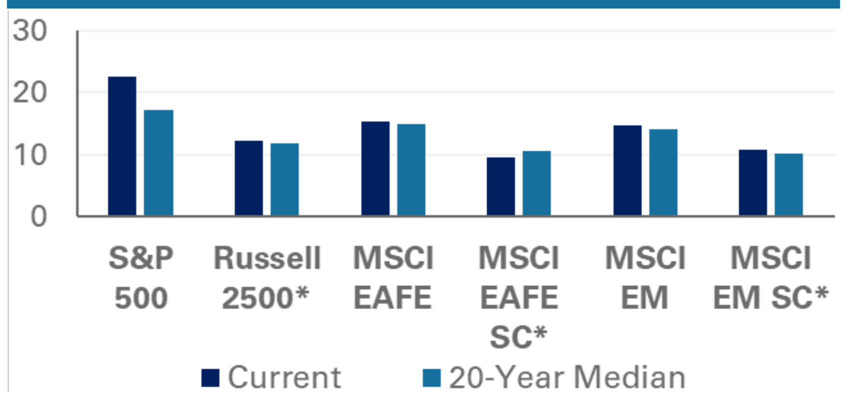
PUBLIC EQUITY
VALUATION

- **Valuations have a large influence on short- to medium-term returns, but earnings growth is the driver of long-term returns**
- **U.S. large-cap valuations remain elevated relative to long-term target levels**
  - U.S. large-cap valuations represent the largest drag on returns across the equity complex
- **Non-U.S. Developed valuations remain close to fair value**
  - Lower long-term valuation targets reflect expectations of a more challenged economic profile

Historical S&P 500 Price Return



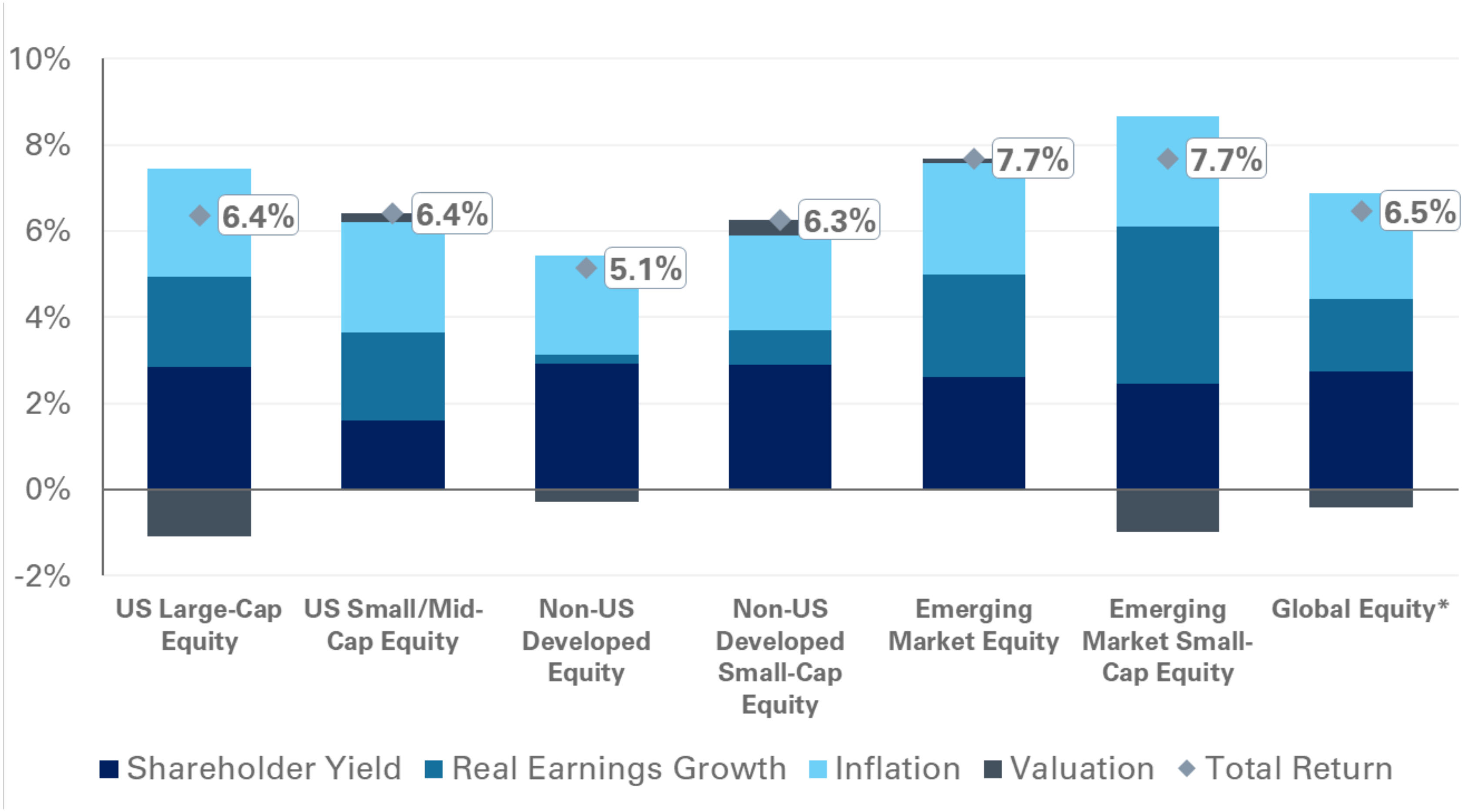
Trailing P/E Relative Median



Sources: S&P, Shiller, Russell, MSCI, FactSet, NEPC; Shiller PE long-term average beginning in 1924
Note: *Small cap indices valuations based on EV/EBITDA multiples

PUBLIC EQUITY

BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



*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.

Source: NEPC

FIXED INCOME

FIXED INCOME ASSUMPTIONS

OVERVIEW

- **Expected returns are mixed across fixed income assets as rate markets try to assess the impact of a slowing economic backdrop relative to inflation uncertainty**
- **Non-U.S. rates moved higher in reaction to fiscal policy news, which lifted the growth outlook and supports non-U.S. gov't bond forecasts**
- **Credit spread widening supports higher return forecasts across credit, but below-median spreads still reflect a more muted outlook overall**
- **Safe-haven fixed income exposure is a critical liquidity source for the portfolio and offers downside protection in periods of market stress**
  - Sizing of the safe-haven exposure is a strategic exercise and reflects investor return objectives, risk-tolerance, and private market pacing plan needs
- **High-quality fixed income is an asset class group designed to support lower volatility portfolios and larger strategic targets to fixed income**

FIXED INCOME ASSUMPTIONS

BUILDING BLOCKS

Illiquidity Premium	The return expected for assets with illiquidity risk
Government Rates Price Change	Change due to shifts in current yields relative to forecasted rates
Credit Deterioration	The average loss for credit assets due to defaults and recovery rates
Spread Price Change	Valuation change due to changes in credit spreads relative to long-term targets
Credit Spread	Yield premium provided by securities with credit risk
Government Rates	The yield attributed to sovereign bonds that do not have credit risk

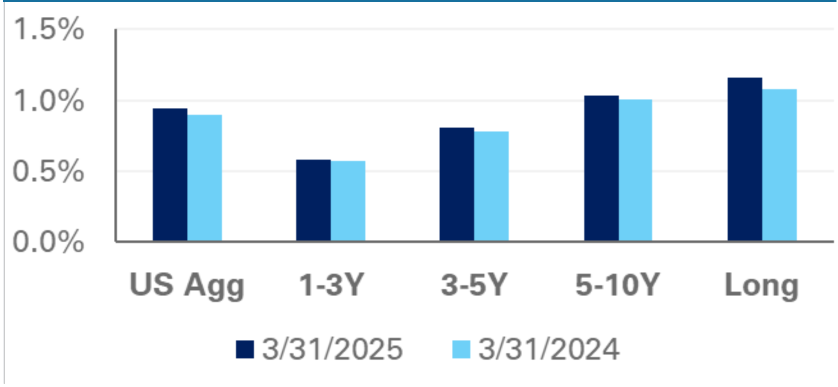
Asset Class	3/31/25 10-Yr Return	12-Month Change
U.S. TIPS	4.5%	-0.2%
U.S. Treasury Bond	4.4%	-
U.S. Corporate Bond	5.6%	+0.1%
U.S. MBS	4.7%	-
U.S. High Yield Corporate	6.5%	+0.4%
U.S. Leveraged Loan	7.2%	-0.1%
EMD External Debt*	7.0%	+0.1%
EMD Local Currency Debt	6.6%	-0.1%
Non-U.S. Govt. Bond	2.8%	+0.3%
U.S. Muni Bond (1-10 Year)	3.5%	+0.4%
U.S. High Yield Muni Bond	4.6%	+0.1%
Hedge Fund – Credit	7.0%	+0.4%
U.S. Aggregate Bond*	4.8%	-
Private Debt*	8.3%	-

*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. Source: NEPC

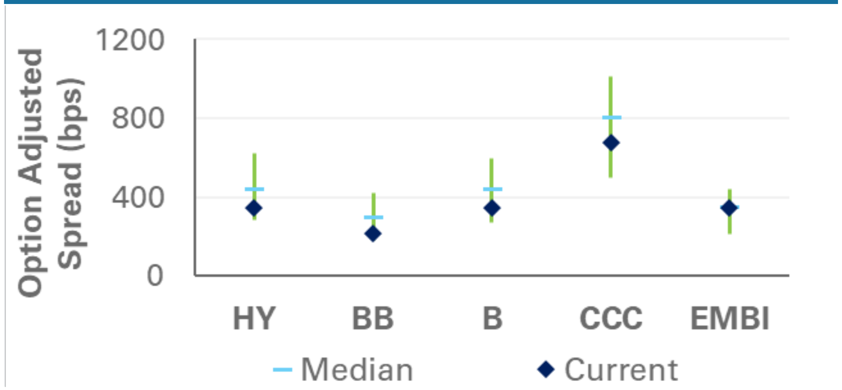
FIXED INCOME
CREDIT SPREADS

- **Credit spreads remain below median levels**
- **Lower spread levels weigh on future return expectations given less overall carry return**
- **Credit spread assumptions reflect a reversion towards long term medians**
- **Default and recovery rate assumptions are informed by long-term history**

U.S. Corporate OAS by Maturity



Return-Seeking Credit Spreads



Sources: Bloomberg, JPM, FactSet, NEPC; Spread medians as of 12/31/2000 and range represents 5th to 75th percentile

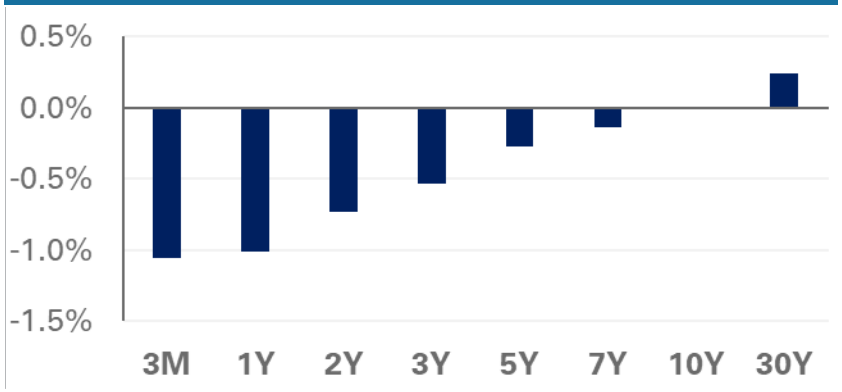
FIXED INCOME

GOVERNMENT RATES

- **Government rates price change reflects shifts in interest rates, the yield curve, and roll down**
  - Roll down refers to the price change due to the aging of a bond along the yield curve
- **The U.S. Treasury yield curve has steepened over the last quarter with short-term rates declining and long-terms rates increasing**
- **A normal, upward-sloping yield curve provides optimal return potential for fixed income**

Barclays U.S. Aggregate Bond

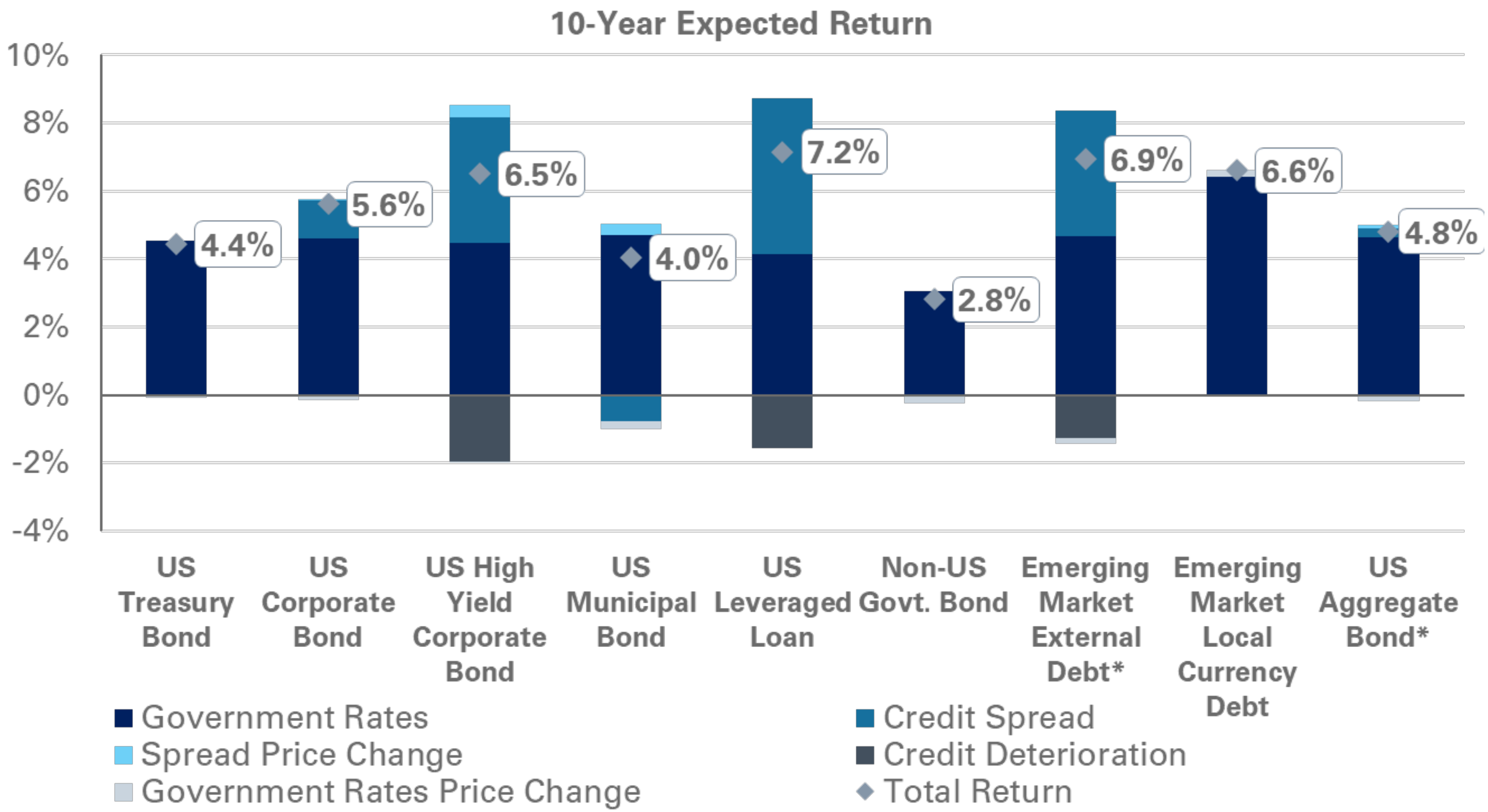
Annual Change in Treasury Yields



Sources: Bloomberg, FactSet, NEPC

FIXED INCOME

BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



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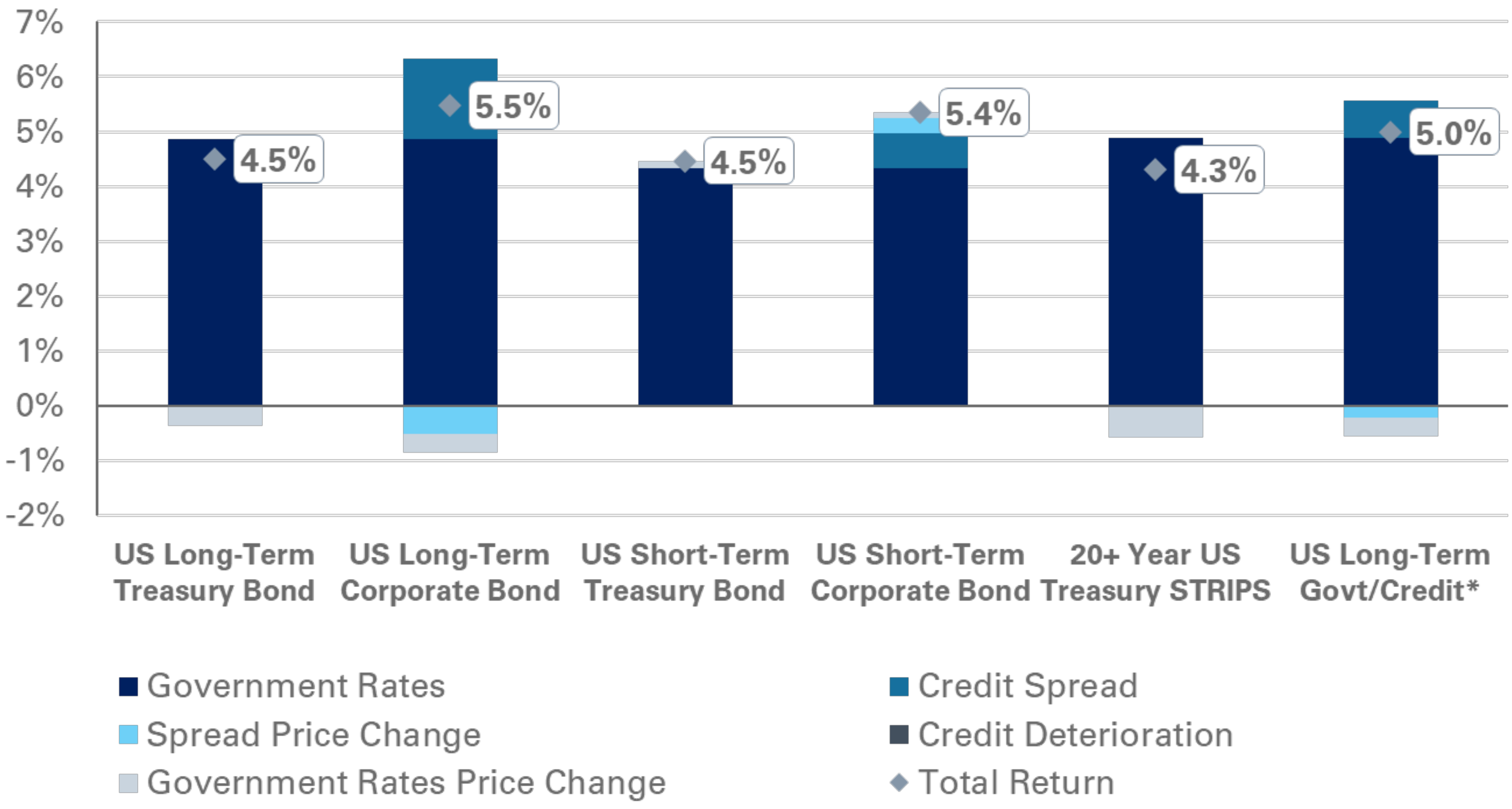
FIXED INCOME

BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



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REAL ASSET

REAL ASSET ASSUMPTIONS

OVERVIEW

- **Real assets are highly sensitive to global growth and inflation dynamics**
  - Uncertainty surrounding the economic impact of policy changes in the U.S. suggests a more neutral near-term outlook
- **Return forecasts across the real asset complex have broadly declined as elevated valuations relative to long-term targets weigh on returns**
- **The commodity futures assumption reflects the impact of global supply-demand dynamics on spot prices and the shape of futures curves**
- **We encourage investors to evaluate strategic real asset exposure relative to their long-term investment objectives and spending needs**
  - We believe building portfolio inflation sensitivity is a strategic exercise and public real assets serve as a complement to private market investments
- **NEPC recommends a strategic real assets target comprising an equal-weight blend to commodity futures, natural resource equity, public infrastructure equity, REITs, and gold**

REAL ASSET ASSUMPTIONS
BUILDING BLOCKS

Illiquidity Premium	The return expected for assets with illiquidity risk
Valuation	The change in price of the asset moving to a terminal value or real average level
Inflation	Based on the inflation path as defined by breakeven-inflation rates and NEPC assumptions
Growth	Market-specific real growth based on a weighted-average of country-level revenue exposure and GDP growth
Real Income	The inflation-adjusted income produced by the asset

Asset Class	3/31/25 10-Yr Return	12-Month Change
Commodity Futures	4.4%	+0.1%
Midstream Energy	4.8%	-0.4%
REIT	5.3%	-0.8%
Global Infrastructure Equity	5.1%	-1.4%
Global Nat Resource Equity	6.2%	-
Gold	4.5%	-0.3%
Real Estate - Core	5.6%	-0.2%
Real Estate – Non-Core	7.2%	-0.4%
Private Debt - Real Estate	6.4%	-0.1%
Private Real Assets - Natural Resources	8.1%	-
Private Real Assets - Infrastructure	5.8%	-0.9%

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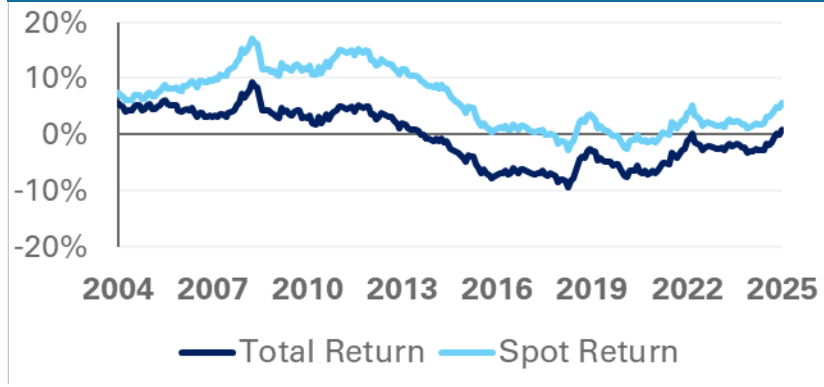
REAL ASSET

REAL INCOME

- **Equity: Real income is inflation-adjusted dividend yield**
  - Includes public infrastructure, REITS, midstream energy, and natural resource equity
- **Real Estate: Real income is net operating income (NOI)**
  - NOI growth tracks the business cycle and economic regimes
- **Commodity Futures: Real income reflects collateral return and the futures roll yield**
  - Collateral is based on a cash proxy over the time horizon and has increased in-line with cash rates

Commodities Rolling 10-Year Returns



Real Asset Yields

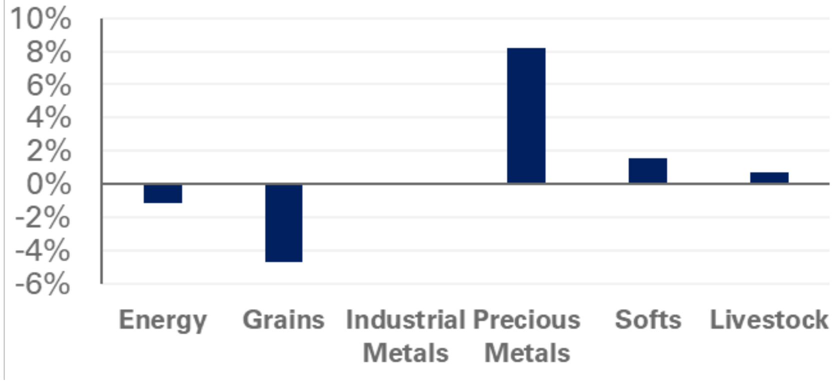
	3/31/25	3/31/24
Midstream Energy	3.1%	5.9%
Real Estate - Core	3.1%	2.6%
U.S. REITs	4.3%	4.4%
Global Infrastructure Equities	3.4%	3.8%
Natural Resource Equities	3.4%	3.8%
U.S. 10-Year Breakeven Inflation	2.4%	2.3%
Commodity Index Roll Yield	-0.9%	-1.3%

Sources: Bloomberg, NCREIF, Alerian, NAREIT, S&P, FactSet, NEPC
*Commodity Index Roll Yield represents a proprietary calculation methodology

REAL ASSET
VALUATION

- **Commodity valuation inputs reflect the long-term average of spot prices**
  - Energy and grains prices are trading at a large discount to long-term real averages
- **Valuation assumptions for other real assets are based on asset-specific valuation inputs**
  - Capitalization rates are used for core real estate, price-to-earnings for global infrastructure and global natural resources equity
  - Gold's valuation incorporates the asset's historical risk premia and the impact of the macroeconomic market regime

Discount/Premium to 10-Year Real Average

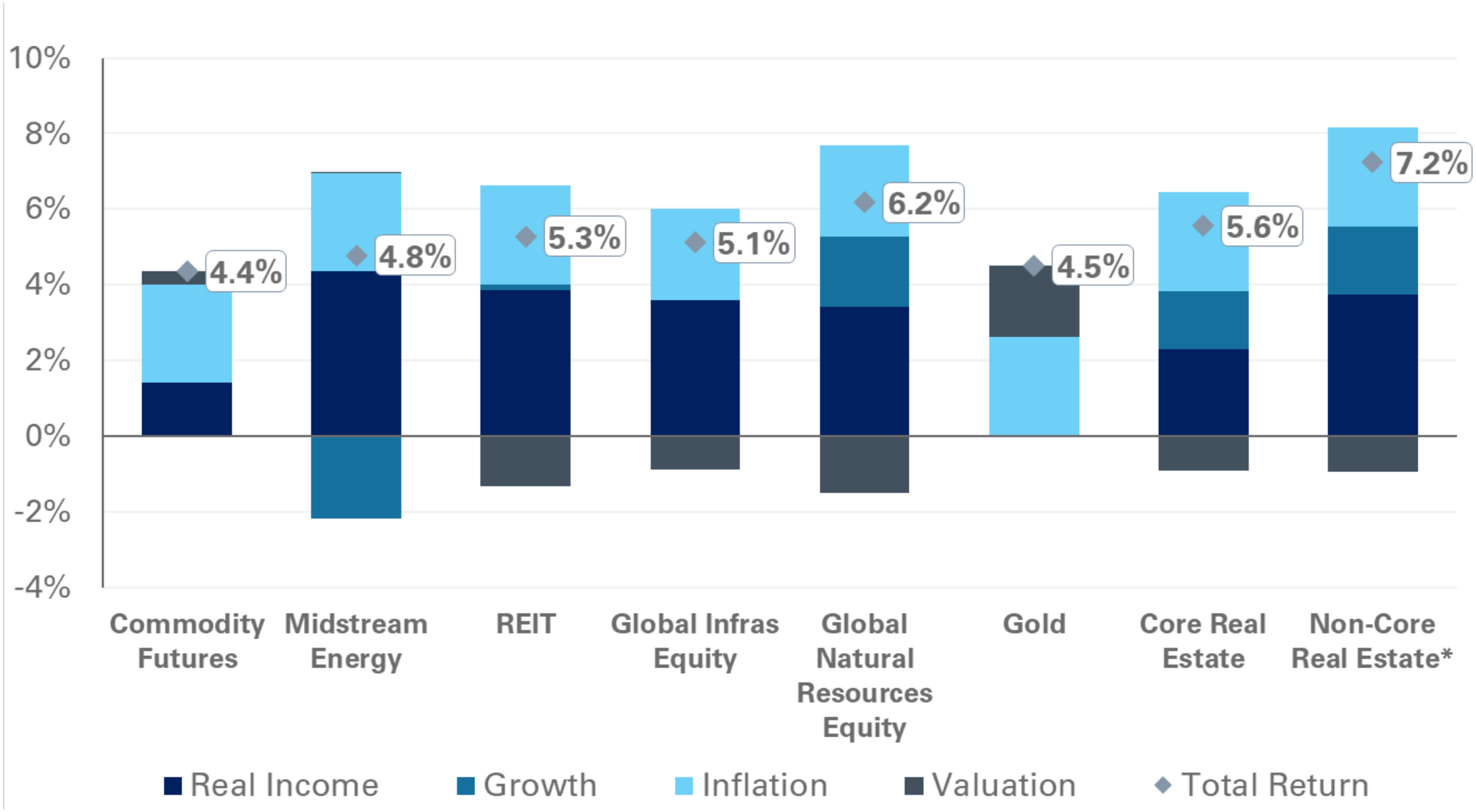


Real Price of Gold

Sources: FactSet, NEPC

REAL ASSET

BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



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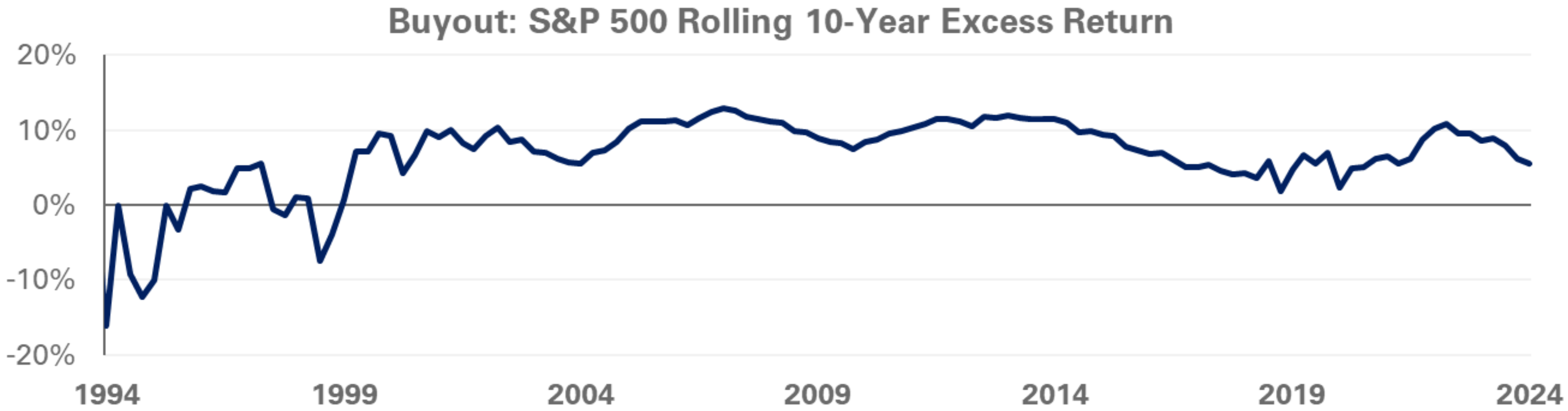
ALTERNATIVE ASSETS

ALTERNATIVE ASSETS
METHODOLOGY

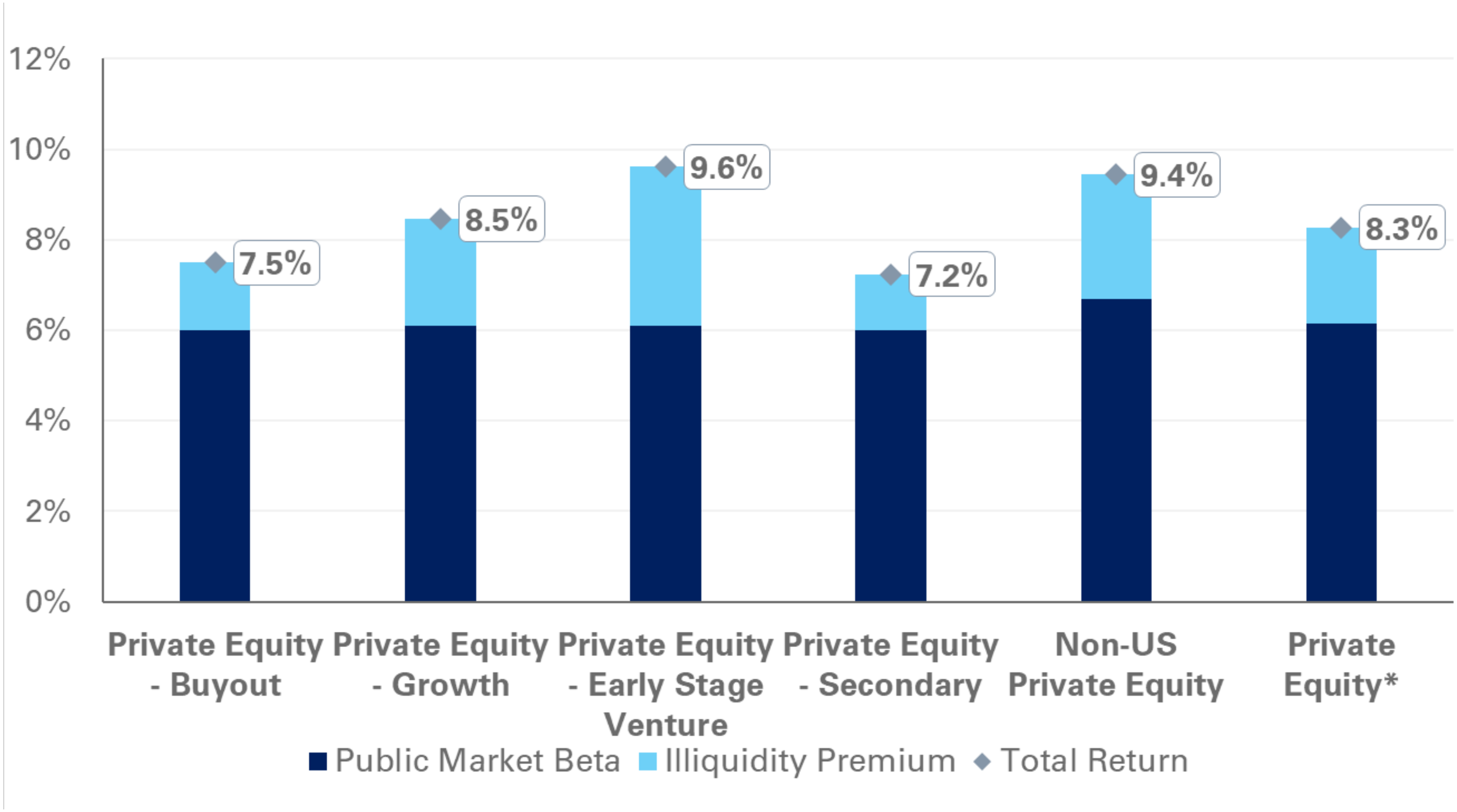


- **Private market assumptions are constructed from public market betas with an added illiquidity premia**
  - Historically, the observed illiquidity premium has been a significant component driving private market returns
- **Hedge fund assumptions are constructed from betas to public markets with an added alpha assumption**

Sources: Thomson One, S&P, FactSet

PRIVATE EQUITY

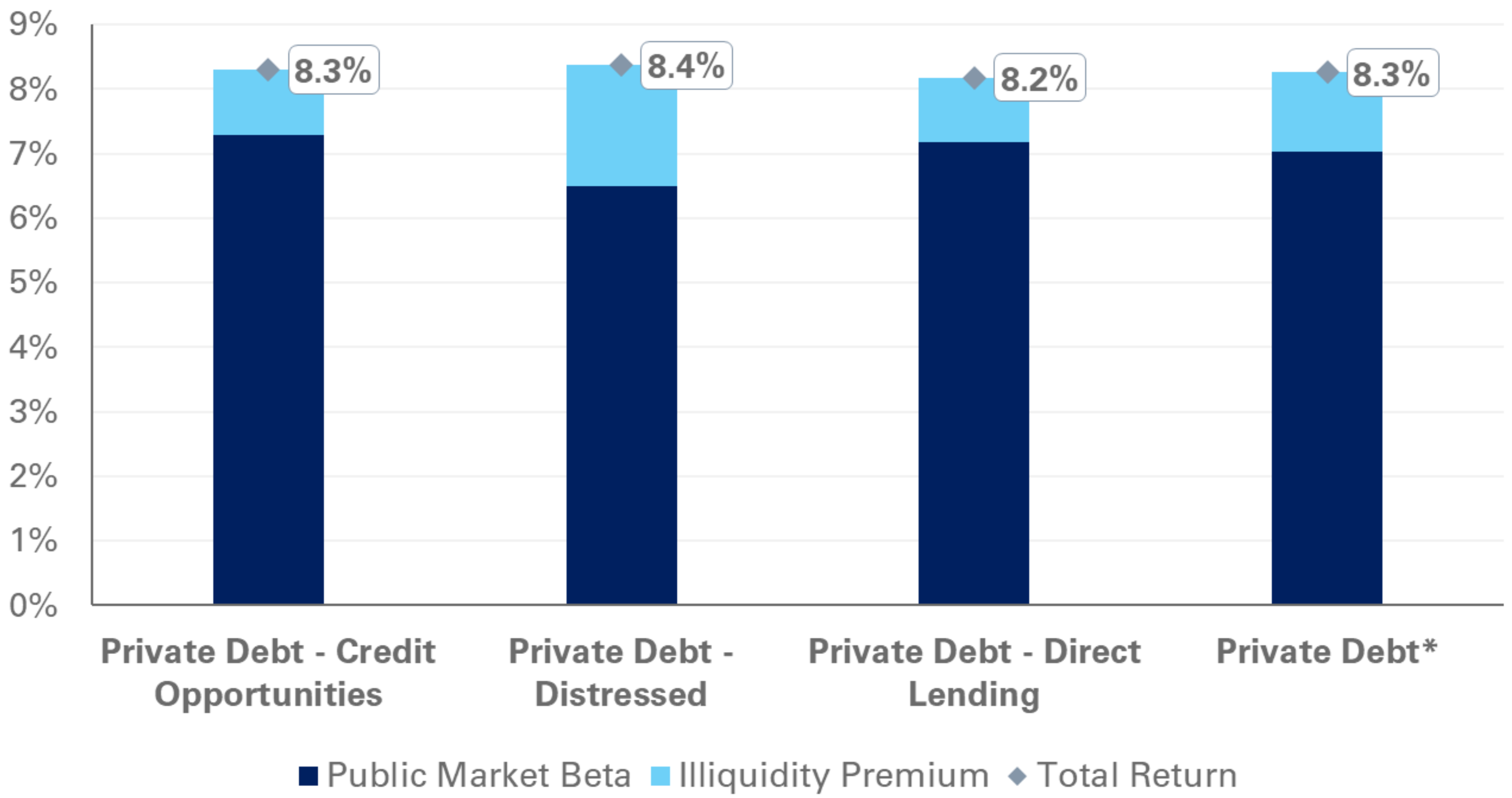
BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



*Private Equity is a derived composite of 34% U.S. Buyout, 34% U.S. Growth, 8.5% U.S. Secondary, 8.5% U.S. Venture, 15% Non-U.S. PE. 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. Source: NEPC

PRIVATE DEBT

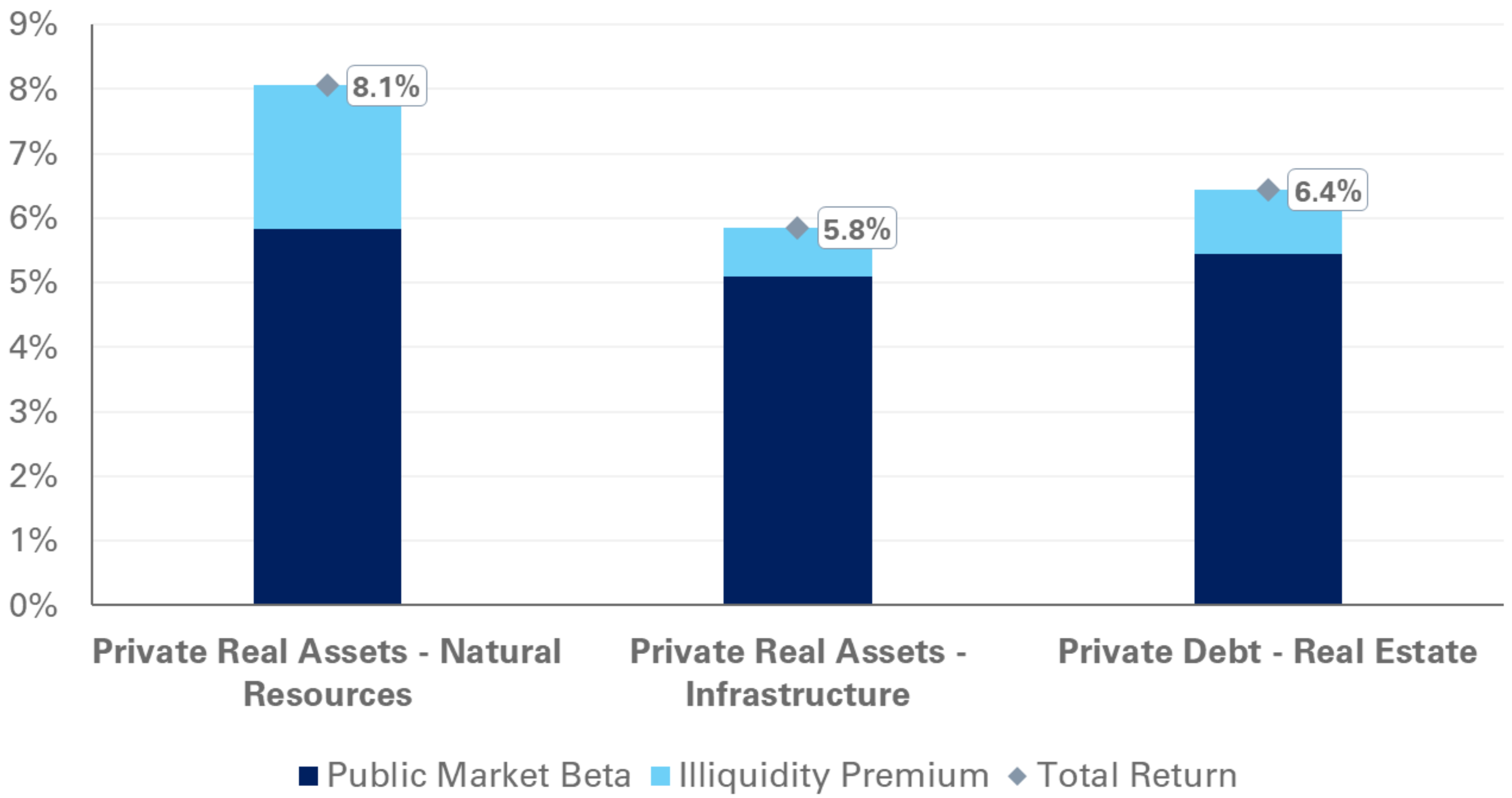
BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



*Private Debt is a derived composite of 25% Credit Opportunities, 25% Distressed, 50% Direct Lending. 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. Source: NEPC

PRIVATE REAL ASSET

BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



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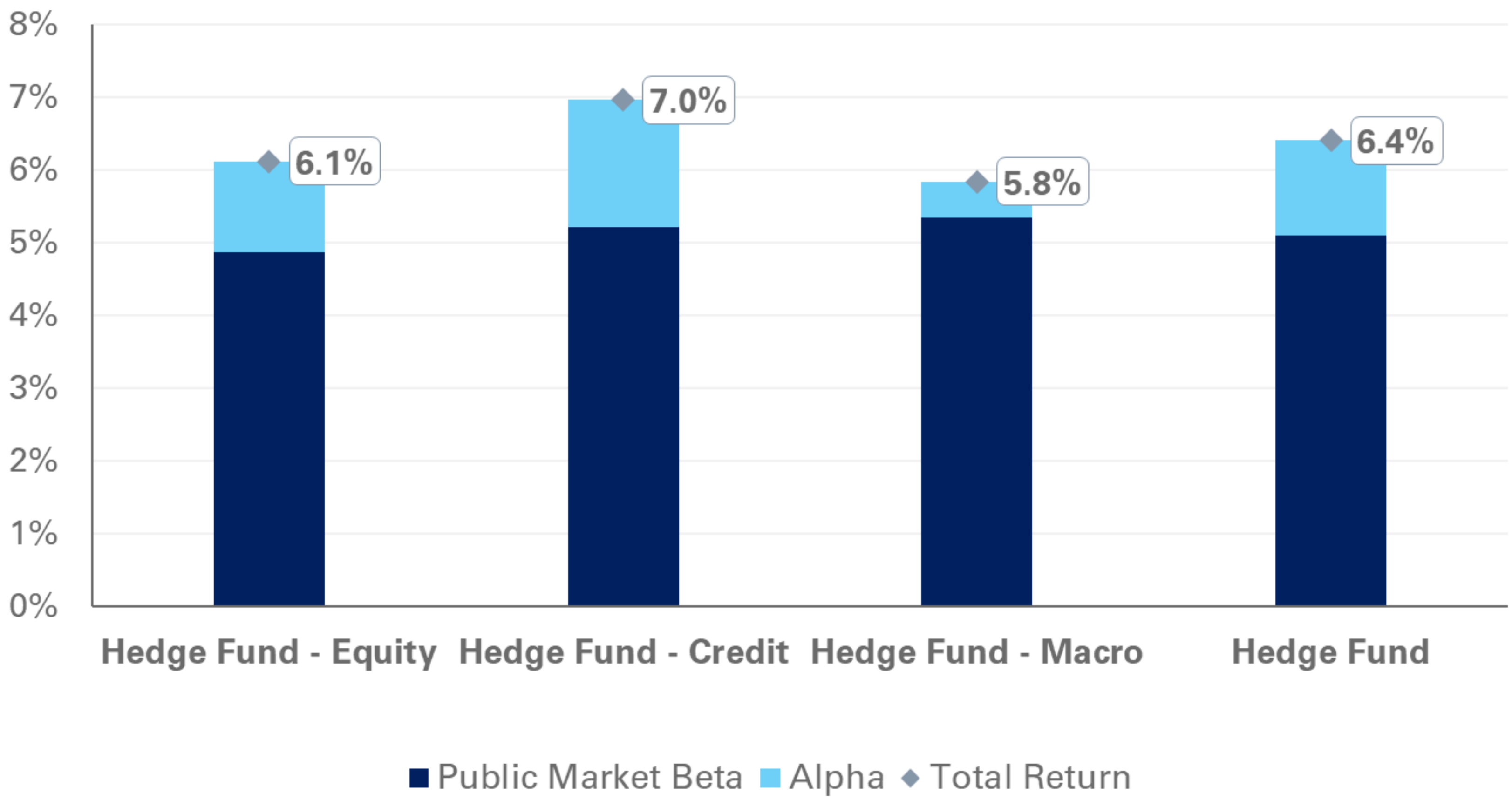
HEDGE FUND

BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



*Hedge Funds is a derived composite of 40% Long/Short, 40% Credit, 20% Macro. 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. Source: NEPC

APPENDIX

PRIVATE MARKETS COMPOSITES

PUBLIC MARKET BETA INPUTS FOR PRIVATE MARKETS

PRIVATE EQUITY

Buyout: 25% U.S. Large Cap, 75% U.S. Small/Mid Cap

Secondary: 25% U.S. Large Cap, 75% U.S. Small/Mid Cap

Growth: 100% U.S. Small/Mid Cap

Early-Stage Venture: 100% U.S. Small/Mid Cap

Non-U.S.: 70% International Small Cap, 30% Emerging Small Cap

Composite: 34% Buyout, 34% Growth, 15 % Non-U.S., 8.5% Secondary, 8.5% Early Venture

PRIVATE DEBT

Direct Lending: 100% Bank Loans

Distressed: 20% U.S. Small/Mid Cap, 60% U.S. High Yield, 20% Bank Loans

Credit Opportunities: 34% High Yield Securitized, 33% U.S. High Yield, 33% Bank Loans

Composite: 50% Direct Lending, 25% Credit Opportunities, 25% Distressed

PRIVATE REAL ASSETS

Energy: 30% Comm., 35% Midstream, 35% Public Resource Equity

Infra/Land: 30% Commodities, 70% Public Infrastructure

Private Real Estate Debt: 50% CMBS, 50% Real Estate - Core

10-YEAR RETURN FORECASTS
EQUITY

Geometric Expected Return			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
U.S. Large-Cap Equity	6.4%	4.1%	+2.3%
U.S. Small/Mid-Cap Equity	6.4%	5.6%	+0.8%
Non-U.S. Developed Equity	5.1%	4.3%	+0.8%
Non-U.S. Developed Equity (USD Hedge)	5.4%	4.5%	+0.9%
Non-U.S. Developed Small-Cap Equity	6.3%	6.5%	-0.2%
Emerging Market Equity	7.7%	8.3%	-0.6%
Emerging Market Small-Cap Equity	7.7%	7.8%	-0.1%
Hedge Fund - Equity	6.1%	5.5%	+0.6%
Private Equity - Buyout	7.5%	7.2%	+0.3%
Private Equity - Growth	8.5%	8.5%	-
Private Equity - Early Stage Venture	9.6%	9.7%	-0.1%
Private Equity - Secondary	7.2%	6.7%	+0.5%
Non-U.S. Private Equity	9.4%	10.1%	-0.7%
China Equity	7.0%	10.3%	-3.3%
Global Equity*	6.5%	5.1%	+1.4%
Private Equity*	8.8%	8.8%	-

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10-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
Cash	3.9%	4.1%	-0.2%
US TIPS	4.5%	4.7%	-0.2%
US Treasury Bond	4.4%	4.4%	-
US Corporate Bond	5.6%	5.5%	+0.1%
US Corporate Bond - AAA	4.9%	4.7%	+0.2%
US Corporate Bond - AA	5.1%	4.9%	+0.2%
US Corporate Bond - A	5.4%	5.4%	-
US Corporate Bond - BBB	5.9%	5.7%	+0.2%
US Mortgage-Backed Securities	4.7%	4.7%	-
US Securitized Bond	5.2%	5.4%	-0.2%
US Collateralized Loan Obligation	5.5%	5.6%	-0.1%
US Municipal Bond	4.0%	3.7%	+0.3%
US Municipal Bond (1-10 Year)	3.5%	3.1%	+0.4%
US Taxable Municipal Bond	5.4%	5.4%	-

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. Source: NEPC

10-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
Non-US Government Bond	2.8%	2.5%	+0.3%
Non-US Government Bond (USD Hedge)	3.1%	2.8%	+0.3%
Non-US Inflation-Linked Bond (USD Hedge)	3.8%	3.4%	+0.4%
US Short-Term TIPS (1-3 Year)	4.4%	4.7%	-0.3%
US Short-Term Treasury Bond (1-3 Year)	4.5%	4.6%	-0.1%
US Short-Term Corporate Bond (1-3 Year)	5.4%	5.6%	-0.2%
US Intermediate-Term TIPS (3-10 Year)	4.5%	4.7%	-0.2%
US Intermediate-Term Treasury Bond (3-10 Year)	4.4%	4.5%	-0.1%
US Intermediate-Term Corporate Bond (3-10 Year)	5.8%	5.8%	-
US Long-Term TIPS (10-30 Year)	4.9%	4.7%	+0.2%
US Long-Term Treasury Bond (10-30 Year)	4.5%	4.1%	+0.4%
US Long-Term Corporate Bond (10-30 Year)	5.5%	5.0%	+0.5%
20+ Year US Treasury STRIPS	4.3%	3.9%	+0.4%
10 Year US Treasury Bond	4.4%	4.5%	-0.1%
10 Year Non-US Government Bond (USD Hedge)	2.8%	2.2%	+0.6%
US Aggregate Bond*	4.8%	4.8%	-

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10-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
US High Yield Corporate Bond	6.5%	6.1%	+0.4%
US Corporate Bond - BB	7.0%	6.9%	+0.1%
US Corporate Bond - B	6.9%	6.3%	+0.6%
US Corporate Bond - CCC/Below	0.3%	0.5%	-0.2%
US Short-Term High Yield Corporate Bond (1-3 Year)	5.9%	5.5%	+0.4%
US Leveraged Loan	7.2%	7.3%	-0.1%
Emerging Market Investment Grade External Debt	5.7%	5.3%	+0.4%
Emerging Market High Yield External Debt	7.9%	8.1%	-0.2%
Emerging Market Local Currency Debt	6.6%	6.7%	-0.1%
US High Yield Securitized Bond	8.9%	9.1%	-0.2%
US High Yield Collateralized Loan Obligation	7.7%	7.9%	-0.2%
US High Yield Municipal Bond	4.6%	4.5%	+0.1%
Hedge Fund - Credit	7.0%	6.6%	+0.4%
Private Debt - Credit Opportunities	8.3%	7.7%	+0.6%
Private Debt - Distressed	8.4%	8.6%	-0.2%
Private Debt - Direct Lending	8.2%	8.2%	-
Private Debt*	8.3%	8.3%	-

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10-YEAR RETURN FORECASTS

REAL ASSETS

Geometric Expected Return			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
Commodity Futures	4.4%	4.3%	+0.1%
Midstream Energy	4.8%	5.2%	-0.4%
REIT	5.3%	6.1%	-0.8%
Global Infrastructure Equity	5.1%	6.5%	-1.4%
Global Natural Resources Equity	6.2%	6.2%	-
Gold	4.5%	4.8%	-0.3%
Real Estate - Core	5.6%	5.8%	-0.2%
Real Estate – Value-Add	6.7%	7.0%	-0.3%
Real Estate - Opportunistic	7.7%	8.1%	-0.4%
Private Debt - Real Estate	6.4%	6.5%	-0.1%
Private Real Assets - Natural Resources	8.1%	8.1%	-
Private Real Assets - Infrastructure	5.8%	6.7%	-0.9%

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. Source: NEPC

30-YEAR RETURN FORECASTS

EQUITY

Geometric Expected Return			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
U.S. Large-Cap Equity	7.4%	6.5%	+0.9%
U.S. Small/Mid-Cap Equity	7.4%	7.3%	+0.1%
Non-U.S. Developed Equity	6.6%	6.1%	+0.5%
Non-U.S. Developed Equity (USD Hedge)	6.9%	6.3%	+0.6%
Non-U.S. Developed Small-Cap Equity	7.7%	7.7%	-
Emerging Market Equity	9.0%	9.2%	-0.2%
Emerging Market Small-Cap Equity	8.7%	8.8%	-0.1%
Hedge Fund - Equity	6.3%	6.0%	+0.3%
Private Equity - Buyout	8.8%	8.7%	+0.1%
Private Equity - Growth	9.6%	9.7%	-0.1%
Private Equity - Early Stage Venture	10.5%	10.5%	-
Private Equity - Secondary	8.2%	8.2%	-
Non-U.S. Private Equity	10.5%	10.8%	-0.3%
China Equity	8.5%	9.7%	-1.2%
Global Equity*	7.6%	7.0%	+0.6%
Private Equity*	10.0%	10.1%	-0.1%

*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. Source: NEPC

30-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
Cash	3.5%	3.5%	-
US TIPS	4.9%	4.7%	+0.2%
US Treasury Bond	4.7%	4.5%	+0.2%
US Corporate Bond	6.3%	6.0%	+0.3%
US Corporate Bond - AAA	5.6%	5.3%	+0.3%
US Corporate Bond - AA	5.5%	5.3%	+0.2%
US Corporate Bond - A	5.9%	5.7%	+0.2%
US Corporate Bond - BBB	6.5%	6.3%	+0.2%
US Mortgage-Backed Securities	4.9%	4.8%	+0.1%
US Securitized Bond	5.6%	5.5%	+0.1%
US Collateralized Loan Obligation	5.1%	5.0%	+0.1%
US Municipal Bond	4.2%	3.9%	+0.3%
US Municipal Bond (1-10 Year)	3.9%	3.6%	+0.3%
US Taxable Municipal Bond	6.3%	6.1%	+0.2%

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. Source: NEPC

30-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
Non-US Government Bond	3.3%	3.0%	+0.3%
Non-US Government Bond (USD Hedge)	3.5%	3.2%	+0.3%
Non-US Inflation-Linked Bond (USD Hedge)	3.9%	3.5%	+0.4%
US Short-Term TIPS (1-3 Year)	4.4%	4.4%	-
US Short-Term Treasury Bond (1-3 Year)	4.4%	4.3%	+0.1%
US Short-Term Corporate Bond (1-3 Year)	5.4%	5.3%	+0.1%
US Intermediate-Term TIPS (3-10 Year)	4.8%	4.8%	-
US Intermediate-Term Treasury Bond (3-10 Year)	4.7%	4.6%	+0.1%
US Intermediate-Term Corporate Bond (3-10 Year)	6.3%	6.2%	+0.1%
US Long-Term TIPS (10-30 Year)	5.3%	4.9%	+0.4%
US Long-Term Treasury Bond (10-30 Year)	5.0%	4.6%	+0.4%
US Long-Term Corporate Bond (10-30 Year)	6.6%	6.2%	+0.4%
20+ Year US Treasury STRIPS	5.1%	4.5%	+0.6%
10 Year US Treasury Bond	5.2%	5.0%	+0.2%
10 Year Non-US Government Bond (USD Hedge)	3.5%	3.0%	+0.5%
US Aggregate Bond*	5.2%	5.0%	+0.2%

*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. Source: NEPC

30-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
US High Yield Corporate Bond	7.5%	7.2%	+0.3%
US Corporate Bond - BB	7.8%	7.8%	-
US Corporate Bond - B	7.4%	7.1%	+0.3%
US Corporate Bond - CCC/Below	1.4%	1.6%	-0.2%
US Short-Term High Yield Corporate Bond (1-3 Year)	6.0%	5.6%	+0.4%
US Leveraged Loan	6.6%	6.6%	-
Emerging Market Investment Grade External Debt	6.4%	5.3%	+1.1%
Emerging Market High Yield External Debt	8.3%	8.1%	+0.2%
Emerging Market Local Currency Debt	5.7%	5.8%	-0.1%
US High Yield Securitized Bond	8.7%	8.5%	+0.2%
US High Yield Collateralized Loan Obligation	7.4%	7.4%	-
US High Yield Municipal Bond	5.2%	5.0%	+0.2%
Hedge Fund - Credit	7.2%	7.0%	+0.2%
Private Debt - Credit Opportunities	8.9%	8.3%	+0.6%
Private Debt - Distressed	9.5%	9.3%	+0.2%
Private Debt - Direct Lending	8.9%	8.9%	-
Private Debt*	9.1%	8.9%	+0.2%

*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. Source: NEPC

30-YEAR RETURN FORECASTS

REAL ASSETS

Geometric Expected Return			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
Commodity Futures	4.1%	3.8%	+0.3%
Midstream Energy	5.9%	6.5%	-0.6%
REIT	7.0%	7.4%	-0.4%
Global Infrastructure Equity	6.3%	6.9%	-0.6%
Global Natural Resources Equity	7.2%	7.2%	-
Gold	4.9%	4.7%	+0.2%
Real Estate - Core	6.3%	6.4%	-0.1%
Real Estate – Value-Add	7.5%	7.7%	-0.2%
Real Estate - Opportunistic	8.4%	8.6%	-0.2%
Private Debt - Real Estate	6.8%	6.7%	+0.1%
Private Real Assets - Natural Resources	8.9%	8.8%	+0.1%
Private Real Assets - Infrastructure	6.8%	7.1%	-0.3%

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. Source: NEPC

VOLATILITY FORECASTS
EQUITY

Volatility			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
U.S. Large-Cap Equity	17.4%	17.2%	+0.2%
U.S. Small/Mid-Cap Equity	21.4%	21.0%	+0.4%
Non-U.S. Developed Equity	19.6%	19.7%	-0.1%
Non-U.S. Developed Equity (USD Hedge)	17.4%	17.7%	-0.3%
Non-U.S. Developed Small-Cap Equity	23.3%	24.2%	-0.9%
Emerging Market Equity	27.4%	28.1%	-0.7%
Emerging Market Small-Cap Equity	30.6%	31.4%	-0.8%
Hedge Fund - Equity	10.9%	11.0%	-0.1%
Private Equity - Buyout	20.7%	20.0%	+0.7%
Private Equity - Growth	30.8%	31.5%	-0.7%
Private Equity - Early Stage Venture	48.0%	46.5%	+1.5%
Private Equity - Secondary	20.4%	20.4%	-
Non-U.S. Private Equity	29.0%	32.0%	-3.0%
China Equity	30.4%	30.6%	-0.2%
Global Equity*	18.2%	18.2%	-
Private Equity*	25.8%	25.9%	-0.1%

*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. Source: NEPC

VOLATILITY FORECASTS

FIXED INCOME

Volatility			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
Cash	0.6%	0.6%	-
US TIPS	6.0%	6.0%	-
US Treasury Bond	5.5%	5.4%	+0.1%
US Corporate Bond	7.9%	7.7%	+0.2%
US Corporate Bond - AAA	7.0%	6.8%	+0.2%
US Corporate Bond - AA	6.7%	6.6%	+0.1%
US Corporate Bond - A	7.7%	7.6%	+0.1%
US Corporate Bond - BBB	8.6%	8.4%	+0.2%
US Mortgage-Backed Securities	6.5%	6.5%	-
US Securitized Bond	7.9%	8.0%	-0.1%
US Collateralized Loan Obligation	6.5%	7.7%	-1.2%
US Municipal Bond	6.0%	6.0%	-
US Municipal Bond (1-10 Year)	4.5%	4.5%	-
US Taxable Municipal Bond	7.5%	7.5%	-

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VOLATILITY FORECASTS

FIXED INCOME

Volatility			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
Non-US Government Bond	9.8%	9.5%	+0.3%
Non-US Government Bond (USD Hedge)	4.1%	4.1%	-
Non-US Inflation-Linked Bond (USD Hedge)	6.7%	6.7%	-
US Short-Term TIPS (1-3 Year)	3.3%	3.3%	-
US Short-Term Treasury Bond (1-3 Year)	2.3%	2.3%	-
US Short-Term Corporate Bond (1-3 Year)	2.8%	2.8%	-
US Intermediate-Term TIPS (3-10 Year)	5.8%	6.0%	-0.2%
US Intermediate-Term Treasury Bond (3-10 Year)	5.4%	5.9%	-0.5%
US Intermediate-Term Corporate Bond (3-10 Year)	7.4%	7.1%	+0.3%
US Long-Term TIPS (10-30 Year)	12.6%	12.4%	+0.2%
US Long-Term Treasury Bond (10-30 Year)	12.3%	11.8%	+0.5%
US Long-Term Corporate Bond (10-30 Year)	12.4%	11.9%	+0.5%
20+ Year US Treasury STRIPS	21.0%	20.7%	+0.3%
10 Year US Treasury Bond	7.6%	7.5%	+0.1%
10 Year Non-US Government Bond (USD Hedge)	4.9%	5.0%	-0.1%
US Aggregate Bond*	5.8%	5.8%	-

*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. Source: NEPC

VOLATILITY FORECASTS

FIXED INCOME

Volatility			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
US High Yield Corporate Bond	11.3%	11.2%	+0.1%
US Corporate Bond - BB	9.7%	9.7%	-
US Corporate Bond - B	11.7%	11.6%	+0.1%
US Corporate Bond - CCC/Below	20.4%	20.3%	+0.1%
US Short-Term High Yield Corporate Bond (1-3 Year)	8.2%	8.2%	-
US Leveraged Loan	6.1%	9.1%	-3.0%
Emerging Market Investment Grade External Debt	8.7%	8.7%	-
Emerging Market High Yield External Debt	17.5%	17.5%	-
Emerging Market Local Currency Debt	12.6%	12.7%	-0.1%
US High Yield Securitized Bond	13.0%	11.2%	+1.8%
US High Yield Collateralized Loan Obligation	15.9%	10.4%	+5.5%
US High Yield Municipal Bond	12.0%	12.0%	-
Hedge Fund - Credit	9.7%	9.9%	-0.2%
Private Debt - Credit Opportunities	14.3%	14.5%	-0.2%
Private Debt - Distressed	13.9%	14.4%	-0.5%
Private Debt - Direct Lending	11.0%	11.0%	-
Private Debt*	11.8%	11.8%	-

*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. Source: NEPC

VOLATILITY FORECASTS
REAL ASSETS

Volatility			
Asset Class	**03/31/2025**	**03/31/2024**	**Delta**
Commodity Futures	18.5%	18.5%	-
Midstream Energy	27.7%	28.2%	-0.5%
REIT	22.4%	21.8%	+0.6%
Global Infrastructure Equity	19.3%	19.4%	-0.1%
Global Natural Resources Equity	22.9%	23.3%	-0.4%
Gold	16.6%	16.4%	+0.2%
Real Estate - Core	14.7%	15.0%	-0.3%
Real Estate – Value-Add	23.0%	23.4%	-0.4%
Real Estate - Opportunistic	27.3%	25.8%	+1.5%
Private Debt - Real Estate	11.9%	11.9%	-
Private Real Assets - Natural Resources	32.5%	32.3%	+0.2%
Private Real Assets - Infrastructure	10.6%	12.4%	-1.8%

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. Source: NEPC

INFORMATION DISCLAIMER

Past performance is no guarantee of future results.

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.

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

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INVESTMENT STRATEGY REVIEW

Scott M. Anderson, CFA – Chief Investment Officer

May 9, 2025

NORTH Dakota | Retirement & Investment
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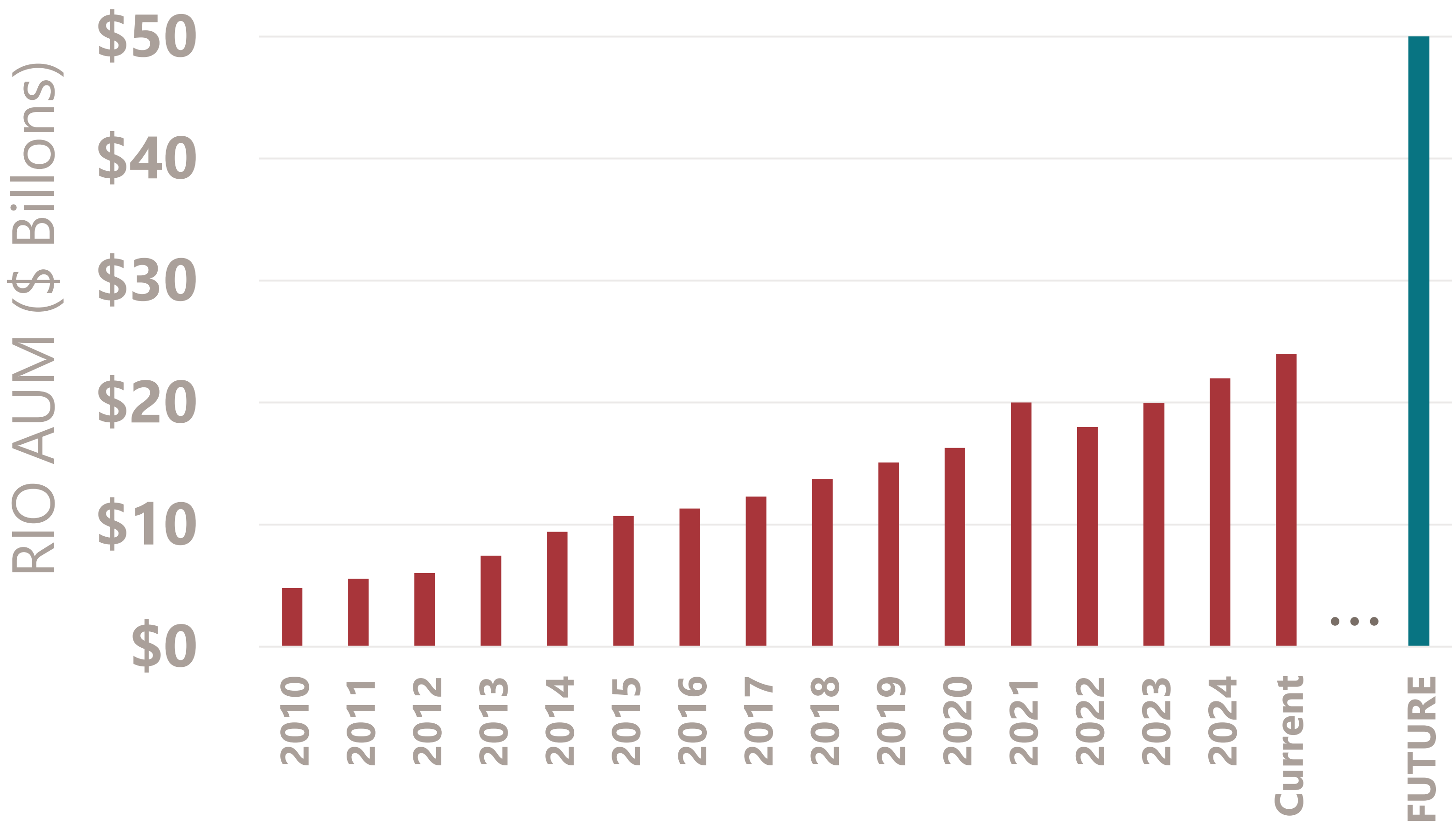
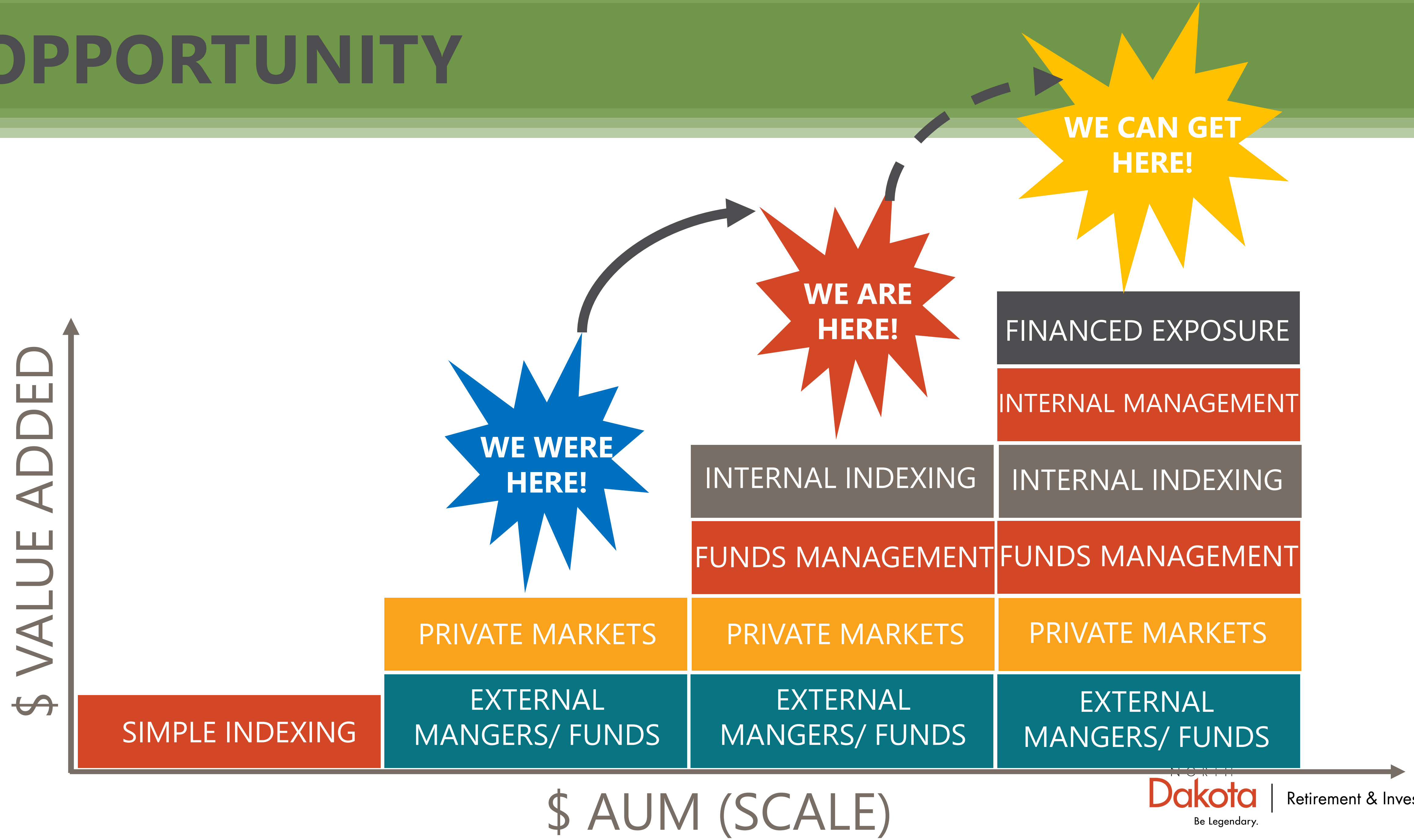
COMPLEXITY

+4.8X $AUM, 31 Client Funds, 42 Managers, 81 Strategies



OPPORTUNITY



North Dakota | Retirement & Investment
Be Legendary.

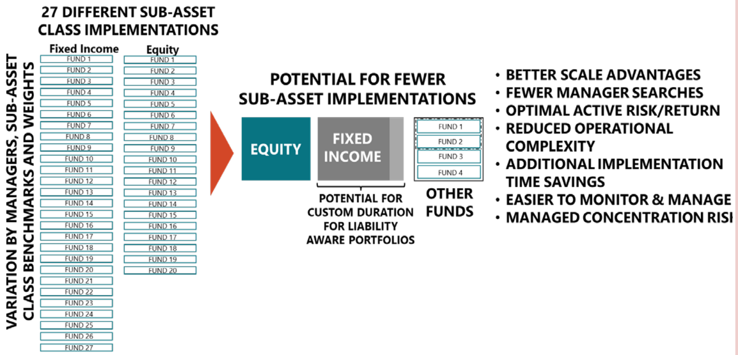
FOUNDATION FOR THE FUTURE

Harvest Results		
Reduce Dimensions	Underwrite Portfolios	Build Capabilities to Succeed

REDUCE THE DIMENSIONS

Reduce Dimensions

May 22’



Actions Completed	Benefits Completed	To Complete the Mission
• Implement Equity 1.0 allocation (May 22’) • 2 manager terminations • Implement Fixed Income 1.0 • Hired asset allocation consultant • Created a combined equity pool manager • Began work on a master trust concept • Private markets begins to converge allocations	• Same allocation across funds: reduced fees, reduced operations risk, optimal allocation • Equity 1.0: ~+$9 Million • Fixed Income 1.0: ~+$20 Million • Scale benefits result in lower fees, lower operations complexity	• **Harmonize pension asset allocations** • Develop a private markets master trust • Potential for an all-asset pool

UNDERWRITE THE PORTFOLIOS

Underwrite Portfolios

Public Markets

PHASE	ACTIVITIES
1.0	**SUB-ASSET STRUCTURE** • INDEXING FOR LIQUIDITY, TRACKING ERROR CONTROL, AND REBALANCING • CONSISTENT SUB-ASSET ALLOCATIONS AND ASSET ALLOCATION POOLS ACROSS FUNDS BASED ON MARKET REPRESENTATIVE UNIVERSES AND BENCHMARKS • MANAGER'S MANDATES RISK ALIGNED TO ASSET ALLOCATION AND TO MANAGE RISK
2.0	**SUB-ASSET OPTIMIZATION** • FIND OPTIMAL POOL OF MANAGERS FOR SUB-ASSET ACTIVE RETURN AND RISK GOALS • CONSTRUCT OPTIMAL WEIGHTING OF MANAGER MANDATES
3.0	**ADVANCED FUNDS MANAGEMENT** • OFFSET SUB-ASSET EXPOSURES TO OPTIMIZE ACTIVE RETURN/RISK • MANAGE LIQUIDITY, REBALANCING AND EXPOSURES WITH INDEX FUNDS

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Private Markets

PHASE	ACTIVITIES
1.0	**DATA GATHERING & ANALYSIS** • STAFFING: GEORGE MOSS (NOV '22), LANCE ZIETTLOW (MAR '23) ✓ • TECHNOLOGY PLATFORM FOR AGGREGATING AND ANALYZING THE ASSETS ✓ • BENCHMARKING • PACING MODELS FOR EACH STRATEGY AND EACH POOL
2.0	**OPTIMIZATION** • MOVE AWAY FROM EXTERNAL FUND-OF-FUNDS, AND TO THE EXTENT POSSIBLE BE CONSISTENT ACROSS POOLS ☆ • ADDRESS CONCERNS IN SUB-ASSET CLASSES • CONSIDER DEDICATED PRIVATE MARKET CONSULTANT
3.0	**ADVANCED FUNDS MANAGEMENT** • FULLY OPERATIONAL INTERNAL FUND-OF-FUNDS STRUCTURE • MANAGE LIQUIDITY AND EXPOSURES WITH PUBLIC MARKET PROXIES • BUILD OUT A COINVESTMENT PLATFORM

Actions Completed	Benefits Completed	To Complete the Mission

• Implement Equity 2.0 – Domestic
  ◦ 5 managers
  ◦ 6 terminations
• Equity 2.0 – International
  ▪ Paused for Legislation
• Begin Fixed Income 2.0
  ◦ 3 managers
  ◦ 3 terminations
• Direct to GP Private Markets
  ▪ 7 PE managers: $316 Mil
  ▪ 3 Pcredit: $135 Mil
  ▪ 2 Real Assets: $185 Mil
• In-state Infrastructure Manager Selection
  ▪ $150 Mil
	• Large Cap: Excess ~+30 bp FYTD Feb
	• Small Cap: Excess ~+80 bp YTD Feb
	• HY: ~-10 bp FYTD Feb
	• February weighted average FYTD Feb excess return on four major funds: ~+32 bp Feb
	• ~$3.8 Mil savings from avoided fund of fund fees on private markets
	• Negotiated In-state equity manager contract for additional commitment (fee savings)
		• Buildout Legacy private equity and private credit allocations
		• Approve and implement international Equity 2.0
		• Finalize Fixed Income 2.0
		• **Scale up the internal investment program assets ($285 million already in place with an estimated savings of ~$670 K) and additional benefits from the cash overlay**
		• **Create a scorecard tracking mechanism for the internal investment program**

CAPABILITIES TO SUCCEED - GOVERNANCE

Build Capabilities to Succeed Governance

NECESSARY CAPABILITIES FOR SUCCESS — NORTH Dakota Be Legendary.

GOVERNANCE	A GOVERNANCE HIERARCHY INCLUDING A STAFF RUN INVESTMENT COMMITTEE WITH SOME DELEGATION AS WELL AS BOARD LEVEL INVESTMENT EXPERTISE
TALENT MANAGEMENT	SPECIFIC INVESTMENT ROLE RECOGNITION AS WELL AS A TOTAL REWARDS PACKAGE THAT IS COMPETITIVE WITH SIMILAR INVESTMENT ORGANIZATIONS
OPERATIONS	APPROPRIATE STAFFING AND SKILLS OR OUTSOURCING OF CRITICAL INVESTMENT ACCOUNTING, TRANSACTION PROCESSING, AND ENTERPRISE RISK CAPABILITIES
DATA AND TECHNOLOGY INFRASTRUCTURE	HIGH FREQUENCY AND HIGH-QUALITY DATA AS WELL AS INFRASTRUCTURE TO SUPPORT DATA THROUGHPUT AND PROCESSING SPEEDS
RESEARCH AND KNOWLEDGE MANAGEMENT	A CULTURE OF RESEARCH, LEARNING, CREATIVITY AND KNOWLEDGE MANAGEMENT SUPPORTED BY EXPECTATIONS, RESOURCES, AND RECOGNITION

Actions Completed

- Governance
  - GPR
  - Investment Committee
  - ER + Compensation
  - Internal Audit Project
  - Legislation
    - In-state Program
    - Spending Rule
    - Legacy Fund Transfer Ballot
    - Incentive Comp
  - Communications
    - Board Training
    - Investment Seminar
    - Newsletter
    - Interviews

Benefits Completed

- Completed charters and committee membership
- Enable quicker better decisions and policy
- Due diligence and vetting of complex issues
- Enabled higher value investment strategies
- Increased the earnings generation capability of the Legacy Fund by more than 1%
- Create a greater awareness of what RIO does
- Developed and approved investment as well as risk, alpha funds management, private markets and internal investment strategies

To Complete the Mission

- Potential to improve the budget process for a smooth flow of resources into the program

CAPABILITIES TO SUCCEED – TALENT MANAGEMENT

Build Capabilities to Succeed Talent Management

TALENT MANAGEMENT IS AN IMPORTANT CAPABILITY FOR UNLOCKING INVESTMENT RESULTS

▪STRUCTURE THE ORGANIZATION FOR COLLABORATION AND KNOWLEDGE DEVELOPMENT
▪ATTRACT GREAT TALENT
▪DEVELOP STAFF TO GROW AND EXCEL
▪MOTIVATE STAFF TO PERFORM WELL

Actions Completed	Benefits Completed	To Complete the Mission
• Hire Team ▪ Initial hire of 5 team members ▪ Hire approved internal investment team of 5 members • Create Incentive Comp Program • Developed evolution of the organization from funds management to an advance funds management structure • Launched weekly markets meetings • Encourage continuing investment education • Team meets quarterly in person	• Hired a world class team • Align efforts, strategies, actions and performance with needs of beneficiaries • Developed a nimble high performing organization to manager the complexities of a growing $24 billion AUM with 31 client funds • A lean collegial, entrepreneurial culture drives continuous positive change • The size of the organization is much lower than industry benchmarks for similar size and complexity	• **Build out the advanced funds management and the direct to GP capability** • Advance the internal investment program with approval in the next legislative session • **Ensure continuity in succession for any promotions, retirements or changes in individual team members**

NORTH Dakota Be Legendary. | Retirement & Investment

CAPABILITIES TO SUCCEED – OPS/RISK MANAGEMENT

Build Capabilities to Succeed Operations/ Risk Management

EXISTING CONSULTANT CONTRACTS

MANDATE	CURRENT CONSULTANT	RENEWAL DATE
Performance and Project Consultant[1]	Callan	July 1, 2024
Compensation Consultant	Mercer	July 1, 2024
Benchmark Hurdle Rate Consultant + 2025?	Verus	July 1, 2025
Performance Consultant[2]	-	July 1, 2024
Allocation Consultant[3]	-	July 1, 2024
Cost and FTE Benchmark Consultant	CEM Benchmarking	In Discussion
Compliance Consultant Retainer	-	April 2024
Public or Private Market Manager Specialist[5]	-	?
Contracted Consulting Projects	-	?

1. The performance and process consulting contract includes quarterly investment performance reports and evaluation of manager performance/attendance at board meetings quarterly; 2 consulting projects; access to specialty consulting staff – can be unbundled into separate performance consulting and project consulting arrangements
2. A general performance consulting contract that provides quarterly performance assessment of client funds and managers; potential to provide annual performance and independent performance checks of fiscal staff generated performance
3. Potential for a retained allocation consultant that provides for fee allocation project consulting, portfolio construction advice and manager search expertise
4. A retained compliance consultant would provide advice and compliance services including legal/regulatory compliance, personal trading policy, trading processes controls/compliance, high level compliance processes
5. Potential for public and private market manager specialist consulting contracts

NORTH

COUNTRY RISK ASSESSMENT

SCORING BY RIO

Customized Bloomberg model to 16 factors with the following weights:

- Political: 50%
  - perpetual risks
- Economic: 30% and Financial: 20%
  - 9% to longer term econ/political risk indicators
  - 21% to current macro-economic conditions
  - 20% to near term economic risk indicators
- Quarterly review of risk changes by RIO

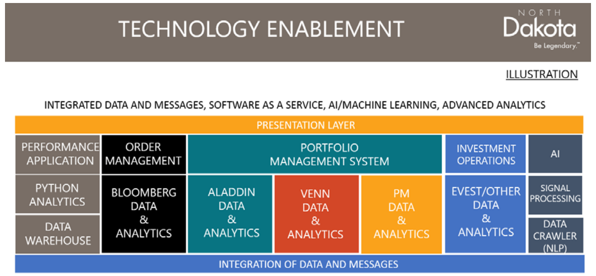
FACTORS	WEIGHT IN GROUP	NET WT.	COMMENTS
Economic	100.0%	30.0%	
GDP	20.0%	6.0%	Current condition
CPI	25.0%	7.5%	Current condition
Unemployment	25.0%	7.5%	Current condition
Budget Surplus	5.0%	1.5%	Longer term economic/political risk indicator
Current Account	5.0%	1.5%	Longer term economic/political risk indicator
Currency Reserves	10.0%	3.0%	Longer term economic/political risk indicator
Total External Debt	10.0%	3.0%	Longer term economic/political risk indicator
Financial	100.0%	20.0%	
5-yr CDS	30.0%	6.0%	Near term economic risk indicator
Sovereign Bond Yield	30.0%	6.0%	Near term economic risk indicator
FX change forecast	30.0%	6.0%	Near term economic risk indicator
3-mo Implied Volatility	10.0%	2.0%	Near term economic risk indicator
Political	100.0%	50.0%	
Rule of Law	30.0%	15.0%	Perpetual risk
Regulatory Quality	10.0%	5.0%	Perpetual risk
Govt. Effectiveness	10.0%	5.0%	Perpetual risk
Corruption	20.0%	10.0%	Perpetual risk
Ease of Doing Business	30.0%	15.0%	Perpetual risk
		100.0%	

Risk Allocation and Management Team: April 25, 2025

Actions Completed	Benefits Completed	To Complete the Mission
• Hire Performance Consultant • Hire Benchmark/Hurdle Rate Consultant • Hire Cost Consultant • Hire Compliance Outsource • Developed Manager Process • Began International Market Trading Authorizations • Built a Country Risk monitoring program • Developed an advanced compliance program • Developed a risk management process and Market Risk Model • Developed processes for document capture and contracting • Onboarding trading outsource and FCM	• Developed new performance reports • Incorporate the corridor benchmark approach • Determined what constitutes top quartile performance for benchmarking and compensation • Enabling direct international investing to increase agility and eventually fees • Reduction of risk from advanced compliance, country risk, and risk process • Administrative processing efficiencies from document management	• **Continue to develop risk scenarios, stress tests and reports** • **Daily cash flow and data quality process from custodian for client allocations and daily performance**

CAPABILITIES TO SUCCEED – DATA AND TECHNOLOGY

Build Capabilities to Succeed Data and Technology



Actions Completed	Benefits Completed	To Complete the Mission
• Implemented Private markets system • Implemented Funds Management Portfolio Management System • Procured and implemented OMS/PMS • Proprietary Public Manager Analytical Platform ▪ Portfolio analysis, optimization, manager analysis, universe analysis, factor analysis • Automated manager questionnaires • Data validation tool for risk • Power BI performance dashboards • Enabled data capabilities	• Timely quality information • Reduction of information processing time • Automation of routine tasks • Straight thru processing eliminating error of hand-offs • Better more dynamic investment decisions resulting in higher return, lower risk and lower cost • Lower administration effort	• **More automated performance process** • Fully incorporate new machine learning concepts • **Finish Data Warehouse project**

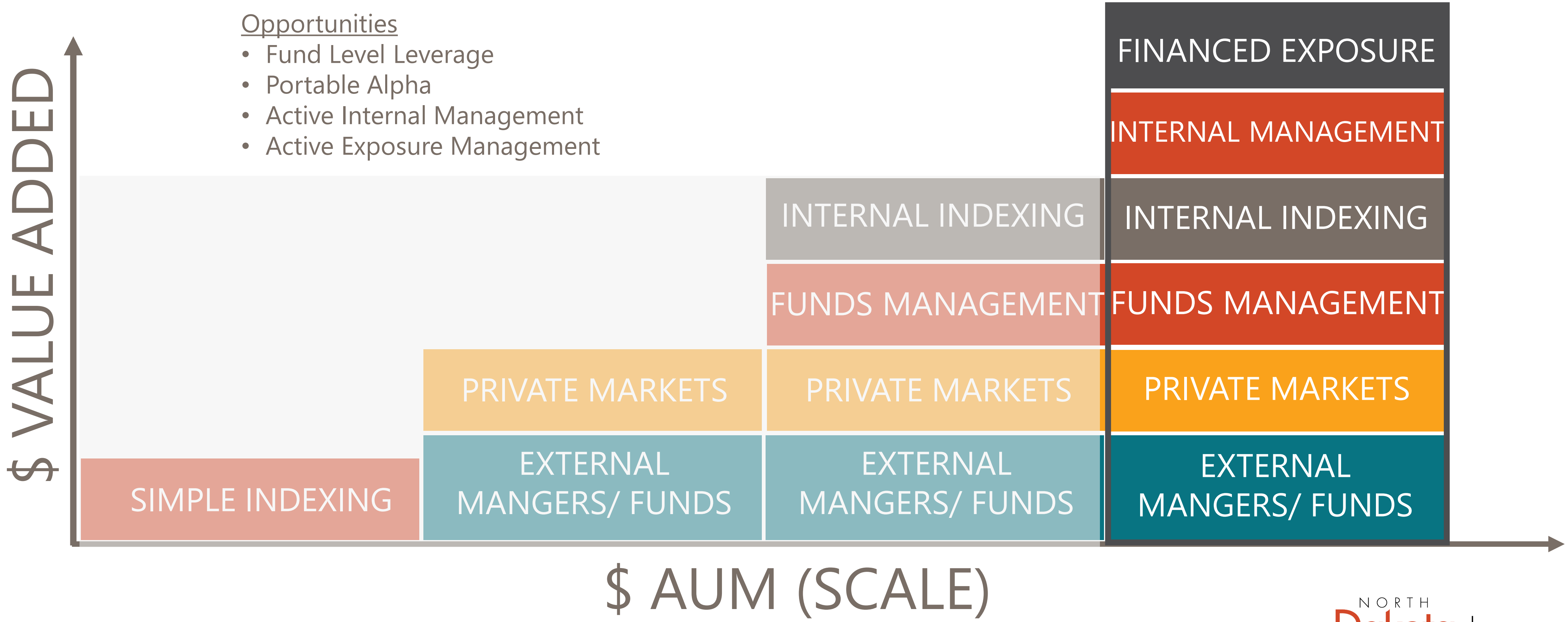
HIGH PRIORITY ITEMS FROM CURRENT STRATEGY

1. Harmonize pension asset allocations
2. Scale up the internal investment program assets ($285 million already in place with an estimated savings of ~$670 K) and additional benefits from the cash overlay
3. Create a scorecard tracking mechanism for the internal investment program
4. Build out the advanced funds management and the direct to GP capability
5. Ensure continuity in succession for any promotions, retirements or changes in individual team members
6. Continue to develop risk scenarios, stress tests and reports
7. Daily cash flow and data quality process from custodian for client allocations and daily performance
8. More automated performance process
9. Finish Data Warehouse project

FUTURE OPPORTUNITY

Harvest Results

<u>Opportunities</u>
- Fund Level Leverage
- Portable Alpha
- Active Internal Management
- Active Exposure Management



FUTURE OPPORTUNITY

ADVANCED FUNDS MANAGEMENT	DIRECT TO GP	ENHANCED INDEXING TO ACTIVE INTERNAL	TECHNOLOGY ENABLEMENT
• Potential for fund level leverage • Portable alpha beta construction • Develop an internal liquidity management capability • Manage to benchmark target risks – equity, credit, rates, currency, liquidity • Dynamically allocated to active return sources • Actively manage risks – equity, credit, rates, currency, liquidity • Create custom factor completion portfolios • Continuous asset allocation process • Risk allocation process	• Portfolio management across and within private market asset classes • Commit consistently but allocate commitments according valuation, opportunity and changes in liquid asset classes • Utilize fund managers for deal sourcing and diligence where value added • Fully implement the research and portfolio management capabilities of private market software platforms • Incorporate appropriate private market risk proxies on the enterprise risk platform for plan level stress test, and portfolio management	• Indexing for liquidity management and rebalancing using lowest cost implementation • Enhanced indexing with simple rules-based strategies and judgement • Leverage externally sourced model portfolios and rules if there is a business case • Begin to develop active strategies that do not require specialization and scale • Apply portable alpha techniques where beneficial • Use portfolio construction techniques to refine results	• Incorporate machine learning tools and techniques • Leverage LLM coding tools to provide efficiencies • Automate initial information retrieval for research • Begin to use AI agents where helpful in orchestrating not decision workflows • Build out a high quality data environment for information retrieval and analysis • Fully utilize vendor solutions

Confidential materials will be sent separately to Committee members via secure link.

PRIVATE MARKETS MANAGER UPDATE

Castlelake Asset-Based Private Credit III, L.P.

- Asset based private credit manager.
- $50 million commitment (Legacy Fund Only).

Agenda Item
V. Manager Update
to follow.

SIB & TFFR Board/Committee Calendar 2025-26

July 2025
July 10, 2025 – SIB ERCC @ 10:00 a.m.
July 11, 2025 – Investment Comm @ 9:00 a.m.
July 24, 2025 – TFFR @ 1:00 p.m.
July 25, 2025 – SIB @ 8:30 a.m.

August 2025
August 8, 2025 – Investment Comm @ 9:00 a.m.
August 13, 2025 – SIB Audit Committee @ 2:30 p.m.

September 2025
September 9, 2025 – SIB GPR @ 10:00 a.m.
September 11, 2025 – TFFR GPR @ 3:30 p.m.
September 12, 2025 – Investment Comm @ 9:00 a.m.
September 16, 2025 – SIB Securities @ 10:00 a.m.
September 25, 2025 – TFFR @ 1:00 p.m.
September 26, 2025 – SIB @ 8:30 a.m.

October 2025
October 10, 2025 – Investment Comm @ 9:00 a.m.
October 24, 2025 – SIB @ 8:30 a.m.

November 2025
November 6, 2025 – TFFR GPR @ 3:30 p.m.
November 14, 2025 – Investment Comm @ 9:00 a.m.
November 12, 2025 – SIB GPR @ 10:00 a.m.
November 18, 2025 – SIB Audit Committee @ 2:30 PM
November 20, 2025 – TFFR @ 1:00 p.m.
November 21, 2025 – SIB @ 8:30 a.m.

December 2025
December 4, 2025 – SIB Securities (Tentative) @ 9:00 a.m.
December 12, 2025 – Investment Comm @ 9:00 a.m.

January 2026
January 9, 2026 – Investment Comm @ 9:00 a.m.
January 14, 2026 – SIB ERCC @ 10:00 a.m.
January 22, 2026 – TFFR @ 1:00 p.m.
January 23, 2026 – SIB @ 8:30 a.m.

February 2026
February 5, 2026 – TFFR GPR @ 3:30 p.m.
February 10, 2026 – SIB GPR @ 10:00 a.m.
February 13, 2026 – Investment Comm @ 9:00 a.m.
February 18, 2026 – SIB Audit Committee @ 2:30 p.m.

March 2026
March 11, 2026 – SIB ERCC @ 10:00 a.m.
March 13, 2026 – Investment Comm @ 9:00 a.m.
March 17, 2026 – SIB Securities @ 10:00 AM
March 26, 2026 – TFFR @ 1:00 p.m.
March 27, 2026 – SIB @ 8:30 a.m.

April 2026
April 7, 2026 – SIB GPR @ 10:00 a.m.
April 9, 2026 – SIB ERCC @ 10:00 a.m.
April 10, 2026 – Investment Comm @ 9:00 a.m.
April 13, 2026 – TFFR GPR @ 3:30 p.m.
April 23, 2026 – TFFR @ 1:00 p.m.
April 24, 2026 – SIB @ 8:30 a.m.

May 2026
May 6, 2026 – SIB Audit Committee @ 2:30 p.m.
May 7, 2026 – SIB ERCC @ 10:00 a.m.
May 8, 2026 – Investment Comm @ 9:00 a.m.
May 15, 2026 – SIB @ 8:30 a.m.

June 2026
June 12, 2026 – Investment Comm @ 9:00 a.m.
June 17, 2026 – SIB Securities (Tentative) @ 10:00 a.m.
June 18, 2026 – TFFR Board Retreat (Tentative) @ 1:00 p.m.