New Hampshire Retirement System (NHRS) **Investment Committee Meeting**

(Certain portions of the meeting may be held in a Non-Public Session)

Agenda Tuesday, November 14, 2023

12:30 pm	Call to Order
12:30 pm	Approve Minutes [Tab 1] October 10, 2023 Public Meeting Minutes (Action Expected)
12:35 pm	 Comments from the Chief Investment Officer [Tab 2] Portfolio: Performance & Manager Update(s) Holdings Update Work Plan Proposed 2024 Investment Committee Meeting Schedule (Action Expected) Contract Renewal (Action Expected) Wellington ISCRE (Non-U.S. Small Cap Equity)
12:45 pm	NHRS Strategic Asset Allocation Presentation [Tab 3]
1:45 pm	DRAFT Comprehensive Annual Investment Report (Action Expected) [Tab 4]
2:00 pm	<u>Adjournment</u>

Informational Materials [Tab 5]

- Callan Monthly Review June 2023 (Final)
 Callan Monthly Review September 2023
- Asset Allocation Update
- Private Debt & Equity Summary

Next Meeting: Tuesday, December 12, 2023

DRAFT NHRS Independent Investment Committee October 10, 2023

NOTE: The draft of these minutes from the October 10, 2023, Independent Investment Committee meeting is subject to approval and execution at a subsequent meeting.

Independent Investment Committee Meeting October 10, 2023 DRAFT Public Minutes

New Hampshire Retirement System 54 Regional Drive Concord, NH 03301

Committee Members:

- Maureen Kelliher, CFA, Chair
- Brian Bickford, CFA, CFP®, Member
- Christine Clinton, CFA, Member
- Mike McMahon, Non-Voting Member
- Paul Provost, CFP ®, Member (absent)

Staff:

- Jan Goodwin, Executive Director
- Raynald Leveque, Chief Investment Officer
- Gregory Richard, CFA, Senior Investment Officer
- Shana Biletch, CFP ®, Investment Officer
- Jesse Pasierb, Investment Operations Analyst
- Tim Crutchfield, *Deputy Director and Chief Legal Counsel (by video conference)*
- Heather Hoffacker, Internal Auditor (by video conference)
- John Laferriere, Director of IT (by video conference)

Guests:

- Angel Haddad, Senior Vice President, Callan LLC
- Catherine Beard, Senior Vice President, Callan LLC
- Pete Keliuotis, CFA, Executive Vice President, Callan LLC
- Britt Murdoch, Vice President, Callan LLC (by video conference)
- Carter Weil, Managing Director, Strategic Value Partners
- David Geenberg, Managing Director, Strategic Value Partners
- Jason Law, Managing Director, Wellington Management
- Mary Pryshlak, Senior Managing Director, Wellington Management
- David DiSilva, Assistant Vice President, Wellington Management

DRAFT NHRS Independent Investment Committee October 10, 2023

Chair Kelliher called the meeting to order at 12:34 PM.

On a motion by Ms. Clinton, seconded by Mr. Bickford, the Independent Investment Committee (Committee) unanimously approved the public minutes of the September 12, 2023, Committee meeting as presented.

Mr. Leveque reviewed investment returns through recent periods and referred to the Callan Monthly Review for periods ending August 31, 2023. He shared an update on holdings within the NHRS portfolio. He confirmed that all allocations are in line with their approved ranges. Mr. Leveque updated the Committee on liquidity, Russian holdings, and the Work Plan. Staff are updating the NHRS Strategic Asset Allocation and will present their recommendations before calendar year-end. Staff anticipates conducting a Request for Proposal (RFP) for an analytical system to assist with their Total Plan Analysis in early 2024.

On a motion by Mr. Bickford, seconded by Ms. Clinton, the Committee unanimously approved the work plan as presented.

Mr. Leveque referenced the "Proposed 2024 Investment Committee Meeting Schedule" memo dated October 10, 2023, and advised the committee of a proposed change from 12 to 8 annual meetings, in conjunction with changes to the Board of Trustees schedule.

The Committee then heard from representatives of Callan.

Mr. Kloepfer referenced the "2023 Long-Term Capital Markets Assumptions" presentation. He provided an overview of Callan's objectives and process for developing Callan's asset class forecasts. Mr. Kloepfer reviewed Callan's Capital Market Assumptions by asset class for the next ten years and described Callan's methodology for building each asset class expected return and risk assumption.

Next, Ms. Biletch and Ms. Beard provided an overview of the Strategic Value Partners (SVP) Capital Solutions Fund II private debt opportunity. They discussed the considerations and merits of investing in SVP Capital Solutions Fund II. Following this, the Committee heard from representatives of SVP.

Mr. Weil provided an overview of SVP and its organizational structure. He detailed SVP's organization, investment strategy and process and closed by discussing Capital Solution II key merits. Mr. Geenberg discussed case studies of investments in prior SVP funds, the Capital Solutions Fund II investment thesis, and outlined past fund performance.

The Committee discussed the presentation made by SVP and the opportunity to invest in Capital Solutions Fund II. On a motion by Ms.

DRAFT NHRS Independent Investment Committee October 10, 2023

Clinton, seconded by Mr. Bickford, the Committee unanimously voted to commit \$50 million to Strategic Value Partners Capital Solutions Fund II, subject to contract and legal review.

Next, the IIC heard from representatives at Wellington Management (Wellington).

Mr. Law provided an overview of Wellington and the firm's relationship with the System. Mr. DiSilva discussed Wellington's investment team and their investment philosophy and process. He reviewed performance attribution for the strategy over various periods and closed with a discussion of the fund's current positioning and the team's investment and macroeconomic outlook. Ms. Pryshlak provided commentary on dispersion within the small cap asset class and the firm's outlook and perceived opportunities.

Mr. Leveque referenced the "Draft NHRS Transmittal Letter"; "Draft Callan Letter"; and "Draft GRS Letter" for the Fiscal Year 2023 Comprehensive Annual Investment Report ("CAIR"). He asked the Committee to review each letter and provide any comments or feedback before the November meeting. At that time, the Committee will vote to approve the full CAIR for recommendation to the Board of Trustees at the December Board of Trustees meeting.

On a motion by Mr. Bickford, seconded by Ms. Clinton, the Committee unanimously voted to adjourn the meeting.

The meeting adjourned at 3:38 PM.



To: Investment Committee

From: Raynald Leveque, Chief Investment Officer

Date: November 14, 2023

Re: Work Plan / Recap of October Investment Committee Meeting

Item: Action: \square Discussion: \square Informational: \boxtimes

The attached six-month Work Plan summarizes the high-level tasks and projects being addressed by the Investment Committee and Staff.

A recap of the October Investment Committee meeting is as follows:

- Staff presented an update on the monthly performance of the public market asset classes of the NHRS, rebalancing, holdings, the Work Plan, and the Proposed 2024 Investment Committee Meeting Schedule.
- o The Committee heard a capital market assumptions presentation from Callan.
- The Committee heard a presentation from private debt manager Strategic Value Partners (SVP) and unanimously voted to commit \$50 million to SVP Capital Solutions Fund II, subject to contract and legal review.
- The Investment Committee heard a presentation from an international small-cap equity manager, Wellington Management, in conjunction with the five-year contract renewal process.
- o The Investment Committee reviewed the Draft GRS Letter, NHRS CAIR Transmittal Letter, and Callan Letter for the Comprehensive Annual Investment Report.



To: Investment Committee

From: Raynald Leveque, Chief Investment Officer

Date: November 14, 2023

Re: Six-Month Investment Work Plan

Item: Action: Discussion: Informational:

As time progresses, the Work Plan will be updated to reflect tasks and initiatives associated with the current and subsequent quarter. Items completed over the fiscal year will also be included.

Presentations are displayed using the following format:

IC meeting date - Pertinent details

Updates from the prior month are highlighted in **bold**.

2nd Quarter FY 2024: October - December 2023

Investment Program

- October 2024 Investment Committee meeting schedule
- November Annual Review of Investment Manual
- November FY 2023 Comprehensive Annual Investment Report
- November NHRS Strategic Asset Allocation Review
- December NHRS Investment Strategic Plan

Marketable Investments

- Schedule presentations of current investment managers
 October Wellington, Non-U.S. Equity Contract Renewal
- Monitor marketable assets portfolio

Alternative Investments

Continue implementation of the 2023 Private Debt & Equity Investment Plan

Real Estate

- Continue implementation of the 2023 Real Estate Investment Plan December - Townsend Contract Renewal (*no presentation*)

Vendors

• December – Abel Noser, Trading Cost Analysis Contract Renewal (no presentation)

3rd Quarter FY 2024: January - March 2024

Investment Program

- Educational session on total plan asset classes
- Discuss macroeconomic investment themes that may impact the portfolio

Marketable Investments

- Schedule presentations of current investment managers
- Monitor marketable assets portfolio

Alternative Investments

- January Callan, Semi-Annual Review of Private Debt & Private Equity Investment Plan
 - o Approve 2024 Pacing Plan for Private Debt & Private Equity

Real Estate

- January Townsend, Semi-Annual Review of the Real Estate Investment Plan
 - o Approve 2024 Pacing Plan for Real Estate

Vendors

No action

Completed Items - Fiscal Year 2024

1st Quarter FY 2024: July - September 2023

Investment Program

Discuss macroeconomic investment themes that may impact the portfolio
 July – J.P. Morgan and BlackRock presented

Marketable Investments

- Schedule presentations of current investment managers
 September IR+M, Fixed Income contract renewal, unanimous five-year renewal vote in October
- Monitor and execute structure of marketable assets portfolio
 September Callan, Marketable Investments fiscal year portfolio review

Alternative Investments

Continue implementation of 2023 Private Debt & Equity Strategic Plan
 August – Ares, Pathfinder II, Private Debt, unanimous approval of \$50 million
 commitment
 September – Ares, Pathfinder II, additional commitment of \$25 million

Real Estate

Continue implementation of 2023 Real Estate Investment Plan



To: Independent Investment Committee

From: Raynald Leveque, Chief Investment Officer

Date: November 14, 2023

Re: Proposed 2024 Investment Committee Meeting Schedule

Item: Action: ☐ Discussion: ☐ Informational: ☐

Recommendation

NHRS staff recommends that the Investment Committee consider a meeting schedule in 2024 on a less-than-monthly basis, aligned with the recent approval of the Board of Trustees meeting frequency. Investment Committee meetings require significant time for members to prepare for, travel to, and attend. The NHRS Investment Team spends much time each month preparing, coordinating, and running each meeting.

The following proposed meeting frequency for consideration is a minimum of eight meetings per year. Should NHRS Staff require additional meetings for investment action, those meetings can be scheduled on an ad-hoc basis.

Additionally, the proposed meeting dates below are on the second Tuesday of the month per our usual schedule. However, the Committee can recommend adjusting these dates to a day later in the month to allow for more timely performance reporting.

Proposed Schedule for 2024 (no meetings scheduled for March, May, July and September)

January 9, 2024

February 13, 2024

April 9, 2024

June 11, 2024

August 13, 2024

October 8, 2024

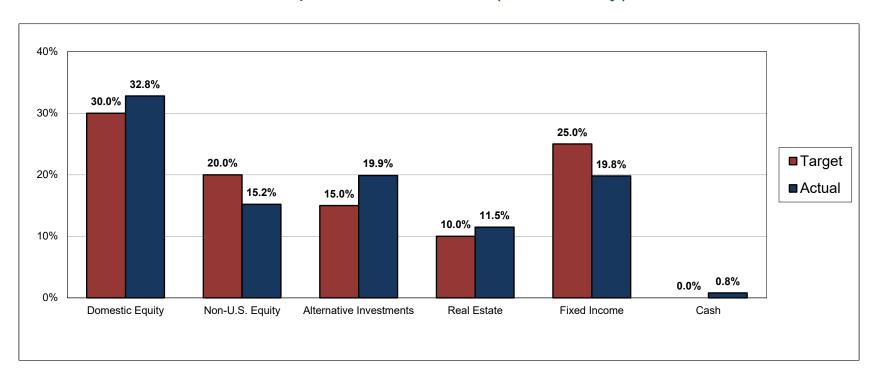
November 12, 2024

December 10, 2024

Current Status



Class Targets vs. Actual Allocation as of September 30, 2023 (Preliminary)



Source: NHRS

Asset Class Allocations Relative to Policy Targets and Ranges



As of September 30, 2023 (preliminary)

		Alloca	ation			
Asset Class	Range	Target	Actual	Variance	Objective	Comments
Domestic Equity	20 - 40%	30.0%	32.8%	2.8%	Monitor	No immediate action needed.
Non-U.S. Equity	15 - 25%	20.0%	15.2%	-4.8%	Monitor	Below target allocation but within approved allocation range. Continue to Monitor.
Alternative Investments (AI) ¹	5 - 25%	15.0%	19.9%	4.9%	Monitor	No immediate action needed.
Real Estate (RE) ¹	5 - 20%	10.0%	11.5%	1.5%	Monitor	Redemption from select open-end funds in process
Fixed Income	20 - 30%	25.0%	19.8%	-5.2%	Monitor	Below target allocation but within approved allocation range when cash is included. Continue to Monitor.
Cash	NA	0.0%	0.8%	0.8%	No Action	Minimal cash balance to provide liquidity, as needed, for annuities, capital calls, and other plan needs.
		100.0%	100.0%	0.0%		

¹As reported on the September 30, 2023 Monthly Review

Source: NHRS

Asset Class Excess Returns September 30, 2023

The table below details the rates of return for the fund's asset classes over various time periods ended September 30, 2023. Negative manager excess returns are shown in red, positive excess returns in green. Returns for one year or greater are annualized.

	Net o	Net of Fees Returns for Periods Ended September 30, 2023							
Composite	Total Fund Weighting As of 9/30/2023	Last Month	Last 3 Months	FYTD	CYTD	LTM	3-YR	5-YR	10-YR
Total Domestic Equity	30.18%	-4.89%	-3.45%	-3.45%	9.16%	17.98%	10.21%	7.66%	10.09%
Domestic Equity Benchmark(1)		-4.76%	-3.25%	-3.25%	12.39%	20.46%	8.61%	8.99%	11.37%
Excess Return		-0.13%	-0.20%	-0.20%	-3.23%	-2.48%	1.60%	-1.33%	-1.28%
Total Non US Equity	17.86%	-4.35%	-4.52%	-4.52%	8.52%	24.08%	4.04%	2.82%	3.68%
Non US Equity Benchmark(2)		-3.16%	-3.77%	-3.77%	5.34%	20.39%	3.74%	2.58%	3.35%
Excess Return		-1.19%	-0.75%	-0.75%	3.18%	3.69%	0.30%	0.24%	0.33%
Total Fixed Income	19.77%	-2.40%	-2.86%	-2.86%	-0.12%	2.50%	-3.22%	0.97%	1.86%
Bloomberg Capital Universe Bond Index		-2.38%	-2.88%	-2.88%	-0.62%	1.61%	-4.68%	0.34%	1.43%
Excess Return		-0.02%	0.02%	0.02%	0.50%	0.89%	1.46%	0.63%	0.43%
Total Cash	0.80%	0.44%	1.34%	1.34%	3.76%	4.71%	1.79%	1.80%	1.20%
3-Month Treasury Bill		0.46%	1.31%	1.31%	3.60%	4.47%	1.70%	1.72%	1.11%
Excess Return		-0.01%	0.03%	0.03%	0.16%	0.24%	0.09%	0.08%	0.08%
Total Real Estate (Q2)*	11.47%	-1.14%	-0.17%	-0.17%	-8.34%	-7.06%	11.50%	9.00%	10.77%
Real Estate Benchmark(3)		-0.97%	-2.88%	-2.88%	-11.01%	-10.73%	7.04%	5.56%	7.81%
Excess Return		-0.18%	2.71%	2.71%	2.67%	3.68%	4.45%	3.44%	2.96%
Total Private Equity (Q2)*	14.89%	-0.70%	-0.02%	-0.02%	5.24%	3.15%	19.63%	13.70%	12.50%
Private Equity Benchmark(4)		6.91%	8.80%	8.80%	26.12%	21.50%	17.16%	15.41%	16.44%
Excess Return		-7.61%	-8.82%	-8.82%	-20.88%	-18.36%	2.48%	-1.71%	-3.94%
Total Private Debt (Q2)*	5.04%	-1.34%	-0.03%	-0.03%	3.54%	4.97%	8.48%	5.37%	6.70%
Private Debt Benchmark(5)		2.22%	2.77%	2.77%	10.90%	11.55%	4.59%	3.48%	6.74%
Excess Return		-3.56%	-2.81%	-2.81%	-7.36%	-6.57%	3.89%	1.88%	-0.04%
Total Fund Composite	100.00%	-3.05%	-2.45%	-2.45%	3.96%	9.18%	7.34%	6.11%	7.10%
Total Fund Benchmark(6)		-1.95%	-1.70%	-1.70%	6.54%	12.24%	5.13%	6.03%	7.22%
Excess Return		-1.10%	-0.75%	-0.75%	-2.58%	-3.05%	2.21%	0.08%	-0.12%

⁽¹⁾ The Domestic Equity Benchmark is the Russell 3000 Index as of 7/1/2021.

^{*}Real Estate and Alternatives market values reflect current custodian valuations, which are typically lagged approximately 1 quarter.



Fiscal Year to Date

CYTD

LTM

Calendar Year to Date

⁽²⁾ The Non US Equity Index is the MSCI ACWI ex US Index as of 7/1/2003. Prior to 7/1/2003 it was the MSCI EAFE Index.

⁽³⁾ The Real Estate Benchmark is the NCREIF NFI-ODCE Value Weight Net Index lagged 1 quarter as of 7/1/2015.

⁽⁴⁾ The Private Equity Benchmark is the Russell 3000 Index + 2% lagged 1 quarter as of 7/1/2022.

⁽⁵⁾ The Private Debt Benchmark is (50% MStar LSTA Leveraged Loan 100 ldx + 50% Bloomberg High Yield Index) + 1% lagged 1 quarter as of 7/1/2022.

Last Twelve Months (6) Current Month Target = 30.0% Russell 3000 Index, 25.0% Bloomberg Universal, 20.0% MSCI ACWI ex-US, 10.0% NCREIF NFI-ODCE Value Weight Net lagged 3 months, 10.0% Russell 3000 Index lagged 3

months+2.0%, 2.5% Bloomberg High Yield Corp lagged 3 months+1.0% and 2.5% MStar LSTA Lev Loan 100 lagged 3 months +1.0%. (7) For the trailing 25 year period ended 9/30/23, the Total Fund has returned 6.73% versus the Total Fund Custom Benchmark return of 6.75%.



To: Investment Committee

From: Raynald Leveque, Chief Investment Officer

Date: November 14, 2023

Re: Wellington International Small Cap Research Equity Contract Extension

Item: Action: Discussion: Informational:

The NHRS Investment Staff recommends that the Investment Committee extend the Investment Management Agreement (Agreement) for the Wellington International Small Cap Research Equity (Wellington ISCRE) contract for a five-year term. Callan has provided an independent evaluation to accompany Investment Staff's recommendation to extend the Agreement with Wellington. Wellington presented at the October 2023 Investment Committee meeting in conjunction with the proposed extension.

The existing Agreement between Wellington and NHRS remains in effect through November 31, 2023. The Agreement contains an automatic twelve-month extension mechanism thereafter, absent written notice of non-renewal.

Wellington ISCRE was added to the Non-US Equity portfolio in November 2021. The NHRS mandate has outperformed its benchmark (MSCI EAFE Small Cap Index) over the Year-to-Date and 1-year periods, while the overall strategy has outperformed over the longer 3, 5, and 7-year periods ending September 30, 2023 (see pg. 5 of Callan's memorandum). Performance remains as expected due to the firm's stock selection process utilizing an experienced team of over twenty industry experts. The mandate's portfolio construction focuses on "best ideas" from each analyst, with a top-down overlay for oversight and risk management. The Wellington ISCRE mandate is rebalanced quarterly to maintain industry and style diversification, exhibiting a high active share percentage (86%) and substantial diversification benefits (projected tracking error of 2.8% versus the MSCI EAFE Small Cap Index). Brinson performance attribution demonstrates significant excess returns through stock selection with outperformance in Emerging Markets and the United Kingdom (see Wellington's October IIC presentation).

Investment Staff maintains its conviction that the Wellington ISCRE will continue to execute its strategy to generate positive excess returns in the NHRS Global Equity portfolio. The exposure to international small capitalization stocks in the non-US Equity allocation is accretive to the overall asset class. Callan's evaluation supports the Investment Staff's recommendation to maintain the Wellington ISCRE allocation in the Global Equity portfolio.

Based on our review, given the recent solid investment performance, strength, firm stability, investment team, and investment process, I recommend that NHRS maintain its investment in the Wellington ISCRE strategy through November 30, 2028.

As a reminder, NHRS can terminate the Agreement at any time upon 30 days written notice to the manager. The Investment Staff and Callan will continue to monitor this mandate to ensure it meets its intended investment objectives.

Our Mission: To provide secure retirement benefits and superior service.

Callan

Callan LLC 1 Deforest Avenue Suite 101 Summit, NJ 07901



Memorandum

To: Raynald Leveque, Chief Investment Officer for the NHRS

From: Angel G. Haddad, Britton M. Murdoch

Date: October 31, 2023

Subject: Wellington International Small Cap Strategy Extension

The New Hampshire Retirement System (NHRS) invests in the Wellington International Small Cap Strategy ("the Strategy"). Consistent with the manager extension process established by NHRS, continued participation in this strategy is subject to discussion at contract extension. This Memo provides an independent evaluation of this investment strategy, together with the research and quantitative analysis considered to support our recommendations.

Based on our findings, we recommend that NHRS extend the contract with Wellington. Callan maintains a positive opinion of Wellington and the International Small Cap strategy. The firm's ownership structure, consistently-applied and unique investment philosophy and process, and stable bench of global industry analysts have resulted in a competitive long-term performance record. The portfolio is managed by ~20 global industry analysts under the supervision of Head of Investment Research Mary Pryshlak. Each analyst manages their own sub-portfolio of the product where they select stocks with the highest expected capital appreciation utilizing fundamental, bottom-up research. Analyst stock coverage is typically across all market capitalizations and is a mix of global and regional coverage depending on the industry. Wellington has historically exhibited a slight growth tilt relative to its benchmark and peers, and has outperformed over both short and long time periods.

New Hampshire first invested in Wellington's International Small Cap Research Equity (ISCRE) portfolio in November 2021. Since inception as of June 30, 2023, the ISCRE portfolio has returned -13.3% (net of fees) vs. the MSCI EAFE Small Cap Index return of -11.4%. The trailing 1-year (as of June 30, 2023) return for ISCRE outperformed the MSCI EAFE Small Cap Index by 4.7% (net of fees). The end of 2021 marked the beginning of a prolonged drawdown in growth stocks and sectors, such as Technology, that continued into 2022. Value stocks were strongly favored over growth stocks in 2022 as the Russia-Ukraine war, rising interest rates, and inflation fears pressured markets. The strategy underperformed in 2022 as stock selection in both Information Technology and Real Estate detracted over 100 bps each, while stock selection in Health Care contributed to performance. Performance in the first half of 2023 has improved. Stock selection in Health Care has been the top contributor YTD, while Consumer Staples and Consumer Discretionary have detracted.

Over the long-term, the strategy's representative account outperformed the MSCI EAFE Small Cap Index by 2.5% and 2.0% (gross of fees) over the trailing 5- and 7-year periods, respectively. Historical performance reflects the strength of the process with almost all alpha being generated by stock selection. Tracking error has typically stayed within a moderate range of 2% - 4.5%.

Please refer to Callan's detailed research update for more information regarding the qualitative and quantitative factors considered in our analysis.



Overview

Wellington was founded in 1928 and remains 100% employee-owned. The Wellington International Small Cap Research strategy employs an industry-focused, bottom-up investment approach. The research portfolio is the reflection of Wellington's global industry analysts expertise. The team seeks to add value through in-depth fundamental research and understanding of their industries. The portfolio is diversified and constructed in a way to ensure stock selection drives performance.

Market Commentary

Global ex-U.S. equity markets trailed U.S. equity markets given lower technology exposure. Lacking the U.S. markets exuberance for any company associated with Artificial Intelligence, style impacts in developed ex-U.S. equity were more muted with value (MSCI World ex USA Value: +3.1%) in line with growth (MSCI World ex USA Growth: +3.0%). Illustratively, Industrials (EAFE Industrials: +6.4%) outperformed Technology (EAFE Technology: +5.9%). Japan (+6.4%) was a top performer and the Nikkei 225 Index hit its highest level since 1990. Japan benefited from strong inflows from foreign investors, expectations for corporate governance reform and an improved outlook for the Japanese economy. The yen sank 8% versus the U.S. dollar as monetary policy was kept ultraloose, but the dollar fell versus the British pound (+2.8%) and the euro (+0.4%).

Emerging market equity underperformed developed market equity, but results varied widely. Emerging Europe (+11.2%) and Latin America (+14.0%) posted double-digit results while Emerging Asia (-0.8%) was hurt by poor performance from China (-9.7%) offsetting results from India (+12.2%). Poland (+24.5%) boosted the performance of Emerging Europe while Turkey (-10.7%) weighed on the regions results. In Latin America, Brazil (+20.7%) and Colombia (+11.7%) were top performers.

Cumulative Annualized Returns (NHRS Account - Net of fees)

	2Q23	1 Year	Since Inception*
Wellington Int'l Small Cap Research (Net)	1.47%	14.86%	(13.31%)
MSCI EAFE Small Cap	0.58%	10.18%	(11.40%)

^{*}Since Inception is 11/1/21.

	YTD 2023	2022
Wellington Int'l Small Cap Research (Net)	8.07%	(24.06%)
MSCI EAFE Small Cap	5.53%	(21.39%)



Wellington Management Company was founded in 1928 and stands as one of the oldest investment firms in the U.S. The firm was purchased by key employees in 1979 and remains a 100% employee-owned partnership today. Roughly one-half of the firm's assets are in equities although the firm manages a broad range of strategies across multiple asset classes and sectors. With more than 1,000 investment professionals and six offices worldwide, the firm maintains a global footprint.

Organization

In September 2020, Wellington's Managing Partners announced the appointment of Jean Hynes to CEO effective June 2021; Hynes replaced then CEO Brendan Swords. Hynes began her tenure at Wellington in 1991 as a global industry analyst on the Health Care team and her responsibilities have expanded since that time. She became a Partner in 2011 and was elected Managing Partner in 2014. In addition to Hynes' appointment, Steve Klar was elected President effective January 2021. Klar joined the firm in 2004 and has had many roles across client, product, and investment groups, including his most recent role as co-head of Investment Boutiques. He became a Partner in 2009, a Vice Chair in 2013, and a Managing Partner in 2017. Hynes has primary responsibility for managing the investment platform while Klar has primary responsibility for managing the client and infrastructure platforms.

People

The portfolio is managed by ~20 global industry analysts under the supervision of Head of Investment Research Mary Pryshlak. The global industry analyst team comprises ~50 analysts with an average experience of 19 years. Analyst stock coverage is typically across all market capitalizations and is a mix of global and regional coverage depending on the industry. Analysts are responsible for conducting fundamental, bottom-up research through a philosophy and process best suited to their industry and investment style. The analysts responsible for managing sub-portfolios for the International Small Cap Research Equity strategy have undergone a vetting process assessing their investment philosophy, behavioral biases, decision-making process, and their past paper portfolio.

The analysts who manage sub-portfolios for the strategy have ultimate decision-making power and are supported by an equity portfolio analyst who monitors performance and risk metrics.

Global Industry Research is organized by industry responsibility. Each analyst is responsible for a specific niche market within their coverage area and provides fundamental analysis of companies within their assigned industries. Analysts identify and maintain what they feel is the most appropriate valuation technique within their coverage area. The analysts role is to make timely investment recommendations using a ranking system.

Analysts conduct fundamental, bottom-up research which includes contacts with company suppliers, customers, and competitors. Wellington believes that the assessment of company management is an important part of the stock selection process. Wellington's analysts build their views over long timeframes with in-depth knowledge and broad perspectives on covered companies.

Philosophy and Process

Each analyst on the strategy manages their own sub-portfolio of the product where they select stocks with the highest expected capital appreciation. The allocation of assets to the sub-portfolios will correspond to the relative weight of each analyst's coverage of the MSCI EAFE Small Cap Index. The selection, valuation methodology, and timing of investments for each of the sub-portfolios is at the complete discretion of the analyst, subject only to the constraint that securities fall within their coverage and that the sub-portfolio remains fully invested. Coverage is not limited to MSCI EAFE Small Cap Index stocks or countries, and the analysts may also invest in emerging markets.

Stocks are typically sold when they have become overvalued relative to their underlying fundamentals or when the company does not meet expectations. An analyst may also sell a stock when the underlying thesis for holding the stock has changed. Examples include a negative unanticipated change in the regulatory or competitive environment. Analysts look at

Philosophy and Process (cont.)	each security on a case-by-case basis. Still, typically, their sell discipline leads to trimming a position as it approaches their price target, to fund incremental new opportunities, or to manage concentration risk. Various other factors, including liquidity, are also considered in the selling process.
Product Dynamics	The International Small Cap Research Equity strategy is currently open to new investors. The portfolio is rebalanced quarterly to maintain industry weighting neutrality and rebalance for unintended style or factor biases. The total number of holdings is typically more than 200 stocks. Maximum position weight is 3%. Industry weights will closely match those of the benchmark. Emerging markets exposure will usually be less than 15% with a maximum of 20% allowed above the index. Turnover is typically 70% - 100% per annum. The strategy has historically exhibited a slight growth tilt relative to peers in Callan's International Small Cap style group and the MSCI EAFE Small Cap Index over time.
	New Hampshire first invested in Wellington's International Small Cap Research Equity (ISCRE) portfolio in November 2021. Since inception as of June 30, 2023, the ISCRE portfolio has returned -13.3% (net of fees) vs. the MSCI EAFE Small Cap Index return of -11.4%. The trailing 1-year (as of June 30, 2023) return for ISCRE outperformed the MSCI EAFE Small Cap Index by 4.7% (net of fees).
Short Term Performance	The end of 2021 marked the beginning of a prolonged drawdown in growth stocks and sectors, such as Technology, that continued into 2022. Value stocks were strongly favored over growth stocks in 2022 as the Russia-Ukraine war, rising interest rates, and inflation fears pressured markets. The strategy underperformed in 2022 as stock selection in both Information Technology and Real Estate detracted over 100 bps each, while stock selection in Health Care contributed to performance. Performance in the first half of 2023 has seen a relative recovery as the strategy has outperformed the benchmark with stock selection in Information Technology and Real Estate both contributing. Stock selection in Health Care has been the top contributor YTD while Consumer Staples and Consumer Discretionary have detracted.
Long Town	Given the relatively recent inception date of November 2021 for New Hampshire's investment in Wellington's International Small Cap Research Equity portfolio, long-term performance comments below are for the strategy's representative account.
Long Term Performance	As of June 30, 2023, 5-year and 7-year trailing returns have outperformed the MSCI EAFE Small Cap Index by 2.5% and 2.0% (gross of fees), respectively. Historical performance reflects the strength of the process with almost all alpha being generated by stock selection. Tracking error has typically stayed within a moderate range of 2% - 4.5%.
Overall Status	Callan maintains a positive opinion of Wellington and the International Small Cap Research Equity strategy. We include the strategy in relevant client searches. The firm's ownership structure, consistently-applied process, and stable team have resulted in a competitive long-term performance record.

Cautionary



Within expectations

Notable

Under Review

Returns Calendar Year Returns



Last Last Last Last Last Last Since

QuarterYear 2 3 4 5 7 Inception

YearsYearsYearsYearsYears1/1/22

1.60 15.63 -- - - - - (11.77)
1.47 14.86 -- - - - - (12.34)
1.76 16.34 (8.35) 8.08 5.62 3.77 7.78 (11.22)
0.58 10.18 (8.48) 5.70 3.31 1.31 5.74 (11.71)

NH Wellington Int'l Small Cap Research *NH Wellington Int'l Small Research (net) Welgtn:Intl Small Cap Research MSCI:EAFE Small



2 2022 2021 2020 2019 2018 2017 2016 Qtrs. 2023

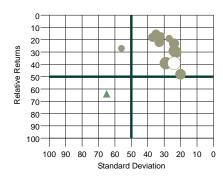
Relative Return vs. Risk vs. Group Rolling 3 Year

NH Wellington Int'l Small Cap Research

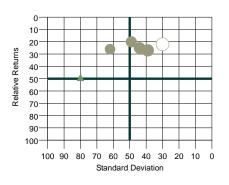
Welgtn:Intl Small Cap Research

MSCI:EAFE Small

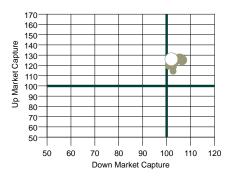
*NH Wellington Int'l Small Research (net)



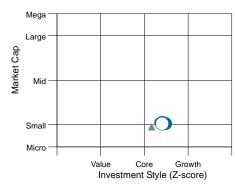
Relative Return vs. Risk vs. Group Rolling 5 Year



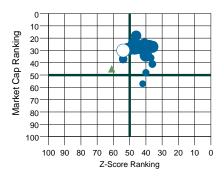
Upside/Downside Capture vs. Index Rolling 5 Year



Holdings Based Style Map Rolling 1 Year



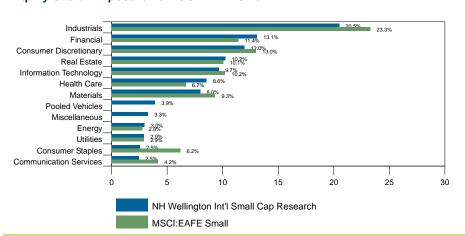
Style Map Ranking vs. Group* Rolling 1 Year



Portfolio Characteristics

	NH Wellington Int'l	
	•	
	Small Cap	
-	Research	MSCI:EAFE Small
Number of Holdings	253	2,266
Issue Diversification	55.4	442.0
Growth Z Score	(0.1)	0.0
Value Z Score	(0.2)	0.0
Combined Z Score	0.1	0.0
Wtd. Median Market Cap.	2.9	2.3
Forecasted P/E (exc neg)	13.4	12.8
Price/Book Value	1.3	1.3
Forecasted Gr. in Earnings	11.3	10.7
Return on Equity	9.4	11.2
Dividend Yield	2.3	3.0

Equity Sector Exposure vs MSCI:EAFE Small



Region Exposures

	NH Wellington Int'l	
_	Small Cap Research	MSCI:EAFE Small
Emerging Markets	6.7%	0.0%
Europe	44.9%	53.4%
Japan	27.1%	31.9%
North America	12.5%	0.0%
Pacific Rim	8.8%	14.7%

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The investment manager organizations contained herein have submitted information to Callan regarding their investment management capabilities, for which information Callan has not necessarily verified the accuracy or completeness of or updated.

The information provided to Callan has been summarized in this report for your consideration. Unless otherwise noted, performance figures reflect a commingled fund or a composite of discretionary accounts.

All written comments in this report are based on Callan's standard evaluation procedures which are designed to provide objective comments based upon facts provided to Callan.

The appropriateness of the candidate investment vehicle(s) discussed herein is based on Callan's understanding of the client's portfolio as of the date hereof.

Certain operational topics may be addressed in this investment evaluation for information purposes.

Unless Callan has been specifically engaged to do so, Callan has not conducted due diligence of the operations of the candidate or investment vehicle(s), as may be typically performed in an operational due diligence evaluation assignment.



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The client agrees to adhere to the conditions of any applicable confidentiality or non-disclosure agreement.





2023 Strategic Asset Allocation Review

NHRS Investment Team
Independent Investment Committee Meeting
November 2023

Objective



- The CIO initiated a Strategic Asset Allocation (SAA) review in 2023 for the following reasons:
 - Macro-economic environment has dramatically shifted in 2022, resulting in a higher interest rate environment, higher inflationary environment, and increased market volatility due to geopolitical risk events
 - Next five to ten years are expected to be more uncertain than the prior period in the global capital markets
 - Staff is focused on improving our funded ratio over the long term and working to build a robust "all-weather" total plan to achieve outcomes that secure retirement benefits
 - Arrival of a new CIO in October 2022, prompted a fresh look at the current policy asset allocation, existing investment managers, and advisors to the NHRS
 - Investment Staff has taken a more active role in managing the portfolio and led this Strategic Asset Allocation review for consideration by the IIC and Board of Trustees

Goals of the SAA Review



- The NHRS Investment Office has three main goals for the 2023 Strategic Asset Allocation review:
 - 1. Reduce the overall volatility or risk of the total plan and within asset classes, examining our exposure to public and private markets
 - 2. Further diversify our existing stock and bond allocations of the current allocation, considering where there are opportunities to generate stable performance
 - 3. Ensure more consistency in total risk-adjusted return for the total plan over the medium-term horizon, thinking about the next five years and how we want to be positioned

SAA Background & New Approach



- Background
 - Asset Allocation is the largest driver of risk-adjusted performance for any investor
 - Callan, our general consultant, has historically collaborated with Investment Staff and conducted the asset allocation review
- New Approach
 - CIO and NHRS Investment Team leveraged Callan's tools and resources to bring this process in-house to conduct a staff-driven analysis of the current SAA
 - Callan assisted with technology and investment analytics
 - Callan performed the stress tests and asset-liability study
 - NHRS utilized Callan's 2023 Capital Market Assumptions (CMAs) to evaluate our current policy allocation
 - The Investment Team developed three potential policy portfolios for consideration by the IIC
 - The implementation horizon for these potential policy portfolios is over five years, with an annual review going forward conducted by Investment Staff and Callan

NHRS Staff Driven SAA Process



Process undertaken by the NHRS Investment Team in 2023...

- 1. 2023 CMAs from Callan reviewed by Investment Team (February)
- 2. Debated CMAs within Investment Team vs. Third Party CMAs (*March*)
- 3. Investment Team developed initial portfolios for Callan to run optimizations (*April*)
 - Considered existing and new asset classes
- 4. Investment Team evaluated the optimizer using unconstrained optimizations (*May*)
- 5. NHRS refined the parameters for constraints and developed preliminary portfolios for optimization (*June*)
- 6. NHRS reviewed and refined potential portfolios with Callan (*July*)
- NHRS evaluated Callan's stress tests and liquidity analysis of potential portfolios (August)
- 8. NHRS finalized proposed allocation for recommendation to the IIC (September October)

Evaluation of the CMA Inputs

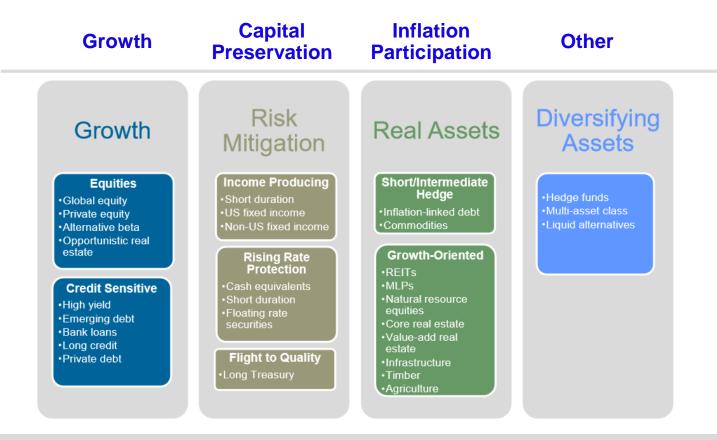


- Investment Team reviewed the CMA inputs to the SAA review
 - Other CMA providers considered in the review of Callan CMAs (e.g., J.P. Morgan)
- Investment Team observations on CMAs
 - Inflation projections
 - Time horizon (10-Year versus 20-Year)
 - Volatility assumptions
 - Correlation assumptions
 - Building blocks
 - Differences with Global Equity vs US and Non-US Equity point estimates
 - Underlying assumption of using Core Fixed Income
 - Underlying assumption for Private Credit projections

Callan's Thematic Classification



- Callan's framework for themes classification is another way to understand portfolio exposures and where NHRS is taking risk
- NHRS customized these labels toward how NHRS manages and thinks about the policy portfolio exposures...



Thematic Classification Adapted for NHRS



- NHRS portfolio is tilted toward the Growth theme with an estimated 75% exposure, primarily to growth-themed investments
- Capital Preservation accounts for about 15% exposure from credit-sensitive public securities (i.e., duration risk)
- Real Estate accounts for majority of inflation-sensitive allocations in the portfolio

Growth

Equities

- Global equityPrivate equity
- Private equity
 Alternative beta
- Opportunistic real estate

Credit Sensitive

- •High yield
- Emerging debtBank loans
- Long credit
- Private debt

Capital Preservation

Income Producing

- •Short duration
- US fixed income
 Non-US fixed income

Rising Rate Protection

- ·Cash equivalents
- •Short duration
 •Floating rate

Flight to Quality

Long Treasury

Inflation Participation

Short/Intermediate Hedge

Inflation-linked debtCommodities

Growth-Oriented

- •REII:
- •MLPs
- •Natural resource equities
- •Core real estate
- •Value-add real
- Infrastructure
- •Timber •Agriculture

Other

Hedge fundsMulti-asset classLiquid alternatives

	Current Policy Ta	rget		NHRS Thematic Buckets				
	Asset Class	Weights	(Growth)	(Capital Preservation)	(Inflation Participation)	(Other)		
(Public) Equity	Global Equity	50.0%						
(Public) Credit	Global Fixed Income	25.0%	Global Equity 50% Private Equity 10% Credit Sensitive (Public) 10%	Income Producing 15%	Core / Value-add Real Estate	None		
e) ves	Private Credit	5.0%	Credit Sensitive (Private) 5%	Cash Equivalents 0%	1070			
(Private) Iternatives	Private Equity	10.0%						
Alte	Real Estate	10.0%						
	Total	100.0%	75%	15%	10%	0%		

Callan's 2023 CMA Inputs



Asset Class	Benchmark	10-Yr Geometric Return	20-Yr Geometric Return	10-Yr Standard Deviation
Equities		Return	Return	Deviation
Global Equity	MSCI ACWI	7.60%	7.90%	18.35%
Broad US Equity	Russell 3000	7.35%	7.65%	18.05%
Large Cap US Equity	S&P 500	7.25%	7.50%	17.75%
Small/Mid Cap US Equity	Russell 2500	7.45%	7.85%	22.15%
Global ex-US Equity	MSCI ACWI ex USA	7.45%	7.85%	21.25%
Developed ex-US Equity	MSCI World ex USA	7.25%	7.50%	20.15%
Emerging Market Equity	MSCI Emerging Markets	7.45%	8.00%	25.70%
Fixed Income				
Cash Equivalents	90-Day T-Bill	2.75%	2.80%	0.90%
Short Duration GoVt/Credit	Bloomberg Barclays 1-3 Yr G/C	3.80%	3.85%	2.30%
Core US Fixed	Bloomberg Barclays Aggregate	4.25%	4.45%	4.10%
High Yield	Bloomberg Barclays High Yield	6.25%	6.30%	11.75%
Bank Loans	S&P/LSTA Leveraged Loan Index	6.10%	6.10%	9.70%
EMD	EMBI Global Diversified	5.85%	5.95%	10.65%
Private Markets				
Private Markets Core Real Estate	NCREIF ODCE	5.75%	6.15%	14.20%
	NCREIF ODCE MSCI Glb Infra/FTSE Dev Core 50/50	5.75% 6.15%	6.15% 6.60%	14.20% 15.45%
Core Real Estate				
Core Real Estate Private Infrastructure	MSCI Glb Infra/FTSE Dev Core 50/50	6.15%	6.60%	15.45%
Core Real Estate Private Infrastructure Private Equity	MSCI Glb Infra/FTSE Dev Core 50/50 Cambridge Private Equity	6.15% 8.50%	6.60% 8.85%	15.45% 27.60%
Core Real Estate Private Infrastructure Private Equity Private Credit	MSCI Glb Infra/FTSE Dev Core 50/50 Cambridge Private Equity N/A	6.15% 8.50% 7.00%	6.60% 8.85% 7.25%	15.45% 27.60% 15.50%
Core Real Estate Private Infrastructure Private Equity Private Credit Hedge Funds Inflation	MSCI Glb Infra/FTSE Dev Core 50/50 Cambridge Private Equity N/A Callan Hedge FoF Database Consumer Price Index - Urban	6.15% 8.50% 7.00% 5.55%	6.60% 8.85% 7.25% 5.60%	15.45% 27.60% 15.50% 8.45%
Core Real Estate Private Infrastructure Private Equity Private Credit Hedge Funds Inflation Relative Comparisons (10-Yr	MSCI Glb Infra/FTSE Dev Core 50/50 Cambridge Private Equity N/A Callan Hedge FoF Database Consumer Price Index - Urban Estimates)	6.15% 8.50% 7.00% 5.55%	6.60% 8.85% 7.25% 5.60%	15.45% 27.60% 15.50% 8.45%
Core Real Estate Private Infrastructure Private Equity Private Credit Hedge Funds Inflation Relative Comparisons (10-Yr I	MSCI Glb Infra/FTSE Dev Core 50/50 Cambridge Private Equity N/A Callan Hedge FoF Database Consumer Price Index - Urban Estimates)	6.15% 8.50% 7.00% 5.55% 2.50%	6.60% 8.85% 7.25% 5.60%	15.45% 27.60% 15.50% 8.45%
Core Real Estate Private Infrastructure Private Equity Private Credit Hedge Funds Inflation Relative Comparisons (10-Yr I	MSCI Glb Infra/FTSE Dev Core 50/50 Cambridge Private Equity N/A Callan Hedge FoF Database Consumer Price Index - Urban Estimates) quity minus Global Equity)	6.15% 8.50% 7.00% 5.55% 2.50%	6.60% 8.85% 7.25% 5.60%	15.45% 27.60% 15.50% 8.45% 1.60%
Core Real Estate Private Infrastructure Private Equity Private Credit Hedge Funds Inflation Relative Comparisons (10-Yr I I I I I I I I I I I I I I I I I I I	MSCI Glb Infra/FTSE Dev Core 50/50 Cambridge Private Equity N/A Callan Hedge FoF Database Consumer Price Index - Urban Estimates) quity minus Global Equity) Private Equity minus Global Equity)	6.15% 8.50% 7.00% 5.55% 2.50%	6.60% 8.85% 7.25% 5.60%	15.45% 27.60% 15.50% 8.45% 1.60%

- Staff collaborated with
 Callan to select the
 CMAs utilized in the
 Strategic Asset Allocation
 review
- Investment Staff reviewed a broader set of assumptions and evaluated a few other CMAs from other investment managers as a robustness check
- Staff decided to make no adjustments to the Callan CMA estimates
- Equity Risk Premium has continued to decline between public and private equities assumptions
- Long-term inflation expectations remain anchored around 2.5% among CMA providers

CMA Asset Class Correlation Matrix



- Private Equity remains highly correlated (>70%) to Public Equity asset classes (regardless of cap size or geography)
- Private Credit is also moderately correlated with Public & Private Equities
- Private Infrastructure is modeled to be a diversifier across the asset classes, highly correlated to Real Estate as expected
- Core Fixed Income is modeled as uncorrelated to Private Credit
 - Staff expects some correlation, taking this into account in our proposed optimizations



Source: Callan, NHRS

Three Potential Policy Portfolios



- NHRS determined three potential policy portfolios for the total plan given our goals
- Callan assisted in running mean-variance optimizations (MVOs) across many different asset class allocations

		06/30/23	Propos	sed LT Policy Por	tfolios
Asset Class	Current Policy Target	Actual Allocation	Portfolio A	Portfolio B	Portfolio C
Global Equity	50%	49%	45% ↓	40% ↓	40%↓
Fixed Income	25%	20%	25%	25%	20% ↓
Alternatives					
Private Equity	10%	14%	10%	10%	10%
Private Credit	5%	5%	5%	10%↑	15% ↑
Core Real Estate	10%	11%	10%	10%	10%
Private Infrastructure	0%	0%	5% ↑	5% ↑	5% ↑
Cash Equivalents	<u>0%</u>	<u>1%</u>	0%	<u>0%</u>	<u>0%</u>
	100%	100%	100%	100%	100%
Expected Return (10-Year)	7.2%	7.4%	7.2%	7.2%	7.3%
Expected Standard Deviation	13.0%	13.8%	12.6%	12.3%	12.9%
Expected Sharpe Ratio (Return / Risk)	0.33	0.32	0.34	0.35	0.34
Total Private Market Allocation	25%	30%	30%	35%	40%

Source: NHRS, Callan

Efficient Frontier for Proposed Portfolios



Efficient Frontier



Source: Callan

- NHRS considered the diversification of the total portfolio, reducing our overall public market volatility, as well as a continued emphasis on active management in developing Portfolios A, B, and C
- All potential portfolios yield above the assumed rate of return (6.75%) while lowering the overall volatility or risk relative to the current policy target to varying degrees

Observations on Proposed Portfolios



- Infrastructure Asset Class
 - Given the NHRS' liquidity position, the total plan can have more investments that tilt toward yield generation to provide stable and consistent long-term income with some capital appreciation
 - Infrastructure asset class exhibits more stable performance through most economic environments with diverse inflation-sensitive sectors
 - Staff recommends adding Infrastructure as a new asset class to reduce the volatility of our existing stock and bond exposures while increasing our diversification to complementary "real" assets
- Increasing Private Credit
 - Private Credit tends to be a more resilient asset class with lower risk or volatility relative to other risk assets (i.e., Private Equity) for institutional investors
 - Private Credit produces a better risk-adjusted return in an environment where global interest rates may remain higher for longer
 - Staff believes the opportunity for credit is more attractive in Private Credit than Public Credit (Global Fixed Income), with more levers to capture the credit beta versus the public market investment strategies

Observations on Proposed Portfolios

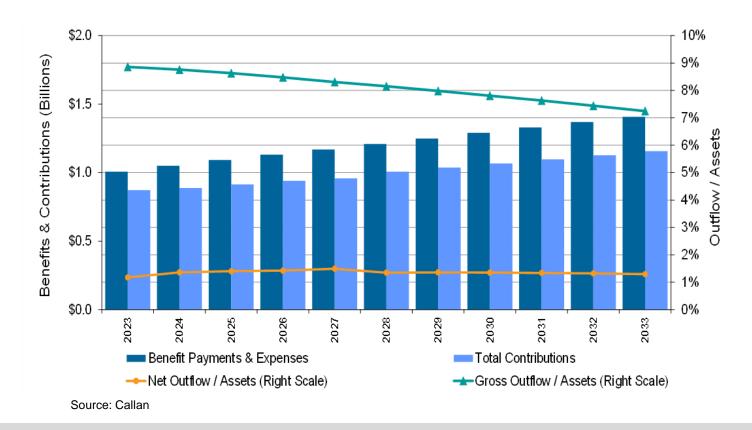


- Public Equity Consolidation
 - Current portfolio separately classifies US Equity and Non-US Equity with a significant portion of Non-US investment managers investing in the US
 - Staff believes a Global Equity portfolio will allow better management of the overall equity exposure that considers a global view of equity opportunities from our managers
 - Staff proposes moving to a single asset class, "Global Equity", consolidating
 US Equity and Non-US Equity, utilizing the MSCI All-Country World as the policy
 benchmark
- Fixed Income Rebalancing
 - The majority of the Global Fixed Income asset class is allocated more towards credit-sensitive investments (i.e., Corporates, High Yield) rather than durationsensitive investments (i.e., Treasuries, Sovereign Bonds)
 - Staff proposes rebalancing the Credit investments to de-risk the portfolio by increasing our exposure to duration-sensitive investments, given the current interest rate environment

Liquidity Analysis



- Callan forecasts net cash outflows to range between 1 2% based on projections of benefit payments net of contributions (see Appendix for historical data)
- Investment Staff & Callan believe that with a low net cash need, the total plan can continue to allocate toward Private Markets and de-risk (lower volatility) the plan via asset allocation



Scenario Analysis for CMAs



- Investment Staff analyzed Callan's stress test and historical market scenarios across all CMAs to determine the efficacy of Profit and Loss (P&L) impacts (see Appendix for assumptions used)
- Scenarios and market shocks perform as expected for the various asset class estimates and potential portfolios
- Market shocks assume instantaneous market impact, which differs from actual experience, which happens over time

Scenario Performance by Asset Class									
Asset Class	Black Monday	2008 Financial Crisis	2011 U.S. Debt Ceiling Crisis and Downgrade	CY 2022	Equities Decline 20% for 1 Year	Baseline			
US Equity	-22%	-42%	-15%	-19%	-20%	6.8%			
Global ex-US Equity	-15%	-48%	-20%	-17%	-20%	6.8%			
Fixed Income	4%	5%	4%	-13%	0%	6.8%			
Cash	1%	2%	0%	1%	0%	6.8%			
Core Real Estate	0%	-14%	3%	7%	0%	6.8%			
Private Equity	-1%	-21%	-6%	-8%	-20%	6.8%			
Private Credit	-1%	-20%	-7%	4%	0%	6.8%			
Private Infrastructure	-1%	-14%	-4%	8%	0%	6.8%			

Source: Callan

Stress Tests for Potential Policy Portfolios



- Investment Staff reviewed both shocks to net cash outflows as % of liquid assets as well
 as overall total plan shock for each of the proposed portfolios versus current policy
- All potential policy portfolios performed within a range of expected P&L performance, with meaningful downside protection vs the current target in the hypothetical scenarios modeled

Net Outflow % of Liquid Assets Before and After Market Shock								
	Current Target	Actual Allocation	Portfolio A	Portfolio B	Portfolio C			
Starting Position	-2.2%	-2.4%	-2.4%	-2.6%	-2.8%			
Target Private Markets Allocation	25.0%	30.0%	30.0%	35.0%	40.0%			
Black Monday	-2.8%	-3.0%	-3.0%	-3.2%	-3.6%			
2008 Financial Crisis	-3.4%	-3.7%	-3.6%	-3.9%	-4.4%			
2011 U.S. Debt Ceiling Crisis and Downgrade	-2.7%	-2.9%	-2.9%	-3.2%	-3.5%			
CY 2022	-2.9%	-3.1%	-3.2%	-3.5%	-3.8%			
Equities Decline 20% for 1 Year	-2.8%	-3.0%	-3.1%	-3.3%	-3.6%			
Baseline	-2.3%	-2.5%	-2.5%	-2.7%	-2.9%			

Projected Portfolio Performance During Market Shock								
	Current Target	Actual Allocation	Portfolio A	Portfolio B	Portfolio C			
Black Monday	-8.9%	-9.2%	-7.9%	-7.0%	-7.3%			
2008 Financial Crisis	-25.4%	-25.9%	-23.9%	-22.7%	-23.9%			
2011 U.S. Debt Ceiling Crisis and Downgrade	-8.2%	-8.2%	-7.5%	-7.0%	-7.5%			
CY 2022	-12.3%	-11.8%	-10.9%	-9.8%	-9.0%			
Equities Decline 20% for 1 Year	-12.0%	-12.6%	-11.0%	-10.0%	-10.0%			
Baseline	6.8%	6.8%	6.8%	6.8%	6.8%			

Source: Callan

Conclusions



- CIO recommends Portfolio B as the new Policy Allocation over the <u>next five years</u> for the following reasons:
 - Overall total plan risk is reduced by moving allocation from Global Equity into a lower volatility private markets asset classes in a measured way
 - Incorporating Infrastructure as a new asset class to further diversify our existing stock and bond allocations
 - Increase our exposure to Private Credit to generate strong risk-adjusted returns over public markets investments
 - Rebalance Global Equity and Global Fixed Income asset classes to further achieve alignment and reduce risk
 - Forecasted low net cash outflows allow the current portfolio to continue to invest in the private markets
- Staffing at current levels remains a challenge for the implementation of a new strategic asset allocation CIO and Investment Team is developing a Strategic Plan to address this
- Upon approval of a policy recommendation by the Board of Trustees, the NHRS Investment Team will develop an implementation plan in 2024



APPENDIX

Infrastructure Background



- Background
 - NHRS met with Townsend, our Real Estate advisor, as well as several existing managers to discuss Infrastructure for the NHRS portfolio
 - CIO previously managed the Real Assets portfolio at the State of Connecticut, underwriting and committing approximately \$625M in primary real assets funds in a \$5.2B Real Assets portfolio (Real Estate, Infrastructure, and Nat. Resources)
 - Today, NHRS has very little exposure to Infrastructure investments (less than 1% of Private Equity and Private Credit mandates, including co-investments) but not as a dedicated strategy at the total plan level
- What is Infrastructure, and why should NHRS incorporate this asset class?
 - Alternative asset class that encompasses investments in sectors that provide physical assets and include services and installations essential for the economic productivity of society
 - Infrastructure is regarded as a long-term asset class suited to investors with long-term liabilities
 - Infrastructure can be comparatively low-risk than other alternative investments, with a focus on both cash yield and capital appreciation
 - Infrastructure is often described as analogous to the Real Estate asset class

Infrastructure Sector Examples



Transportation & Logistics



Power & Utilities



Environmental



Energy



Telecommunications



Social



Source: BlackRock, 2022

Benefits and Considerations for Infrastructure Investing



Key Benefits

- Portfolio Diversification low correlation of infrastructure with other asset classes (public markets) over longterm
- Stabilized Demand assets providing essential services with few competitors drive stable demand through various economic environments
- Longevity infrastructure assets typically have long life spans
- Sector Diversity infrastructure has matured as an asset class since the 1990s, with newer sectors being introduced (e.g., telecom)
- Downside Protection stable free cash flow influences downside protection in sub-strategies that focus on income over capital appreciation

Important Considerations

- Market Breadth infrastructure market has expanded to include newer technologies (i.e., broadband, data centers) which tend to be capital intensive and introduce innovation risk
- Capital Intensive infrastructure assets are capital intensive for greenfield assets, due to development costs (similar to real estate)
- Inflation Linkage infrastructure assets are linked to inflation, through regulation, or contracts that adjust to changes in inflation rates. Other sectors may have less sensitivity to inflation (e.g., telecom / internet service)
- Demand for Core infrastructure investors had demanded core (income assets) exposure, driving up acquisition prices, and reducing underwriting returns

Infrastructure Risk and Return



	Core	Core Plus	Value Add	
Revenue Model	 Cash flow underpinned by regulation or concession None or limited price and volume risk 	 Cash flow underpinned by medium to long term contracts, strong market position, or concession Some price/volume risk 	 Medium term contracts Some to significant volume and price risk, ramp-up risk Growth opportunities (add-on, roll-up) Core/core-plus Greenfield assets 	
Leverage	70-90%, IG¹	60-80%, IG¹	40-60%, IG or sub-IG ¹	
Operating Risk	Low to medium	Low to medium	Medium to high	
Market Risk	Low	Low to moderate	Moderate to high	
Yield	High	Medium to high	Low to medium	
Growth Potential	Low	Low to Medium	High	
Targeted Returns	6-8%	8-10%	12-15%	

IG = Investment Grade Source: Townsend

Historical Net Cash Outflow for NHRS



		Funded											
		Percentage of AA Value of	f Assets Availab		Actual Total	Net Cash					Ratio	to Payroll Standard	Standard
	NHRS in	Aggregate Member	Current Retirees &	Active & Inactive	Payroll / Expected	Flow as a Percent		UAAL Amortization				Deviation of	Deviation of Contribution
Valuation Year	Total	Contributions	Beneficiaries	Members	Total Payroll	of MVA	Retirees ¹	Period	UAAL	AVA	AAL	Return	Rate
June 30, 2008	67.8%	100%	83%	0%	101%	(1.2)%	2.2	30	109%	230%	339%	***	***
June 30, 2009*	58.3	100	63	0	103	(2.3)	2.1	30	145	202	346	23%	0.3%
June 30, 2010	58.5	100	61	0	98	(2.8)	2.0	30	150	211	361	23	0.3%
June 30, 2011#*	57.4	100	63	0	98	(3.1)	1.8	29	169	228	397	26	0.3%
June 30, 2012	56.1	100	58	0	96	(2.3)	1.7	28	183	234	417	28	0.3%
June 30, 2013	56.7	100	59	0	97	(2.9)	1.6	27	185	243	428	29	0.3%
June 30, 2014	60.7	100	67	0	97	(1.7)	1.6	26	173	267	440	32	0.4%
June 30, 2015#^	59.2	100	66	0	99	(1.8)	1.5	25	195	283	478	33	0.4%
June 30, 2016	60.0	100	67	0	98	(1.7)	1.5	24	196	294	489	34	0.4%
June 30, 2017#	61.8	100	72	0	99	(2.0)	1.3	23	189	306	495	36	0.5%
June 30, 2018	63.6	100	75	0	100	(1.7)	1.3	22	181	317	498	37	0.5%
June 30, 2019#*@^	60.8	100	73	0	100	(1.8)	1.3	21	209	323	531	40	0.6%
June 30, 2020	61.0	100	72	0	100	(1.9)	1.3	20	209	326	535	40	0.6%
June 30, 2021	64.2	100	78	0	100	(2.1)	1.3	19	193	345	538	42	0.6%

[#] After reflection of changes in assumptions.

Source: GRS

^{*} After reflection of changes in legislation.

[@] After reflection of changes in methodology.

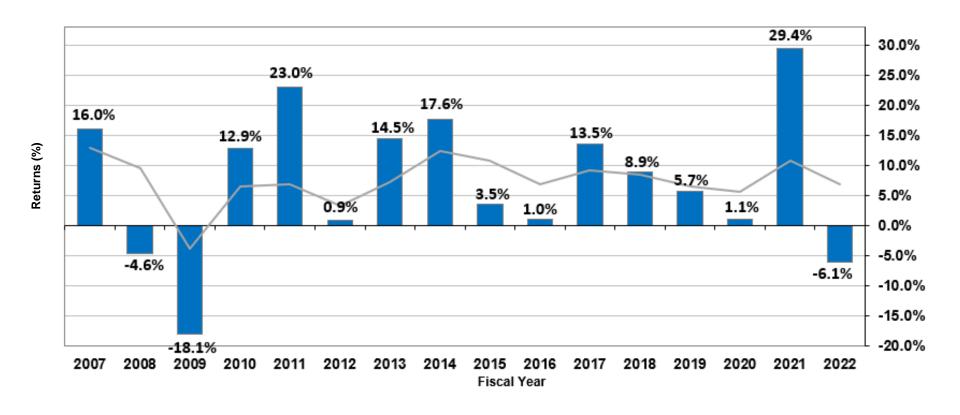
^{***} Unavailable.

[^] The standard deviation of investment return was updated in these years as the result of an experience study.

¹ Beginning with the valuation year ended June 30, 2019, the ratio of actives to retirees excludes additional data records which have resulted from additional annuities, survivor benefits, or members having benefits in more than one valuation group. There were 3,543 such records in 2021.

Historical NHRS Fiscal Year Performance





Grey Line: Smoothed Actuarial Rate of Return (five-year moving average)

Source: Callan, GRS

Assumptions for Stress Test & Scenario Analysis



Historical Scenarios

- 2008 Financial Crisis (October 2007 February 2009)
- Black Monday (October 1987)
- 2011 US Debt Ceiling Crisis and Rating Downgrade (June September 2011)
- Calendar Year 2022 (January December 2022)

Parametric Scenarios

- Equities Decline 20% in 1 year
- Baseline Plan Earns 6.75% Expected Return

In the historical scenarios we use proxy benchmarks for the expected return of each asset class

- US Equity = Russell 3000
- Global ex-US Equity = MSCI ACWI ex US IMI
- US Fixed Income = Bloomberg Aggregate
- Real Estate = NCREIF NFI-ODCE Value Weight Net
- Private Equity = Cambridge Global Private Equity
- Private Credit = Cambridge Private
- Infrastructure = Cambridge Global Private Infrastructure

New Hampshire Retirement System

A Component Unit of the State of New Hampshire

Comprehensive Annual Investment Report

For the Fiscal Year Ended June 30, 2023



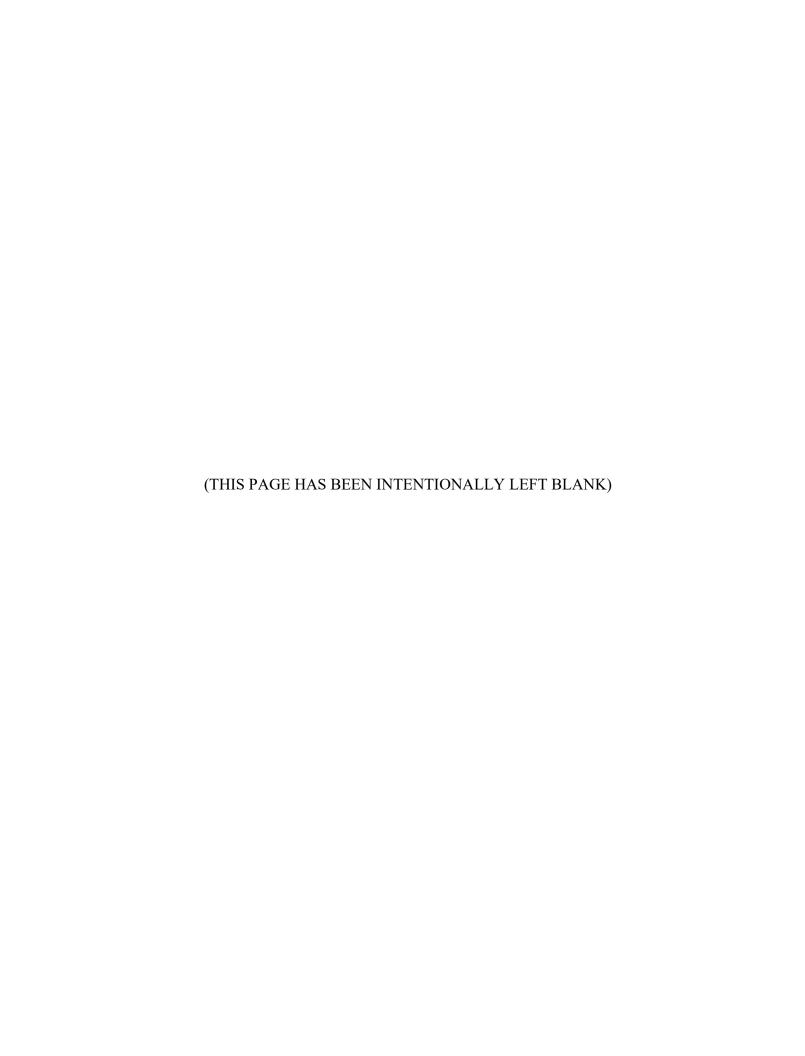


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NHRS Investment Philosophy





December 12, 2023

The Honorable Christopher Sununu, Governor
The Honorable Jeb Bradley, President of the Senate
The Honorable Sherman Packard, Speaker of the House of Representatives

Annual Report for Fiscal Year 2023

The Independent Investment Committee (Investment Committee) of the New Hampshire Retirement System (NHRS, System) is pleased to present the Comprehensive Annual Investment Report for the Fiscal Year ended June 30, 2023, in accordance with the provisions of the Revised Statutes Annotated (RSA) 100-A:15, VII of the State of New Hampshire.

Asset Allocation & Summary of Results

Total assets at the end of Fiscal Year 2023 were \$11.4 billion, reflecting a \$0.7 billion increase compared to \$10.7 billion the prior year. The System's investment portfolio is prudently managed for the long-term in order to generate adequate returns to support benefit payments promised to members. To achieve that goal, investments are broadly diversified across the following asset classes: domestic (U.S.) and non-U.S. stocks, bonds, real estate, and alternative investments.

The target allocation and range for each asset class shown below was adopted by the Board of Trustees on May 14, 2019, based on a recommendation of the Investment Committee.

Asset Class	Target Allocation	Allocation Range	Actual Allocation at June 30, 2023*
U.S. Equity	30%	20 - 40%	33.0%
Non-U.S. Equity	20%	15 - 25%	15.6%
Fixed Income	25%	20 – 30%	20.7%
Real Estate	10%	5 – 20%	11.3%
Alternative Investments	15%	5 – 25%	19.6%

^{*} U.S. Equity and Non-U.S. Equity have been adjusted to reflect a global equity portfolio which may opportunistically invest in each of these asset classes. Fixed Income includes cash. Refer to Appendix C for additional detail.

As illustrated in the table, as of June 30, 2023 all asset classes were within the allocation ranges.

The NHRS return was 8.2% net of fees for the Fiscal Year ended June 30, 2023 compared to the benchmark return of 9.8%. The five-year annualized net of fees return was 7.1% compared to the benchmark return of 6.9%. The ten-year annualized net of fees return was 7.9% compared to the benchmark return of 7.9%. Note that these benchmarks do not include any management fees which would be incurred if NHRS invested in the underlying indices. Compared to our peers, NHRS ranked in the top 30% and 17% for the five and ten-year trailing periods, respectively. These rankings are based on the Callan Public Fund Large Defined Benefit Gross Universe.

Over the long-term, the 25-year annualized net of fees return was 6.5%. The System's actuarial assumed rate of return is 6.75%.

Please refer to Appendix A for a detailed review of investment performance as well as market commentary.

The Investment Committee

The Investment Committee is responsible for investing in accordance with policies established by the NHRS Board of Trustees (Board), and making recommendations to the Board regarding asset allocation, investment consultants, and other investment policy matters. In addition, the Investment Committee is responsible for selecting investment managers, agents, and custodial banks; and reviewing performance.

The Investment Committee meets monthly and is comprised of six members: three independent voting members and an active non-voting member of the retirement system appointed by the Governor and Executive Council; and two voting members of the Board of Trustees appointed by the Chair of the Board. All members are required by statute to have significant experience in institutional investing or finance. As of June 30, 2023, the independent member was Christine Clinton, CFA; and the active member was Michael McMahon.

The two Board members serving on the Investment Committee were Maureen Kelliher, CFA (Chair); and Paul Provost, CFP ®. Brian Bickford was appointed to the Investment Committee as

an independent voting member in June 2023 and began serving in July 2023. One vacancy remains for an independent voting member. Brief biographies and photographs of the Investment Committee members as of June 30, 2023 follow this report.

The Committee would like recognize a prior Committee member, Tim Lesko, for his contributions and dedicated service. Mr. Lesko served on the Committee over 5 years between January 2018 and December 2022. Mr. Lesko continues his service to the New Hampshire Retirement System as Chair of its Board of Trustees.

Investment Manual

The NHRS Investment Manual provides governance and oversight of the pension fund assets and is presented in Appendix C of this report. Highlights are listed below:

- The Investment Policy and Accountability Matrix provide a description of the roles and responsibilities of the Board, the Investment Committee, NHRS Staff, and the System's service providers;
- The Proxy Voting Policy and Securities Lending Policy provide specific guidance on these individual topics;
- The program's benchmarks and asset allocation policy are detailed along with discussions of risk management, liquidity, rebalancing and portfolio monitoring controls;
- Various considerations related to the oversight of investments are described, including the selection of service providers and use of active or passive strategies; and
- Asset class guidelines detail portfolio construction, permissible and prohibited investment vehicles, as well as concentration limits

The Board sets the assumed rate of return based on the recommendations of the System's actuary, NHRS Staff, the Investment Committee, and analysis provided by the investment consultant and other industry experts. A written opinion letter on this subject is included in this report as Appendix B.

Governance, Benchmarks and Measurement of Outcomes

The management and administration of the pension trust is a complex effort involving multiple stakeholders with distinct roles and responsibilities as described in the Investment Manual and in statute. At each regular meeting of the Board or Investment Committee, status reports are provided regarding the outcomes of various investment initiatives. Additionally, performance is reviewed versus benchmarks at the manager-level, asset class-level, and portfolio-level on a monthly and quarterly basis, as appropriate, and over various time-periods since the inception of a particular investment mandate or strategy to continually evaluate the portfolio.

NHRS continuously monitors the investment fees paid to managers and discloses alternative investment fees on an aggregate basis each quarter in compliance with the New Hampshire House Bill (HB) 173 passed in 2021. NHRS has a procedure to monitor Environmental, Social, and Governance factors for all marketable managers.

Administrative Comments

The Investment Committee meets at the System's offices monthly. Notice is provided regarding the time, agenda and location of these meetings pursuant to RSA 91-A:2, II. The Investment Committee promotes transparency regarding the investment program through these public meetings, investment materials and reports. Meeting minutes are posted on the NHRS website. Certain investment matters may require discussion in non-public session in accordance with statute. On a regular basis, the Investment Committee receives presentations from investment managers currently retained by NHRS as well as from prospective managers.

Raynald D. Leveque was the System's Chief Investment Officer for the Fiscal Year ending June 30, 2023. In this capacity, Mr. Leveque served as the primary staff liaison on investment matters. In addition, he directed all aspects of the System's investment program including the development of recommendations regarding the System's overall investment strategy and asset allocation; oversight of external portfolio managers; and promoting productive relationships with investment consultants and service providers. A biography of Mr. Leveque follows this report.

Each fiscal year, NHRS produces an Annual Comprehensive Financial Report (ACFR), which details the operation and financial condition of the retirement system. This report also includes a

financial section which outlines the funded status and unfunded actuarial accrued liability, in addition to other actuarial statistics. ACFR reports are available on the System's website, www.nhrs.org.

Overview of Significant Investment Committee Initiatives during the 2023 Fiscal Year:

- Reviewed capital market expectations and asset allocation in conjunction with an asset/liability study underway
- Hired passive non-U.S. equity and fixed income managers for rebalancing and asset allocation decisions
 - Completed rebalance of the non-U.S. equity and fixed income portfolios by allocating to the passive managers
- Reviewed the long-term performance of all current marketable investment managers against their respective benchmarks and renewed their contracts, where appropriate
 - Updated public market manager contract terms from two years to five years going forward
- Approved NHRS Investment Staff's (Staff's) proposal for a Staff-driven investment manager recommendation process
- Reviewed and renewed, where appropriate, service provider/other contracts:
 - Renewed the custodial bank agreement with BNY Mellon for an additional twoyear period and incorporated a private markets transparency service offered through BNY Mellon
- Approved a revised proxy voting policy which was subsequently approved by the NHRS Board of Trustees
- Reviewed and discussed the structure of the public markets portfolio
- Continued the expansion of the alternative investments program; new commitments of \$130 million in aggregate were made to three private equity investment strategies.

- Performed a comprehensive review of all private debt and equity commitments made since the program's restart in 2009 and adopted an annual private debt and equity strategic plan
- Adopted an annual real estate investment plan

The Investment Committee is dedicated to achieving the best long-term investment results possible within acceptable levels of risk and consistent with prudent policies and practices.

Respectfully submitted,

Maureen Kelliher, Chair Christine Clinton Paul Provost Michael McMahon Jan Goodwin, Executive Director Raynald Leveque, Chief Investment Officer











Maureen Kelliher has more than four decades of investment management experience. She has served as cochief and chief investment officer for trust and investment management firms as well as money desk manager for several banks. She holds the Chartered Financial Analyst® (CFA®) designation and is a member of the CFA Institute. She lives in Dover.

Christine Clinton has been working in the investment management industry for more than two decades after cofounding Bluestone Wealth Management LLC. Prior to Bluestone, she worked as a Corporate Controller for several high-tech start-ups in the communications, finance and biotech industries in the Boston area. Christine is a CPA as well as a Chartered Financial Analyst® (CFA) charterholder. She is a member of the CFA Institute and Boston Securities Analysts Society. She lives in Dublin.

Paul Provost is a 30-year veteran of the wealth management and trust business, he has led the wealth management businesses for local community banks in New Hampshire since 2002. He is the president of New Hampshire Trust Company (NHTrust), a subsidiary of New Hampshire Mutual Bancorp headquartered in Concord. Paul earned a bachelor's degree from the University of Vermont and a master's degree in Administrative Management from Saint Michael's College. He is a Certified Financial Planner. He also serves on the boards of the New Hampshire Higher Education Loan Corporation and the Concord Hospital Trust. He previously served as a board chair for the NH Charitable Foundation, Capital Region, and the Central New Hampshire Boys & Girls Club. He lives in Concord.

Mike McMahon has been a member of Hampton Fire Rescue for nearly 30 years, where he currently serves as Fire Chief. During this time, he has served in a variety of financial and investment roles. He has spent over two decades in credit union leadership and is currently a director at Service Credit Union. Mike was a member of the 2017 Decennial Retirement Commission and serves in many other community leadership roles.

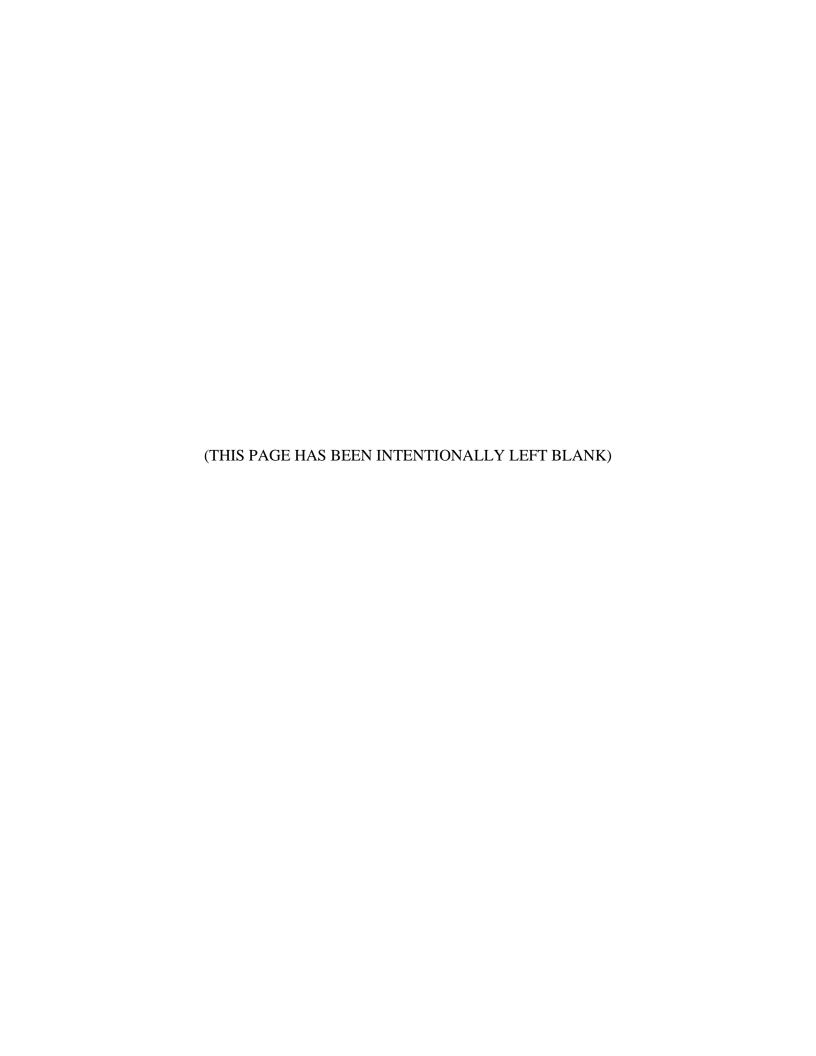
Raynald Leveque is the Chief Investment Officer for the New Hampshire Retirement System. Before joining New Hampshire in 2022, Raynald was the Deputy Chief Investment Officer for the State of Connecticut's \$41 billion Retirement Plans and Trust Funds. Prior to the State of Connecticut, Raynald held leadership roles in strategic asset allocation, risk management and quantitative portfolio management at the \$254 billion New York State Common Retirement Fund, and Invesco (formerly OppenheimerFunds). Raynald earned his master's degree in finance from Fordham University and a bachelor's degree in computer engineering from the Rochester Institute of Technology.

Appendix A

Investment Consultant's Letter

Investment Performance Review & Market Commentary

Investment Reports



October 31, 2023

Board of Trustees Investment Committee Executive Director The New Hampshire Retirement System 54 Regional Drive Concord, NH 03301-8507 Callan LLC 1 Deforest Avenue Suite 101 Summit, NJ 07901

Main 908.522.3880 Fax 908.277.1503 www.callan.com

Dear NHRS Fiduciaries:

Callan LLC (Callan) is pleased to provide an overview of the New Hampshire Retirement System (NHRS) investment program for the fiscal year ended June 30, 2023. Fiscal year 2023 was a very strong performing, yet volatile year for the capital markets due to a variety of factors. Recessionary fears were prevalent as the yield curve remained inverted throughout the majority of the fiscal year and inflation reached levels not seen since the early 1980's. The Federal Reserve hiked interest rates relatively aggressively in an effort to contain inflationary pressures. Investors continue to monitor the potential unintended consequences of the Fed's current Monetary Policy, including its impact on the real economy and the possibility of a recession. The regional banking crisis that took place during the third quarter of the fiscal year (March 2023) serves as an example of some of the unintended consequences of the current policy. In addition, geopolitical events, such as China's decision to move away from "zero-COVID" policies, the ongoing war in Ukraine, and the U.S. debt ceiling, for example, contributed to higher volatility in the capital markets. Despite these events, U.S. GDP rose during each quarter of the fiscal year and the labor market remained robust with unemployment at a generational low. Furthermore, inflation dropped significantly during the second half of the fiscal year, ending at nearly 3%, due mostly to having better balance between supply and demand dynamics in the current environment, falling food and energy prices, and the incremental impact of the Fed's Monetary Policy. The capital markets, particularly broad global equities, were resilient over the fiscal year, rising by double digits. Bond indices produced mixed results, while commodities and other alternatives asset classes fared relatively poorly.

NHRS follows an investment strategy designed to meet its funding requirements over the long-term. Assets are allocated efficiently to ensure that beneficiaries will receive the benefits they were promised. The Fund is managed on a total return basis, while recognizing the importance of capital preservation and prudent risk management. Additionally, the Independent Investment Committee (IIC) administers the Fund in accordance with sound fiduciary standards and industry best practices. The Fund's strategic asset allocation and related objectives, parameters and specific delegation of responsibilities are explicitly defined in the Investment Policy Statement. The IIC manages the investment program pursuant to the investment policy, develops asset class guidelines, monitors and evaluates performance, and makes decisions regarding the retention or termination of asset managers. The investment manual includes all investment policies and asset class guidelines and may be obtained from the NHRS website at www.nhrs.org. The following pages report on the performance and attributes of the investment program for fiscal year 2023.

Market Review for the Year Ended June 30, 2023

The market volatility experienced over the fiscal year reflected fluctuations in risk sentiment amid an array of systemic risk factors, including yields, inflation, China's "zero-COVID" policies, the U.S. debt ceiling, the implications of the war between Russia and Ukraine, as well as other issues impacting the global markets. Risk assets performed poorly over the first quarter of the fiscal year, but rebounded strongly during the final three quarters. U.S. GDP readings were positive throughout the fiscal year, rising 3.2%, 2.6%, 2.0% and 2.4% over the first, second, third, and fourth quarters, respectively. Strong GDP growth results were driven by a robust labor market as well as a significant decline in inflationary pressures. Price reductions have been broad-based in the U.S., but primarily driven by the food and energy sectors. U.S. equities outperformed developed non-U.S. equities over the fiscal year. The S&P 500 Index rose 19.6% over the fiscal year while the MSCI EAFE Index rose 18.8%. Emerging markets equities, as measured by the MSCI Emerging Markets Index, returned 1.8%, underperforming both U.S. and non-U.S. developed markets equities. Within emerging markets, China detracted the most as concerns surrounding China's real estate sector and poor economic data impacted investor sentiment. Fixed income markets were challenged, as inflation drove the 10-year U.S. Treasury yield over 4% for the first time since 2011. The Bloomberg U.S. Aggregate Bond Index returned -0.9% over the fiscal year.

NHRS Investment Portfolio Review

For the fiscal year ended June 30, 2023, the NHRS Total Fund returned 8.2%, net of investment management fees (or "net"), and underperformed the Total Fund Benchmark return of 9.8%. The Fund posted a return of 8.8%, gross of investment management fees (or "gross"), ranking in the 33rd percentile relative to peers in Callan's Large Defined Benefit Public Fund Universe, which consisted of 85 constituents as of June 30, 2023. The Fund's domestic equity and alternatives portfolios underperformed their respective benchmarks. From an asset allocation standpoint, given the "denominator effect" institutional investors experienced over the last fiscal year, an underweight to domestic equity and non-US equity as well as an overweight to real estate detracted from performance. For the trailing three-year period, the Fund returned 9.6% (net), ranking in the 22nd percentile of its peers (peer group rankings are measured gross of investment management fees). For the trailing five-year period, the Fund returned 7.1% (net), ranking in the top third of the peer group (30th percentile). For the trailing ten-year period, the Fund returned 7.9% (net), ranking in the 17th percentile of its peers, and for the trailing twenty-five year period, the Fund returned 6.5% (net), below the current assumed rate of return of 6.75% but ranked in the 32nd percentile of its peers.

During fiscal year 2023, the IIC engaged in the following activities:

- Asset Allocation: Reevaluated the Fund's strategic asset allocation, with an emphasis on understanding the impact of increasing exposure to alternatives given liquidity concerns;
- Rebalancing: NHRS Staff worked with the IIC to rebalance the portfolio, with an emphasis on the Fund's fixed income and non-U.S. positions to bring the allocations back within acceptable IPS parameters;
- Structural modifications: NHRS Staff introduced two passive exposures (BlackRock Superfund Non-U.S. Equity and Mellon U.S. Aggregate Bond Index Fixed Income) and terminated one of the emerging markets active managers due to performance concerns Neuberger Berman;
- Alternative Assets Portfolio Pacing and Implementation: Continued to implement the approved allocations within the Alternative Assets portfolio.

Callan LLC provides NHRS with strategic planning, implementation, performance monitoring services, and on-going research and education on a variety of relevant topics for institutional investors. The investment performance analysis produced by Callan has been developed using performance evaluation methodologies that are consistent with industry best practices. The performance results presented in this letter are calculated using a time-weighted returns and are reported both net of investment management fees, as well as gross of fees.

Sincerely,

Angel Haddad

Senior Vice President

Britton M. Murdoch

Vice President



Investment Performance Review - Fiscal Year 2023

Overview

For the fiscal year ended June 30, 2023, the NHRS Total Fund returned 8.2%, net of investment management fees (or "net"), and underperformed the Total Fund Benchmark return of 9.8%. The Fund posted a return of 8.8%, gross of investment management fees (or "gross"), ranking in the 33rd percentile relative to peers in Callan's Large Defined Benefit Public Fund Universe, which consisted of 85 constituents as of June 30, 2023. With the positive momentum experienced in the capital markets, the overall portfolio (the "Fund") performed well on an absolute basis but underperformed its total fund target. The Fund's domestic equity and alternatives portfolios underperformed their respective benchmarks. From a strategic asset allocation standpoint, given the "denominator effect" institutional investors experienced over the last fiscal year, an underweight to domestic equity and non-US equity as well as an overweight to real estate detracted from performance.

U.S. Equity Markets

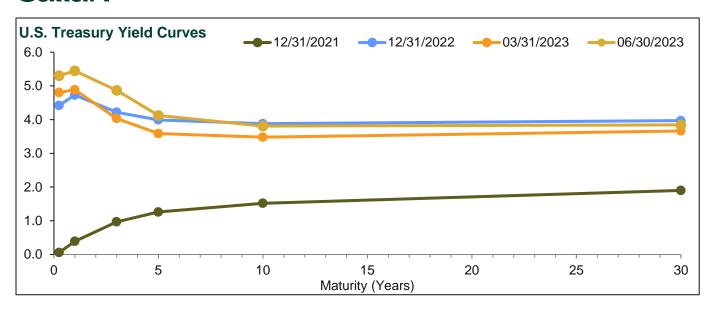
U.S. stocks registered a return of 19.6% over the fiscal year, as measured by the S&P 500 Index. The annualized return over the past 10 years was 12.9%. Most of the sectors represented in the index produced positive returns over the fiscal year, led by the Information Technology, Industrials, and Consumer Discretionary sectors. Real Estate and Utilities were the only sectors to produce negative returns over the fiscal year. Growth stocks outperformed value stocks over the period, with value slightly in favor over the first half of the fiscal year and growth stocks heavily in favor over the second half. Small cap stocks produced strong absolute returns but underperformed large cap stocks over the period, returning 12.3%, as measured by the Russell 2000 Index.

Non-U.S. Equities

Developed non-U.S. equities and emerging market equities produced positive returns during the fiscal year. The strong U.S. dollar began to depreciate versus other currencies starting in September 2022, contributing to strong non-U.S. equity performance. For the fiscal year, developed non-U.S. equities significantly outperformed emerging markets. China posted particularly weak returns over the fiscal year, -16.8% as measured by the MSCI China Index, due to multiple challenges including deteriorating exports, a high youth unemployment rate, a distressed property market, and languishing domestic demand. For the one-year period ended June 30, 2023, developed non-U.S. equity markets, as measured by the MSCI EAFE Index, posted a return of 18.8% and emerging markets, as measured by MSCI Emerging Markets Index, posted a return of 1.8%.

Fixed Income

The fiscal year began with heightened inflation levels near 9%, spurring the Fed to raise interest rates at near historic levels and contributing to systematic issues such as regional banking failures in the U.S. The rising rate environment proved challenging for fixed income investing over the fiscal year with the Bloomberg Aggregate declining 0.9%. However, negative returns were limited to higher quality U.S. securities with high yield and global bond indices producing positive performance. The 10-year U.S. Treasury yield remained at high levels relative to recent history during fiscal year 2023, beginning at 3.01% as of June 30, 2022, and ending at 3.81% as of June 30, 2023. The yield curve remained inverted throughout the vast majority of the fiscal year signaling potential recession.



Real Estate and Alternative Investments

The real estate market returned -10.5% for the fiscal year, as measured by the NCREIF ODCE Index, with depreciation of 13% and income returns of 2.5%. During the fiscal year, ODCE redemption queues steadily increased and transaction volume steadily decreased each quarter. Real estate valuations are reflective of higher interest rates, which have put upward pressure on capitalization rate and discount rate assumptions. Income returns remained positive throughout each quarter of the fiscal year across all sectors. Underperformance was broadly spread across region and property types. The Office sector performed the worst, depreciating close to 20% while Hotels were the only sector to produce positive performance over the fiscal year.

Alternative investments posted positive returns for the fiscal year. After experiencing severe declines in public equity performance during fiscal year 2022, private equity investors were bracing for and experienced a more challenging return environment compared to the public markets. Broad private equity returns were positive for the last two quarters of the fiscal year, with buyout gains offsetting VC losses. Fundraising over the first half of 2023 was behind levels reached during the first half of 2022 by approximately 62% in venture capital and 26% in buyouts.

NHRS Asset Class Highlights

NHRS Asset Class	FY 2023 Return (Net of Fees)
Total Fund	8.18%
Total Fund Custom Index	9.81%
Total Domestic Equity	17.25%
US Equity Index	18.95%
Total Non-US Equity	19.01%
Non-US Equity Index	12.72%
Total Fixed Income	1.43%
Fixed Income Benchmark	-0.04%
Total Real Estate	-7.24%
Real Estate Benchmark	-10.73%
Total Alternatives	3.58%
Alternative Assets Benchmark	18.22%

The NHRS Total Domestic Equity portfolio, comprised of both passive and actively managed portfolios, returned 17.3% (net), underperforming the strategic benchmark (Russell 3000 Index) by 170 basis points over fiscal year

2023. The Domestic Equity portfolio's passive large cap exposure had a 19.4% return compared to 12.9% for the small/mid-cap composite and 15.2% for the small cap composite. The small/mid-cap composite outperformed its Russell 2500 benchmark and the small cap composite underperformed its Russell 2000 benchmark.

The NHRS Total Non-U.S. Equity portfolio, which is comprised of both passive and actively managed portfolios with exposures to both developed and emerging markets, returned 19.0% (net). The Non-U.S. Equity portfolio outperformed its benchmark by 629 basis points during the fiscal year as all active core non-US equity, emerging market equities, and non-US small cap equity managers outperformed their respective benchmarks.

The NHRS Total Fixed Income portfolio is comprised of passive and broadly diversified actively managed portfolios, including domestic and international exposures. This aggregate portfolio had a 1.4% return (net), outperforming the Total Fixed Income Index return by 147 basis points. An overweight to lower quality and higher yielding issues relative to the Bloomberg Universal Index had a positive impact on relative performance. Exposure to non-U.S. issues also impacted relative performance, as non-U.S. bonds outperformed their U.S. counterparts over the fiscal year.

The NHRS Real Estate portfolio returned -7.2% (net), outperforming its benchmark return of -10.7%. Outperformance was driven by the Tactical Non-Core Real Estate allocation within the portfolio; the Strategic Core portfolio slightly detracted from relative results.

Lastly, for fiscal year 2023, the Alternative Investments portfolio generated a return of 3.6% (net) while its benchmark returned 18.2%. Underperformance was driven by both the private equity and private debt allocations within the portfolio, given more modest valuations for alternative investments in 2023.

Investment Market Update (by asset type)

Index Summary (6/30/23)	Last Year	Last 3 Years	Last 5 Years	Last 10 Years			
Equity Indices							
S&P 500 Index	19.6%	14.6%	12.3%	12.9%			
Russell 1000 Index	19.4%	14.1%	11.9%	12.6%			
Russell 1000 Growth Index	27.1%	13.7%	15.1%	15.7%			
Russell 1000 Value Index	11.5%	14.3%	8.1%	9.2%			
Russell 2000 Index	12.3%	10.8%	4.2%	8.3%			
Russell 2000 Growth Index	18.5%	6.1%	4.2%	8.8%			
Russell 2000 Value Index	6.0%	15.4%	3.5%	7.3%			
Russell 2500 Index	13.6%	12.3%	6.6%	9.4%			
Russell 3000 Index	19.0%	13.9%	11.4%	12.3%			
MSCI ACWI Index	16.5%	11.0%	8.1%	8.8%			
MSCI ACWI ex US Index	12.7%	7.2%	3.5%	4.8%			
MSCI EAFE Index	18.8%	8.9%	4.4%	5.4%			
MSCI EAFE Growth Index	20.2%	6.3%	5.4%	6.4%			
MSCI EAFE Value Index	17.4%	11.3%	2.9%	4.2%			
MSCI Europe Index	21.8%	10.7%	5.2%	5.7%			
MSCI Japan Index	18.1%	5.7%	3.1%	5.2%			
MSCI Pacific ex JPN Index	5.9%	6.5%	2.7%	4.3%			
MSCI EM Index	1.8%	2.3%	0.9%	3.0%			
Fixed Income Indices							
Bloomberg Aggregate Index	-0.9%	-4.0%	0.8%	1.5%			
Bloomberg Gov't/Credit Index	-0.7%	-4.1%	1.0%	1.7%			
Bloomberg TIPS Index	-1.4%	-0.1%	2.5%	2.1%			
Bloomberg High Yield Corporate Index	9.1%	3.1%	3.4%	4.4%			
S&P LSTA Leveraged Loan 100 Index	11.8%	5.4%	4.0%	3.7%			
Bloomberg Global Aggregate Index	-1.3%	-5.0%	-1.1%	0.2%			
Bloomberg High Yield Muni Index	2.9%	1.8%	2.8%	4.2%			
JPM EMBI Global Diversified Index	7.4%	-3.1%	0.6%	2.8%			
JPM GBI-EM Global Diversified Index	11.4%	-1.4%	0.3%	-0.6%			
Other Indices							
Bloomberg Commodity Price Index	-13.3%	16.0%	3.0%	-2.0%			
S&P GSCI Index	-14.2%	25.1%	2.8%	-3.5%			
Alerian MLP Index	30.5%	30.7%	6.2%	0.9%			
FTSE NAREIT Composite Index	-4.3%	6.2%	4.4%	6.6%			
NCREIF NFI-ODCE Equal Weight Net Index	-10.5%	7.6%	6.1%	8.1%			

Investment Market Update (sorted by best to worst 1-year performance)

Index Summary (6/30/23)	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Alerian MLP Index	30.5%	30.7%	6.2%	0.9%
Russell 1000 Growth Index	27.1%	13.7%	15.1%	15.7%
MSCI Europe Index	21.8%	10.7%	5.2%	5.7%
MSCI EAFE Growth Index	20.2%	6.3%	5.4%	6.4%
S&P 500 Index	19.6%	14.6%	12.3%	12.9%
Russell 1000 Index	19.4%	14.1%	11.9%	12.6%
Russell 3000 Index	19.0%	13.9%	11.4%	12.3%
MSCI EAFE Index	18.8%	8.9%	4.4%	5.4%
Russell 2000 Growth Index	18.5%	6.1%	4.2%	8.8%
MSCI Japan Index	18.1%	5.7%	3.1%	5.2%
MSCI EAFE Value Index	17.4%	11.3%	2.9%	4.2%
MSCI ACWI Index	16.5%	11.0%	8.1%	8.8%
Russell 2500 Index	13.6%	12.3%	6.6%	9.4%
MSCI ACWI ex US Index	12.7%	7.2%	3.5%	4.8%
Russell 2000 Index	12.3%	10.8%	4.2%	8.3%
S&P LSTA Leveraged Loan 100 Index	11.8%	5.4%	4.0%	3.7%
Russell 1000 Value Index	11.5%	14.3%	8.1%	9.2%
JPM GBI-EM Global Diversified Index	11.4%	-1.4%	0.3%	-0.6%
Bloomberg High Yield Corporate Index	9.1%	3.1%	3.4%	4.4%
JPM EMBI Global Diversified Index	7.4%	-3.1%	0.6%	2.8%
Russell 2000 Value Index	6.0%	15.4%	3.5%	7.3%
MSCI Pacific ex JPN Index	5.9%	6.5%	2.7%	4.3%
Bloomberg High Yield Muni Index	2.9%	1.8%	2.8%	4.2%
MSCI EM Index	1.8%	2.3%	0.9%	3.0%
Bloomberg Gov't/Credit Index	-0.7%	-4.1%	1.0%	1.7%
Bloomberg Aggregate Index	-0.9%	-4.0%	0.8%	1.5%
Bloomberg Global Aggregate Index	-1.3%	-5.0%	-1.1%	0.2%
Bloomberg TIPS Index	-1.4%	-0.1%	2.5%	2.1%
FTSE NAREIT Composite Index	-4.3%	6.2%	4.4%	6.6%
NCREIF NFI-ODCE Equal Weight Net Index	-10.5%	7.6%	6.1%	8.1%
Bloomberg Commodity Price Index	-13.3%	16.0%	3.0%	-2.0%
S&P GSCI Index	-14.2%	25.1%	2.8%	-3.5%

S&P 500 Sectors (sorted by best to worst 1-year performance)

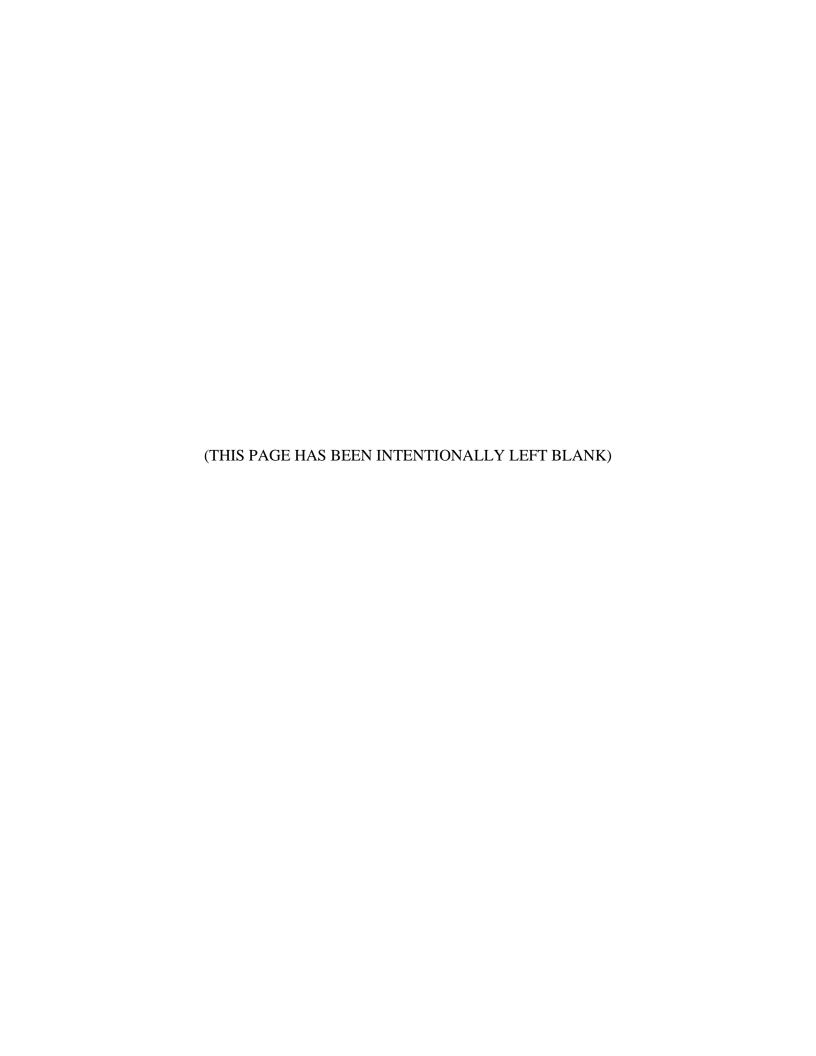
Sector	Benchmark Weight (%) as of 6/30/23	Benchmark Return (%) as of 6/30/23
Information Technology	28.3%	40.3%
Industrials	8.5%	25.2%
Consumer Discretionary	10.7%	24.7%
Energy	4.1%	18.8%
Communication Services	8.4%	17.3%
Materials	2.5%	15.1%
Financial	12.4%	9.5%
Consumer Staples	6.7%	6.6%
Health Care	13.4%	5.4%
Utilities	2.6%	-3.7%
Real Estate	2.5%	-4.1%

Note: Figures may not add up to exactly 100% due to rounding.

Summary

Consistent with Callan's most recent asset allocation study, we believe that the Fund's current asset allocation target is appropriate to meet its long-term return objectives. However, as part of its on-going monitoring process, NHRS Staff is evaluating opportunities to diversify away from equity beta risk in an effort to enhance risk-adjusted returns going forward. To this end, NHRS Staff is reevaluating the Fund's strategic asset allocation for the Board's review. The overall manager structure of the portfolio is stable and will be evaluated by Staff in the future. Overall, the Fund exhibits competitive performance relative to objectives over the long-term.

Appendix B Gabriel Roeder Smith & Company Actuarial Opinion Letter





September 29, 2023

Board of Trustees New Hampshire Retirement System 54 Regional Drive Concord, New Hampshire 03301

Re: Reasonableness of the Assumed Rate of Return

Dear Board Members:

The purpose of this letter is to provide our actuarial opinion regarding the reasonableness of the assumed rate of return for the New Hampshire Retirement System and to address any differences between the assumed rate of return and the expected rate of return under the System's investment policy statement as required under New Hampshire statute.

Background:

The requirement under New Hampshire statute is as follows:

RSA 100-A:15 VII.

- (c) An annual investment policy statement which shall incorporate the following:
 - (1) A clear statement of investment objectives including the adoption of a reasonable and sound expected rate of return the retirement system is attempting to earn. The expected rate of return utilized for the statement of investment objectives shall bear some reasonable relationship to the assumed rate of return set by the trustees for the biennial actuarial calculation. The retirement system's actuaries shall issue a written opinion in regard to the reasonableness of the assumed rate of return that shall address any difference between the assumed rate of return and the expected rate of return.

We understand the current asset allocation targets and ranges, adopted by the Board of Trustees in September 2012, are based on asset liability modeling and asset allocation recommendations from investment consultants. The Independent Investment Committee reviewed, in March of this year, the results of asset/liability and asset allocation studies and confirmed the asset allocation targets and ranges remain appropriate. Based on the 2023 capital market assumptions, Callan has indicated the following expectations for NHRS' current asset allocation:

- During the next 10-year period:
 - The expected rate of return is 7.25% per year;
 - The standard deviation is 13.05% per year; and
 - The implicit price inflation rate is 2.50% per year.
- During the next 30-year period:
 - The expected rate of return is 7.80% per year;
 - o The standard deviation is 13.05% per year; and
 - The implicit price inflation rate is 2.50% per year.

In determining the assumed rate of return for the actuarial valuation, we abide by Actuarial Standard of Practice (ASOP) No. 27, Selection of Economic Assumptions for Measuring Pension Obligations, as adopted by the Actuarial Standards Board.

Under ASOP No. 27, we determine a reasonable assumption for each economic assumption. The reasonable assumption must be appropriate for the purpose of the measurement, reflect the actuary's professional judgement, take into account relevant historical and current demographic data, reflect the actuary's estimate of future experience or the estimates inherent in the market data and have no significant bias. For the investment return assumption, our analysis is based on forward-looking measures of expected investment return outcomes for the asset classes in the System's current investment policy.

For purposes of this analysis, we have analyzed the System's investment policy with the capital market assumptions from twelve nationally recognized investment firms and the 2023 GRS Capital Market Assumption Modeler (CMAM). The capital market assumptions in the 2023 CMAM are from the following investment firms (in alphabetical order): Aon Hewitt, Blackrock, BNY Mellon, Callan, Cambridge, JPMorgan, Meketa, Mercer, NEPC, RVK, Verus, and Wilshire. Eleven of these firms provide capital market expectations for a 10-year horizon, seven of them provide expectations for longer horizons of 20-30 years. Capital market expectations can vary significantly from year to year and often are contrarian. The financial markets at the end of 2022 were not particularly strong resulting in higher expectations in 2023 than in prior years. To adjust for year-to-year fluctuations, we also compare results to the three-year average of GRS CMAMs.



Our analysis is based on the GRS 2023 CMAM. The purpose of the CMAM is to assess the reasonability of the assumed rate of return for use in the actuarial valuations for the plan. In our professional judgment, the CMAM has the capability to provide results that are consistent with this purpose. We performed tests to ensure that the model reasonably represents that which is intended to be modeled. We are relying on the GRS actuaries and Internal Software, Training, and Processes Team who developed and maintain the model.

Actuarial Opinion:

For the June 30, 2023 valuation, the actuarial assumed rate of return is made up of a price inflation assumption of 2.00% and a real rate of return assumption of 4.75% for a total of 6.75% per year, net of investment expenses. This assumption was adopted by the Board to be effective in the June 30, 2019 valuation based on the 2015-2019 Experience Study.

Based on our independent analysis using NHRS' target asset allocation and the 2023 CMAM, the median rate of return is 6.60% over a 10-year horizon. As discussed, this year's expectations are higher than prior years. The three-year average median over a 10-year horizon is 5.67%.

Over the longer horizon of 20-30 years, the median rate of return is 6.78%. The 3-year average median over the longer horizon is 6.46%. The current NHRS net investment rate assumption of 6.75% is reasonable when compared to our 2023 CMAM medians of 6.60% - 6.78% and Callan's 7.25% - 7.80% current estimates for the expected rate of return.

It should be noted that due to the methods utilized by the GRS CMAM, differences in the underlying inflation assumption between the actuarial valuation (2.0%) and Callan's (2.50%) result in expected returns that may not be directly comparable. For example, if Callan's inflation assumption of 2.50% was used in our analysis, the expected returns discussed above based on the 2023 GRS CMAM would be approximately 0.50% higher.

Differences between the expected rate of return in the System's Investment Policy and the actuarial assumed rate of return are attributable in part to the different objectives of the measurement. Key differences are:

- The Investment Policy focuses on asset allocation decisions and establishes benchmarks for manager performance. The assumed rate of return is a long-term assumption for funding policy.
- The Investment Horizon of 10 years in the Investment Policy is based on a shorter time frame than used to determine the assumed rate of return which can be 20-30 years or longer. When focusing on the 20-30-year time horizon, the policy and the actuarial assumption produce similar expected returns.



Board of Trustees September 29, 2023 Page 4

Given the purpose and use of the different assumptions, different results are not uncommon. Under the current actuarial standard of practice, the current assumed rate of return for valuation purposes is reasonable and, therefore, meets the requirements of those standards.

Governmental Accounting Standards Board (GASB) Statement No. 67:

The statutory funding requirements of RSA 100-A:16 and the NHRS' Actuarial Funding Policy call for the NHRS pension unfunded actuarial accrued liability as of June 30, 2017 to be amortized through 2039. Each subsequent change in liability as calculated in odd-numbered years shall be separately amortized over a fixed period of no longer than 20 years. Based on this, the GASB discount rate will be equal to the assumed rate of investment return of 6.75%.

Jeffrey T. Tebeau, Heidi G. Barry, and Casey T. Ahlbrandt-Rains are independent of the plan sponsor, are Members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted, Gabriel, Roeder, Smith & Company

Jeffrey T. Tebeau, FSA, EA, FCA, MAAA

Heidi G. Barry, ASA, FCA, MAAA

race T. Albert Rans

Casey T. Ahlbrandt-Rains, ASA, MAAA

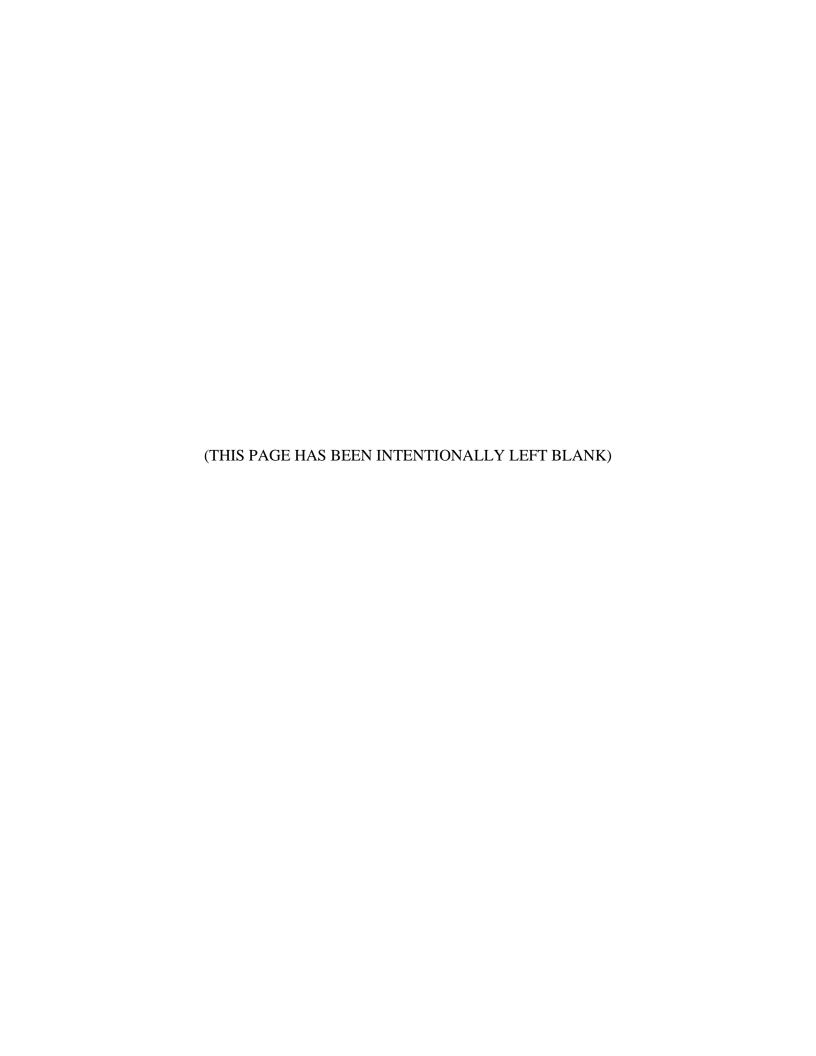
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Appendix C

Investment Manual

NHRS Investment Philosophy



The NHRS Investment Manual can be accessed by clicking here.





Changes to the NHRS Investment Policy

This document outlines changes to the NHRS Investment Policy since the founding of the Independent Investment Committee (IIC) under RSA 100-A:14-b, on January 1, 2009.

Assumed Rate of Return

The Board of Trustees (Board) approved the following based on recommendations of the IIC. All changes were effective starting July 1 of the fiscal year subsequent to approval.

May 10, 2011: 8.50% to 7.75%
May 10, 2016: 7.75% to 7.25%
June 9, 2020: 7.25% to 6.75%

Asset Allocation Targets and Ranges

The Board adopted the following changes based on recommendations of the IIC. All changes were effective at the start of the month subsequent to approval.

- July 13, 2010:
 - O Domestic Equity allocation range changed from 26 43% to 20 50%.
 - Non-U.S. Equity target allocation increased from 15% to 20% and the 5% target allocation to Global Equity was removed. The Non-U.S. Equity allocation range changed from 11 19% to 15 25%.
 - o Fixed Income allocation range changed from 26 34% to 25 35%.
 - o Real Estate range changed from 5 15% to 0 15%.
- September 11, 2012:
 - Fixed income target allocation was reduced from 30% to 25%. The allocation range changed from 25 35% to 20 30%.
 - O Alternative Investments target allocation was increased from 10% to 15%. The allocation range changed from 0 15% to 0 20%.
- June 9, 2015:
 - Real Estate allocation range changed from 0 15% to 5 20%.
 - Alternative Investments allocation range changed from 0 20% to 5 25%.
- May 14, 2019:
 - o U.S. Equity allocation range changed from 20 50% to 20 40%.

Benchmark Changes

The IIC approved the following changes which were subsequently reviewed by the Board. All changes were effective starting July 1 of the fiscal year subsequent to approval.

- April 24, 2015:
 - o The U.S. Equity benchmark changed from the Russell 3000 Index to the S&P 500 Index.
 - The Real Estate benchmark changed from the NCREIF Property Index + 50 basis points to the NCREIF NFI-ODCE Index.
 - The Alternative Investments benchmark changed from the S&P 500 Index + 5% or Consumer Price Index + 5% to the following:
 - 33.3% Private Equity: S&P 500 Index + 3%.
 - 33.3% Private Debt: S&P/LSTA U.S. Leveraged Loan 100 Index.
 - 33.3% Opportunistic:1-month LIBID + 5%.
- May 14, 2019:
 - O The Opportunistic benchmark was eliminated and the Alternative Investments benchmark was changed to the following:
 - 66.7% Private Equity (S&P 500 Index + 3%).
 - 33.3% Private Debt (S&P LSTA Leveraged Loan 100 Index).
- June 18, 2021:
 - o The U.S. Equity benchmark changed from the S&P 500 Index to the Russell 3000 Index.
- June 14, 2022:
 - \circ The Private Equity benchmark was updated from the S&P 500 + 3% to the Russell 3000 + 2%.
 - The Private Debt benchmark was updated from the S&P/LSTA U.S. Leveraged Loan 100 Index to a blend of (50% S&P/LSTA 100 Index and 50% Bloomberg High Yield Index) + 1%.

NHRS Investment Philosophy:

Adopted by the Investment Committee at the July 17, 2009 meeting

Purpose: The New Hampshire Retirement System ("NHRS" or "System") Investment Philosophy sets forth guiding principles for the management of the investment program.

Description of the Fund: The NHRS is a defined-benefit pension plan. Contributions to the plan are made by employees and employers participating in the System. These contributions are invested to support the payment of plan benefits and to pay reasonable expenses of administering the System.

The System's assets are invested pursuant to the Constitution of the State of New Hampshire and all applicable statutes and are managed in accordance with the NHRS Statement of Investment Policy for the exclusive purpose of providing plan benefits to members and beneficiaries. NHRS plan fiduciaries are beholden to a duty of loyalty and a standard of care as described in RSA 100-A:15. The Board of Trustees ("Board") and the Investment Committee ("Committee") seek the advice and assistance of internal and external professionals and shall exercise conscious discretion when making investment decisions. The Committee members recognize their fiduciary duty to invest the System's funds prudently and in continued recognition of the fundamental long-term nature of the System.

The NHRS investment program has a distinctive profile. The objective of supporting plan benefits is one primary differentiator from the goals of other types of institutional investors, for example, endowments or foundations. The NHRS also differs from other public pension plans because each plan has its own distinctive characteristics such as benefit structures and legislative mandates. The System has a high proportion of retirees relative to actively-contributing members. The demographics of a mature plan require more liquidity from the investment program because contributions into the plan do not fully offset the benefits paid. Additionally, the size of the NHRS investment program provides the System with the ability to invest in certain opportunities but may not provide the scale necessary to gain access to other opportunities. All of these factors guide the design of the NHRS investment program.

Investment Objectives: The NHRS pursues an investment strategy designed to support the long-term funding obligations of the plan. The Board adopts an assumed rate of return and sets asset-allocation policy. The Committee manages the components of the investment program with the goal of achieving the plan's objectives with a comprehensive understanding of risk. This involves designing a program that balances expected return and risk over long time periods through a range of market conditions. For the reasons previously mentioned, peer performance or universe comparisons are not the most appropriate measurements of the effectiveness of the NHRS investment program. Performance comparisons within the context of the stated investment objectives will promote alignment with the System's mission.

The primary objective of the Committee is to manage the investment program to support the payment of plan benefits over the long-term. A secondary objective is to exceed the policy benchmark on a net-of-fees basis over a three to five-year period.

NHRS Investment Philosophy:

Market View and Context: The Committee believes that financial markets are largely, but not entirely, efficient. This means that there is a central tendency to the markets and that in some developed and accessible segments it is difficult to gain an advantage relative to other investors. However, there are areas of the market in which inefficiencies exist due to more limited access, information, coverage, or other factors; and investors can benefit from participation in these areas. Investment opportunities emerge and evolve over time and the NHRS Committee, staff, and consultants will remain vigilant concerning market developments in order to identify these opportunities and to build a sustainable advantage.

Diversification: The Board and the Committee recognize that it is necessary to maintain broad diversification both among and within various asset classes. The asset allocation of the investment program will be reviewed monthly by staff relative to the asset-class policy targets and ranges established by the Board in the Statement of Investment Policy. Staff shall strive to maintain the System's asset allocation within policy ranges. When rebalancing assets already within ranges, staff will give due consideration to market conditions, costs and risks of implementation, potential impacts on manager-level performance, and other relevant factors.

Portfolio Structure and Implementation: The Committee may utilize a combination of passive and active management strategies. The goal of passive management is to gain diversified exposure to the desired asset class while incurring minimal expense and seeking performance returns comparable to the asset class benchmark. The goal of active management is to exceed the performance of the appropriate benchmark on a net-of-fees basis, measured across market cycles, at a commensurate level of risk. The Committee will structure the program and implement its philosophy through the use of external investment management firms.

Performance Measurement: The ultimate measurement of the pension plan is how well it achieves its funding objectives and supports plan benefits. This is a shared responsibility between the Board who set the assumed rate of return and also determines the contribution rates and the Committee who seek to augment those contributions with investment returns over the long term. Achievement of the plan objectives in absolute terms is contingent on sound return assumptions and the execution of a clear investment process which recognizes that market conditions will vary over time.

Relative investment performance can be an important measurement tool. The Board adopts specific benchmarks which represent the standards of measurement used for the various asset classes utilized by the NHRS. Individual managers are also measured relative to benchmarks. As a model for performance measurement of the investment program, the NHRS uses a planlevel policy benchmark comprised of index returns (or proxy asset returns in the case of illiquid assets) weighted to reflect the asset-allocation policy targets set by the Board. This provides insight into the ways in which the actual portfolio performs relative to a passively-managed representation of plan policy during various market conditions.

Since investment returns will vary under different economic conditions and market cycles, an optimal period for effectively measuring performance would span three to five years or more. NHRS returns are expected to exceed the relevant benchmark on a net-of-fees basis over time.

NHRS Investment Philosophy:

Risk: Risk must be viewed within the context of the total portfolio. Since most risks are not readily quantifiable, defining the appropriate level of risk and creating a portfolio that reflects a reasonable balance between potential risk and return is a matter of judgment. Risk comes in a variety of forms including the risk of the unknown, liquidity risk, valuation risk, regulatory risk, geopolitical risk, and volatility risk as well as excessive diversification, fraud, inconsistency of investment discipline, and the risk of the destruction of capital. The Committee takes a broad view of risk in its oversight and endeavors to mitigate risk through rebalancing, monitoring managers, and conducting strategic reviews of the portfolio.

Callan

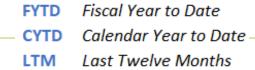
June 30, 2023 **New Hampshire Retirement System Investment Measurement Service Monthly Review**

Asset Class Excess Returns June 30, 2023

The table below details the rates of return for the fund's asset classes over various time periods ended June 30, 2023. Negative manager excess returns are shown in red, positive excess returns in green. Returns for one year or greater are annualized.

	N	let of Fees Retur	ns for Period	s Ended Jun	e 30, 2023				
Composite	Total Fund Weighting As of 6/30/2023	Last Month	QTD	FYTD	CYTD	LTM	3-YR	5-YR	10-YR
Total Domestic Equity	30.36%	7.15%	6.81%	17.25%	13.06%	17.25%	14.21%	9.65%	11.18%
Domestic Equity Benchmark(1)		6.83%	8.39%	18.95%	16.17%	18.95%	12.99%	11.36%	12.43%
Excess Return		0.32%	-1.57%	-1.70%	-3.11%	-1.70%	1.22%	-1.71%	-1.24%
Total Non US Equity	18.16%	5.14%	3.98%	19.01%	13.66%	19.01%	7.75%	3.97%	4.99%
Non US Equity Benchmark(2)		4.49%	2.44%	12.72%	9.47%	12.72%	7.22%	3.52%	4.75%
Excess Return		0.65%	1.54%	6.30%	4.19%	6.30%	0.52%	0.46%	0.24%
Total Fixed Income	19.76%	0.23%	-0.38%	1.43%	2.82%	1.43%	-1.51%	1.60%	2.24%
Bloomberg Capital Universe Bond Index		-0.16%	-0.59%	-0.04%	2.32%	-0.04%	-3.43%	0.98%	1.80%
Excess Return		0.39%	0.21%	1.47%	0.49%	1.47%	1.92%	0.62%	0.44%
Total Cash	0.90%	0.42%	1.22%	3.85%	2.39%	3.85%	1.34%	1.64%	1.06%
3-Month Treasury Bill		0.46%	1.17%	3.59%	2.25%	3.59%	1.27%	1.55%	0.98%
Excess Return		-0.04%	0.06%	0.26%	0.13%	0.26%	0.07%	0.08%	0.08%
Total Real Estate (Q2)*	11.25%	-4.64%	-5.08%	-7.24%	-8.18%	-7.24%	11.62%	9.04%	10.84%
Real Estate Benchmark(3)		-0.97%	-2.88%	-10.73%	-6.16%	-10.73%	7.04%	5.56%	7.78%
Excess Return		-3.67%	-2.20%	3.50%	-2.02%	3.50%	4.57%	3.48%	3.07%
Total Private Equity (Q2)*	14.56%	4.16%	3.89%	3.11%	5.27%	3.11%	19.67%	13.69%	12.50%
Private Equity Benchmark(4)		6.91%	8.80%	21.50%	17.09%	21.50%	17.64%	15.69%	16.58%
Excess Return		-2.75%	-4.91%	-18.39%	-11.83%	-18.39%	2.04%	-2.00%	-4.08%
Total Private Debt (Q2)*	5.00%	2.02%	2.25%	4.96%	3.57%	4.96%	8.53%	5.37%	6.70%
Private Debt Benchmark(5)		2.22%	2.77%	11.55%	6.40%	11.55%	4.59%	3.48%	6.74%
Excess Return		-0.20%	-0.53%	-6.58%	-2.83%	-6.58%	3.95%	1.89%	-0.04%
Total Fund Composite	100.00%	3.19%	2.68%	8.18%	6.56%	8.18%	9.56%	7.06%	7.87%
Total Fund Benchmark(6)		3.61%	3.56%	9.81%	8.59%	9.81%	7.36%	6.93%	7.87%
Excess Return		-0.43%	-0.88%	-1.63%	-2.02%	-1.63%	2.20%	0.13%	0.01%

⁽¹⁾ The Domestic Equity Benchmark is the Russell 3000 Index as of 7/1/2021.



⁽²⁾ The Non US Equity Index is the MSCI ACWI ex US Index as of 7/1/2003. Prior to 7/1/2003 it was the MSCI EAFE Index.

⁽³⁾ The Real Estate Benchmark is the NCREIF NFI-ODCE Value Weight Net Index as of 7/1/2015.

⁽⁴⁾ The Private Equity Benchmark is the Russell 3000 Index + 2% as of 7/1/2022.

⁽⁵⁾ The Private Debt Benchmark is (50% MStar LSTA Leveraged Loan 100 ldx + 50% Bloomberg High Yield Index) + 1% as of 7/1/2022.

⁽⁶⁾ Current Month Target = 30.0% Russell 3000 Index, 25.0% Bloomberg Universal, 20.0% MSCI ACWI ex-US, 10.0% NCREIF NFI-ODCE Value Weight Net, 10.0% Russell 3000 Index +2.0%, 2.5% Bloomberg High Yield Corp +1.0% and 2.5% MStar LSTA Lev Loan 100+ 1.0%.

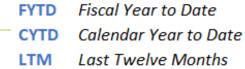
⁽⁷⁾ For the trailing 25 year period ended 6/30/23, the Total Fund has returned 6.52% versus the Total Fund Custom Benchmark return of 6.61%.

^{*}Real Estate and Alternatives market values are not lagged and reflect custodian valuations through FYE (2Q23).

The table below details the rates of return for the fund's investment managers over various time periods ended June 30, 2023. Negative manager excess returns are shown in red, positive excess returns in green. Returns for one year or greater are annualized.

		Net of Fees R	eturns for Pe	riods Ended J	une 30, 2023				
Composite	Total Fund Weighting As of 6/30/2023	Last Month	QTD	FYTD	CYTD	LTM	3-YR	5-YR	10-YR
Total Domestic Equity	30.36%	7.15%	6.81%	17.25%	13.06%	17.25%	14.21%	9.65%	11.18%
Domestic Equity Benchmark(1)		6.83%	8.39%	18.95%	16.17%	18.95%	12.99%	11.36%	12.43%
Excess Return		0.32%	-1.57%	-1.70%	-3.11%	-1.70%	1.22%	-1.71%	-1.24%
Large Cap Domestic Equity	17.56%	6.60%	8.60%	19.41%	16.72%	19.41%	14.35%	11.20%	11.93%
S&P 500 Index		6.61%	8.74%	19.59%	16.89%	19.59%	14.60%	12.31%	12.86%
Excess Return		0.00%	-0.14%	-0.19%	-0.18%	-0.19%	-0.25%	-1.11%	-0.94%
BlackRock S&P 500	17.56%	6.60%	8.60%	19.41%	16.72%	19.41%	14.51%	12.25%	12.83%
S&P 500 Index		6.61%	8.74%	19.59%	16.89%	19.59%	14.60%	12.31%	12.86%
Excess Return		0.00%	-0.14%	-0.19%	-0.18%	-0.19%	-0.09%	-0.06%	-0.04%
Smid Cap Domestic Equity	5.58%	8.19%	5.10%	12.87%	8.45%	12.87%	14.13%	6.10%	9.28%
Russell 2500 Index		8.52%	5.22%	13.58%	8.79%	13.58%	12.29%	6.55%	9.38%
Excess Return		-0.33%	-0.12%	-0.71%	-0.35%	-0.71%	1.84%	-0.45%	-0.10%
AllianceBernstein	3.46%	8.95%	5.11%	14.38%	9.66%	14.38%	12.00%	6.54%	9.94%
Russell 2500 Index		8.52%	5.22%	13.58%	8.79%	13.58%	12.29%	6.55%	9.38%
Excess Return		0.43%	-0.12%	0.80%	0.86%	0.80%	-0.29%	0.00%	0.56%
TSW	2.13%	6.98%	5.10%	10.49%	6.53%	10.49%	17.97%	5.32%	8.28%
TSW Blended Benchmark (2)		8.89%	4.37%	10.37%	5.83%	10.37%	16.07%	6.11%	9.15%
Excess Return		-1.91%	0.72%	0.12%	0.71%	0.12%	1.89%	-0.78%	-0.87%
Small Cap Domestic Equity	7.21%	7.71%	3.61%	15.23%	7.63%	15.23%	14.38%	8.82%	10.57%
Russell 2000 Index		8.13%	5.21%	12.31%	8.09%	12.31%	10.82%	4.21%	8.26%
Excess Return		-0.42%	-1.60%	2.92%	-0.45%	2.92%	3.56%	4.61%	2.32%
Boston Trust	1.92%	6.88%	0.79%	12.01%	4.41%	12.01%	16.64%	9.71%	10.32%
Russell 2000 Index		8.13%	5.21%	12.31%	8.09%	12.31%	10.82%	4.21%	8.26%
Excess Return		-1.25%	-4.41%	-0.30%	-3.67%	-0.30%	5.82%	5.50%	2.07%
Segall Bryant & Hamill	1.98%	8.15%	2.62%	16.50%	5.49%	16.50%	13.86%	9.54%	9.94%
Russell 2000 Index		8.13%	5.21%	12.31%	8.09%	12.31%	10.82%	4.21%	8.26%
Excess Return		0.02%	-2.58%	4.19%	-2.59%	4.19%	3.03%	5.33%	1.69%
Wellington	3.31%	7.93%	5.93%	16.41%	10.96%	16.41%	13.45%	7.98%	11.13%
Russell 2000 Index		8.13%	5.21%	12.31%	8.09%	12.31%	10.82%	4.21%	8.26%
Excess Return		-0.20%	0.72%	4.11%	2.87%	4.11%	2.62%	3.77%	2.87%

⁽¹⁾ The Domestic Equity Benchmark is the Russell 3000 Index as of 7/1/2021.





⁽²⁾ TSW Blended Benchmark is the Russell 2500 Value Index as of 7/1/2019. Prior to 7/1/2019 it was the Russell 2500.

Non-US Equity Excess Returns

June 30, 2023

The table below details the rates of return for the fund's investment managers over various time periods ended June 30, 2023. Negative manager excess returns are shown in red, positive excess returns in green. Returns for one year or greater are annualized.

		Net of	Fees Returns fo	r Periods Ended					
Composite	Total Fund Weighting As	Last Month	QTD	FYTD	CYTD	LTM	3-YR	5-YR	10-YR
·	of 6/30/2023								
Total Non US Equity	18.16%	5.14%	3.98%	19.01%	13.66%	19.01%	7.75%	3.97%	4.99%
Non US Equity Benchmark (1)		4.49%	2.44%	12.72%	9.47%	12.72%	7.22%	3.52%	4.75%
Excess Return		0.65%	1.54%	6.30%	4.19%	6.30%	0.52%	0.46%	0.24%
Core Non US Equity	11.04%	4.72%	3.53%	21.53%	14.08%	21.53%	9.12%	4.11%	4.57%
Core Non US Benchmark (2)		4.49%	2.44%	12.72%	9.47%	12.72%	7.22%	3.52%	4.75%
Excess Return		0.24%	1.09%	8.81%	4.61%	8.81%	1.90%	0.59%	-0.18%
Aristotle	1.44%	4.60%	4.88%	17.96%	12.74%	17.96%	-	-	-
MSCI EAFE	1.44 /0	4.55%	2.95%	18.77%	11.67%	18.77%		<u>-</u>	-
Excess Return		0.05%	1.92%	-0.81%	1.07%	-0.81%		-	
Artisan Partners	3.12%	4.74%	1.46%	18.04%	10.42%	18.04%	4.33%	4.40%	-
MSCI EAFE		4.55%	2.95%	18.77%	11.67%	18.77%	8.93%	4.39%	-
Excess Return		0.19%	-1.49%	-0.73%	-1.25%	-0.73%	-4.60%	0.01%	-
BlackRock SuperFund	1.57%	4.54%	2.62%	-	-	-	-	-	-
MSCI ACWI Ex-US		4.49%	2.44%	-	-	-	-	-	-
Excess Return		0.06%	0.18%	-	-	-	-	-	-
Causeway Capital	3.55%	4.92%	5.11%	30.62%	20.42%	30.62%	16.54%	6.37%	_
MSCI EAFE	3.33%	4.55%	2.95%	18.77%	11.67%	18.77%	8.93%	4.39%	
Excess Return		0.37%	2.16%	11.84%	8.75%	11.84%	7.61%	1.98%	-
Lazard	1.37%	4.50%	3.99%	15.80%	12.21%	15.80%	-	-	_
MSCI EAFE	1101 70	4.55%	2.95%	18.77%	11.67%	18.77%	-	-	-
Excess Return		-0.05%	1.04%	-2.97%	0.54%	-2.97%	-	-	-
Emerging Markets	1.43%	6.12%	2.48%	5.64%	6.42%	5.64%	-0.27%	-0.99%	1.67%
MSCI EM		3.80%	0.90%	1.75%	4.89%	1.75%	2.32%	0.93%	2.95%
Excess Return		2.32%	1.58%	3.89%	1.53%	3.89%	-2.58%	-1.92%	-1.28%
Wellington Emerging Markets	1.43%	5.55%	1.90%	5.08%	4.12%	5.08%	-0.18%	-0.84%	2.73%
MSCI EM		3.80%	0.90%	1.75%	4.89%	1.75%	2.32%	0.93%	2.95%
Excess Return		1.76%	1.00%	3.33%	-0.77%	3.33%	-2.50%	-1.77%	-0.22%
Non US Small Cap	1.10%	3.85%	1.47%	14.86%	8.07%	14.86%	3.69%	-3.91%	0.96%
MSCI EAFE Small Cap		2.89%	0.58%	10.18%	5.53%	10.18%	5.70%	1.31%	6.19%
Excess Return		0.95%	0.89%	4.68%	2.55%	4.68%	-2.01%	-5.22%	-5.23%
Wellington Int'l Small Cap Research	1.10%	3.85%	1.47%	14.86%	8.07%	14.86%	-	-	-
MSCI EAFE Small Cap		2.89%	0.58%	10.18%	5.53%	10.18%	-	-	-
Excess Return		0.95%	0.89%	4.68%	2.55%	4.68%	-	-	-
Global Equity	4.59%	6.16%	6.24%	23.21%	17.78%	23.21%	11.70%	10.66%	11.14%
MSCI ACWI net		5.81%	6.18%	16.53%	13.93%	16.53%	10.99%	8.10%	8.76%
Excess Return		0.35%	0.07%	6.69%	3.85%	6.69%	0.71%	2.55%	2.38%
Walter Scott Global Equity	4.59%	6.16%	6.24%	23.21%	17.78%	23.21%	11.70%	10.66%	11.14%
Walter Scott Blended Benchmark (3)		5.81%	6.18%	16.53%	13.93%	16.53%	10.99%	8.10%	8.76%
Excess Return		0.35%	0.07%	6.69%	3.85%	6.69%	0.71%	2.55%	2.38%

⁽¹⁾ The Non US Equity Index is the MSCI ACWI ex US Index as of 7/1/2003. Prior to 7/1/2003 it was the MSCI EAFE Index.

⁽³⁾ The Walter Scott Blended Benchmark is the MSCI ACWI Index as 5/1/2008. Prior to 5/1/2008 it was the MSCI EAFE Index.



⁽²⁾ The Core Non US Equity Index is the MSCI ACWI ex US as of 7/1/2007. Prior to 7/1/2007 it was the MSCI EAFE Index.

Fixed Income Excess Returns

June 30, 2023

The table below details the rates of return for the fund's investment managers over various time periods ended June 30, 2023. Negative manager excess returns are shown in red, positive excess returns in green. Returns for one year or greater are annualized.

		Net of Fees Re	turns for Peri	ods Ended Jur	ne 30, 2023		•	•	•
Composite	Total Fund Weighting As of 6/30/2023	Last Month	QTD	FYTD	CYTD	LTM	3-YR	5-YR	10-YR
Total Fixed Income	19.76%	0.23%	-0.38%	1.43%	2.82%	1.43%	-1.51%	1.60%	2.24%
Fixed Income Benchmark (1)		-0.16%	-0.59%	-0.04%	2.32%	-0.04%	-3.43%	0.98%	1.80%
Excess Return		0.39%	0.21%	1.47%	0.49%	1.47%	1.92%	0.62%	0.44%
BlackRock SIO Bond Fund	2.21%	0.32%	0.39%	1.91%	1.99%	1.91%	1.45%	-	-
BlackRock Custom Benchmark (2)		0.42%	1.27%	3.92%	2.41%	3.92%	1.46%	-	_
Excess Return		-0.10%	-0.88%	-2.01%	-0.43%	-2.01%	-0.01%	-	-
Brandywine Asset Mgmt	2.01%	1.27%	-0.62%	0.93%	3.26%	0.93%	-1.92%	-0.18%	1.14%
Brandywine Custom Benchmark (3)		0.07%	-1.70%	-2.40%	1.82%	-2.40%	-6.50%	-2.04%	-0.49%
Excess Return		1.20%	1.08%	3.32%	1.44%	3.32%	4.58%	1.86%	1.63%
FIAM (Fidelity) Tactical Bond	3.17%	0.46%	-0.15%	3.12%	3.13%	3.12%	0.23%	_	-
Bloomberg Aggregate		-0.36%	-0.84%	-0.94%	2.09%	-0.94%	-3.96%	-	-
Excess Return		0.82%	0.70%	4.05%	1.04%	4.05%	4.20%	-	-
Income Research & Management	6.67%	-0.20%	-0.73%	-0.38%	2.76%	-0.38%	-3.78%	1.42%	2.04%
Bloomberg Gov/Credit	0.0.70	-0.32%	-0.93%	-0.70%	2.21%	-0.70%	-4.11%	1.03%	1.66%
Excess Return		0.11%	0.20%	0.32%	0.55%	0.32%	0.32%	0.39%	0.38%
Loomis Sayles	2.37%	0.34%	-0.39%	2.61%	2.66%	2.61%	0.19%	2.96%	3.45%
Loomis Sayles Custom Benchmark (4)		0.35%	0.06%	2.50%	3.24%	2.50%	-1.50%	1.74%	2.58%
Excess Return		-0.02%	-0.45%	0.11%	-0.59%	0.11%	1.68%	1.21%	0.87%
Manulife Strategic Fixed Income	1.81%	0.56%	0.01%	4.01%	3.36%	4.01%	0.00%	2.09%	-
Bloomberg Multiverse		0.12%	-1.39%	-0.82%	1.59%	-0.82%	-4.67%	-0.94%	-
Excess Return		0.44%	1.40%	4.83%	1.77%	4.83%	4.67%	3.03%	-
Mellon US Agg Bond Index	1.52%	-0.35%	-	-	-	-	-	_	-
Bloomberg Aggregate Bond Index		-0.36%	-	-	_	-	-	_	_
Excess Return		0.01%	-	-	-	-	-	-	-
Total Cash	0.90%	0.42%	1.22%	3.85%	2.39%	3.85%	1.34%	1.64%	1.06%
3-month Treasury Bill		0.46%	1.17%	3.59%	2.25%	3.59%	1.27%	1.55%	0.98%
Excess Return		-0.04%	0.06%	0.26%	0.13%	0.26%	0.07%	0.08%	0.08%
Total Marketable Assets	69.19%	4.46%	3.84%	12.65%	9.96%	12.65%	7.50%	5.74%	6.92%
Total Marketable Index (5)		3.88%	3.79%	11.00%	9.69%	11.00%	6.04%	6.06%	7.16%
Excess Return		0.58%	0.04%	1.64%	0.27%	1.64%	1.46%	-0.33%	-0.23%

⁽¹⁾ The Fixed Income Benchmark is the Bloomberg Universal Bond Index as of 7/1/2007.

⁽⁵⁾ Marketable Assets Index is 40% Russell 3000, 26.7% MSCI ACWI ex US, and 33.3% Bloomberg Universal as of 7/1/2021.



FYTD Fiscal Year to Date

LTM

TD Calendar Year to Date

Last Twelve Months

⁽²⁾ The BlackRock Custom Benchmark is 3 Month SOFR compounded in arrears as of 1/1/2022.

⁽³⁾ The Brandywine Blended Benchmark is the FTSE WGBI Ex-China Index as of 11/1/2021.

⁽⁴⁾ The Loomis Sayles Custom Benchmark is 65% Bloomberg Aggregate and 35% Bloomberg High Yield.

Alternatives Excess Returns June 30, 2023

The table below details the rates of return for the fund's investment managers over various time periods ended June 30, 2023. Negative manager excess returns are shown in red, positive excess returns in green. Returns for one year or greater are annualized.

	N	et of Fees Retur	ns for Period	s Ended June	e 30, 2023			•	
Composite	Total Fund Weighting As of 6/30/2023	Last Month	QTD	FYTD	CYTD	LTM	3-YR	5-YR	10-YR
Total Real Estate (Q2)* (5)	11.25%	-4.64%	-5.08%	-7.24%	-8.18%	-7.24%	11.62%	9.04%	10.84%
Real Estate Benchmark (1)		-0.97%	-2.88%	-10.73%	-6.16%	-10.73%	7.04%	5.56%	7.78%
Excess Return		-3.67%	-2.20%	3.50%	-2.02%	3.50%	4.57%	3.48%	3.07%
Strategic Core Real Estate (Q2)*	7.12%	-7.87%	-8.38%	-11.04%	-12.46%	-11.04%	9.08%	7.52%	9.42%
Real Estate Benchmark (1)		-0.97%	-2.88%	-10.73%	-6.16%	-10.73%	7.04%	5.56%	7.78%
Excess Return		-6.90%	-5.50%	-0.30%	-6.30%	-0.30%	2.04%	1.96%	1.65%
Tactical Non-Core Real Estate (Q2)*	4.13%	1.51%	1.23%	0.24%	0.42%	0.24%	16.18%	11.82%	13.29%
Real Estate Benchmark (1)		-0.97%	-2.88%	-10.73%	-6.16%	-10.73%	7.04%	5.56%	7.78%
Excess Return		2.48%	4.12%	10.97%	6.58%	10.97%	9.14%	6.26%	5.51%
Total Alternative Assets (Q2)*	19.56%	3.60%	3.46%	3.58%	4.83%	3.58%	16.27%	11.05%	9.77%
Alternative Assets Benchmark (2)		5.35%	6.78%	18.22%	13.46%	18.22%	13.57%	11.51%	12.39%
Excess Return		-1.75%	-3.32%	-14.65%	-8.63%	-14.65%	2.71%	-0.47%	-2.62%
Total Private Equity (Q2)*	14.56%	4.16%	3.89%	3.11%	5.27%	3.11%	19.67%	13.69%	12.50%
Private Equity Benchmark (3)		6.91%	8.80%	21.50%	17.09%	21.50%	17.64%	15.69%	16.58%
Excess Return		-2.75%	-4.91%	-18.39%	-11.83%	-18.39%	2.04%	-2.00%	-4.08%
Total Private Debt (Q2)*	5.00%	2.02%	2.25%	4.96%	3.57%	4.96%	8.53%	5.37%	6.70%
Private Debt Benchmark (4)		2.22%	2.77%	11.55%	6.40%	11.55%	4.59%	3.48%	6.74%
Excess Return		-0.20%	-0.53%	-6.58%	-2.83%	-6.58%	3.95%	1.89%	-0.04%

⁽¹⁾ The Real Estate Benchmark is the NCREIF NFI-ODCE Value Weight Net Index as of 7/1/2015.

⁽²⁾ The Alternative Assets Benchmark is 66.7% Russell 3000 Index + 2% and 33.3% ((50% MStar LSTA Leveraged Loan 100 Index + 50% Bloomberg High Yield Index) + 1%) as of 7/1/2022.

⁽³⁾ The Private Equity Benchmark is the Russell 3000 Index + 2% as of 7/1/2022.

⁽⁴⁾ The Private Debt Benchmark is (50% MStar LSTA Leveraged Loan 100 Index / 50% Bloomberg High Yield Index) + 1% as of 7/1/2022.

⁽⁵⁾ Total Real Estate returns includes Townsend discretionary fee as of 7/1/2022.

^{*}Real Estate and Alternatives market values are not lagged and reflect custodian valuations through FYE (2Q23).

Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of June 30, 2023, with the distribution as of May 31, 2023. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

Asset Distribution Across Investment Managers

	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Total Domestic Equity	\$3,458,714,586	30.36%	\$0	\$231,581,206	\$3,227,133,380	29.20%
Large Cap Domestic Equity	\$2,000,916,361	17.56%	\$0	\$123,966,631	\$1,876,949,730	16.98%
Blackrock S&P 500	2,000,916,361	17.56%	0	123,966,631	1,876,949,730	16.98%
SMid Cap Domestic Equity	\$636,144,797	5.58%	\$0	\$48,402,279	\$587,742,518	5.32%
AllianceBernstein	393,913,798	3.46%	0	32,503,755	361,410,043	3.27%
TSW	242,230,999	2.13%	0	15,898,524	226,332,476	2.05%
Small Cap Domestic Equity	\$821,653,428	7.21%	\$0	\$59,212,295	\$762,441,132	6.90%
Boston Trust	218,581,646	1.92%	0	14,145,993	204,435,653	1.85%
Segall Bryant & Hamill	225,735,035	1.98%	0	17,151,770	208,583,264	1.89%
Wellington	377,336,747	3.31%	0	27,914,532	349,422,215	3.16%
Total Non US Equity	\$2,068,607,480	18.16%	\$(18,476)	\$101,864,275	\$1,966,761,681	17.80%
Core Non US Equity (1)	\$1,257,685,405	11.04%	\$(18,469)	\$57,181,657	\$1,200,522,218	10.86%
Aristotle	163,657,086	1.44%	0	7,259,962	156,397,124	1.42%
Artisan Partners	354,943,424	3.12%	0	16,247,957	338,695,467	3.06%
BlackRock Superfund	178,541,447	1.57%	0	7,758,054	170,783,393	1.55%
Causeway Capital	404,172,744	3.55%	0	19,126,347	385,046,397	3.48%
Lazard	155,681,568	1.37%	0	, ,	148,911,115	1.35%
Lazard	155,001,500	1.37 %	U	6,770,453	140,911,115	1.33%
Emerging Markets	\$162,689,144	1.43%	\$(7)	\$9,499,873	\$153,189,279	1.39%
Wellington Emerging Markets	162,689,144	1.43%	0	8,682,435	154,006,708	1.39%
Non US Small Cap	\$124,816,978	1.10%	\$0	\$4,623,068	\$120,193,910	1.09%
Wellington Int'l Small Cap Research	124,816,978	1.10%	0	4,623,068	120,193,910	1.09%
Global Equity	\$523,415,953	4.59%	\$0	\$30,559,678	\$492,856,275	4.46%
Walter Scott Global Equity	523,415,953	4.59%	0	30,559,678	492,856,275	4.46%
Total Fixed Income	\$2,251,265,208	19.76%	\$0	\$5,712,488	\$2,245,552,721	20.32%
BlackRock SIO Bond Fund	252,131,560	2.21%	0	913,223	251,218,337	2.27%
Brandywine Asset Mgmt	228,830,232	2.01%	0	2,925,911	225,904,321	2.04%
FIAM (Fidelity) Tactical Bond	361,123,084	3.17%	0	1,754,241	359,368,843	3.25%
Income Research & Management	759,675,580	6.67%	Ö	(1,445,534)	761,121,114	6.89%
Loomis Savles	270,008,060	2.37%	0	979,780	269,028,280	2.43%
Manulife Strategic Fixed Income	206,228,831	1.81%	ő	1,192,074	205,036,757	1.86%
Mellon US Agg Bond Index	173,267,861	1.52%	0	(607,208)	173,875,069	1.57%
Total Cash	\$103,085,375	0.90%	\$(39,357,065)	\$535,078	\$141,907,362	1.28%
Total Marketable Assets	\$7,881,672,649	69.19%	\$(39,375,541)	\$339,693,046	\$7,581,355,144	68.60%
Total Real Estate	\$1,281,585,654	11.25%	\$1,446,712	\$(62,465,635)	\$1,342,604,577	12.15%
Strategic Core Real Estate	810,671,639	7.12%	(3,140,499)	(69,462,366)	883,274,504	7.99%
Tactical Non-Core Real Estate	470,914,014	4.13%	4,587,210	6,996,730	459,330,073	4.16%
Total Alternative Assets	\$2,228,343,876	19.56%	\$17,861,799	\$82,493,383	\$2,127,988,693	19.25%
Private Equity	1,658,441,594	14.56%	20,970,805	68,026,598	1,569,444,192	14.20%
Private Debt	569,902,281	5.00%	(3,109,006)	14,466,786	558,544,502	5.05%
Total Fund Composite	\$11,391,602,179	100.0%	\$(22,436,228)	\$362,089,993	\$11,051,948,414	100.0%

⁽¹⁾ Includes \$689,136 in legacy assets that are not actively managed and in liquidation following the termination of Fisher Investments.



⁻Alternatives market values reflect current custodian valuations, which may not be up to date.

Callan

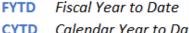
September 30, 2023 **New Hampshire Retirement System Investment Measurement Service Monthly Review**

Asset Class Excess Returns September 30, 2023

The table below details the rates of return for the fund's asset classes over various time periods ended September 30, 2023. Negative manager excess returns are shown in red, positive excess returns in green. Returns for one year or greater are annualized.

Net of Fees Returns for Periods Ended September 30, 2023											
Composite	Total Fund Weighting As of 9/30/2023	Last Month	Last 3 Months	FYTD	CYTD	LTM	3-YR	5-YR	10-YR		
Total Domestic Equity	30.18%	-4.89%	-3.45%	-3.45%	9.16%	17.98%	10.21%	7.66%	10.09%		
Domestic Equity Benchmark(1)		-4.76%	-3.25%	-3.25%	12.39%	20.46%	8.61%	8.99%	11.37%		
Excess Return		-0.13%	-0.20%	-0.20%	-3.23%	-2.48%	1.60%	-1.33%	-1.28%		
Total Non US Equity	17.86%	-4.35%	-4.52%	-4.52%	8.52%	24.08%	4.04%	2.82%	3.68%		
Non US Equity Benchmark(2)		-3.16%	-3.77%	-3.77%	5.34%	20.39%	3.74%	2.58%	3.35%		
Excess Return		-1.19%	-0.75%	-0.75%	3.18%	3.69%	0.30%	0.24%	0.33%		
Total Fixed Income	19.77%	-2.40%	-2.86%	-2.86%	-0.12%	2.50%	-3.22%	0.97%	1.86%		
Bloomberg Capital Universe Bond Index		-2.38%	-2.88%	-2.88%	-0.62%	1.61%	-4.68%	0.34%	1.43%		
Excess Return		-0.02%	0.02%	0.02%	0.50%	0.89%	1.46%	0.63%	0.43%		
Total Cash	0.80%	0.44%	1.34%	1.34%	3.76%	4.71%	1.79%	1.80%	1.20%		
3-Month Treasury Bill		0.46%	1.31%	1.31%	3.60%	4.47%	1.70%	1.72%	1.11%		
Excess Return		-0.01%	0.03%	0.03%	0.16%	0.24%	0.09%	0.08%	0.08%		
Total Real Estate (Q2)*	11.47%	-1.14%	-0.17%	-0.17%	-8.34%	-7.06%	11.50%	9.00%	10.77%		
Real Estate Benchmark(3)		-0.97%	-2.88%	-2.88%	-11.01%	-10.73%	7.04%	5.56%	7.81%		
Excess Return		-0.18%	2.71%	2.71%	2.67%	3.68%	4.45%	3.44%	2.96%		
Total Private Equity (Q2)*	14.89%	-0.70%	-0.02%	-0.02%	5.24%	3.15%	19.63%	13.70%	12.50%		
Private Equity Benchmark(4)		6.91%	8.80%	8.80%	26.12%	21.50%	17.16%	15.41%	16.44%		
Excess Return		-7.61%	-8.82%	-8.82%	-20.88%	-18.36%	2.48%	-1.71%	-3.94%		
Total Private Debt (Q2)*	5.04%	-1.34%	-0.03%	-0.03%	3.54%	4.97%	8.48%	5.37%	6.70%		
Private Debt Benchmark(5)		2.22%	2.77%	2.77%	10.90%	11.55%	4.59%	3.48%	6.74%		
Excess Return		-3.56%	-2.81%	-2.81%	-7.36%	-6.57%	3.89%	1.88%	-0.04%		
Total Fund Composite	100.00%	-3.05%	-2.45%	-2.45%	3.96%	9.18%	7.34%	6.11%	7.10%		
Total Fund Benchmark(6)		-1.95%	-1.70%	-1.70%	6.54%	12.24%	5.13%	6.03%	7.22%		
Excess Return		-1.10%	-0.75%	-0.75%	-2.58%	-3.05%	2.21%	0.08%	-0.12%		

⁽¹⁾ The Domestic Equity Benchmark is the Russell 3000 Index as of 7/1/2021.



CYTD Calendar Year to Date





⁽²⁾ The Non US Equity Index is the MSCI ACWI ex US Index as of 7/1/2003. Prior to 7/1/2003 it was the MSCI EAFE Index.

⁽³⁾ The Real Estate Benchmark is the NCREIF NFI-ODCE Value Weight Net Index lagged 1 quarter as of 7/1/2015.

⁽⁴⁾ The Private Equity Benchmark is the Russell 3000 Index + 2% lagged 1 quarter as of 7/1/2022.

⁽⁵⁾ The Private Debt Benchmark is (50% MStar LSTA Leveraged Loan 100 ldx + 50% Bloomberg High Yield Index) + 1% lagged 1 quarter as of 7/1/2022.

⁽⁶⁾ Current Month Target = 30.0% Russell 3000 Index, 25.0% Bloomberg Universal, 20.0% MSCI ACWI ex-US, 10.0% NCREIF NFI-ODCE Value Weight Net lagged 3 months, 10.0% Russell 3000 Index lagged 3 months+2.0%, 2.5% Bloomberg High Yield Corp lagged 3 months+1.0% and 2.5% MStar LSTA Lev Loan 100 lagged 3 months +1.0%.

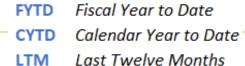
⁽⁷⁾ For the trailing 25 year period ended 9/30/23, the Total Fund has returned 6.73% versus the Total Fund Custom Benchmark return of 6.75%.

^{*}Real Estate and Alternatives market values reflect current custodian valuations, which are typically lagged approximately 1 quarter.

The table below details the rates of return for the fund's investment managers over various time periods ended September 30, 2023. Negative manager excess returns are shown in red, positive excess returns in green. Returns for one year or greater are annualized.

		Net of Fees Returns for Periods Ended September 30, 2023 Total Fund								
Composite	Total Fund Weighting As of 9/30/2023		Last 3 Months	FYTD	CYTD	LTM	3-YR	5-YR	10-YR	
Total Domestic Equity	30.18%	-4.89%	-3.45%	-3.45%	9.16%	17.98%	10.21%	7.66%	10.09%	
Domestic Equity Benchmark(1)		-4.76%	-3.25%	-3.25%	12.39%	20.46%	8.61%	8.99%	11.37%	
Excess Return		-0.13%	-0.20%	-0.20%	-3.23%	-2.48%	1.60%	-1.33%	-1.28%	
Large Cap Domestic Equity	17.48%	-4.77%	-3.27%	-3.27%	12.91%	21.43%	10.07%	8.98%	10.98%	
S&P 500 Index		-4.77%	-3.27%	-3.27%	13.07%	21.62%	10.15%	9.92%	11.91%	
Excess Return		0.00%	0.01%	0.01%	-0.16%	-0.18%	-0.08%	-0.94%	-0.94%	
BlackRock S&P 500	17.48%	-4.77%	-3.27%	-3.27%	12.91%	21.43%	10.07%	9.86%	11.88%	
S&P 500 Index		-4.77%	-3.27%	-3.27%	13.07%	21.62%	10.15%	9.92%	11.91%	
Excess Return		0.00%	0.01%	0.01%	-0.16%	-0.18%	-0.08%	-0.06%	-0.03%	
Smid Cap Domestic Equity	5.53%	-5.30%	-3.96%	-3.96%	4.15%	12.75%	10.34%	4.54%	7.72%	
Russell 2500 Index		-5.58%	-4.78%	-4.78%	3.59%	11.28%	8.39%	4.55%	7.90%	
Excess Return		0.28%	0.82%	0.82%	0.56%	1.46%	1.95%	-0.01%	-0.18%	
AllianceBernstein	3.37%	-6.39%	-5.33%	-5.33%	3.81%	11.10%	7.58%	4.48%	8.22%	
Russell 2500 Index		-5.58%	-4.78%	-4.78%	3.59%	11.28%	8.39%	4.55%	7.90%	
Excess Return		-0.81%	-0.55%	-0.55%	0.22%	-0.18%	-0.81%	-0.07%	0.32%	
TSW	2.15%	-3.54%	-1.73%	-1.73%	4.69%	15.42%	15.32%	4.69%	6.99%	
TSW Blended Benchmark (2)		-5.35%	-3.66%	-3.66%	1.95%	11.34%	13.32%	4.35%	7.80%	
Excess Return		1.81%	1.93%	1.93%	2.74%	4.08%	2.00%	0.34%	-0.81%	
Small Cap Domestic Equity	7.17%	-4.89%	-3.50%	-3.50%	3.86%	13.52%	11.09%	6.93%	9.17%	
Russell 2000 Index		-5.89%	-5.13%	-5.13%	2.54%	8.93%	7.16%	2.40%	6.65%	
Excess Return		1.00%	1.63%	1.63%	1.32%	4.59%	3.92%	4.54%	2.53%	
Boston Trust	1.90%	-5.25%	-4.02%	-4.02%	0.21%	11.56%	14.30%	7.55%	8.93%	
Russell 2000 Index		-5.89%	-5.13%	-5.13%	2.54%	8.93%	7.16%	2.40%	6.65%	
Excess Return		0.64%	1.11%	1.11%	-2.33%	2.63%	7.13%	5.16%	2.29%	
Segall Bryant & Hamill	1.98%	-4.39%	-2.91%	-2.91%	2.43%	14.33%	11.07%	7.25%	8.67%	
Russell 2000 Index		-5.89%	-5.13%	-5.13%	2.54%	8.93%	7.16%	2.40%	6.65%	
Excess Return		1.49%	2.22%	2.22%	-0.12%	5.40%	3.90%	4.86%	2.02%	
Wellington	3.29%	-4.97%	-3.56%	-3.56%	7.01%	14.19%	9.40%	6.39%	9.64%	
Russell 2000 Index		-5.89%	-5.13%	-5.13%	2.54%	8.93%	7.16%	2.40%	6.65%	
Excess Return		0.91%	1.57%	1.57%	4.47%	5.26%	2.23%	4.00%	2.99%	

⁽¹⁾ The Domestic Equity Benchmark is the Russell 3000 Index as of 7/1/2021.



⁽²⁾ TSW Blended Benchmark is the Russell 2500 Value Index as of 7/1/2019. Prior to 7/1/2019 it was the Russell 2500.

Non-US Equity Excess Returns September 30, 2023

The table below details the rates of return for the fund's investment managers over various time periods ended September 30, 2023. Negative manager excess returns are shown in red, positive excess returns in green. Returns for one year or greater are annualized.

	_								
	Net of Fees Returns for Periods Ended September 30, 2023								
	Total Fund								
Composite	Weighting As of 9/30/2023	Last Month	Last 3 Months	FYTD	CYTD	LTM	3-YR	5-YR	10-YR
Total Non US Equity	17.86%	-4.35%	-4.52%	-4.52%	8.52%	24.08%	4.04%	2.82%	3.68%
Non US Equity Benchmark (1)		-3.16%	-3.77%	-3.77%	5.34%	20.39%	3.74%	2.58%	3.35%
Excess Return		-1.19%	-0.75%	-0.75%	3.18%	3.69%	0.30%	0.24%	0.33%
Core Non US Equity	10.92%	-4.02%	-3.95%	-3.95%	9.57%	28.23%	6.29%	2.88%	3.18%
Core Non US Benchmark (2)		-3.16%	-3.77%	-3.77%	5.34%	20.39%	3.74%	2.58%	3.35%
Excess Return		-0.86%	-0.18%	-0.18%	4.23%	7.84%	2.56%	0.30%	-0.16%
Aristotle	1.41%	-3.86%	-4.46%	-4.46%	7.71%	22.18%	-	-	_
MSCI EAFE	,	-3.42%	-4.11%	-4.11%	7.08%	25.65%	_	-	_
Excess Return		-0.44%	-0.35%	-0.35%	0.63%	-3.47%	-	-	-
Artisan Partners	3.08%	-4.69%	-4.13%	-4.13%	5.86%	22.87%	0.63%	2.87%	_
MSCI EAFE	3.00 /0	-3.42%	-4.11%	-4.11%	7.08%	25.65%	5.75%	3.24%	
Excess Return		-1.27%	-0.02%	-0.02%	-1.22%	-2.78%	-5.13%	-0.37%	-
PlackPook SuperFund	1.55%	2 120/	-3.74%	-3.74%	-		-	-	_
MSCI ACWI Ex-US	1.55%	-3.12% -3.16%	-3.77%	-3.77%	-	-	-	-	-
Excess Return		0.04%	0.03%	0.03%	-	-	-	-	-
					10 =00/	44.000/	44-54		
Causeway Capital MSCI EAFE	3.54%	-3.90% -3.42%	-3.04%	-3.04% -4.11%	16.76% 7.08%	41.26% 25.65%	14.75%	5.39% 3.24%	-
Excess Return		-3.42% -0.49%	-4.11% 1.07%	1.07%	9.68%	25.65% 15.61%	5.75% 9.00%	2.15%	-
Lazard	1.33%	-4.02%	-5.61%	-5.61%	5.91%	20.75%	-	-	-
MSCI EAFE		-3.42% -0.60%	-4.11% -1.50%	-4.11% -1.50%	7.08% -1.17%	25.65% -4.90%	-	-	-
Excess Return		-0.00%	-1.50%	-1.50%	-1.17%	-4.90%	-	-	-
Emerging Markets	1.42%	-3.76%	-3.58%	-3.58%	2.61%	11.63%	-4.00%	-0.45%	1.10%
MSCI EM		-2.62%	-2.93%	-2.93%	1.82%	11.70%	-1.73%	0.56%	2.07%
Excess Return		-1.14%	-0.65%	-0.65%	0.79%	-0.07%	-2.28%	-1.00%	-0.97%
Wellington Emerging Markets	1.42%	-3.76%	-3.58%	-3.58%	0.39%	9.02%	-4.02%	-0.14%	2.48%
MSCI EM		-2.62%	-2.93%	-2.93%	1.82%	11.70%	-1.73%	0.56%	2.07%
Excess Return		-1.14%	-0.65%	-0.65%	-1.43%	-2.68%	-2.29%	-0.70%	0.41%
Non US Small Cap	1.08%	-4.64%	-4.38%	-4.38%	3.34%	19.25%	-0.41%	-4.41%	-0.64%
MSCI EAFE Small Cap		-4.42%	-3.51%	-3.51%	1.82%	17.90%	1.10%	0.76%	4.30%
Excess Return		-0.21%	-0.88%	-0.88%	1.51%	1.35%	-1.51%	-5.17%	-4.94%
Wellington Int'l Small Cap Research	1.08%	-4.64%	-4.38%	-4.38%	3.34%	19.25%	-	-	_
MSCI EAFE Small Cap		-4.42%	-3.51%	-3.51%	1.82%	17.90%	-	-	-
Excess Return		-0.21%	-0.88%	-0.88%	1.51%	1.35%	-	-	-
Global Equity	4.44%	-5.26%	-6.21%	-6.21%	10.47%	24.47%	6.46%	7.63%	9.52%
MSCI ACWI net		-4.14%	-3.40%	-3.40%	10.06%	20.80%	6.89%	6.46%	7.56%
Excess Return		-1.13%	-2.81%	-2.81%	0.41%	3.67%	-0.44%	1.17%	1.96%
Walter Scott Global Equity	4.44%	-5.26%	-6.21%	-6.21%	10.47%	24.47%	6.46%	7.63%	9.52%
Walter Scott Blended Benchmark (3)	7.44 /0	-4.14%	-3.40%	-3.40%	10.47%	20.80%	6.89%	6.46%	7.56%
Excess Return		-1.13%	-2.81%	-2.81%	0.41%	3.67%	-0.44%	1.17%	1.96%
		1.1070	2.0170	2.0170	U. F170	0.0170	U. 1770	1.1770	1.50/0

⁽¹⁾ The Non US Equity Index is the MSCI ACWI ex US Index as of 7/1/2003. Prior to 7/1/2003 it was the MSCI EAFE Index.

⁽³⁾ The Walter Scott Blended Benchmark is the MSCI ACWI Index as 5/1/2008. Prior to 5/1/2008 it was the MSCI EAFE Index.



⁽²⁾ The Core Non US Equity Index is the MSCI ACWI ex US as of 7/1/2007. Prior to 7/1/2007 it was the MSCI EAFE Index.

Fixed Income Excess Returns September 30, 2023

The table below details the rates of return for the fund's investment managers over various time periods ended September 30, 2023. Negative manager excess returns are shown in red, positive excess returns in green. Returns for one year or greater are annualized.

	Ne	et of Fees Retu	ırns for Periods I	Ended Septe	mber 30, 2023			•	
Composite	Total Fund Weighting As of 9/30/2023	Last Month	Last 3 Months	FYTD	CYTD	LTM	3-YR	5-YR	10-YR
Total Fixed Income	19.77%	-2.40%	-2.86%	-2.86%	-0.12%	2.50%	-3.22%	0.97%	1.86%
Fixed Income Benchmark (1)		-2.38%	-2.88%	-2.88%	-0.62%	1.61%	-4.68%	0.34%	1.43%
Excess Return		-0.02%	0.02%	0.02%	0.50%	0.89%	1.46%	0.63%	0.43%
BlackRock SIO Bond Fund	2.28%	-0.89%	-0.17%	-0.17%	1.82%	3.48%	0.53%	-	-
BlackRock Custom Benchmark (2)		0.43%	1.34%	1.34%	3.78%	4.73%	1.88%	_	_
Excess Return		-1.32%	-1.50%	-1.50%	-1.96%	-1.25%	-1.34%	-	-
Brandywine Asset Mgmt	1.92%	-4.99%	-7.34%	-7.34%	-4.32%	2.33%	-5.55%	-1.53%	0.32%
Brandywine Custom Benchmark (3)		-3.40%	-4.50%	-4.50%	-2.77%	0.98%	-8.81%	-2.63%	-1.22%
Excess Return		-1.59%	-2.83%	-2.83%	-1.55%	1.34%	3.26%	1.10%	1.55%
FIAM (Fidelity) Tactical Bond	3.16%	-2.61%	-3.13%	-3.13%	-0.10%	2.62%	-1.73%	-	-
Bloomberg Aggregate		-2.54%	-3.23%	-3.23%	-1.21%	0.64%	-5.21%	_	_
Excess Return		-0.06%	0.10%	0.10%	1.11%	1.97%	3.48%	-	-
Income Research & Management	6.66%	-2.39%	-2.93%	-2.93%	-0.25%	1.25%	-5.13%	0.81%	1.70%
Bloomberg Gov/Credit	0.0070	-2.34%	-3.00%	-3.00%	-0.85%	0.93%	-5.32%	0.41%	1.31%
Excess Return		-0.04%	0.07%	0.07%	0.61%	0.33%	0.19%	0.40%	0.39%
Loomis Sayles	2.41%	-1.66%	-1.25%	-1.25%	1.37%	4.09%	-1.25%	2.42%	3.11%
Loomis Sayles Custom Benchmark (4)		-2.07%	-1.95%	-1.95%	1.23%	3.95%	-2.79%	1.17%	2.26%
Excess Return		0.40%	0.70%	0.70%	0.14%	0.14%	1.54%	1.25%	0.85%
Manulife Strategic Fixed Income	1.82%	-2.01%	-2.22%	-2.22%	1.07%	4.30%	-1.72%	1.48%	-
Bloomberg Multiverse	1.0270	-2.87%	-3.46%	-3.46%	-1.92%	2.69%	-6.62%	-1.48%	_
Excess Return		0.86%	1.24%	1.24%	2.99%	1.61%	4.90%	2.96%	-
Mellon US Agg Bond Index	1.51%	-2.55%	-3.24%	-3.24%	_	-	_	-	_
Bloomberg Aggregate Bond Index	1.5170	-2.54%	-3.23%	-3.23%	_	_	_	_	_
Excess Return		0.00%	-0.01%	-0.01%	-	-	-	-	-
Total Cash	0.80%	0.44%	1.34%	1.34%	3.76%	4.71%	1.79%	1.80%	1.20%
3-month Treasury Bill	0.0070	0.46%	1.31%	1.31%	3.60%	4.47%	1.70%	1.72%	1.11%
Excess Return		-0.01%	0.03%	0.03%	0.16%	0.24%	0.09%	0.08%	0.08%
Total Marketable Assets	68.61%	-3.98%	-3.50%	-3.50%	6.12%	14.35%	4.43%	4.42%	5.98%
Total Marketable Index (5)		-3.54%	-3.24%	-3.24%	6.14%	14.10%	3.00%	4.68%	6.22%
Excess Return		-0.43%	-0.26%	-0.26%	-0.03%	0.24%	1.44%	-0.26%	-0.25%

⁽¹⁾ The Fixed Income Benchmark is the Bloomberg Universal Bond Index as of 7/1/2007.

⁽⁵⁾ Marketable Assets Index is 40% Russell 3000, 26.7% MSCI ACWI ex US, and 33.3% Bloomberg Universal as of 7/1/2021.



⁽²⁾ The BlackRock Custom Benchmark is 3 Month SOFR compounded in arrears as of 1/1/2022.

⁽³⁾ The Brandywine Blended Benchmark is the FTSE WGBI Ex-China Index as of 11/1/2021.

⁽⁴⁾ The Loomis Sayles Custom Benchmark is 65% Bloomberg Aggregate and 35% Bloomberg High Yield.

Alternatives Excess Returns September 30, 2023

The table below details the rates of return for the fund's investment managers over various time periods ended September 30, 2023. Negative manager excess returns are shown in red, positive excess returns in green. Returns for one year or greater are annualized.

	Net o	of Fees Return	s for Periods En	ded Septen	nber 30, 202	23			
Composite	Total Fund Weighting As of 9/30/2023	Last Month	Last 3 Months	FYTD	CYTD	LTM	3-YR	5-YR	10-YR
Total Real Estate (Q2)* (5)	11.47%	-1.14%	-0.17%	-0.17%	-8.34%	-7.06%	11.50%	9.00%	10.77%
Real Estate Benchmark (1)		-0.97%	-2.88%	-2.88%	-11.01%	-10.73%	7.04%	5.56%	7.81%
Excess Return		-0.18%	2.71%	2.71%	2.67%	3.68%	4.45%	3.44%	2.96%
Strategic Core Real Estate (Q2)*	7.16%	-1.50%	-0.09%	-0.09%	-12.55%	-11.12%	9.05%	7.50%	9.40%
Real Estate Benchmark (1)		-0.97%	-2.88%	-2.88%	-11.01%	-10.73%	7.04%	5.56%	7.81%
Excess Return		-0.53%	2.79%	2.79%	-1.53%	-0.38%	2.01%	1.94%	1.59%
Tactical Non-Core Real Estate (Q2)*	4.31%	-0.54%	-0.31%	-0.31%	0.11%	1.04%	15.88%	11.76%	13.20%
Real Estate Benchmark (1)		-0.97%	-2.88%	-2.88%	-11.01%	-10.73%	7.04%	5.56%	7.81%
Excess Return		0.43%	2.57%	2.57%	11.12%	11.77%	8.84%	6.20%	5.39%
Total Alternative Assets (Q2)*	19.92%	-0.86%	-0.02%	-0.02%	4.80%	3.61%	16.23%	11.03%	9.66%
Alternative Assets Benchmark (2)		5.35%	6.78%	6.78%	20.93%	18.22%	13.00%	11.18%	12.14%
Excess Return		-6.21%	-6.81%	-6.81%	-16.13%	-14.62%	3.23%	-0.15%	-2.48%
Total Private Equity (Q2)*	14.89%	-0.70%	-0.02%	-0.02%	5.24%	3.15%	19.63%	13.70%	12.50%
Private Equity Benchmark (3)		6.91%	8.80%	8.80%	26.12%	21.50%	17.16%	15.41%	16.44%
Excess Return		-7.61%	-8.82%	-8.82%	-20.88%	-18.36%	2.48%	-1.71%	-3.94%
Total Private Debt (Q2)*	5.04%	-1.34%	-0.03%	-0.03%	3.54%	4.97%	8.48%	5.37%	6.70%
Private Debt Benchmark (4)		2.22%	2.77%	2.77%	10.90%	11.55%	4.59%	3.48%	6.74%
Excess Return		-3.56%	-2.81%	-2.81%	-7.36%	-6.57%	3.89%	1.88%	-0.04%

⁽¹⁾ The Real Estate Benchmark is the NCREIF NFI-ODCE Value Weight Net Index lagged 1 quarter as of 7/1/2015.

⁽²⁾ The Alternative Assets Benchmark is 66.7% Russell 3000 Index + 2% lagged 1 quarter and 33.3% ((50% S&P LSTA Leveraged Loan 100 Index + 50% Bloomberg High Yield Index) + 1%) lagged 1 quarter as of 7/1/2022.

⁽³⁾ The Private Equity Benchmark is the Russell 3000 Index + 2% lagged 1 quarter as of 7/1/2022.

⁽⁴⁾ The Private Debt Benchmark is (50% MStar LSTA Leveraged Loan 100 Index / 50% Bloomberg High Yield Index) + 1% lagged 1 quarter as of 7/1/2022.

⁽⁵⁾ Total Real Estate returns includes Townsend discretionary fee as of 7/1/2022.

^{*}Real Estate and Alternatives market values reflect current custodian valuations, which are typically lagged approximately 1 quarter.

Investment Manager Asset Allocation

The table below contrasts the distribution of assets across the Fund's investment managers as of September 30, 2023, with the distribution as of August 31, 2023. The change in asset distribution is broken down into the dollar change due to Net New Investment and the dollar change due to Investment Return.

Asset Distribution Across Investment Managers

	September 3	0, 2023			August 31,	2023
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Total Domestic Equity	\$3,341,644,686	30.18%	\$0	\$(171,166,989)	\$3,512,811,675	30.70%
Large Cap Domestic Equity	\$1,935,613,066	17.48%	\$0	\$(96,886,115)	\$2,032,499,181	17.76%
Blackrock S&P 500	1,935,613,066	17.48%	0	(96,886,115)	2,032,499,181	17.76%
SMid Cap Domestic Equity	\$611,803,668	5.53%	\$0	\$(33,950,973)	\$645,754,640	5.64%
AllianceBernstein	373,417,661	3.37%	0	(25,312,732)	398,730,393	3.48%
TSW	238,386,007	2.15%	0	(8,638,240)	247,024,247	2.16%
Small Cap Domestic Equity	\$794,227,953	7.17%	\$0	\$(40,329,902)	\$834,557,855	7.29%
Boston Trust	210,038,968	1.90%	0	(11,543,819)	221,582,786	1.94%
Segall Bryant & Hamill	219,617,698	1.98%	0	(9,936,292)	229,553,991	2.01%
Wellington	364,571,287	3.29%	0	(18,849,791)	383,421,078	3.35%
Total Non US Equity	\$1,977,834,164	17.86%	\$0	\$(89,008,686)	\$2,066,842,850	18.06%
Core Non US Equity (1)	\$1,209,436,400	10.92%	\$0	\$(50,198,834)	\$1,259,635,234	11.01%
Aristotle	156,533,810	1.41%	0	(6,223,796)	162,757,606	1.42%
Artisan Partners	340,838,723	3.08%	0	(16,568,195)	357,406,918	3.12%
BlackRock Superfund	171,855,968	1.55%	0	(5,529,990)	177,385,958	1.55%
Causeway Capital	392,406,678	3.54%	0	(15,765,172)	408,171,850	3.57%
Lazard	147,132,498	1.33%	0	(6,094,864)	153,227,362	1.34%
Emerging Markets	\$157,268,749	1.42%	\$0	\$(6,000,779)	\$163,269,528	1.43%
Wellington Emerging Markets	157,268,749	1.42%	0	(6,000,779)	163,269,528	1.43%
Non US Small Cap	\$119,565,062	1.08%	\$0	\$(5,737,040)	\$125,302,102	1.10%
Wellington Int'l Small Cap Research	119,565,062	1.08%	0	(5,737,040)	125,302,102	1.10%
Global Equity	\$491,563,953	4.44%	\$0	\$(27,072,033)	\$518,635,986	4.53%
Walter Scott Global Equity	491,563,953	4.44%	0	(27,072,033)	518,635,986	4.53%
Total Fixed Income	\$2,188,383,430	19.77%	\$0	\$(53,348,976)	\$2,241,732,406	19.59%
BlackRock SIO Bond Fund	252,016,802	2.28%	0	(2,163,241)	254,180,043	2.22%
Brandywine Asset Mgmt	212,212,886	1.92%	0	(11,088,636)	223,301,523	1.95%
FIAM (Fidelity) Tactical Bond	350,096,425	3.16%	0	(9,272,418)	359,368,843	3.14%
Income Research & Management	737,749,165	6.66%	0	(17,920,251)	755,669,416	6.60%
Loomis Savles	266,839,188	2.41%	0	(4,440,242)	271,279,430	2.37%
Manulife Strategic Fixed Income	201,801,127	1.82%	0	(4,087,111)	205,888,239	1.80%
Mellon US Agg Bond Index	167,667,836	1.51%	0	(4,377,077)	172,044,913	1.50%
Total Cash	\$88,111,316	0.80%	\$(19,360,032)	\$444,030	\$107,027,317	0.94%
Total Marketable Assets	\$7,595,973,596	68.61%	\$(19,360,032)	\$(313,080,621)	\$7,928,414,248	69.29%
Tatal Basi Fatata	£4 000 707 000	44 470/	\$2.040.000	¢(44.407.000)	£4 200 440 025	44 400/
Total Real Estate	\$1,269,767,688 703,009,710	11.47%	\$3,846,686	\$(14,197,023) (14,656,276)	\$1,280,118,025	11.19%
Strategic Core Real Estate	792,998,719	7.16%	(2,588,131)	(11,656,376)	807,243,226	7.05%
Tactical Non-Core Real Estate	476,768,969	4.31%	6,434,817	(2,540,647)	472,874,798	4.13%
Total Alternative Assets	\$2,205,681,460	19.92%	\$(12,101,791)	\$(15,972,112)	\$2,233,755,363	19.52%
Private Equity	1,648,028,961	14.89%	(11,709,718)	(9,210,845)	1,668,949,523	14.59%
Private Debt	557,652,500	5.04%	(392,073)	(6,761,268)	564,805,840	4.94%
Total Fund Composite	\$11,071,422,744	100.0%	\$(29,199,031)	\$(341,665,861)	\$11,442,287,636	100.0%

⁽¹⁾ Includes \$668,723 in legacy assets that are not actively managed and in liquidation following the termination of Fisher Investments.



⁻Alternatives market values reflect current custodian valuations, which may not be up to date.



NHRS Asset Allocation Update

NHRS Investment Team
Independent Investment Committee Meeting

November 14, 2023

Summary

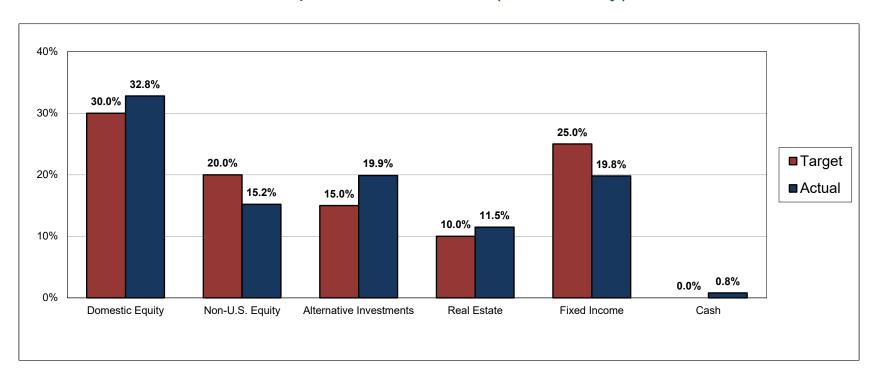


- At September 30, 2023 the preliminary Total Fund value was approximately \$11.1 billion.
- New Asset Allocation Targets and Ranges were approved by the Board of Trustees on September 11, 2012 (Targets) and May 14, 2019 (Ranges), respectively.
- Allocations are managed within approved allocation ranges. All asset classes are continually monitored and Staff takes action to prudently rebalance as a range limit is approached.
- Current status of Targets vs. Actual is illustrated on page 2.
- All asset classes are within approved allocation ranges* (page 3) as of September 30th, 2023.
 - *Fixed Income is below the target allocation but within the approved allocation range when cash is added.
- Total Fund allocation is above and below the target of 70% Equity-like and 30% Fixed Income investments, respectively as of September 30th(page 4).

Current Status



Class Targets vs. Actual Allocation as of September 30, 2023 (Preliminary)



Source: NHRS

Asset Class Allocations Relative to Policy Targets and Ranges



As of September 30, 2023 (preliminary)

	Allocation							
Asset Class	Range	Target	Actual	Variance	Objective	Comments		
Domestic Equity	20 - 40%	30.0%	32.8%	2.8%	Monitor	No immediate action needed.		
Non-U.S. Equity	15 - 25%	20.0%	15.2%	-4.8%	Monitor	Below target allocation but within approved allocation range. Continue to Monitor.		
Alternative Investments (AI) ¹	5 - 25%	15.0%	19.9%	4.9%	Monitor	No immediate action needed.		
Real Estate (RE) ¹	5 - 20%	10.0%	11.5%	1.5%	Monitor	Redemption from select open-end funds in process		
Fixed Income	20 - 30%	25.0%	19.8%	-5.2%	Monitor	Below target allocation but within approved allocation range when cash is included. Continue to Monitor.		
Cash	NA	0.0%	0.8%	0.8%	No Action	Minimal cash balance to provide liquidity, as needed, for annuities, capital calls, and other plan needs.		
		100.0%	100.0%	0.0%				

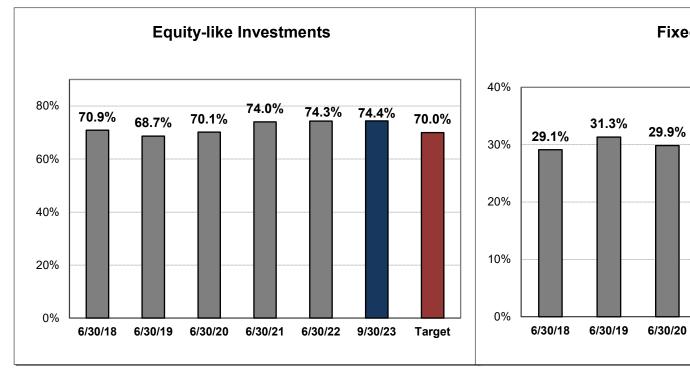
¹As reported on the September 30, 2023 Monthly Review

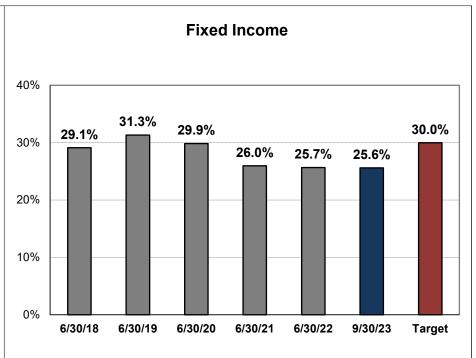
Source: NHRS

Total Fund Allocation from 6/30/18 through 9/30/23 (Preliminary)



• The Total Fund allocation is above and below the target of 70% Equity-like and 30% Fixed Income investments, respectively.





Source: NHRS

IIC Meeting – November 2023

Private Debt & Equity Summary: As of October 31, 2023

IIC Approval	Investment Name		Amount		Strategy
June 2009	Lexington Capital Partners VII	\$	20,000,000		Secondaries
March 2011	Siguler Guff Distressed Opportunities IV *	\$	20,000,000		Distressed
April 2011	Avenue Special Situations Fund VI		20,000,000		Distressed
April 2011	Lexington Capital Partners VII		20,000,000		Secondaries
May 2011	Industry Ventures Fund VI *		20,000,000		Secondaries
August 2011	RFE Investment Partners VIII *		20,000,000		Buyout
August 2011	Tennenbaum Opportunities Fund VI		20,000,000		Distressed
September 2011 November 2011	Edgewater Growth Capital Partners Fund III * SL Capital European Smaller Funds I *		20,000,000 20,000,000	**	Buyout Buyout
November 2011	oc Capital European Omalier Funds i	\$	20,000,000		Buyout
July 2012	Ironwood Mezzanine Fund III *	\$	20,000,000		Mezzanine
July 2012	Coller International Partners VI	\$	20,000,000		Secondaries
December 2012	Paul Capital Partners X *		12,500,000		Secondaries
February 2013	HarbourVest Dover Street VIII *	\$	50,000,000		Secondaries
May 2013	Gramercy Distressed Opportunity Fund II *	\$	50,000,000		Distressed
July 2013	Monroe Capital Senior Secured Direct Loan Fund *	\$	50,000,000		Direct Lending
September 2013	Industry Ventures Fund VII *	\$	20,000,000		Secondaries
September 2013	Industry Ventures Partnership Holdings Fund III *	\$	20,000,000		Venture Capital
October 2013	Pine Brook Capital Partners II	\$	50,000,000		Growth
F-h 0011	COMP Carifel Invest	•	FO 000 000		Democrat
February 2014	CCMP Capital Investors III	\$	50,000,000		Buyout
February 2014 March 2014	Carlyle Group * Crescent Direct Lending Levered Fund *	\$	150,000,000		Growth
April 2014	Lexington Capital Partners VIII *	\$ \$	50,000,000 50,000,000		Direct Lending Secondaries
August 2014	Alcentra European Direct Lending Fund	\$	50,000,000		Direct Lending
August 2014	HarbourVest HIPEP VII *	\$	50,000,000		Buyout
September 2014	Top Tier Venture Velocity Fund *	\$	20,000,000		Secondaries
October 2014	BlackRock Private Opportunities Fund - 2014 Series	\$	150,000,000		Co-Investments
November 2014	NGP Natural Resources XI *	\$	75,000,000		Energy
January 2015	Comvect Conital III *	φ	40,000,000		Direct Lending
January 2015 January 2015	Comvest Capital III * CarVal Investors Credit Value Fund III *	\$ \$	40,000,000 50,000,000		Direct Lending Multisector
April 2015	Coller International Partners VII	\$	50,000,000		Secondaries
August 2015	Gramercy Distressed Opportunity Fund III *	\$	50,000,000		Distressed
August 2015	Monroe Capital Private Credit Fund II *	\$	50,000,000		Direct Lending
August 2015	BlueBay Direct Lending Fund II *	\$	50,000,000	**	Direct Lending
September 2015	Industry Ventures Partnership Holdings Fund IV *	\$	20,000,000		Venture Capital
September 2015	Warburg Pincus XII	\$	64,000,000	***	Growth
November 2015	HarbourVest Dover Street IX *	\$	50,000,000		Secondaries
November 2015	Kayne Anderson Energy Fund VII *	\$	50,000,000		Energy
February 2016	Alcentra European Direct Lending Fund II *	\$	50,000,000		Direct Lending
February 2016	Riverstone Credit Partners *	\$	50,000,000		Energy
March 2016	Thoma Bravo Fund XII	\$	46,000,000	***	Buyout
October 2016 December 2016	Comvest Capital IV * HarbourVest HIPEP VIII *	\$ \$	50,000,000 50,000,000		Direct Lending Buyout
December 2010	Harbour vest Hill Er. VIII	Ą	30,000,000		Dayout
January 2017	Actis Energy 4	\$	50,000,000		Energy
February 2017	Edgewater Growth Capital Partners Fund IV *	\$	50,000,000		Buyout
February 2017	Top Tier Venture Velocity Fund 2 *	\$	25,000,000	***	Secondaries
April 2017	Apollo Investment Fund IX Crescent Direct Lending Levered Fund II *	\$	40,000,000	***	Buyout Direct Lending
June 2017 September 2017	Carlyle Asia V *	\$ \$	50,000,000 50,000,000		Growth
September 2017	CarVal Investors Credit Value Fund IV *	\$	50,000,000		Multisector
October 2017	BlackRock Private Opportunities Fund - 2018 Series	\$	150,000,000		Co-Investments
November 2017	Riverstone Credit Partners II *	\$	50,000,000		Energy
February 2018	Industry Ventures Partnership Holdings Fund V *	\$	25,000,000		Venture Capital
March 2018	BlueBay Direct Lending Fund III *	\$	50,000,000		Direct Lending
April 2018 September 2018	Monroe Capital Private Credit Fund III * Alcentra European Direct Lending Fund III *	\$ \$	50,000,000 50,000,000		Direct Lending Direct Lending
September 2018	Thoma Bravo Fund XIII	\$ \$	50,000,000		Buyout
September 2018	Warburg Pincus Global Growth	\$	50,000,000		Growth
			, ,		
April 2019	HarbourVest Dover Street X *	\$	50,000,000		Secondaries
April 2019	Top Tier Venture Velocity Fund 3 *	\$	25,000,000		Secondaries

Private Debt & Equity Summary: As of October 31, 2023

IIC Approval	Investment Name		<u>Amount</u>		<u>Strategy</u>
March 2020	Coller International Partners VIII	\$	75,000,000		Secondaries
March 2020	HarbourVest HIPEP IX *	\$	75,000,000		Buyout
April 2020	Comvest Capital V *	\$	50,000,000		Direct Lending
September 2020	Thoma Bravo Fund XIV	\$	50,000,000	***	Buyout
October 2020	CarVal Investors Credit Value Fund V *	\$	50,000,000		Multisector
October 2020	Industry Ventures Fund IX *	\$	50,000,000		Secondaries
November 2020	BlackRock Private Opportunities Fund - 2021 Series	\$	150,000,000		Co-Investments
December 2020	Monroe Capital Private Credit Fund IV *	\$	50,000,000		Direct Lending
February 2021	Crescent Direct Lending Levered Fund III *	\$	50,000,000		Direct Lending
June 2021	Industry Ventures Partnership Holdings Fund VI *	\$	25,000,000		Venture Capital
September 2021	Top Tier Venture Velocity Fund 4 *	\$	25,000,000		Secondaries
November 2021	Atalaya Special Opportunities Fund VIII	\$	50,000,000		Specialty Finance
February 2022	Clearlake Capital Partners VII	\$	50,000,000		Buyout
February 2022	Thoma Bravo Fund XV	\$	50,000,000		Buyout
March 2022	Comvest Capital VI *	\$	50,000,000		Direct Lending
March 2022	Warburg Pincus 14	\$	50,000,000		Growth
May 2022	HarbourVest Dover Street XI *	\$	50,000,000		Secondaries
May 2023	American Industrial Partners VIII	\$	50,000,000		Buyout
May 2023	Apollo X	\$	40,000,000		Buyout
May 2023	Apollo X Co-Investment	\$	40,000,000		Buyout
Aug / Sept 2023	Ares Pathfinder II	\$	75,000,000		Specialty Finance
		\$ 3,857,500,000			

Red indicates Private Equity (\$2,512.5m or 66% of commitments) Green indicates Private Debt (\$1,345.0m or 35% of commitments)

Investments that are bolded and shaded represent re-ups

^{*} Advisory Board Member (includes observer seats)

^{**} Commitment made in Euros

^{***} Amount reduced due to oversubscription