

# MONTANA

## BOARD OF INVESTMENTS

REGULAR BOARD MEETING  
February 22-23, 2023

### COMMITTEE MEETINGS

- A. **Audit Committee – Mark Barry, Chair** 9:30 AM  
Committee Members – Peterson, Bennett, Trost
1. Public Comment – *Public Comment on issues with Committee Jurisdiction*
  2. Approval of December 6, 2022, Committee Minutes
  3. Executive Director Comments
  4. Audit Checklist
  5. Ethics Policy
  6. Financial Compliance Audit Reports
- B. **Loan Committee – Jeff Meredith, Chair** 10:30 AM  
Committee Members – Barry, Kober, Bennett, Younkin
1. Public Comment – *Public Comment on issues with Committee Jurisdiction*
  2. Approval of December 6, 2022, Committee Meeting Minutes
  3. Executive Director Comments
  4. INTERCAP Loan Requests – **Decisions**
- C. **Human Resource Committee – Maggie Peterson, Chair** 11:30 AM  
Committee Members – Meredith, Kober, Trost, Younkin
1. Public Comment – *Public Comment on issues with Committee Jurisdiction*
  2. Executive Director Comments

**BREAK FOR LUNCH** 12:00 PM

- Tab 1 CALL TO ORDER – Jack Prothero, Board Chair** 1:00 PM
- A. Notice of Video Recording of Meeting
  - B. Roll Call
  - C. Public Comment – *Public Comment on issues with Board Jurisdiction*
  - D. Approval of the December 6-7, 2022, Meeting Minutes
  - E. Administrative Business
    1. Audit Committee Report
    2. Loan Committee Report – **Decisions**
    3. Human Resource Committee Report
  - F. Comments from Pension Board Members
  - G. Comments from Board Legislative Liaisons

- Tab 2 EXECUTIVE DIRECTOR REPORTS – Dan Villa** 1:30 PM
- A. Member Requests from Prior Meeting
  - B. Monthly Snapshot
  - C. Disaster Recovery and Emergency Preparedness
  - D. Custodial Bank Relationship and Continuity

Tab 3	INVESTMENT POLICY STATEMENT REVIEW – Jon Putnam, CFA, FRM, CAIA A. Policy 40.700 – Montana State Fund      John Romasko, CFA	2:00 PM
Tab 4	CASH MANAGEMENT OF STATE MONIES – John Carpenter, CPA Polly Boutin	3:00 PM
	BREAK	3:30 PM
Tab 5	MONTANA LOAN PROGRAM – Doug Hill A. Commercial and Residential Portfolios Report	3:45 PM
Tab 6	BOND PROGRAM – Louise Welsh A. INTERCAP 1. Activity Report 2. Staff Approved Loans Report	4:00 PM
	ADJOURN	4:15 PM

## AGENDA DAY 2

	RECONVENE AND CALL TO ORDER – Jack Prothero, Board Chair A. Roll Call B. Notice of Video Recording and Meeting C. Public Comment – <i>Public Comment on issues within Board Jurisdiction</i>	9:30 AM
Tab 7	RVK	9:45 AM
	BREAK	10:30 AM
Tab 8	INVESTMENT UPDATE – Jon Putnam, CFA, FRM, CAIA	10:45 AM
	RECAP OF STAFF TO DO LIST AND ADJOURNMENT – Jack Prothero, Board Chair	12:15 PM

## Appendix

- A. Annual Board Meeting Schedule
- B. 2022/2023 Work Plan
- C. Acronym Index
- D. Terminology List



# MONTANA

## BOARD OF INVESTMENTS

### REGULAR BOARD MEETING MINUTES

December 6-7, 2022

Meeting recordings are posted at: <https://leg.mt.gov/lcd/>  
(timestamps may differ)

#### Call to Order

The Board of Investment's meeting was called to order by Board Chairman Karl Englund at 11:30 a.m. on Tuesday, December 6, 2022.

#### Attendance

Board Members Present: Karl Englund, Jack Prothero, Bruce Nelson, Diane Fladmo, Jeff Meredith, Maggie Peterson, Mark Barry, Terry Cohea, Daniel Trost

Board Members Absent: None

Legislative Liaisons Present: Rep. Ken Walsh

Legislative Liaisons Absent: Sen. Ryan Lynch

Board Staff Present: Brenda Thomas, Dan Villa, Dan Whyte, Dan Zarling, Doug Hill, Eron Krpan, Jason Brent, John Carpenter, John Romasko, Jon Putnam, Julie Feldman, Kelsey Poore, Kirsten Haswell, Louise Welsh, Mark Lodman, Peggy MacEwen, Peggy Saarela, Polly Boutin, Sam Holman, Savannah Morgan, Sheli Jacoby, Steve Strong, Tammy Lindgren, Teri Kolnik, Thomas Winkler, Tim House

Interested Parties Present: Shawn Graham – Teachers Retirement System; Dore Schwinden – Montana Public Employee Retirement Administration; Bill Holahan – Montana Public Employee Retirement Administration; Becky Gratsinger - RVK; Paige Blaser – RVK; Gregg Gethard - PEI Media; Kevin Balaod – With Intelligence

#### December 6, 2022

##### **Tab 1 CALL TO ORDER (00:05)**

##### **A. Notice of Video Recording (00:11)**

Chairman Englund advised of audio and video recording of the meeting.

##### **B. Roll Call (00:22)**

Roll was taken. Nine Board members were present, forming a quorum.

##### **C. Public Comment (01:03)**

Chairman Englund asked for public comment. None was given.

##### **D. Approval of Minutes (01:22)**

October 26-27, 2022, Regular Board Meeting Minutes

Member Prothero moved to approve. Member Nelson seconded the motion, which passed unanimously.

**E. Administrative Business**

**1. Audit Committee Report (01:47)**

Committee Chair Peterson briefed the Board.

Chair Peterson moved to approve the draft FY22 Financial Statements as presented. Member Barry seconded the motion, which passed unanimously.

Chair Peterson moved to approve the draft FY22 Annual Report as presented with minor changes requested by the Committee. Member Fladmo seconded the motion, which passed unanimously.

Chair Peterson moved to approve the Annual Statutory Compliance Checklist as presented. Member Trost seconded the motion, which passed unanimously.

Chair Peterson moved to approve the Committee's affirmation of the Annual Audit Charter Compliance both through fiscal year 2022 and the period up to this meeting. Member Barry seconded the motion, which passed unanimously.

**F. Comments from Pension Board Members**

Member Trost briefed the Board. (08:00)

**G. Comments from Board Legislative Liaisons**

Rep. Walsh briefed the Board. (09:28)

**Tab 2 EXECUTIVE DIRECTOR REPORTS (12:43)**

**A. Member Requests from Prior Meeting**

There were no Board member requests from the prior meeting.

**B. Monthly Snapshot**

Executive Director Villa briefed the Board.

**C. 2023 Work Plan**

Executive Director Villa briefed the Board.

**D. 2023 Legislative Session**

Executive Director Villa briefed the Board.

**E. LPAC Reporting**

Executive Director Villa briefed the Board.

**F. Securities Litigation Annual Review**

Executive Director Villa briefed the Board.

**G. Policy 10.217 Authorization of Investment Vendors**

Executive Director Villa briefed the Board.

**Tab 3 TRS AND MPERA RELATIONSHIP (39:43)**

Shawn Graham, Executive Director of the Teachers Retirement System, briefed the Board and answered questions.

Dore Schwinden, Executive Director of the Montana Public Employee Retirement Administration and Bill Holahan, Deputy Director of Montana Public Employee Retirement Administration, briefed the Board and answered questions.

**Tab 4 INVESTMENTS – NEW COMMITMENTS (1:36:58)**

**A. Real Estate/Real Assets (1:37:00)**

Jon Putnam briefed the Board.

**B. Private Investments (1:57:06)**

Thomas Winkler briefed the Board.

**Tab 5 ASSET ALLOCATION RANGE APPROVAL – *Decision* (2:03:26)**

Jon Putnam briefed the Board.

Member Prothero motioned to approve the Asset Allocation Range as reported. Member Cohea seconded the motion, which passed unanimously.

**Tab 6 MONTANA LOAN PROGRAM (2:16:07)**

**A. Commercial and Residential Portfolios Report**

Doug Hill briefed the Board and answered questions.

**Tab 7 BOND PROGRAM (2:25:30)**

**A. INTERCAP**

Louise Welsh briefed the Board and answered questions.

**ADJOURN**

**December 7, 2022**

**CALL TO ORDER (00:05)**

**A. Roll Call (00:17)**

Roll was taken. All nine Board members were present including Chairman Karl Englund, Jack Prothero, Terry Cohea, Bruce Nelson, Diane Fladmo, Maggie Peterson, Mark Barry, Dan Trost, and Jeff Meredith, forming a quorum.

**B. Notice of Video Recording (01:12)**

Chairman Englund advised of audio and video recording of the meeting.

**C. Public Comment (01:17)**

Chairman Englund asked for public comment. None was given.

**Tab 8 RVK INVESTMENT UPDATE (02:50)**

Paige Blaser and Becky Gratsinger with RVK briefed the Board and answered questions.

**Tab 9 CIO INVESTMENT UPDATE (1:06:20)**

**CIO Update (1:06:38)**

Jon Putnam briefed the Board.

**Macro Attribution (1:32:13)**

Eron Krpan briefed the Board.

**Private Investments (1:35:15)**

Thomas Winkler briefed the Board.

**Real Estate (1:42:20)**

Jon Putnam briefed the Board.

**Real Assets (1:45:39)**

Jon Putnam briefed the Board.

**Core Fixed Income (1:49:05)**

John Romasko briefed the Board.

**Non-Core Fixed Income, Domestic Equity, and International Equity (1:53:00)**

Jason Brent briefed the Board.

**STIP (2:02:09)**

Kirsten Haswell briefed the Board.

**State Fund and Trust Fund Investment Pool (2:04:26)**

John Romasko briefed the Board.

**RECAP OF STAFF TO DO LIST AND ADJOURNMENT (02:24:56)**

Chairman Englund adjourned the meeting at 11:55 a.m.

**MONTANA BOARD OF INVESTMENTS**

APPROVE: \_\_\_\_\_  
Jack Prothero, Chairman

ATTEST: \_\_\_\_\_  
Dan Villa, Executive Director

DATE: \_\_\_\_\_





# MONTANA

## BOARD OF INVESTMENTS

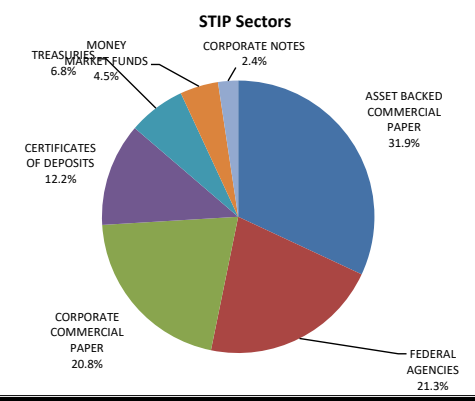
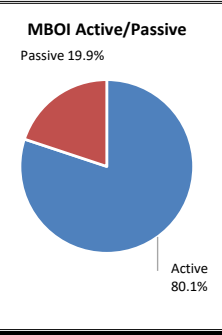
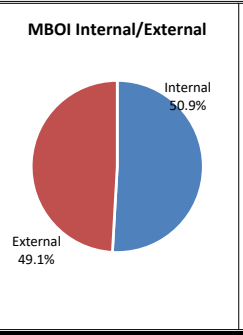
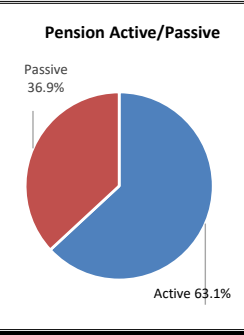
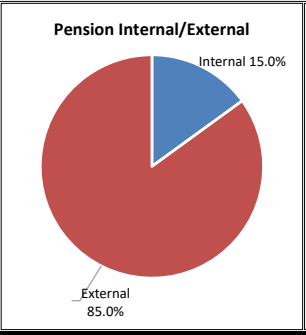
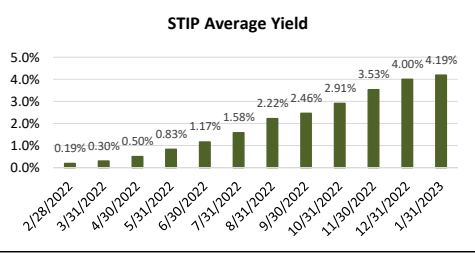
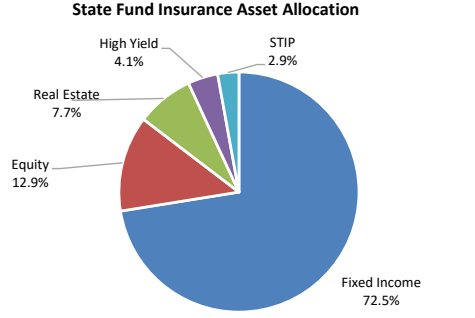
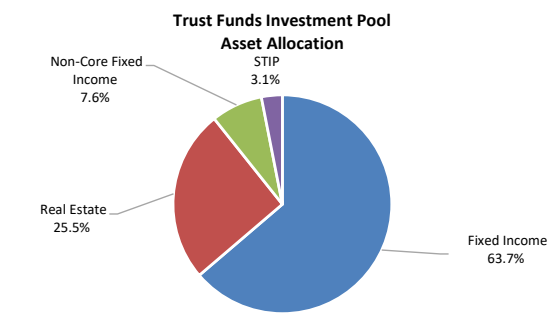
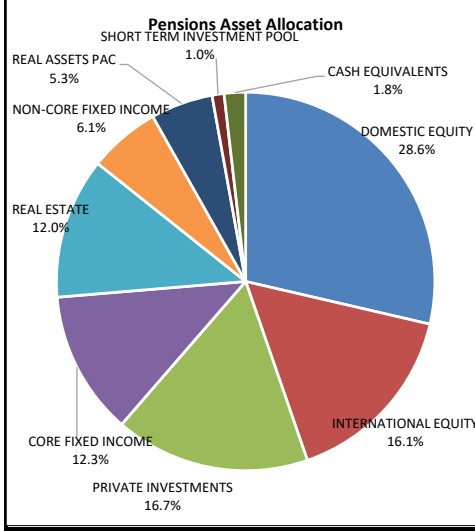
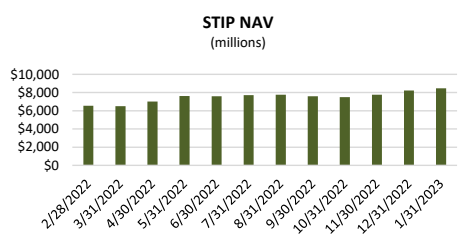
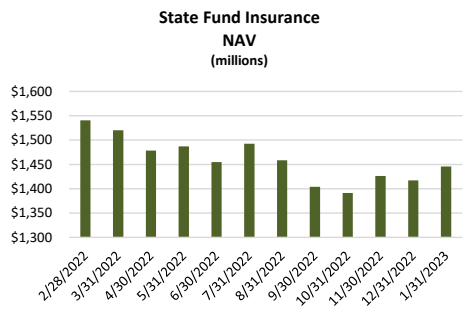
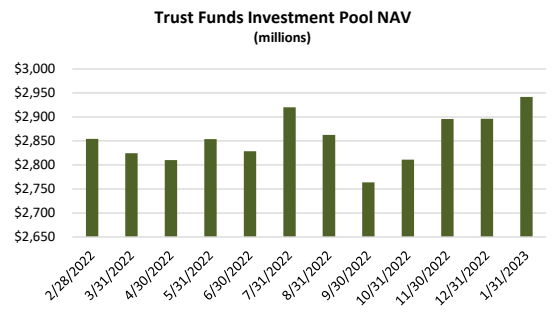
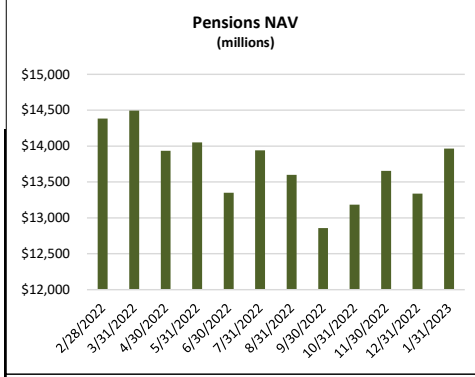
**To:** Members of the Board  
**From:** Dan Villa, Executive Director  
**Date:** February 22, 2023  
**Re:** Executive Director Report

- A. Member Requests from Prior Meeting
- B. Monthly Snapshot – *attached*
- C. Disaster Recovery and Preparedness - *attached*
- D. Custodial Bank Relationship and Continuity - *attached*

**MBOI Snapshot**  
**Asset Management View**  
**1/31/2023 Unaudited**  
**Assets Under Management \$26,656,041,612**



Pensions	NAV	%	TFIP	NAV	%	State Fund	NAV	%	Other Fixed Income & Pending	\$	73,339,201
<b>DOMESTIC EQUITY</b>	<b>\$3,997,886,771</b>	<b>28.62%</b>	Fixed Income	\$ 1,875,302,971	63.75%	Fixed Income	\$ 1,047,573,555	72.46%			
<b>INTERNATIONAL EQUITY</b>	<b>\$2,246,632,525</b>	<b>16.09%</b>	Real Estate	\$ 751,453,891	25.54%	Equity	\$ 186,612,414	12.91%	<b>STIP*</b>	<b>NAV</b>	<b>%</b>
<b>PRIVATE INVESTMENTS</b>	<b>\$2,327,909,332</b>	<b>16.67%</b>	Non-Core Fixed Income	\$ 224,202,796	7.62%	Real Estate	\$ 111,630,117	7.72%	ASSET BACKED COMMERCIAL PAPER	\$2,628,479,937	31.94%
<b>CORE FIXED INCOME</b>	<b>\$1,717,456,549</b>	<b>12.30%</b>	STIP	\$ 90,843,925	3.09%	High Yield	\$ 58,643,780	4.06%	FEDERAL AGENCIES	\$1,749,656,483	21.26%
<b>REAL ESTATE</b>	<b>\$1,682,391,856</b>	<b>12.05%</b>	<b>Total</b>	<b>\$ 2,941,803,584</b>	<b>100.00%</b>	STIP	\$ 41,209,942	2.85%	CORPORATE COMMERCIAL PAPER	\$1,714,580,753	20.84%
<b>NON-CORE FIXED INCOME</b>	<b>\$855,119,651</b>	<b>6.12%</b>				<b>State Fund Total</b>	<b>\$ 1,445,669,808</b>	<b>100.00%</b>	CERTIFICATES OF DEPOSITS	\$1,006,869,361	12.24%
<b>REAL ASSETS PAC</b>	<b>\$741,801,191</b>	<b>5.31%</b>							TREASURIES	\$559,367,181	6.80%
<b>SHORT TERM INVESTMENT POOL</b>	<b>\$142,969,453</b>	<b>1.02%</b>							MONEY MARKET FUNDS	\$373,579,029	4.54%
<b>CASH EQUIVALENTS</b>	<b>\$254,825,690</b>	<b>1.82%</b>							CORPORATE NOTES	\$195,703,258	2.38%
<b>Pensions Total</b>	<b>\$13,966,993,018</b>	<b>100.00%</b>							<b>STIP Total</b>	<b>\$8,228,236,001</b>	<b>100.00%</b>



Definition of NAV: Net Asset Value is the total value of the account including assets held, adjusted for payables, receivables and liabilities

(1) Other Holdings column on page two represents the value of securities, receivables, payables and liabilities that comprise the Net Asset Value for the asset owner.

\*Difference of \$57,632,911 is attributable to the portion of STIP held within CAPP (\$199,767,301) and TFIP (\$90,542,398) as a cash investment and distributions held over month end (\$232,676,788). Such value is represented in the NAV for the CAPP and STIP columns.



# MONTANA

## BOARD OF INVESTMENTS

**TO:** Members of the Board  
**FROM:** Dan Villa, Executive Director  
**DATE:** February 22, 2023  
**RE:** Custodial Bank Relationship and Continuity

State Street Bank (SSB) provides custodial banking services to the Board which include safekeeping most of the Board's fiduciary assets and investments, as well as clearing and recording the Board's financial transactions. In addition, SSB calculates absolute performance for the various accounts, as well as relative performance to the Board's assigned benchmarks.

In 2023 the Board adopted Policy 10.310 which outlines the process to solicit custodial banking services, defines the minimum requirements of a custodian, and designates the custodian as the official "book of record" for BOI holdings.

Other important functions performed by SSB include securities lending and filing domestic securities class action claims on behalf of BOI. SSB investment products are also used to sweep cash into temporary, short-term investments or SSB's in-house liquidity funds.

Only a handful of banks worldwide are eligible for consideration as a custodian given the BOI's assets under management and relatively complex portfolios. BOI's relationship with the custodial bank is hands-on and real time as we have daily contact with various SSB personnel. BOI and relevant SSB personnel meet in Helena at least three times per year for training, updates, and senior management level troubleshooting, should it be necessary.

SSB as well as the State's depository bank, U.S. Bank, are paid by an on-going 'statutory' appropriation. Currently, SSB is paid \$1,429,490 per year for all services under the master contract negotiated in 2021. A separate agreement governs securities lending income which is currently split 15% to SSB and 85% to BOI after expenses.

The relationship is much improved since contract negotiations began due to several changes. First, BOI insisted and SSB agreed to put fees at risk based on performance. Fees at risk are tied to both quantitative items (deadlines and dollars) as well as qualitative items (at the discretion of the Executive Director). Further, we've instituted formal escalation procedures for issues demanding immediate attention or imminent loss of value and a tracking system for BOI staff to input issues encountered and resolutions implemented. Our staff have mapped relationships with their counterparts as well as pertinent escalation and backup staff at SSB. Bob Dollard, Senior Vice President, and I maintain communications throughout any volatile issues. His dedication to our account is extraordinary.

The relationship between BOI and SSB is stronger today than when I last reported to you. I anticipate we will continue to work through challenges and jointly capitalize on opportunities. I will make the Board aware of any issues which warrant staff or Board action.

I am happy to answer any questions.



# MONTANA

## BOARD OF INVESTMENTS

**TO:** Members of the Board

**FROM:** Jon Putnam, Chief Investment Officer  
John Romasko, Director of Fixed Income

**DATE:** February 22, 2023

**RE:** Proposed Investment Policy Changes

We are proposing changes to the Montana State Fund (MSF) asset allocation as shown in the table below. The redline of the proposed Montana State Fund Investment Policy Statement, Policy 40.700 follows this memo.

State Fund Investment Pool Asset Class Allocations		
Asset Class	Range Low	Range High
Public Equity	0	15
Real Estate	0	8
<del>High Yield Non-Core Fixed Income</del>	0	7
Real Assets	0	6
Investment Grade Fixed Income	70	100

- Change the Investment Grade Fixed Income benchmark to the Bloomberg U.S. Aggregate Bond Index.

BOI has worked with MSF over the last 9 months to develop these investment policy recommendations. We reviewed the current investment policy as well as annual peer comparisons. We consulted with RVK who performed a Mean Variance Optimization (MVO) analysis based on the proposed changes.

In addition, we analyzed MSF cash flow requirements and examined the impact to MSF's Risk Based Capital (RBC) ratio. All factors are favorable to implement these changes.

The rationale for each investment policy change is discussed below:

### A. Add Convertible Bonds to the portfolio as part of the Non-Core Fixed Income Asset Class

*Convertible bonds are corporate bonds that contain an option to convert the bond into common stock. Companies issue convertible bonds to capture the tax advantages of issuing debt and to delay dilution of existing shareholders. They are typically issued by high growth companies.*

*Convertible bonds have an attractive risk/reward profile. They offer additional diversification to the portfolio. They receive favorable capital treatment for insurance companies versus public equity. Long-term return expectations exceed high yield.*

*Convertible bonds contain bankruptcy and interest rate risk. In addition, they may be less liquid than investment grade bonds.*

## **B. Add Real Assets as an approved Asset Class for the portfolio**

*Real assets are tangible investments that have an intrinsic value due to the substance or physical properties of the asset. Commodities, infrastructure, and natural resources are all types of real assets. Real assets tend to be more stable but less liquid than financial assets.*

*Real Asset strategies generally offer contractual income with steady cash flow. They can act as an inflation hedge as cash flows are often directly or indirectly tied to inflation. Real Assets are typically uncorrelated with other investments in the portfolio. Long-term return expectations for appropriate MSF strategies are likely in the mid to high single digits.*

*Real Asset strategies typically contain liquidity risk, business & operational risks, and legal risk. BOI's experience with this asset class can help mitigate these risks.*

## **C. Change the Investment Grade Fixed Income Benchmark to the Bloomberg U.S. Aggregate Bond Index from the Bloomberg Intermediate U.S. Aggregate Bond Index**

*The Aggregate Index contains securities with maturities up to 30 years which better matches MSF cash flows. The Aggregate Index provides a larger investment opportunity set and there is potential for slightly higher yield.*

*The Aggregate Index does take on greater interest rate risk than the Intermediate Aggregate Index.*

# MONTANA

## BOARD OF INVESTMENTS

## BOARD ADOPTED POLICY

POLICY NUMBER: 40.700

EFFECTIVE DATE: ~~TBD~~ November 30, 2021

TITLE: Montana State Fund  
Investment Policy Statement

SUPERSEDES: November 30 ~~June 1~~, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: February 22, 2023

### I. Introduction

- A. Montana State Fund (MSF or State Fund) provides Montana employers with an option for workers' compensation and occupational disease insurance coverage and guarantees available coverage for all employers in Montana.
- B. The State Fund Investment Pool (SFIP) seeks to attain investment returns that assist State Fund in meeting liabilities as well as maintaining stable, cost-effective rates for workers' compensation insurance.
  1. Workers' compensation benefit payments typically require immediate medical payments and then ongoing medical and indemnity benefits that can span four decades.
  2. It is important to have a well-diversified, high-quality portfolio that is positioned for the long term.
  3. The SFIP invests directly in the underlying Asset Classes. Each Asset Class has an underlying set of investment objectives and investment guidelines.
  4. This policy is effective upon adoption and supersedes all previous Investment Policy Statement (IPS) related to the investment management of SFIP.

### II. Purpose

- A. The purpose of this policy statement is to provide a broad strategic framework for the SFIP investments under the guidance of the Board.

### III. Legal and Constitutional Authority

- A. Article VIII, Section 13, of the Montana Constitution requires that the Legislature provide for a Unified Investment Program for public funds and State Fund assets.
- B. Section 17-6-201, MCA:
  1. Established the Unified Investment Program.
  2. Created the Board.
  3. Gave the Board sole authority to invest state funds, in accordance with state law and the state constitution.
- C. Section 17-6-201(1), MCA, requires the Board to operate under the "prudent expert principle," defined as:
  1. "Discharging its duties with the care, skill, prudence, and diligence, under the circumstances then prevailing, that a prudent person acting in a like capacity with the same resources and familiar with like matters exercises in the conduct of an enterprise of like character with like aims.
  2. Diversifying the holdings of each fund to minimize the risk of loss and maximize the rate of return, unless under the circumstances it is clearly prudent not to do so.
  3. Discharging its duties solely in the interest of and for the beneficiaries of the funds managed."

Adopted: November 30, 2021

Revised:

Reviewed: February 22, 2023



D. Article VIII, Section 13 (4), of the Montana Constitution requires:

“Investment of state compensation insurance fund assets shall be managed in a fiduciary capacity in the same manner that a prudent expert acting in a fiduciary capacity and familiar with the circumstances would use in the conduct of a private insurance organization. State compensation insurance fund assets may be invested in private corporate capital stock. However, the stock investments shall not exceed twenty-five percent (25%) of the book value of the state compensation insurance fund’s total invested assets.”

E. State Fund investments are subject to Title 33, Chapter 12 of the MCA. The purpose of Chapter 12 (Insurer Investments) “is to protect the interests of insureds by promoting insurer solvency and financial strength.”

F. The Board, as the investment fiduciary, is responsible for establishing the investment parameters for the SFIP.

#### IV. Strategic Investment Objectives

A. The Board’s primary objective is to provide investment income that assists the State Fund in meeting claim benefit liabilities as well as maintaining stable, cost-effective rates for workers’ compensation insurance.

B. The Board’s secondary objective is to achieve long term capital appreciation in excess of inflation.

C. Both objectives must be compatible with the Board’s risk tolerance and prudent investment practices.

D. The Board seeks to maintain a long-term perspective in formulating and implementing investment policies and evaluating investment performance.

#### V. Time Horizon

A. The Board expects to meet or exceed these objectives over a long-term investment horizon.

B. Over shorter periods, the anticipated market volatility, and specific actions, including risk mitigation efforts of the Board, may lead to unfavorable but expected deviation from the objectives.

#### VI. Performance Measurement

A. Success in achieving these objectives will be measured by comparing the risk and return of the SFIP account to the return on the:

1. Bloomberg/~~Barclays~~ U.S. Aggregate Bond Index (fixed income).

2. S&P 500 index (domestic equity).

3. MSCI ACWI Ex U.S. Index (international equity).

4. NCREIF ODCE Index (real estate).

5. Fifty percent (50%) MSCI ACWI Commodity Producers Index / fifty percent (50%) MSCI ACWI Infrastructure Index (real assets).

B. Each weighted proportionately to the portfolio’s holdings.

C. Performance results will be monitored and evaluated quarterly.

D. Success in achieving the objective will be measured on a three (3) year, five (5) year, and ten (10) year annualized basis.

#### VII. Roles and Responsibilities

##### A. Board of Investments

1. The Board is responsible for approving the IPS and has the authority to manage the SFIP as it considers prudent, subject to such limitations as contained in the Policy, the law, and the state Constitution.

2. The Board reviews this document periodically and approves any changes to the policy as needed.

B. As described in the Board's Governance Manual, to execute the day-to-day duties required to carry out the Board's mission, the Board delegates authority to the:

1. Executive Director.
2. Chief Investment Officer (CIO).
3. Other Staff.

C. Executive Director

1. The Executive Director is empowered by the Board to sign any and all documents required to conduct Board business, unless there are specific written policies or instructions from the Board to the contrary.
2. The Executive Director is responsible for the:
  - a) Oversight of the SFIP.
  - b) Establishment of financial reporting procedures.
  - c) Collection and reporting of all income.

D. Chief Investment Officer

1. The CIO is empowered by the Board to serve as the principal staff person responsible for overseeing the investment activities under the Board's jurisdiction in compliance with the Board's policies.
2. The CIO, with the support of other staff, is responsible for recommending investment policy changes for Board approval.

E. Staff

1. The staff is responsible for:
  - a) Managing day-to-day operations and delegating work to external resources as appropriate.
  - b) Monitoring allocations and overseeing all investment manager due diligence activities and recommending changes to the CIO.
  - c) Monitoring and reporting to the Board the performance of each asset class and the individual managers' performance.
  - d) Informing the Board of any new managers or terminations.
  - e) Reporting any deviations from the IPS to the Board.
  - f) Coordinating with the State Fund to provide financial data necessary for their quarterly reporting and calendar year closing cycle.

F. Investment Consultant

1. The investment consultant assists the CIO and Staff with policy recommendations and provides advice to the Board.
2. The investment consultant shall provide assistance to staff as requested in conjunction with the management of the SFIP.

G. External Managers

1. Managers are responsible for all aspects of portfolio management as set forth in the contract specific to each manager.
2. Managers must communicate with staff as needed, regarding investment strategies and results.
3. Managers must also cooperate fully with:
  - a) Staff regarding administrative, accounting, and reconciliation issues.

- b) Any requests from the investment consultant and the mastercustodian.

#### VIII. Strategic Asset Allocation

- A. The current asset allocation ranges for the SFIP are in Policy 40.701.
- B. The asset allocation ranges are subject to change as modifications are adopted by the Board, at which time Policy 40.701 of the Governance Manual will be revised to reflect these changes.

#### IX. Rebalancing

- A. The actual asset allocation mix may deviate from time to time from the approved asset allocation ranges due to financial market performance, cash flows, and manager performance.
- B. Material deviations from the asset allocation ranges can alter the expected return and risk of the separate accounts.
- C. Rebalancing to remain within the Board-approved allocation ranges is delegated to staff in consultation with the CIO and the Executive Director.
- D. Any necessary rebalancing will be made in a timely manner and will take into consideration associated costs and current market conditions.

#### X. Risk Management

##### A. Evaluation of Investment Managers

- 1. The Investment Manager Evaluation Policy is a distinct policy that is regularly reviewed and updated separate from the IPS because staff utilizes the Investment Manager Evaluation Policy to oversee and manage other assets in addition to the SFIP assets.

##### B. Liquidity

- 1. The total liquidity needs for the SFIP are generally low and participant capital is not expected to change dramatically on short notice.
- 2. Illiquidity risk still needs to be monitored and managed by staff on a regular basis to ensure that assets are not required to be sold too quickly, or at an unfavorable time, and potentially at a discount to fair value to meet the cash needs of State Fund.
  - a) A significant percentage of the investment in Core Real Estate, ~~and High Yield Non-Core Fixed Income and Real Assets Classes are~~ considered illiquid.
  - b) Due to the limited liquidity of these assets, it will typically be impractical to fund participant cash needs or correct deviations from policy ranges through the purchase or sale of these assets.
- 3. The investments held in Equities and Investment Grade Asset Classes are categorized as publicly traded securities. In “normal market” conditions many of the underlying assets can be liquidated in a relatively short period to accommodate both expected and unexpected withdrawals as well as any repositioning of the asset allocation to stay within approved ranges.

##### C. Monitoring/Reporting - Transparency

- 1. Managers shall submit periodic reports to facilitate Staff's monitoring of the Managers' conformance to investment restrictions and performance objectives.
- 2. Staff shall provide regular reporting to the Board regarding the asset allocation and performance of the SFIP to confirm these items are known and adhere to all IPS requirements and expectations.

##### D. Leverage

- 1. Leverage is a significant risk factor.
- 2. Investment managers may utilize leverage only when permitted in the manager's investment guidelines approved by Staff.
- 3. Staff shall monitor the use of leverage and its impact on risk and return.

4. The use of derivative securities can generate additional leverage even if the derivative is being used to reduce the risk in other investments.
5. Investment managers may only use derivatives when permitted in the manager's investment guidelines approved by Staff.

#### E. Cash Investments

1. Cash investments held within the SFIP entail an element of credit risk.
2. Only approved cash investment vehicles are permitted. These include:
  - a) STIP
  - b) Any cash vehicle at the Custodial Bank
  - c) Any SEC-registered money market fund employed by an external asset manager which specifically address credit risk in their respective investment guidelines.

#### XI. Securities Lending

- A. Section 17-1-113, MCA authorizes the Board to lend securities held by the state.
- B. The Board may lend its publicly traded securities through an agent, to other market participants in return for compensation.
- C. Currently, through an explicit contract, the state's Custodial Bank, manages the state's securities lending program.
- D. The Board seeks to assess counterparty and reinvestment risk, associated with each aspect of its securities lending program.
- E. The Board requires borrowers to maintain collateral at one hundred two percent (102%) for domestic securities and one hundred five percent (105%) for international securities.
  1. To ensure that the collateral ratio is maintained, securities on loan are marked to market daily and the borrower must provide additional collateral if the value of the collateral falls below the agreed-upon ratio of over-collateralization.
  2. In addition to the strict collateral requirements imposed by the Board, the credit quality of approved borrowers is monitored continuously by the contractor.
- F. Staff may restrict a security or borrowing counterparty from the lending program upon notification to the Custodial Bank.
- G. Staff will monitor the securities lending program and will periodically report to the Board on the status of the program.
- H. The Board's participation in securities lending may change over time given account activity, market conditions and the agent agreement.

#### XII. Exercise of Shareholder Rights

- A. The Board recognizes that publicly traded securities and other assets of the SFIP include certain ancillary rights:
  1. The right to vote on shareholder resolutions at companies' annual shareholders' meetings.
  2. The right to assert claims in securities class action lawsuits or other litigation.
- B. The Board will prudently manage these assets for the exclusive purpose of enhancing the value of the SFIP through such means as:
  1. Adopting and implementing a proxy voting policy.
  2. Undertaking productive, cost-effective action to exercise its rights as shareholders or claimants in litigation.

### C. Proxy Voting

1. Active voting of proxies is an important part of the Board's investment program.
2. ~~The Board will designate an agent to vote proxies held in the assigned account in the interest of MSF and its policy holders. Under the contractual arrangements between the Board and its investment managers, the responsibility for voting proxies on the investments is delegated to the managers.~~
3. ~~Managers are contractually required to establish a proxy voting program in coordination with Board Staff and are required to vote proxies, excluding shares on loan on record date unless recalled under the Board's securities lending program, in the interest of the Plans' beneficiaries.~~
- 4.3. Records of proxy votes shall be maintained by the Board's agent Managers, and/or its third-party designee, and submitted to Staff ~~and/or an external service provider~~ annually.
- 5.4. Staff will monitor the proxy voting practices of the Board's ~~agent~~ external investment managers.
0. ~~External service providers may be retained by either the Board or the Managers to assist in monitoring efforts.~~
0. ~~This monitoring will be coordinated with each manager to reasonably assure the Staff that Managers are fulfilling their fiduciary responsibilities with respect to proxy voting.~~

### F.D. Class Action Litigation

1. Claims under state and federal securities laws arising out of losses on securities under the Board's management are assets subject to the Board's fiduciary duty of prudent management.
2. The Board shall take reasonable, cost-effective steps to identify, pursue and collect upon claims under securities laws for losses suffered by the Board on its investment.
3. Accordingly, the Board maintains a detailed litigation policy, including process steps, outlined in Policy 10.250 of the Governance Manual.

### XIII. Investment Policy Statement Review

- A. Per the Board's Governance Policy, "the Board shall create, maintain, and revise as necessary Investment Policy Statements (IPS) for each separate account it manages. The IPS shall cite the law establishing the account if such law exists, the permissible investments authorized by law, and establish an investment range for each of the permissible investments. The Board shall review such policies at least annually or more frequently at the request of Board staff. IPS may only be revised in a public meeting. All IPS shall be posted on the Board's website for review by the public.

Authority: Montana Constitution, Article VIII, Section 13  
 Section 2-15-1808, MCA  
 Section 17-1-113, MCA  
 Sections 17-6-201 and -202, MCA  
 Section 33-1-115, MCA  
 Section 39-71-2320, MCA

---

Adopted: November 30, 2021

Revised:

Reviewed: February 22, 2023

# MONTANA

## BOARD OF INVESTMENTS

## BOARD ADOPTED POLICY

POLICY NUMBER: 40.701

EFFECTIVE DATE: ~~TBD~~ November 30, 2021TITLE: State Fund Investment Pool  
Allocation RangesSUPERSEDES: ~~November 30~~ June 1, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: February 22, 2023

## I. Appendix I: State Fund Investment Pool Allocation Ranges

## A. Permitted Ranges:

State Fund Investment Pool Asset Class Allocations		
Asset Class	Range Low	Range High
Public Equity	0	15
Real Estate	0	8
<del>High Yield Non-Core Fixed Income</del>	0	7
<del>Real Assets</del>	<u>0</u>	<u>6</u>
Investment Grade Fixed Income	70	100

Authority: Montana Constitution, Article VIII, Section 13  
 Section 2-15-1808, MCA  
 Section 17-1-113, MCA  
 Sections 17-6-201 and -202, MCA  
 Section 33-1-115, MCA  
 Section 39-71-2320, MCA

Adopted: November 30, 2021

Revised:

Reviewed: February 22, 2023

# MONTANA

## BOARD OF INVESTMENTS

### BOARD ADOPTED POLICY

---

POLICY NUMBER: 40.702

EFFECTIVE DATE: November 30, 2021

TITLE: Investment Objectives and Guidelines  
Public Equity Asset Class

SUPERSEDES: June 1, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: [February 22, 2023](#)

---

#### I. Investment Objectives and Guidelines

- A. Investment Objectives and Guidelines for the Public Equity Asset Class are established in Policy 40.701.
- B. The asset class allocations established by the Board are effective upon adoption and supersedes all previous Investment Objectives and Guidelines for Equities.

#### II. Statement of Purpose

- A. The purpose of these objectives and guidelines is to:
  - 1. Establish the investment objectives and performance standards of the Public Equity Asset Class.
  - 2. Provide diversified exposure to the equity market in a prudent and cost-effective manner.

#### III. Investment Objective

- A. The objective of the Public Equity Asset Class is to attain the highest possible total return within the parameters of the Investment Guidelines set forth below.
- B. Success in achieving this objective will be measured by comparing the risk and after-fee return of the Equity Asset Class to the S&P 500 Index and ACWI ex. U.S. Index (the Benchmark) each proportionately weighted to the portfolio's domestic and international equity holdings. Performance results will be monitored and evaluated quarterly. However, the success in achieving the objective will be measured on a three (3) year, five (5) year, and ten (10) year annualized basis.

#### IV. Investment Guidelines

- A. Staff will have full discretion to manage this Asset Class consistent with the investment guidelines stated below. Compliance with the following guidelines for permitted investments and other restrictions is the sole responsibility of the Staff. Any exceptions or compliance violations are to be reported to the Board at the next scheduled quarterly Board meeting. State Fund will be notified of any exceptions or compliance violations within five (5) days.
- B. Most of the Public Equity Asset Class investments will be managed by external investment managers.
- C. It is expected that the Public Equity Asset Class shall invest in public market investments that provide liquidity and meaningful transparency to portfolio characteristics and risk exposures.
- D. Permitted Investments
  - 1. The Public Equity Asset Class may only invest in the following:

- a) Public equity securities and derivatives held in separate accounts, commingled funds, limited partnerships, or limited liability companies managed by external investment managers and governed by their respective investment management contracts and investment guidelines.
- b) Exchange-Traded Funds (ETFs) based on an equity index that is approved by the CIO and purchased and monitored by Staff.

E. Other Restrictions

1. A maximum of fifteen percent (15%) of the market value of the SFIP will be invested in public equities.
  2. A maximum of four percent (4%) of the market value of the SFIP will be invested in international equities.
- F. If at any time, due to market fluctuations or any other circumstances, any of the guidelines are not maintained, Staff will use its best efforts to conform to these limits in a timely manner, while considering current market conditions and the associated costs of rebalancing. At the Board's next regularly scheduled quarterly meeting, the CIO shall inform the Board of any cases that the Public Equity Asset Class allocations were outside of the limits and either inform the Board of the actions that were taken to return the Public Equity Asset Class back within guidelines or a plan to do so. State Fund will be notified of any exceptions or compliance violations within five (5) days.

Authority: Montana Constitution, Article VIII, Section 13  
Section 2-15-1808, MCA  
Section 17-1-113, MCA  
Sections 17-6-201 through 17-6-203, MCA  
Section 33-1-115, MCA  
Section 39-71-2320, MCA



# MONTANA

## BOARD OF INVESTMENTS

### BOARD ADOPTED POLICY

---

POLICY NUMBER: 40.703

EFFECTIVE DATE: November 30, 2021

TITLE: Investment Objectives and Guidelines  
Real Estate Asset Class

SUPERSEDES: June 1, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: [February 22, 2023](#)

---

#### I. Investment Objectives and Guidelines

- A. Investment Objectives and Guidelines for the Real Estate Asset Class are established in Policy 40.701.
- B. The asset class allocations established by the Board are effective upon adoption and supersedes all previous Investment Objectives and Guidelines for Core Real Estate.

#### II. Statement of Purpose

- A. The purpose of these objectives and guidelines is to:
  - 1. Establish the investment objectives and performance standards of the Real Estate Asset Class.
  - 2. Provide diversified exposure to Real Estate in a prudent and cost-effective manner.

#### III. Investment Objective

- A. The objective of the Real Estate Asset Class is to attain the highest possible return within the parameters of the Investment Guidelines set forth below.
- B. Success in achieving this objective will be measured by comparing the risk and after-fee return of the Real Estate Asset Class to the NCREIF ODCE Index (the Benchmark). Performance results will be monitored and evaluated quarterly. However, the success in achieving the objective will be measured on a five (5) year and ten (10) year annualized basis.

#### IV. Investment Guidelines

- A. Staff will have full discretion to manage the Real Estate Asset Class consistent with the investment guidelines stated below. Compliance with the following guidelines for permitted investments and other restrictions is the sole responsibility of the Staff. Any exceptions or compliance violations are to be reported to the Board at the next scheduled quarterly Board meeting. State Fund will be notified of any exceptions or compliance violations within five (5) days.
- B. Most of the Real Estate Asset Class investments will be managed by external investment managers.
- C. Real Estate is classified as "Core" if it is an investment in operating, substantially leased, and positively cash flowing institutional quality real estate across property types, geographies, and markets.
- D. Permitted Investments
  - 1. The Real Estate Asset Class may only invest in the following:

- a) Separate Accounts, Open-Ended Funds, Closed-Ended Funds, ETFs, Real Estate Investment Trusts (REITs), or Master Limited Partnerships (MLPs) managing publicly traded Real Estate, where the investments are approved by the CIO and purchased and monitored by Staff.
- b) Private Investment partnership interests. These private partnerships may be direct limited partnerships, limited liability companies, or vehicles that primarily invest in partnerships, including Fund-of-Funds and Secondary Funds.
- c) Individual public or private securities received as distributions from funds are also permitted to be held in the Real Estate Asset Class.

E. Other Restrictions

1. The following restrictions are preferred structures and limitations, recognizing precision relative to current market value or net asset value may not be feasible due to their illiquid nature:

- a) No less than seventy-five percent (75%) of the aggregate of the Core Real Estate Asset Class net asset value plus capital shall be invested in “Core” Real Estate.
- b) Separate Accounts, Open-Ended Funds, Closed-Ended Funds, ETFs, or MLPs managing publicly traded Real Estate may not exceed twenty-five percent (25%) of the aggregate of the Real Estate Asset Class net asset value plus uncalled committed capital.
- c) The Core Real Estate Asset Class market value invested in any single mandate/portfolio shall be no greater than five percent (5%) of the SFIP Assets.
- d) Individual public securities received as distributions will be liquidated over a reasonable time period dependent on market conditions.
- e) Leverage will be monitored on an individual fund level. Total Real Estate Asset Class leverage shall not exceed fifty percent (50%).

F. If at any time, due to market fluctuations or any other circumstances, any of the guidelines are not maintained, Staff will use its best efforts to conform to these limits in a timely manner, while considering current market conditions and the associated costs of rebalancing. At the Board’s next regularly scheduled quarterly meeting, the CIO shall inform the Board of any cases that the Core Real Estate Asset Class allocations were outside of the limits and either inform the Board of the actions that were taken to return the Core Real Estate Asset Class back within guidelines or a plan to do so. State Fund will be notified of any exceptions or compliance violations within five (5) days.

G. While no formal diversification ranges are set forth for property type diversification or regional diversification within the United States, it is expected that the Core Real Estate Asset Class shall remain diversified across these factors. These and other factors shall be monitored and reported to the Board at least annually.

Authority: Montana Constitution, Article VIII, Section 13  
 Section 2-15-1808, MCA  
 Section 17-1-113, MCA  
 Sections 17-6-201 through 17-6-203, MCA  
 Section 33-1-115, MCA  
 Section 39-71-2320, MCA

# MONTANA

## BOARD OF INVESTMENTS

## BOARD ADOPTED POLICY

POLICY NUMBER: 40.704

EFFECTIVE DATE: November 30, 2021

TITLE: Investment Objectives and Guidelines ~~High-Yield Non-Core Fixed Income~~ Asset Class  
 SUPERSEDES: ~~June 1~~ November 30, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: February 22, 2023

### I. Investment Objectives and Guidelines

- A. Investment Objectives and Guidelines for the High-Yield Non-Core Fixed Income Asset Class are established in Policy 40.701.
- B. The asset class allocations established by the Board are effective upon adoption and supersedes all previous Investment Objectives and Guidelines for Non-Core Fixed Income~~High-Yield~~.

### II. Statement of Purpose

- A. The purpose of these objectives and guidelines is to:
  1. Establish the investment objectives and performance standards of the Non-Core Fixed Income~~High-Yield~~ Asset Class.
  2. Provide diversified exposure to the Non-Core Fixed Income~~High-Yield~~ markets in a prudent and cost-effective manner.

### III. Investment Objective

- A. The objective of the Non-Core Fixed Income ~~High-Yield~~ Asset Class is to attain the highest possible total return within the parameters of the Investment Guidelines set forth below.
- B. Success in achieving this objective will be measured by comparing the risk and after-fee return of the Non-Core Fixed Income~~High-Yield~~ Asset Class to the Bloomberg ~~Barclays~~ US High Yield - 2% Issuer Cap Index (the Benchmark). Performance results will be monitored and evaluated quarterly. However, the success in achieving the objective will be measured on a three (3) year, five (5) year, and ten (10) year annualized basis.

### IV. Investment Guidelines

- A. Staff will have full discretion to manage the Non-Core Fixed Income~~High-Yield~~ Asset Class consistent with the investment guidelines stated below. Non-Core Fixed Income is defined as strategies primarily invested in High Yield Corporate Debt, Convertible Debt and Preferred Securities. Compliance with the following guidelines for permitted investments and other restrictions is the sole responsibility of the Staff. Any exceptions or compliance violations are to be reported to the Board at the next scheduled quarterly Board meeting. State Fund will be notified of any exceptions or compliance violations within five (5) days.
- B. Permitted Investments
  1. The Non-Core Fixed Income ~~High-Yield~~ Asset Class may only invest in securities and derivatives held in separate accounts, commingled funds, limited partnerships, or limited liability companies managed by external investment managers and governed by their respective investment management contracts and investment guidelines.

Adopted: November 30, 2021

Revised:

Reviewed: February 22, 2023

C. Other restrictions include a maximum of ten percent (10%) of the market value of the Non-Core Fixed Income High Yield Asset Class held in Non-U.S. securities if they are denominated in a foreign currency.

~~0. The average duration of the High Yield Asset Class will be maintained in a range of + or - twenty-five percent (25%) of the index duration.~~

~~0. A maximum of twenty-five percent (25%) of the market value of the High Yield Asset Class shall be in securities rated more than six (6) notches below investment grade as defined by the average rating of the NRSRO.~~

F.D. If at any time, due to market fluctuations or any other circumstances, any of the guidelines are not maintained, Staff will use its best efforts to conform to these limits in a timely manner, while considering current market conditions and the associated costs of rebalancing. At the Board's next regularly scheduled quarterly meeting, the CIO shall inform the Board of any cases that the Non-Core Fixed Income High Yield Asset Class allocations were outside of the limits and either inform the Board of the actions that were taken to return the Non-Core Fixed Income High Yield Asset Class back within guidelines or a plan to do so. State Fund will be notified of any exceptions or compliance violations within five (5) days.

Authority: Montana Constitution, Article VIII, Section 13  
 Section 2-15-1808, MCA  
 Section 17-1-113, MCA  
 Sections 17-6-201 through 17-6-203, MCA  
 Section 33-1-115, MCA  
 Section 39-71-2320, MCA

# MONTANA

## BOARD OF INVESTMENTS

### BOARD ADOPTED POLICY

POLICY NUMBER: 40.705

EFFECTIVE DATE: TBD

TITLE: Investment Objectives and Guidelines  
Investment Grade Fixed Income  
Asset Class

SUPERSEDES: ~~November 30~~~~June 1~~, 2021

BOARD ADOPTION: November 30, 2021

REVIEWED: February 22, 2023

#### I. Investment Objectives and Guidelines

- A. Investment Objectives and Guidelines for the Investment Grade Fixed Income Asset Class are established in Policy 40.701.
- B. The asset class allocations established by the Board are effective upon adoption and supersedes all previous Investment Objectives and Guidelines for Investment Grade Fixed Income Asset Class.

#### II. Statement of Purpose

- A. The purpose of these objectives and guidelines is to:
  1. Establish the investment objectives and performance standards of the Investment Grade Fixed Income Asset Class.
  2. Provide diversified exposure to the Investment Grade Fixed Income markets in a prudent and cost-effective manner.

#### III. Investment Objective

- A. The objective of the Investment Grade Fixed Income Asset Class is to attain the highest possible total return within the parameters of the Investment Guidelines set forth below.
- B. Success in achieving this objective will be measured by comparing the risk and after-fee return of Investment Grade Fixed Income Asset Class to the Bloomberg ~~Barclays Intermediate~~ US Aggregate Bond Index (the Benchmark). Performance results will be monitored and evaluated quarterly. However, the success in achieving the objective will be measured on a three (3) year, five (5) year, and ten (10) year annualized basis.

#### IV. Investment Guidelines

- A. Staff will have full discretion to manage the Investment Grade Fixed Income Asset Class consistent with the investment guidelines stated below. Compliance with the following guidelines for permitted investments and other restrictions is the sole responsibility of the Staff. Any exceptions or compliance violations are to be reported to the Board at the next scheduled quarterly Board meeting. State Fund will be notified of any exceptions or compliance violations within five (5) days.
- B. Permitted Investments
  1. The Investment Grade Fixed Income Asset Class may only invest in the following:
    - a) Debt obligations of the U.S. Government, including its agencies and instrumentalities.
    - b) Dollar denominated debt obligations of Quasi and Foreign Government entities.
    - c) Dollar denominated debt obligations of domestic and foreign corporations.
    - d) Dollar denominated securitized assets, including U.S. Agency mortgage-backed securities

Adopted: November 30, 2021

Revised:

Reviewed: February 22, 2023

(MBS), U.S. Agency collateralized mortgage obligations (CMOs), commercial mortgage-backed securities (CMBS), and asset backed securities (ABS).

- e) Cash – either an investment in the STIP, a vehicle available through the Custodian, or an SEC registered money market fund that is considered a “US Treasury” or “US Government” money market fund per the SEC regulations.

### C. Other Restrictions

1. A minimum of twenty percent (20%) of the market value must be held in U.S. Treasury/Agency securities.
2. A maximum of ten percent (10%) of the market value may be held in dollar denominated quasi and foreign government securities.
  - a) Quasi and foreign government securities must be rated a minimum of the seventh (7<sup>th</sup>) highest rating by any NRSRO at the time of purchase.
3. A maximum of fifty percent (50%) of the market value may be held in corporate bonds.
4. A maximum of fifty percent (50%) of the market value may be held in U.S. Agency mortgage-backed securities (MBS & CMO).
5. A maximum of five percent (5%) of the market value may be held in ABS.
6. A maximum of ten percent (10%) of the market value may be held in CMBS.
7. The average duration will be maintained in a range of + or – twenty percent (20%) of the index duration.
8. A maximum of ten percent (10%) of the Net Asset Value of any internally managed portfolio may be held in non-agency mortgage-backed securities (RMBS).
- ~~9. The average life for individual fixed income securities will be less than twelve (12) years.~~
- ~~10-9.~~ A maximum of three percent (3%) of the market value may be held in a single parent company issuer, foreign/quasi government issuer or ABS specific pool at the time of purchase; there is no limit on U.S. Government/Agency securities. Exposure to a single parent company issuer, foreign/quasi government issuer or ABS specific pool will be limited to four percent (4%) of the market value regardless of when securities were purchased.
- ~~11-10.~~ Securities must be rated investment grade by at least two (2) NRSROs, with the exception of securities issued or guaranteed by agencies or instrumentalities of the U.S. Government. In the case of split-rated securities, the lower rating is used.
- ~~12-11.~~ Securities that drop below investment grade as defined above may be held to maturity. However, the Investment Grade Fixed Income Asset Class may not hold more than five percent (5%) below investment grade.
- ~~13-12.~~ Fixed income securities rated lower than the seventh (7<sup>th</sup>) highest rating by any NRSRO are limited to thirty percent (30%) of the market value of the Investment Grade Fixed Income Asset Class. In the case of split rated securities, the lowest rating will apply.
- ~~14-13.~~ Securitized assets must be rated a minimum of the fourth (4<sup>th</sup>) highest rating by any NRSRO at the time of purchase. Securities that drop below the fourth (4<sup>th</sup>) highest rating by any NRSRO may be held to maturity. However, the Investment Grade Fixed Income Asset Class may not hold more than four percent (4%) in these securities.
- ~~15-14.~~ A minimum of one percent (1%) of the Investment Grade Fixed Income Asset Class will be held in cash investments.
- ~~16-15.~~ The use of derivatives is prohibited.
- ~~17-16.~~ The use of leverage is prohibited.

- D. If at any time, due to market fluctuations or any other circumstances, any of the guidelines are not maintained, Staff will use its best efforts to conform to these limits in a timely manner, while considering current market conditions and the associated costs of rebalancing. At the Board's next regularly scheduled quarterly meeting, the CIO shall inform the Board of any cases that the Investment Grade Fixed Income Asset Class allocations were outside of the limits and either inform the Board of the actions that were taken to return the Investment Grade Fixed Income Asset Class back within guidelines or a plan to do so. State Fund will be notified of any exceptions or compliance violations within five (5) days.

Authority: Montana Constitution, Article VIII, Section 13  
Section 2-15-1808, MCA  
Section 17-1-113, MCA  
Sections 17-6-201 through 17-6-203, MCA  
Section 33-1-115, MCA  
Section 39-71-2320, MCA

# MONTANA

## BOARD OF INVESTMENTS

### BOARD ADOPTED POLICY

---

POLICY NUMBER: 40.706

EFFECTIVE DATE: TBD

TITLE: Investment Objectives and Guidelines  
Real Assets Asset Class

SUPERSEDES: NEW

BOARD ADOPTION: TBD

REVIEWED: February 22, 2023

---

#### I. Investment Objectives and Guidelines

- A. Investment Objectives and Guidelines for the Real Assets Asset Class are established in Policy 40.701.
- B. The asset class allocations established by the Board are effective upon adoption and supersedes all previous Investment Objectives and Guidelines for Real Assets.

#### II. Statement of Purpose

- A. The purpose of these objectives and guidelines is to:
  - 1. Establish the investment objectives and performance standards of the Real Assets Asset Class.
  - 2. Provide diversified exposure to the Real Assets markets in a prudent and cost-effective manner.

#### III. Investment Objective

- A. The objective of the Real Assets Asset Class is to attain the highest possible return within the parameters of the Investment Guidelines set forth below.
- B. There is no generally accepted performance comparisons benchmark index for private partnership investments in Real Assets. Characteristically, private partnership investments are impacted by the “j-curve” effect, in which fees and transaction costs create negative returns during the initial investment years before distributions are realized. Private partnership investments usually require a long-time horizon to realize the value provided by the creation or enhancement of private companies.
  - 1. The long-term performance objective for the Real Assets Asset Class is the achievement of net returns (after management fees and general partner’s carried interest) above a benchmark reflecting public equity Real Assets market returns.
  - 2. Success in achieving this objective will be measured by comparing the long-term net return of the Real Assets Asset Class to 50% MSCI ACWI Commodity Producers Index, and 50% MSCI ACWI Infrastructure Index (the Benchmark) on an annualized basis. Performance results will be monitored quarterly. However, the success in achieving the objective will be measured on a five (5) year and ten (10) year annualized basis.

#### IV. Investment Guidelines

- A. Staff will have full discretion to manage the Real Assets Asset Class consistent with the investment guidelines stated below. Compliance with the following guidelines for permitted investments and other restrictions is the sole responsibility of the Staff. Any exceptions or compliance violations are to be reported to the Board at the next scheduled quarterly Board meeting.
- B. Most of the Real Assets Asset Class investments will be managed by external investment managers via private investment partnerships in which the Board will have a limited partnership interest.

---

Adopted:

Revised:

Reviewed: February 22, 2023



### C. Permitted Investments

1. The Real Assets Asset Class (for the purpose of these guidelines, “Real Assets” includes investments in infrastructure, timber, energy, agriculture, and other commodities) may invest only in the following:
  - a) Private investment partnership interest in Real Assets. These private investment partnerships may be direct limited partnerships, limited liability companies, or vehicles that primarily invest in partnerships, including fund-of-funds and secondary funds.
  - b) The Real Assets Asset Class may co-invest with private investment managers in transactions that are suitable for inclusion into a Real Assets private investment partnership.
  - c) Individual securities received as distributions from funds.
  - d) Separately managed accounts, open-ended funds or closed-ended funds, managing Real Assets related investments, where the investments are approved by the CIO and purchased and monitored by Staff.

### D. Other Restrictions

1. The State Fund Investment Pool assets as a percentage of Net Asset Value invested in a single investment within Real Assets Asset Class shall be no greater than three percent (3%).
  2. No more than forty percent (40%) of the aggregate of the Real Assets Asset Class Net Asset Value should be considered “Non-U.S.” exposure based on the primary objective of the fund, partnership, separately managed account, or index.
  3. No more than ten percent (10%), of the aggregate of the Real Assets Asset Class Net Asset Value shall be invested in direct co-investments.
  4. Individual securities received as distribution will be liquidated over a reasonable time dependent on market conditions.
  5. While no formal diversification ranges are set forth for Real Assets sub-asset classes, it is expected that the Real Assets portfolio will be diversified over time.
- E. If at any time, due to market fluctuations or any other circumstances, any of the guidelines are not maintained, Staff will use its best efforts to conform to these limits in a timely manner, while considering current market conditions and the associated costs of rebalancing. At the Board’s next regularly scheduled quarterly meeting, the CIO shall inform the Board of any cases that the Real Assets Asset Class allocations were outside of the limits and either inform the Board of the actions that were taken to return the Real Assets Asset Class back within guidelines or a plan to do so. State Fund will be notified of any exceptions or compliance violations within five (5) days.

Authority: Montana Constitution, Article VIII, Section 13  
 Section 2-15-1808, MCA  
 Section 17-1-113, MCA  
 Sections 17-6-201 through 17-6-203, MCA  
 Section 33-1-115, MCA  
 Section 39-71-2320, MCA

---

Adopted:

Revised:

Reviewed: February 22, 2023

Page 2 of 2



# CASH MANAGEMENT OF STATE MONIES

Presented by:

Polly Boutin, Associate Financial Manager  
John Carpenter, CPA, Accounting Bureau Manager

Date: February 22, 2023

# Cash Management

## Background

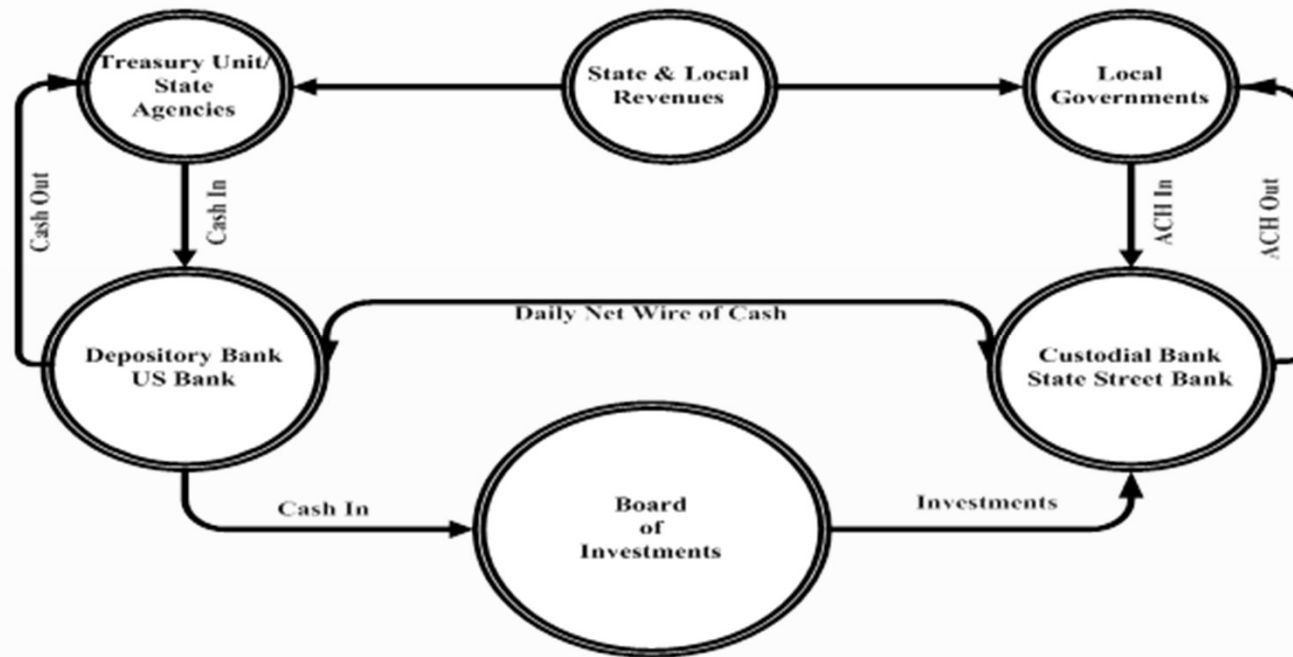
- Unified Investment Program
  - The Montana Constitution requires that the Legislature provide for a Unified Investment Program for public funds. Section 17-6-201, MCA, established the Unified Investment Program, created the Montana Board of Investments (the “Board”), and gave the Board sole authority to invest state funds in accordance with state law and the state constitution.
  - With only a few exceptions, this program mandates that all state money, regardless of source or use, flows into or out of the Board of Investments.
  - The yearly velocity is in the billions of dollars, the number of transactions is in the tens of thousands.

# Cash Management

## Daily Cash Flow

### Key Entities

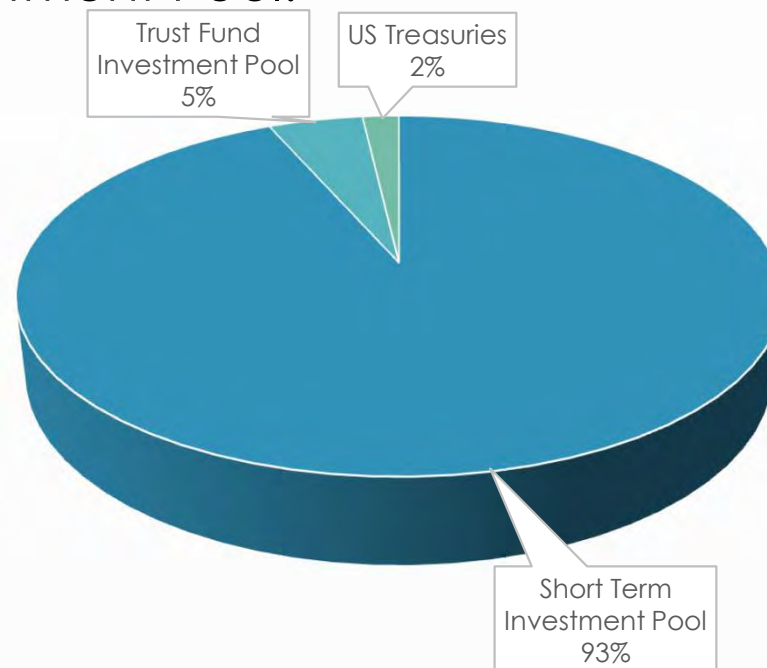
- Montana Board of Investments (MBOI)
- Montana Department of Administration (DOA)
- State's depository bank (US Bank)
- State's custodial bank (State Street Bank)



# Cash Management

## Treasurer's Fund

- The Treasurer's Fund Balance is comprised of cash invested from the General Fund as well as all State Agencies not otherwise permitted a separate STIP account.
- Allowable investments include:
  - STIP and any cash vehicle at custodial bank
  - U.S. Treasuries (3-year maximum)
  - Agency discount notes (3-year maximum)
  - Trust Funds Investment Pool.



# Cash Management

## Treasurer's Fund Constraints

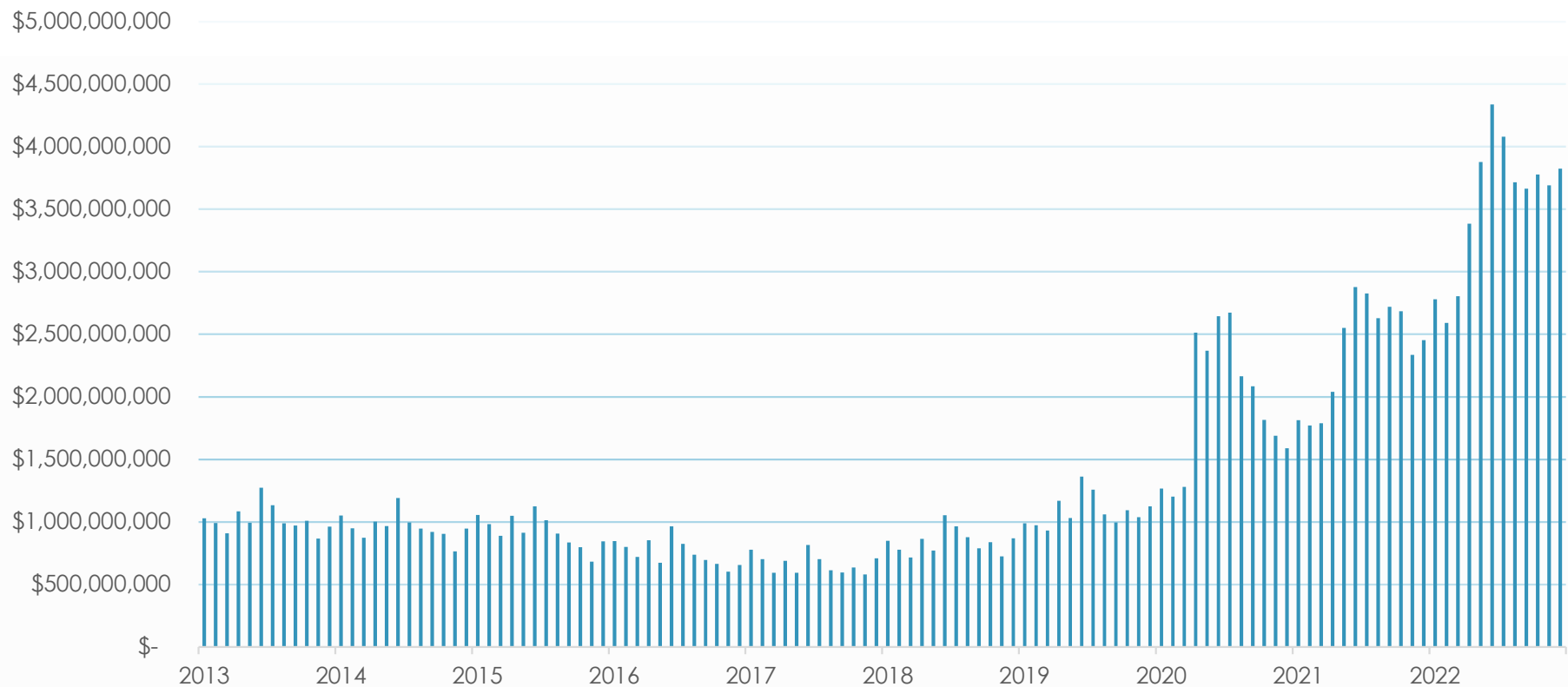
- The maximum market value of longer securities is equal to 50% of the lowest 12-month average balance over the past ten years.
- If threshold is exceeded, no further purchases would be allowed.
- Prudent sales would be executed in the event the securities portfolio exceeded 60%.
- Current limit \$330 million, current long-term exposure \$251 million as of December 31, 2022.

# Cash Management

## Treasurer's Fund Assets

- Assets fluctuate significantly, seasonally, and with the condition of State finances.

Treasurer's Fund Month End Market Value





# Cash Management

## Short Term Investment Pool

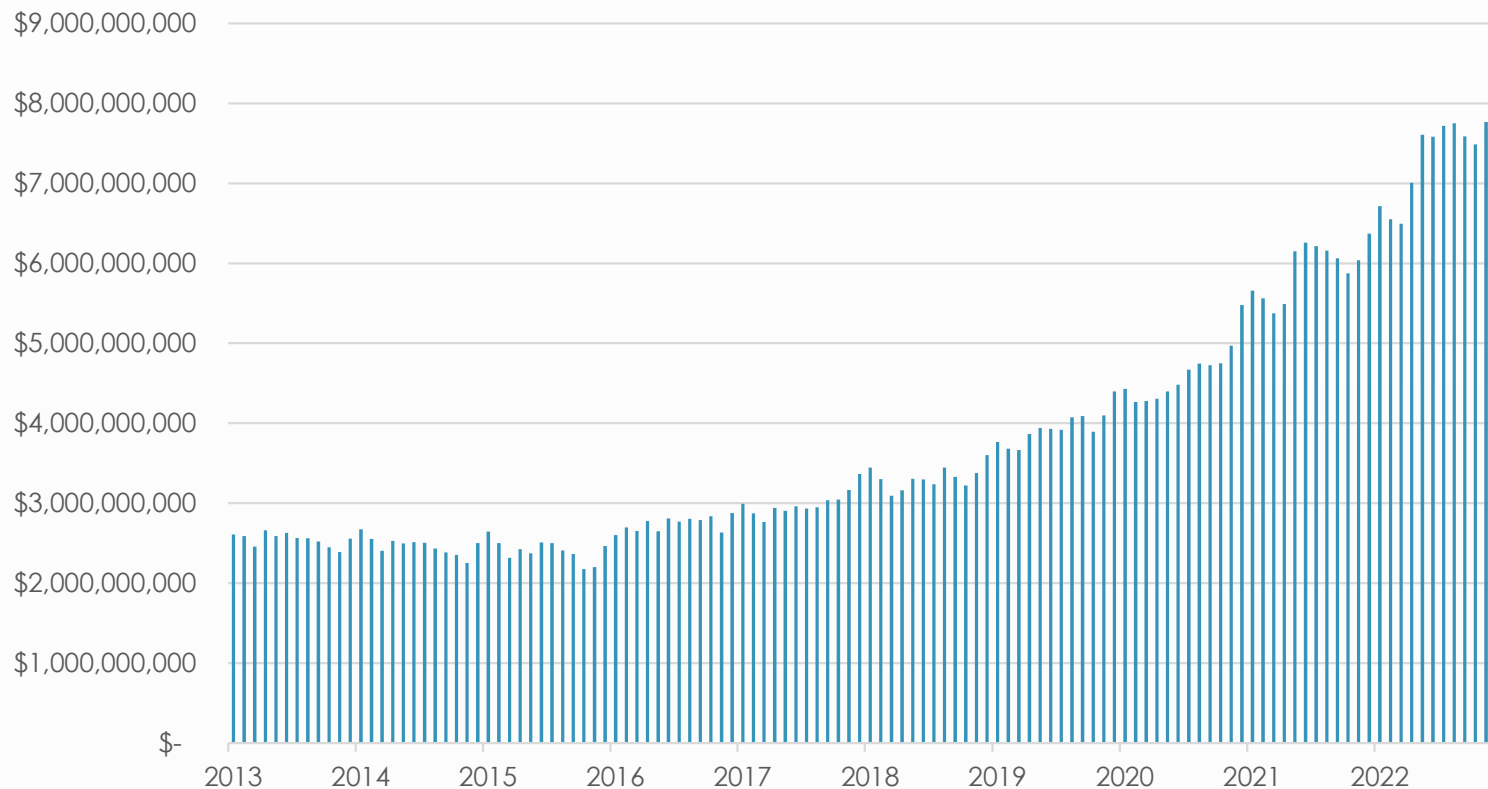
- Our focus for the Short Term Investment Pool (STIP) is safety first, liquidity second, and income third.
- All transactions are executed with the strategic objective to achieve a high level of investment income compatible with:
  - Preservation of principal
  - Providing STIP participants with one-day liquidity
  - Prudent investment practices.
- Risk mitigation and liquidity are key and interrelated concepts for STIP.
- Cash management is closely related to managing STIP.

# Cash Management

## Short Term Investment Pool

- The Short Term Investment Pool (STIP), Treasurer's Fund and the STIP Reserve had **3,520 transactions** totaling in excess of **\$120.2 billion** for calendar year 2022.

STIP Month End Market Value

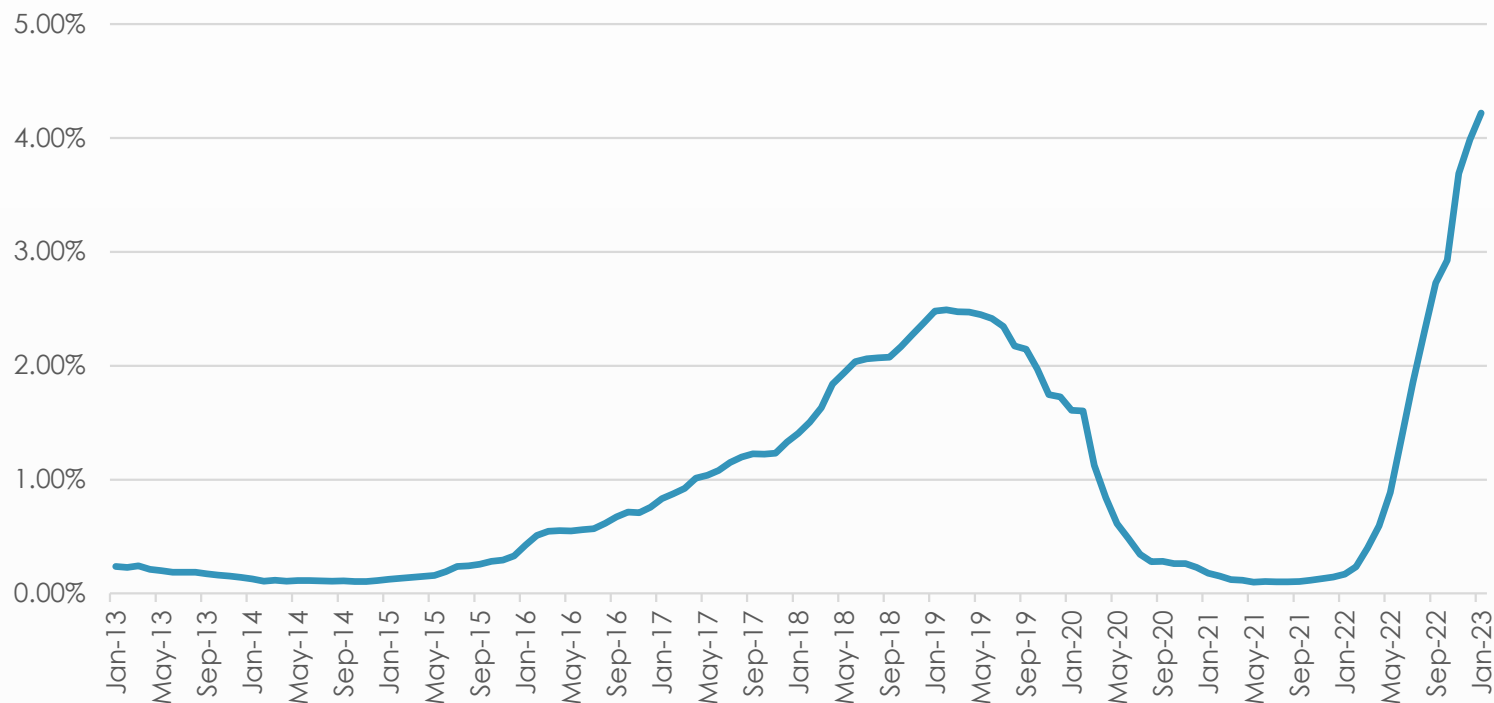


# Cash Management

## Short Term Investment Pool

- STIP yield has seen a sharp increase as the Federal Reserve increases interest rates to offset inflation.
- Based on current market expectations, STIP yield should continue to increase modestly with Fed moves.

STIP Net Yield



# Cash Management

## Short Term Investment Pool

- STIP can purchase securities anywhere between a one-day maturity out to 2 years for floating rate notes.
- STIP Investment Policy Statement requires daily liquidity of 10% of the portfolio and weekly liquidity of 15%.
  - Daily liquidity includes cash held at the custodial bank, money market funds, U.S. Treasuries, and next-day maturities.
  - Weekly liquidity includes daily liquidity instruments, agency discount notes and one-week maturities.

# Cash Management

## Trust Funds Investment Pool Objectives

- Strategic Objective
  - Provide a diversified investment vehicle for participants that offers a return that assists in supporting client missions.
- Investment Objectives
  - Provide investment income by assuming a prudent amount of risk.
  - Preserve principal by diversifying the portfolio across risk factors.

# Cash Management

## Conclusion

- Accounting works cooperatively within BOI, state and local government, and financial institutions to process a significant volume of transactions.
- Safety and Liquidity are the primary goals for the Treasurer's Fund.
- STIP is a critical component for both state and local governments.
- Communication between clients, key entities, and MBOI is essential.



# MONTANA

## BOARD OF INVESTMENTS

**TO:** Members of the Board  
**FROM:** Doug Hill, Director of In-State Loan Programs  
**DATE:** February 22, 2023  
**RE:** Commercial and Residential Loan Portfolios

The Participation Loan Program reflected an outstanding balance, as of December 31, 2022, of \$93,442,585 and represents 41 loans with a yield of 2.51%. There are currently six loan reservations that total \$18,757,931 and four loans committed that total \$23,401,500. There are no past due loans.

The Infrastructure Loan Program reflected an outstanding balance, as of December 31, 2022, of \$10,530,944 and represents 8 loans with a yield of 4.07%. There is one loan reservation for \$2,733,224. There are no past due loans.

The Intermediary Relending Program reflected an outstanding balance, as of December 31, 2022, of \$4,927,997 and represents 38 loans with a yield of 2.00%. There is one loan committed for \$500,000. There are no past due loans.

The Science and Tech portfolio reflected an outstanding balance, as of December 31, 2022, of \$7,793,711 and represents 3 loans with a yield of 2.75%. There are no past due loans.

The Montana Facility Finance Authority portfolio reflected an outstanding balance, as of December 31, 2022, of \$12,236,346 and represents 16 loans with a yield of 2.53%. There are no past due loans.

The Veterans Home Loan Mortgage portfolio reflected an outstanding balance, as of January 26, 2023, of \$48,730,747 and represents 277 loans with a yield of 1.80%. There are four reservations totaling \$1,100,789 with a projected net yield of 4.17%. There are two loans over 90 days past due totaling \$430,623, or 0.88% of the portfolio.

The Multifamily Coal Trust Homes Program reflected an outstanding balance, as of January 23, 2022, of \$9,657,199 and represents six loans with a yield of 2.34%. There are two reservations totaling \$4,508,099. There are no past due loans.

The Residential loan portfolio reflected an outstanding balance, as of December 31, 2022, of \$1,588,809 and represents 45 loans with a yield of 6.32%. There are no outstanding reservations. There are two loans past due over 90 days.

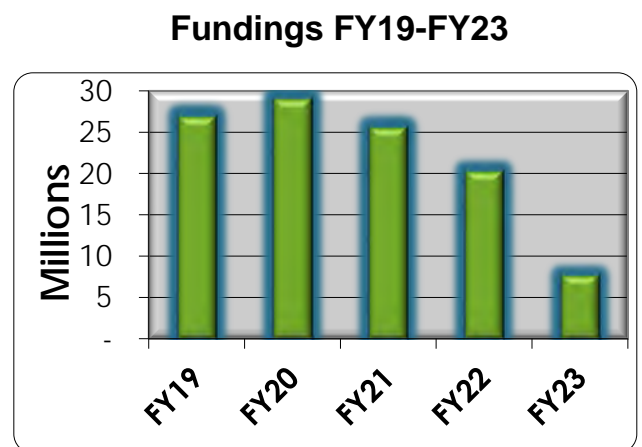
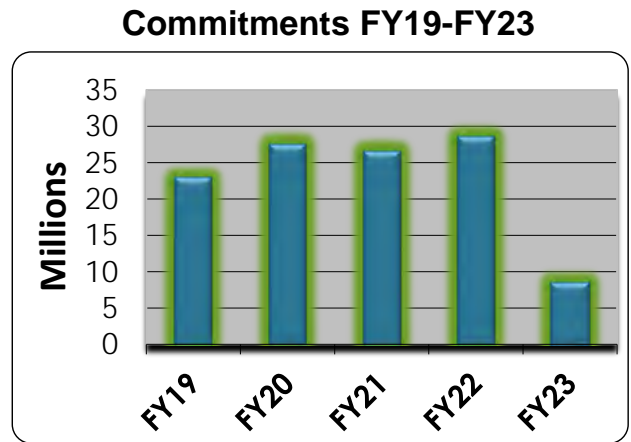
The Montana Down Payment Assistance Program reflected an outstanding balance, as of January 26, 2023, of \$9,254,543 and represents twenty-six loans. There are currently fifty-nine loan reservations that total \$44,843,272. There are thirty-six loans committed that total \$21,686,714, and eight loans withdrawn that total \$3,419,598.





<b>Bond Series 2022:</b>		<b>Loans:</b>	
Outstanding	68,706,869	Outstanding	69,477,864
Available for Drawdown	51,293,131	Pending Commitments	23,501,554
<b>Total Committed</b>		<b>687,081,656</b>	
<b>Total Funded</b>		<b>663,580,102</b>	

FY2022		
Month	Commitments	Fundings
July-22	800,000	646,447
August	2,938,536	131,707
September	22,085	1,448,082
October	4,260,000	2,190,158
November	190,586	1,749,320
December	570,898	1,486,808
January		
February		
March		
April		
May		
June-23		
<b>To Date</b>	<b>8,782,105</b>	<b>7,652,521</b>



Note: Commitments include withdrawn and expired loans.

**Variable Loan Rate History February 16, 2015 - February 15, 2023**

February 16, 2015 - February 15, 2016	<u>1.25%</u>	February 16, 2019 - February 15, 2020	<u>3.37%</u>
February 16, 2016 - February 15, 2017	<u>1.55%</u>	February 16, 2020 - February 15, 2021	<u>2.50%*</u>
February 16, 2017 - February 15, 2018	<u>2.50%</u>	February 16, 2021 - February 15, 2022	<u>1.65%</u>
February 16, 2018 - February 15, 2019	<u>3.15%</u>	February 16, 2022 - February 15, 2023	<u>1.55%**</u>

\*BOI decreased interest rates for INTERCAP loans to 1.00% until August 15, 2020 in response to the COVID-19 pandemic.  
 \*\*1.50% for borrowers set up with Autopay.

# MONTANA

BOARD OF INVESTMENTS

## INTERCAP

**TO:** Members of the Board

**FROM:** Louise Welsh,  
Sr. Bond Program Officer

**DATE:** February 22, 2023

**RE:** INTERCAP Staff Approved Loans Committed – Staff approved the following loans from October 1, 2022, to December 31, 2022.



<b>Borrower:</b>	Beaverhead Jackson Water & Sewer District
<b>Purpose:</b>	Upgrading sewer system
<b>Staff Approval Date:</b>	October 11, 2022
<b>Board Loan Amount:</b>	\$ 200,000
<b>Other Funding Sources:</b>	\$ 678,329
<b>Total Project Cost:</b>	\$ 878,329
<b>Term:</b>	15 years

<b>Borrower:</b>	Avon Rural Fire District
<b>Purpose:</b>	Three-bay addition to fire hall
<b>Staff Approval Date:</b>	October 20, 2022
<b>Board Loan Amount:</b>	\$ 60,000
<b>Other Funding Sources:</b>	\$ 10,000
<b>Total Project Cost:</b>	\$ 70,000
<b>Term:</b>	12 years

<b>Borrower:</b>	City of Laurel
<b>Purpose:</b>	Public works vehicles
<b>Staff Approval Date:</b>	November 18, 2022
<b>Board Loan Amount:</b>	\$ 198,586
<b>Other Funding Sources:</b>	\$ 0
<b>Total Project Cost:</b>	\$ 198,586
<b>Term:</b>	7 years

Borrower:	City of Thompson Falls
Purpose:	Purchase a snowplow
Staff Approval Date:	December 1, 2022
Board Loan Amount:	\$ 69,085
Other Funding Sources:	\$ 0
Total Project Cost:	\$ 69,085
Term:	7 years

Borrower:	Golden Valley County
Purpose:	Public safety office building and equipment
Staff Approval Date:	December 15, 2022
Board Loan Amount:	\$ 250,000
Other Funding Sources:	\$ 0
Total Project Cost:	\$ 250,000
Term:	10 years

Borrower:	City of Kalispell
Purpose:	Public works equipment
Staff Approval Date:	December 27, 2022
Board Loan Amount:	\$ 252,000
Other Funding Sources:	\$ 0
Total Project Cost:	\$ 252,000
Term:	5 years





# Quarterly Investment Performance Analysis

Montana Board of Investments

Period Ended: December 31, 2022



Montana Board of Investments  
Comparative Performance  
Retirement Plans

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	20 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Public Employees' Retirement - Net</b>	<b>4.75</b>	<b>1.52</b>	<b>-8.48</b>	<b>6.41</b>	<b>6.50</b>	<b>7.76</b>	<b>8.11</b>	<b>7.56</b>	<b>17.61</b>	<b>11.94</b>	<b>16.77</b>	<b>-2.63</b>	<b>14.80</b>	<b>7.60</b>	<b>07/01/1994</b>
Public Employees' Benchmark	7.08	3.66	-9.95	4.72	5.49	7.36	7.95	N/A	14.31	11.58	20.45	-5.57	15.35	N/A	
Difference	-2.33	-2.14	1.47	1.69	1.01	0.40	0.16	N/A	3.30	0.36	-3.68	2.94	-0.55	N/A	
<b>Public Employees' Retirement - Gross</b>	<b>4.93</b>	<b>1.83</b>	<b>-7.89</b>	<b>7.04</b>	<b>7.13</b>	<b>8.36</b>	<b>8.68</b>	<b>8.04</b>	<b>18.32</b>	<b>12.53</b>	<b>17.44</b>	<b>-2.03</b>	<b>15.34</b>	<b>7.94</b>	<b>07/01/1994</b>
All Public Plans (>\$5B) Total Fund Median	4.72	0.91	-9.96	5.56	6.22	7.96	7.58	7.85	16.96	12.11	17.28	-2.62	16.17	7.90	
Rank	45	17	42	24	26	32	3	27	33	41	43	43	67	42	
<b>Teachers' Retirement - Net</b>	<b>4.74</b>	<b>1.49</b>	<b>-8.52</b>	<b>6.39</b>	<b>6.49</b>	<b>7.75</b>	<b>8.10</b>	<b>7.56</b>	<b>17.61</b>	<b>11.93</b>	<b>16.78</b>	<b>-2.64</b>	<b>14.76</b>	<b>7.61</b>	<b>07/01/1994</b>
Teachers' Benchmark	7.06	3.62	-10.00	4.69	5.46	7.33	7.91	N/A	14.29	11.53	20.43	-5.57	15.32	N/A	
Difference	-2.32	-2.13	1.48	1.70	1.03	0.42	0.19	N/A	3.32	0.40	-3.65	2.93	-0.56	N/A	
<b>Teachers' Retirement - Gross</b>	<b>4.92</b>	<b>1.80</b>	<b>-7.93</b>	<b>7.02</b>	<b>7.12</b>	<b>8.35</b>	<b>8.68</b>	<b>8.04</b>	<b>18.32</b>	<b>12.52</b>	<b>17.45</b>	<b>-2.03</b>	<b>15.31</b>	<b>7.95</b>	<b>07/01/1994</b>
All Public Plans (>\$5B) Total Fund Median	4.72	0.91	-9.96	5.56	6.22	7.96	7.58	7.85	16.96	12.11	17.28	-2.62	16.17	7.90	
Rank	45	18	42	24	26	33	3	26	33	41	43	44	67	41	
<b>Police Retirement - Net</b>	<b>4.75</b>	<b>1.52</b>	<b>-8.48</b>	<b>6.40</b>	<b>6.50</b>	<b>7.76</b>	<b>8.11</b>	<b>7.51</b>	<b>17.58</b>	<b>11.95</b>	<b>16.80</b>	<b>-2.63</b>	<b>14.79</b>	<b>7.48</b>	<b>07/01/1994</b>
Police Benchmark	7.08	3.70	-9.93	4.72	5.48	7.35	7.95	N/A	14.24	11.60	20.44	-5.57	15.33	N/A	
Difference	-2.33	-2.18	1.45	1.68	1.02	0.41	0.16	N/A	3.34	0.35	-3.64	2.94	-0.54	N/A	
<b>Police Retirement - Gross</b>	<b>4.94</b>	<b>1.84</b>	<b>-7.89</b>	<b>7.03</b>	<b>7.13</b>	<b>8.36</b>	<b>8.69</b>	<b>8.00</b>	<b>18.28</b>	<b>12.54</b>	<b>17.47</b>	<b>-2.02</b>	<b>15.33</b>	<b>7.82</b>	<b>07/01/1994</b>
All Public Plans (>\$5B) Total Fund Median	4.72	0.91	-9.96	5.56	6.22	7.96	7.58	7.85	16.96	12.11	17.28	-2.62	16.17	7.90	
Rank	45	17	42	24	26	32	3	34	33	41	43	43	67	54	

Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$5B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Retirement plan benchmarks' inception dates were updated to 1/1/2011.



Montana Board of Investments  
Comparative Performance  
Retirement Plans

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	20 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Firefighters' Retirement - Net</b>	<b>4.75</b>	<b>1.52</b>	<b>-8.47</b>	<b>6.41</b>	<b>6.50</b>	<b>7.76</b>	<b>8.11</b>	<b>7.53</b>	<b>17.58</b>	<b>11.95</b>	<b>16.79</b>	<b>-2.62</b>	<b>14.79</b>	<b>7.47</b>	<b>07/01/1994</b>
Firefighters' Benchmark	7.08	3.70	-9.93	4.71	5.48	7.36	7.95	N/A	14.23	11.59	20.44	-5.57	15.33	N/A	
Difference	-2.33	-2.18	1.46	1.70	1.02	0.40	0.16	N/A	3.35	0.36	-3.65	2.95	-0.54	N/A	
<b>Firefighters' Retirement - Gross</b>	<b>4.94</b>	<b>1.84</b>	<b>-7.88</b>	<b>7.03</b>	<b>7.13</b>	<b>8.36</b>	<b>8.69</b>	<b>8.02</b>	<b>18.28</b>	<b>12.53</b>	<b>17.46</b>	<b>-2.01</b>	<b>15.34</b>	<b>7.82</b>	<b>07/01/1994</b>
All Public Plans (>\$5B) Total Fund Median	4.72	0.91	-9.96	5.56	6.22	7.96	7.58	7.85	16.96	12.11	17.28	-2.62	16.17	7.90	
Rank	45	17	42	24	26	31	3	31	33	41	43	43	67	54	
<b>Sheriffs' Retirement - Net</b>	<b>4.75</b>	<b>1.52</b>	<b>-8.47</b>	<b>6.42</b>	<b>6.50</b>	<b>7.77</b>	<b>8.11</b>	<b>7.55</b>	<b>17.61</b>	<b>11.94</b>	<b>16.75</b>	<b>-2.62</b>	<b>14.80</b>	<b>7.51</b>	<b>07/01/1994</b>
Sheriffs' Benchmark	7.07	3.67	-9.95	4.72	5.49	7.36	7.95	N/A	14.30	11.58	20.43	-5.56	15.35	N/A	
Difference	-2.32	-2.15	1.48	1.70	1.01	0.41	0.16	N/A	3.31	0.36	-3.68	2.94	-0.55	N/A	
<b>Sheriffs' Retirement - Gross</b>	<b>4.93</b>	<b>1.83</b>	<b>-7.87</b>	<b>7.05</b>	<b>7.13</b>	<b>8.36</b>	<b>8.68</b>	<b>8.03</b>	<b>18.32</b>	<b>12.53</b>	<b>17.42</b>	<b>-2.02</b>	<b>15.34</b>	<b>7.85</b>	<b>07/01/1994</b>
All Public Plans (>\$5B) Total Fund Median	4.72	0.91	-9.96	5.56	6.22	7.96	7.58	7.85	16.96	12.11	17.28	-2.62	16.17	7.90	
Rank	45	17	42	24	26	31	3	28	32	41	44	43	67	53	
<b>Highway Patrol Retirement - Net</b>	<b>4.75</b>	<b>1.52</b>	<b>-8.46</b>	<b>6.42</b>	<b>6.51</b>	<b>7.77</b>	<b>8.11</b>	<b>7.57</b>	<b>17.62</b>	<b>11.94</b>	<b>16.78</b>	<b>-2.62</b>	<b>14.79</b>	<b>7.50</b>	<b>07/01/1994</b>
Highway Patrol Benchmark	7.07	3.67	-9.93	4.74	5.50	7.37	7.96	N/A	14.31	11.60	20.45	-5.56	15.34	N/A	
Difference	-2.32	-2.15	1.47	1.68	1.01	0.40	0.15	N/A	3.31	0.34	-3.67	2.94	-0.55	N/A	
<b>Highway Patrol Retirement - Gross</b>	<b>4.93</b>	<b>1.84</b>	<b>-7.87</b>	<b>7.05</b>	<b>7.14</b>	<b>8.37</b>	<b>8.69</b>	<b>8.05</b>	<b>18.33</b>	<b>12.53</b>	<b>17.45</b>	<b>-2.01</b>	<b>15.33</b>	<b>7.84</b>	<b>07/01/1994</b>
All Public Plans (>\$5B) Total Fund Median	4.72	0.91	-9.96	5.56	6.22	7.96	7.58	7.85	16.96	12.11	17.28	-2.62	16.17	7.90	
Rank	45	17	42	23	26	30	3	26	32	41	43	43	67	53	

Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$5B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Retirement plan benchmarks' inception dates were updated to 1/1/2011.





Montana Board of Investments  
Comparative Performance  
Retirement Plans

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	20 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Game Wardens' Retirement - Net</b>	<b>4.75</b>	<b>1.52</b>	<b>-8.48</b>	<b>6.40</b>	<b>6.50</b>	<b>7.76</b>	<b>8.10</b>	<b>7.51</b>	<b>17.62</b>	<b>11.91</b>	<b>16.77</b>	<b>-2.62</b>	<b>14.81</b>	<b>7.52</b>	<b>07/01/1994</b>
Game Wardens' Benchmark	7.08	3.66	-9.96	4.71	5.48	7.36	7.94	N/A	14.30	11.56	20.45	-5.56	15.36	N/A	
Difference	-2.33	-2.14	1.48	1.69	1.02	0.40	0.16	N/A	3.32	0.35	-3.68	2.94	-0.55	N/A	
<b>Game Wardens' Retirement - Gross</b>	<b>4.94</b>	<b>1.83</b>	<b>-7.88</b>	<b>7.03</b>	<b>7.13</b>	<b>8.36</b>	<b>8.68</b>	<b>7.99</b>	<b>18.32</b>	<b>12.50</b>	<b>17.44</b>	<b>-2.01</b>	<b>15.35</b>	<b>7.86</b>	<b>07/01/1994</b>
All Public Plans (>\$5B) Total Fund Median	4.72	0.91	-9.96	5.56	6.22	7.96	7.58	7.85	16.96	12.11	17.28	-2.62	16.17	7.90	
Rank	45	17	42	24	26	32	3	34	32	42	43	43	67	52	
<b>Judges' Retirement - Net</b>	<b>4.75</b>	<b>1.51</b>	<b>-8.50</b>	<b>6.41</b>	<b>6.50</b>	<b>7.77</b>	<b>8.11</b>	<b>7.56</b>	<b>17.63</b>	<b>11.94</b>	<b>16.78</b>	<b>-2.64</b>	<b>14.82</b>	<b>7.51</b>	<b>07/01/1994</b>
Judges' Benchmark	7.08	3.65	-9.98	4.72	5.49	7.36	7.95	N/A	14.31	11.59	20.47	-5.57	15.37	N/A	
Difference	-2.33	-2.14	1.48	1.69	1.01	0.41	0.16	N/A	3.32	0.35	-3.69	2.93	-0.55	N/A	
<b>Judges' Retirement - Gross</b>	<b>4.94</b>	<b>1.82</b>	<b>-7.91</b>	<b>7.04</b>	<b>7.13</b>	<b>8.36</b>	<b>8.68</b>	<b>8.04</b>	<b>18.34</b>	<b>12.53</b>	<b>17.45</b>	<b>-2.03</b>	<b>15.36</b>	<b>7.85</b>	<b>07/01/1994</b>
All Public Plans (>\$5B) Total Fund Median	4.72	0.91	-9.96	5.56	6.22	7.96	7.58	7.85	16.96	12.11	17.28	-2.62	16.17	7.90	
Rank	45	18	42	24	26	31	3	27	32	41	43	44	67	52	
<b>Volunteer Firefighters' Retirement - Net</b>	<b>4.75</b>	<b>1.49</b>	<b>-8.50</b>	<b>6.40</b>	<b>6.50</b>	<b>7.74</b>	<b>8.10</b>	<b>7.53</b>	<b>17.61</b>	<b>11.94</b>	<b>16.79</b>	<b>-2.64</b>	<b>14.79</b>	<b>7.33</b>	<b>07/01/1994</b>
Volunteer Firefighters' Benchmark	7.09	3.65	-9.98	4.73	5.50	7.36	7.96	N/A	14.37	11.59	20.47	-5.59	15.33	N/A	
Difference	-2.34	-2.16	1.48	1.67	1.00	0.38	0.14	N/A	3.24	0.35	-3.68	2.95	-0.54	N/A	
<b>Volunteer Firefighters' Retirement - Gross</b>	<b>4.94</b>	<b>1.81</b>	<b>-7.91</b>	<b>7.03</b>	<b>7.13</b>	<b>8.33</b>	<b>8.68</b>	<b>8.02</b>	<b>18.31</b>	<b>12.53</b>	<b>17.46</b>	<b>-2.04</b>	<b>15.34</b>	<b>7.67</b>	<b>07/01/1994</b>
All Public Plans (>\$5B) Total Fund Median	4.72	0.91	-9.96	5.56	6.22	7.96	7.58	7.85	16.96	12.11	17.28	-2.62	16.17	7.90	
Rank	45	18	42	24	26	35	3	31	33	41	43	44	67	68	

Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$5B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. Retirement plan benchmarks' inception dates were updated to 1/1/2011.

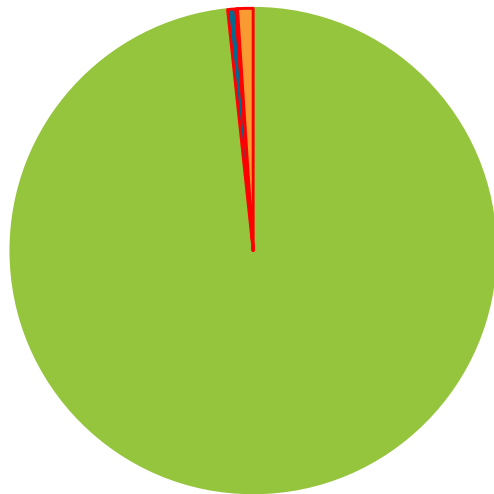


Montana Board of Investments  
 Asset Allocation by Segment  
 Retirement Plans

As of December 31, 2022

	Consolidated Asset Pension Pool (CAPP)		Short Term Investment Pool (STIP)		Total Fund	
	(\$)	%	(\$)	%	(\$)	%
Public Employees' Retirement	6,535,590,811	48.99	67,421,943	48.59	6,603,012,754	48.99
Teachers' Retirement	4,622,054,282	34.65	48,369,897	34.86	4,670,424,179	34.65
Firefighters' Retirement	583,407,047	4.37	6,065,645	4.37	589,472,692	4.37
Police Retirement	533,658,562	4.00	5,628,136	4.06	539,286,698	4.00
Sheriffs' Retirement	460,084,062	3.45	5,046,645	3.64	465,130,707	3.45
Game Wardens' Retirement	260,406,544	1.95	2,618,423	1.89	263,024,967	1.95
Highway Patrol Retirement	175,677,323	1.32	1,914,967	1.38	177,592,290	1.32
Judges' Retirement	122,832,697	0.92	1,240,563	0.89	124,073,260	0.92
Volunteer Firefighters' Retirement	45,847,331	0.34	463,083	0.33	46,310,414	0.34
<b>Retirement Plans Total Fund Composite</b>	<b>13,339,558,659</b>	<b>98.97</b>	<b>138,769,302</b>	<b>1.03</b>	<b>13,478,327,961</b>	<b>100.00</b>

December 31, 2022 : \$13,478,327,961

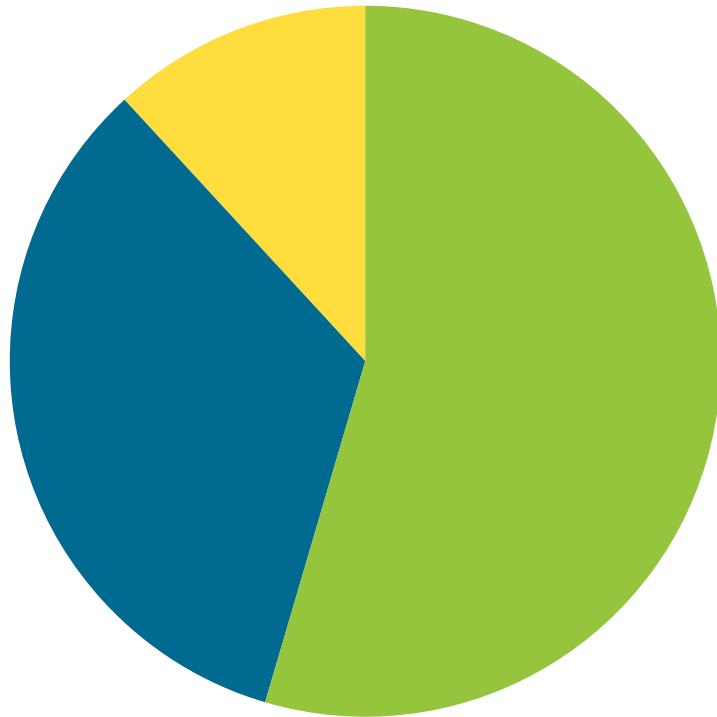


Segments	Market Value (\$)	Allocation (%)
CAPP Ex Cash	13,251,326,770	98.32
CAPP Cash Pension	75,013,648	0.56
CAPP Asset Class Cash	13,218,241	0.10
Short Term Investment Pool (STIP)	138,769,302	1.03
Total Cash	227,001,191	1.68

Allocations shown may not sum up to 100% exactly due to rounding. Retirement Plan market values may differ from State Street due to uninvested amounts not included in segment totals.



December 31, 2022 : \$24,454,015,228



	Market Value (\$)	Allocation (%)
Consolidated Asset Pension Pool (CAPP)	13,339,558,674	54.55
Short Term Investment Pool	8,218,353,552	33.61
Trust Funds Investment Pool	2,896,103,003	11.84

Allocations shown may not sum up to 100% exactly due to rounding. Market values do not include pending transactions.

Montana Board of Investments  
Comparative Performance  
Investment Pools

As of December 31, 2022

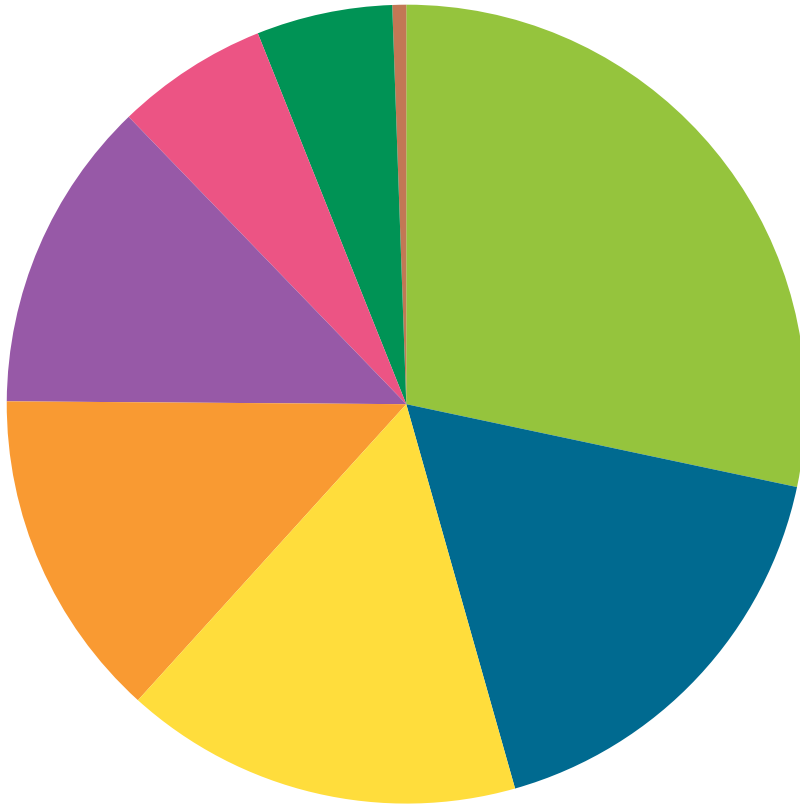
	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Consolidated Asset Pension Pool (CAPP)</b>	<b>4.80</b>	<b>1.50</b>	<b>-8.60</b>	<b>6.48</b>	<b>6.58</b>	<b>N/A</b>	<b>N/A</b>	<b>17.83</b>	<b>12.10</b>	<b>17.12</b>	<b>-2.74</b>	<b>N/A</b>	<b>7.55</b>	<b>04/01/2017</b>
CAPP Custom Benchmark	7.14	3.66	-10.12	4.99	5.68	N/A	N/A	14.57	12.38	20.70	-5.64	N/A	6.80	
Difference	-2.34	-2.16	1.52	1.49	0.90	N/A	N/A	3.26	-0.28	-3.58	2.90	N/A	0.75	
<b>Trust Funds Investment Pool</b>	<b>1.84</b>	<b>-1.90</b>	<b>-6.26</b>	<b>0.67</b>	<b>2.23</b>	<b>2.74</b>	<b>2.76</b>	<b>1.49</b>	<b>7.23</b>	<b>8.98</b>	<b>0.45</b>	<b>4.01</b>	<b>5.49</b>	<b>10/01/1995</b>
Trust Fund Custom Benchmark	1.57	-0.50	-5.05	0.93	2.25	2.49	2.18	0.71	7.51	8.72	0.01	3.54	4.71	
Difference	0.27	-1.40	-1.21	-0.26	-0.02	0.25	0.58	0.78	-0.28	0.26	0.44	0.47	0.78	
<b>Short Term Investment Pool</b>	<b>0.88</b>	<b>1.41</b>	<b>1.67</b>	<b>0.83</b>	<b>1.35</b>	<b>1.21</b>	<b>0.90</b>	<b>0.11</b>	<b>0.73</b>	<b>2.28</b>	<b>1.98</b>	<b>1.11</b>	<b>2.27</b>	<b>04/01/1997</b>
Short Term Custom Index	0.93	1.50	1.69	0.70	1.23	1.12	0.84	0.04	0.36	2.14	1.95	1.15	2.18	
Difference	-0.05	-0.09	-0.02	0.13	0.12	0.09	0.06	0.07	0.37	0.14	0.03	-0.04	0.09	
iMoney.net Money Fund (Gross) Median	0.98	1.58	1.83	0.90	1.46	1.30	0.97	0.15	0.73	2.45	2.15	1.21	2.26	
Difference	-0.10	-0.17	-0.16	-0.07	-0.11	-0.09	-0.07	-0.04	0.00	-0.17	-0.17	-0.10	0.01	

Performance shown is net of all manager fees and expenses (Net-All). Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. See the Addendum for custom index specification. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Montana Board of Investments  
 Asset Allocation  
 Consolidated Asset Pension Pool (CAPP)

As of December 31, 2022

December 31, 2022 : \$13,339,558,817



	Market Value (\$)	Allocation (%)
Domestic Equity	3,779,000,584	28.33
Private Investments	2,305,039,355	17.28
International Equity	2,148,659,426	16.11
Core Fixed Income	1,787,434,021	13.40
Real Estate	1,688,810,924	12.66
Non-Core Fixed Income	821,991,869	6.16
Real Assets*	733,608,990	5.50
Cash Pension	75,013,648	0.56

Allocations shown may not sum up to 100% due to rounding.  
 \*Formerly the Natural Resources pension asset class.



Montana Board of Investments  
Comparative Performance  
Consolidated Asset Pension Pool (CAPP)

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Domestic Equity</b>	7.26	2.60	-19.00	7.35	8.49	10.59	11.89	27.17	20.09	30.75	-7.09	20.79	9.13	05/01/2003
Domestic Equity Custom Index	7.21	2.44	-19.22	7.25	8.93	11.17	12.28	26.12	21.10	31.14	-5.20	21.05	9.79	
Difference	0.05	0.16	0.22	0.10	-0.44	-0.58	-0.39	1.05	-1.01	-0.39	-1.89	-0.26	-0.66	
<b>International Equity</b>	13.83	2.81	-17.66	0.21	1.00	4.98	4.23	7.83	13.35	22.86	-14.99	28.67	4.36	04/01/1997
International Equity Custom Index	14.15	3.09	-16.58	0.20	0.85	4.84	3.95	8.53	11.12	21.63	-14.76	27.81	4.62	
Difference	-0.32	-0.28	-1.08	0.01	0.15	0.14	0.28	-0.70	2.23	1.23	-0.23	0.86	-0.26	
<b>Core Fixed Income</b>	1.68	-2.94	-11.91	-2.08	0.26	0.96	1.21	-1.54	8.25	6.90	0.95	2.29	5.07	04/01/1995
Core Fixed Income Custom Index	1.87	-2.97	-13.01	-2.71	-0.27	0.54	0.81	-1.54	7.51	6.39	0.68	2.57	4.41	
Difference	-0.19	0.03	1.10	0.63	0.53	0.42	0.40	0.00	0.74	0.51	0.27	-0.28	0.66	
<b>Non-Core Fixed Income</b>	4.93	3.50	-11.25	-0.85	1.66	3.75	3.50	3.21	6.40	13.98	-2.27	5.99	6.24	06/01/2009
Bloomberg US HY 2% Issuer Cap Index	4.17	3.50	-11.18	0.03	2.30	5.04	4.03	5.26	7.05	14.32	-2.08	7.50	7.25	
Difference	0.76	0.00	-0.07	-0.88	-0.64	-1.29	-0.53	-2.05	-0.65	-0.34	-0.19	-1.51	-1.01	
<b>Real Assets</b>	4.76	6.13	15.88	6.74	4.66	N/A	N/A	21.24	-13.43	-2.18	5.55	N/A	5.11	04/01/2017
Real Assets Custom Index	10.14	3.65	1.36	0.24	0.10	6.10	-0.11	13.32	-12.32	13.06	-11.75	13.70	2.62	
Difference	-5.38	2.48	14.52	6.50	4.56	N/A	N/A	7.92	-1.11	-15.24	17.30	N/A	2.49	
<b>Real Estate</b>	0.63	2.24	12.00	10.23	9.36	9.26	10.12	20.00	-0.35	6.97	9.19	9.17	5.21	06/01/2006
Real Estate Custom Index	0.31	4.87	20.96	3.36	5.81	6.30	8.09	13.64	-19.66	25.84	-4.57	5.99	5.81	
Difference	0.32	-2.63	-8.96	6.87	3.55	2.96	2.03	6.36	19.31	-18.87	13.76	3.18	-0.60	
<b>Cash Pension</b>	1.42	1.79	2.21	1.05	1.49	N/A	N/A	0.13	0.84	2.28	2.00	N/A	1.43	05/01/2017
Short Term Custom Index	0.93	1.50	1.69	0.70	1.23	1.12	0.84	0.04	0.36	2.14	1.95	1.15	1.24	
Difference	0.49	0.29	0.52	0.35	0.26	N/A	N/A	0.09	0.48	0.14	0.05	N/A	0.19	
<b>Private Investments*</b>	-1.26	-0.95	5.94	17.99	15.66	14.37	13.76	39.81	10.91	12.95	11.55	15.20	13.08	05/01/2002
Private Investments Custom Index	7.25	5.67	-13.86	6.08	6.48	10.27	12.24	16.54	18.90	27.38	-9.99	20.59	10.54	
Difference	-8.51	-6.62	19.80	11.91	9.18	4.10	1.52	23.27	-7.99	-14.43	21.54	-5.39	2.54	

For additional information on the Private Investments Custom Index, please see the Addendum.

\*Performance is based on the prior quarter's fair market value adjusted for cash flows during the most recent quarterly period.

Performance shown is net of all manager fees and expenses (Net-All). Benchmark returns reflect unmanaged indices which are not impacted by management fees. Fiscal year ends on 06/30. Please see Addendum for custom index specification. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Montana Board of Investments  
Comparative Performance  
Investment Pools

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Domestic Equity</b>	<b>7.27</b>	<b>2.62</b>	<b>-18.97</b>	<b>7.53</b>	<b>8.73</b>	<b>10.86</b>	<b>12.17</b>	<b>27.47</b>	<b>20.37</b>	<b>31.13</b>	<b>-6.78</b>	<b>21.16</b>	<b>9.41</b>	<b>05/01/2003</b>
All Public Plans-US Equity Segment Median	7.43	2.32	-18.07	6.61	7.77	10.43	11.43	24.57	18.92	30.04	-5.83	20.31	9.28	
Rank	63	39	60	28	30	33	24	30	32	28	74	31	42	
Population	58	57	56	50	48	46	37	70	67	65	66	89	10	
<b>International Equity</b>	<b>13.85</b>	<b>2.86</b>	<b>-17.49</b>	<b>0.50</b>	<b>1.31</b>	<b>5.30</b>	<b>4.56</b>	<b>8.18</b>	<b>13.71</b>	<b>23.28</b>	<b>-14.72</b>	<b>29.06</b>	<b>4.77</b>	<b>04/01/1997</b>
All Public Plans-Intl. Equity Segment Median	14.84	3.65	-16.87	1.42	2.42	5.82	5.18	9.51	12.76	23.71	-13.63	28.75	N/A	
Rank	70	74	54	68	77	81	83	74	45	62	78	46	N/A	
Population	58	58	57	54	53	53	41	69	68	65	68	84	N/A	
<b>Core Fixed Income</b>	<b>1.69</b>	<b>-2.92</b>	<b>-11.87</b>	<b>-2.03</b>	<b>0.31</b>	<b>1.01</b>	<b>1.25</b>	<b>-1.48</b>	<b>8.31</b>	<b>6.94</b>	<b>1.00</b>	<b>2.34</b>	<b>5.19</b>	<b>04/01/1995</b>
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	1.82	-2.89	-12.95	-2.20	0.45	1.39	1.50	-1.23	8.51	9.19	0.06	4.01	4.89	
Rank	66	54	14	35	68	80	79	65	54	98	8	99	18	
Population	132	132	132	132	129	127	122	146	154	156	163	168	60	
<b>Non-Core Fixed Income</b>	<b>4.94</b>	<b>3.56</b>	<b>-11.05</b>	<b>-0.48</b>	<b>2.11</b>	<b>4.24</b>	<b>4.00</b>	<b>3.64</b>	<b>6.91</b>	<b>14.60</b>	<b>-1.71</b>	<b>6.58</b>	<b>6.77</b>	<b>06/01/2009</b>
IM U.S. High Yield Bonds (SA+CF) Median	4.05	3.73	-9.64	0.58	2.69	4.86	4.22	5.31	6.54	14.25	-1.64	7.47	7.24	
Rank	8	63	82	90	84	83	62	91	42	41	53	74	76	
Population	144	144	144	142	137	129	115	161	175	189	199	202	92	
<b>Trust Funds Investment Pool</b>	<b>1.92</b>	<b>-1.78</b>	<b>-6.02</b>	<b>0.81</b>	<b>2.35</b>	<b>2.85</b>	<b>2.86</b>	<b>1.59</b>	<b>7.30</b>	<b>9.06</b>	<b>0.53</b>	<b>4.10</b>	<b>5.56</b>	<b>10/01/1995</b>
All Public Plans-US Fixed Income Segment Median	1.91	-2.25	-11.92	-1.37	0.88	1.86	1.71	-0.11	8.59	9.25	-0.25	4.59	N/A	
Rank	49	40	10	1	1	9	8	12	78	53	22	62	N/A	
Population	63	63	62	56	54	53	45	73	74	68	72	85	N/A	
<b>Real Estate</b>	<b>0.83</b>	<b>2.59</b>	<b>13.02</b>	<b>11.52</b>	<b>10.86</b>	<b>10.78</b>	<b>11.63</b>	<b>21.37</b>	<b>1.11</b>	<b>8.65</b>	<b>11.12</b>	<b>10.91</b>	<b>6.64</b>	<b>06/01/2006</b>
All Public Plans-Real Estate Segment Median	0.36	0.86	13.79	11.48	9.98	10.53	11.74	20.84	1.66	7.65	9.04	8.84	N/A	
Rank	42	32	56	50	44	48	55	47	72	39	15	26	N/A	
Population	44	42	40	31	25	20	14	41	38	35	27	32	N/A	

Performance shown is gross of fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. The All Public Plans US Equity, Intl Equity, US Fixed Income, and Real Estate segments currently do not have enough members to calculate trailing period returns.

Montana Board of Investments  
Comparative Performance  
Equity Composites

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Domestic Large Cap Equity - Net</b>	<b>7.11</b>	<b>2.18</b>	<b>-19.30</b>	<b>7.96</b>	<b>9.46</b>	<b>11.39</b>	<b>12.62</b>	<b>28.39</b>	<b>21.44</b>	<b>31.06</b>	<b>-4.71</b>	<b>21.66</b>	<b>8.51</b>	<b>12/01/2006</b>
S&P 500 Index (Cap Wtd)	7.56	2.31	-18.11	7.66	9.42	11.48	12.56	28.71	18.40	31.49	-4.38	21.83	8.64	
Difference	-0.45	-0.13	-1.19	0.30	0.04	-0.09	0.06	-0.32	3.04	-0.43	-0.33	-0.17	-0.13	
<b>Domestic Large Cap Equity - Gross</b>	<b>7.11</b>	<b>2.18</b>	<b>-19.29</b>	<b>8.09</b>	<b>9.62</b>	<b>11.55</b>	<b>12.78</b>	<b>28.61</b>	<b>21.66</b>	<b>31.29</b>	<b>-4.52</b>	<b>21.82</b>	<b>8.72</b>	<b>12/01/2006</b>
IM U.S. Large Cap Equity (SA+CF) Median	8.14	2.92	-17.58	7.42	9.08	11.10	12.36	27.36	18.35	30.42	-4.86	21.82	8.83	
Rank	69	66	66	35	34	35	34	37	34	42	46	51	53	
<b>Domestic Mid Cap Equity - Net</b>	<b>10.82</b>	<b>8.07</b>	<b>-13.07</b>	<b>7.29</b>	<b>7.14</b>	<b>9.55</b>	<b>10.37</b>	<b>25.15</b>	<b>13.53</b>	<b>28.03</b>	<b>-10.75</b>	<b>19.45</b>	<b>8.41</b>	<b>01/01/2005</b>
Russell Mid Cap Index	9.18	5.43	-17.32	5.88	7.10	9.61	10.96	22.58	17.10	30.54	-9.06	18.52	8.88	
Difference	1.64	2.64	4.25	1.41	0.04	-0.06	-0.59	2.57	-3.57	-2.51	-1.69	0.93	-0.47	
<b>Domestic Mid Cap Equity - Gross</b>	<b>10.82</b>	<b>8.07</b>	<b>-13.07</b>	<b>7.29</b>	<b>7.26</b>	<b>9.83</b>	<b>10.76</b>	<b>25.15</b>	<b>13.53</b>	<b>28.11</b>	<b>-10.28</b>	<b>20.18</b>	<b>8.82</b>	<b>01/01/2005</b>
IM U.S. Mid Cap Equity (SA+CF) Median	9.73	6.00	-13.95	6.55	7.58	10.02	11.28	24.71	14.37	30.28	-9.69	19.11	9.51	
Rank	34	19	43	34	55	60	69	44	59	66	55	46	82	
<b>Domestic Small Cap Equity - Net</b>	<b>6.97</b>	<b>6.33</b>	<b>-16.81</b>	<b>6.26</b>	<b>6.19</b>	<b>9.30</b>	<b>10.52</b>	<b>27.56</b>	<b>13.07</b>	<b>25.76</b>	<b>-10.51</b>	<b>15.65</b>	<b>10.89</b>	<b>03/01/2003</b>
Russell 2000 Index	6.23	3.91	-20.44	3.10	4.13	7.90	9.01	14.82	19.96	25.53	-11.01	14.65	9.77	
Difference	0.74	2.42	3.63	3.16	2.06	1.40	1.51	12.74	-6.89	0.23	0.50	1.00	1.12	
<b>Domestic Small Cap Equity - Gross</b>	<b>6.98</b>	<b>6.34</b>	<b>-16.79</b>	<b>6.53</b>	<b>6.53</b>	<b>9.72</b>	<b>11.04</b>	<b>28.00</b>	<b>13.50</b>	<b>26.25</b>	<b>-10.09</b>	<b>16.27</b>	<b>11.40</b>	<b>03/01/2003</b>
IM U.S. Small Cap Equity (SA+CF) Median	8.58	4.69	-16.45	6.22	6.56	9.76	10.91	23.97	17.43	25.80	-10.30	15.10	11.78	
Rank	66	33	52	47	51	51	46	33	58	47	49	44	59	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all composites. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.





Montana Board of Investments  
Comparative Performance  
Equity Composites

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>International Large Cap Passive - Net</b>	<b>14.06</b>	<b>2.54</b>	<b>-16.10</b>	<b>0.06</b>	<b>0.92</b>	<b>4.96</b>	<b>4.00</b>	<b>7.76</b>	<b>10.81</b>	<b>21.59</b>	<b>-14.04</b>	<b>27.79</b>	<b>5.40</b>	<b>06/01/2009</b>
MSCI ACW Ex US Index (USD) (Net)	14.28	2.96	-16.00	0.07	0.88	4.80	3.80	7.82	10.65	21.51	-14.20	27.19	5.23	
Difference	-0.22	-0.42	-0.10	-0.01	0.04	0.16	0.20	-0.06	0.16	0.08	0.16	0.60	0.17	
<b>International Large Cap Passive - Gross</b>	<b>14.07</b>	<b>2.56</b>	<b>-16.06</b>	<b>0.12</b>	<b>0.98</b>	<b>5.03</b>	<b>4.07</b>	<b>7.82</b>	<b>10.88</b>	<b>21.66</b>	<b>-13.98</b>	<b>27.88</b>	<b>5.47</b>	<b>06/01/2009</b>
<b>International Equity Active - Net</b>	<b>13.36</b>	<b>2.91</b>	<b>-19.26</b>	<b>0.28</b>	<b>1.24</b>	<b>5.22</b>	<b>5.04</b>	<b>7.77</b>	<b>15.91</b>	<b>25.83</b>	<b>-16.18</b>	<b>30.82</b>	<b>3.43</b>	<b>04/01/1997</b>
MSCI ACW Ex US Index (USD) (Net)	14.28	2.96	-16.00	0.07	0.88	4.80	3.80	7.82	10.65	21.51	-14.20	27.19	4.69	
Difference	-0.92	-0.05	-3.26	0.21	0.36	0.42	1.24	-0.05	5.26	4.32	-1.98	3.63	-1.26	
<b>International Equity Active - Gross</b>	<b>13.52</b>	<b>3.20</b>	<b>-18.82</b>	<b>0.80</b>	<b>1.77</b>	<b>5.77</b>	<b>5.57</b>	<b>8.30</b>	<b>16.50</b>	<b>26.48</b>	<b>-15.73</b>	<b>31.50</b>	<b>3.95</b>	<b>04/01/1997</b>
IM International Large Cap Core Equity (SA+CF) Median	15.58	5.08	-15.89	1.51	2.18	5.24	5.59	12.09	11.77	23.58	-14.33	27.89	6.55	
Rank	84	82	74	65	58	35	51	79	29	31	69	18	100	
<b>International Value - Net</b>	<b>13.70</b>	<b>3.01</b>	<b>-13.14</b>	<b>1.25</b>	<b>1.52</b>	<b>5.85</b>	<b>4.91</b>	<b>9.32</b>	<b>9.31</b>	<b>20.76</b>	<b>-13.97</b>	<b>30.72</b>	<b>2.32</b>	<b>11/01/2006</b>
MSCI ACW Ex US Val Index (USD) (Net)	15.70	3.63	-8.59	0.06	-0.05	4.19	2.72	10.46	-0.77	15.72	-13.97	22.66	1.90	
Difference	-2.00	-0.62	-4.55	1.19	1.57	1.66	2.19	-1.14	10.08	5.04	0.00	8.06	0.42	
<b>International Value - Gross</b>	<b>13.83</b>	<b>3.25</b>	<b>-12.73</b>	<b>1.75</b>	<b>2.03</b>	<b>6.38</b>	<b>5.46</b>	<b>9.85</b>	<b>9.87</b>	<b>21.37</b>	<b>-13.52</b>	<b>31.39</b>	<b>2.88</b>	<b>11/01/2006</b>
IM International Large Cap Value Equity (SA+CF) Median	17.70	5.48	-8.99	1.47	1.78	5.13	5.19	11.76	4.84	21.15	-14.75	25.58	3.78	
Rank	91	78	69	45	41	20	39	64	28	46	39	10	77	
<b>International Growth - Net</b>	<b>13.32</b>	<b>3.80</b>	<b>-23.99</b>	<b>-0.98</b>	<b>1.37</b>	<b>4.68</b>	<b>4.54</b>	<b>3.79</b>	<b>23.08</b>	<b>31.39</b>	<b>-16.09</b>	<b>28.01</b>	<b>2.85</b>	<b>11/01/2006</b>
MSCI ACW Ex US Grth Index (USD) (Net)	12.89	2.31	-23.05	-0.40	1.49	5.17	4.68	5.09	22.20	27.34	-14.43	32.01	3.56	
Difference	0.43	1.49	-0.94	-0.58	-0.12	-0.49	-0.14	-1.30	0.88	4.05	-1.66	-4.00	-0.71	
<b>International Growth - Gross</b>	<b>13.47</b>	<b>4.08</b>	<b>-23.58</b>	<b>-0.45</b>	<b>1.92</b>	<b>5.26</b>	<b>5.09</b>	<b>4.33</b>	<b>23.74</b>	<b>32.10</b>	<b>-15.61</b>	<b>28.74</b>	<b>3.39</b>	<b>11/01/2006</b>
IM International Large Cap Growth Equity (SA+CF) Median	13.91	4.20	-23.82	1.87	3.15	6.16	6.32	11.00	23.67	29.68	-13.59	32.00	4.94	
Rank	60	52	50	81	77	73	96	84	50	26	68	70	92	
<b>International Small Cap - Net</b>	<b>12.87</b>	<b>1.65</b>	<b>-21.69</b>	<b>0.05</b>	<b>0.13</b>	<b>4.60</b>	<b>5.55</b>	<b>11.57</b>	<b>14.63</b>	<b>23.91</b>	<b>-18.90</b>	<b>33.61</b>	<b>3.94</b>	<b>09/01/2006</b>
MSCI ACWI Ex US Sm Cap Index IMI (USD) (Net)	13.31	3.83	-19.97	1.07	0.67	5.08	5.24	12.93	14.24	22.42	-18.20	31.65	4.56	
Difference	-0.44	-2.18	-1.72	-1.02	-0.54	-0.48	0.31	-1.36	0.39	1.49	-0.70	1.96	-0.62	

Gross of fees performance is not available (N/A) for the International Small Cap composite which currently consists of BlackRock ACWI Ex-US Small Cap (CF), Templeton Investment Counsel (SA), and American Century Investment Mgmt (SA).

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all composites. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



Montana Board of Investments  
Comparative Performance  
Domestic Equity Managers

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Domestic Large Cap Equity</b>														
<b>BlackRock MSCI US Equity Index (SA) - Net</b>	7.06	2.03	-19.50	7.43	N/A	N/A	N/A	26.95	21.33	N/A	N/A	N/A	10.06	04/01/2019
MSCI US Index (USD) (Gross)	7.12	2.09	-19.46	7.47	9.31	11.35	12.45	26.97	21.37	31.64	-4.50	21.90	10.10	
Difference	-0.06	-0.06	-0.04	-0.04	N/A	N/A	N/A	-0.02	-0.04	N/A	N/A	N/A	-0.04	
<b>BlackRock MSCI US Equity Index (SA) - Gross</b>	7.06	2.04	-19.49	7.44	N/A	N/A	N/A	26.96	21.34	N/A	N/A	N/A	10.07	04/01/2019
IM U.S. Large Cap Core Equity (SA+CF) Median	8.08	3.12	-16.86	7.47	9.08	11.27	12.54	27.77	17.54	30.03	-5.07	22.09	9.96	
Rank	75	78	78	53	N/A	N/A	N/A	57	29	N/A	N/A	N/A	46	
<b>Northern Trust MSCI US Index (SA) - Net</b>	7.12	2.08	-19.46	7.46	N/A	N/A	N/A	26.97	21.34	31.70	N/A	N/A	10.50	11/01/2018
MSCI US Index (USD) (Gross)	7.12	2.09	-19.46	7.47	9.31	11.35	12.45	26.97	21.37	31.64	-4.50	21.90	10.50	
Difference	0.00	-0.01	0.00	-0.01	N/A	N/A	N/A	0.00	-0.03	0.06	N/A	N/A	0.00	
<b>Northern Trust MSCI US Index (SA) - Gross</b>	7.12	2.08	-19.45	7.47	N/A	N/A	N/A	26.98	21.36	31.71	N/A	N/A	10.51	11/01/2018
IM U.S. Large Cap Core Equity (SA+CF) Median	8.08	3.12	-16.86	7.47	9.08	11.27	12.54	27.77	17.54	30.03	-5.07	22.09	10.50	
Rank	74	78	76	51	N/A	N/A	N/A	56	29	31	N/A	N/A	48	
<b>iShares:Core S&amp;P Tot USM (ITOT) - Net</b>	7.13	2.18	-19.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-15.24	12/01/2021
S&P Tot Mkt Index	7.18	2.29	-19.53	6.89	8.65	10.93	12.03	25.66	20.79	30.90	-5.30	21.16	-15.31	
Difference	-0.05	-0.11	0.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.07	
<b>iShares:Core S&amp;P 500 (IVV) - Net</b>	7.61	2.33	-17.03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-12.28	12/01/2021
S&P 500 Index (Cap Wtd)	7.56	2.31	-18.11	7.66	9.42	11.48	12.56	28.71	18.40	31.49	-4.38	21.83	-13.41	
Difference	0.05	0.02	1.08	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.13	
<b>Domestic Mid Cap Equity</b>														
<b>iShares:Core S&amp;P Md-Cp (IJH) - Net</b>	10.82	8.07	-13.07	7.30	6.06	N/A	N/A	25.15	13.53	26.24	-13.95	N/A	7.29	07/01/2017
S&P Mid Cap 400 Index (Cap Wtd)	10.78	8.05	-13.06	7.23	6.71	9.94	10.78	24.76	13.66	26.20	-11.08	16.24	7.87	
Difference	0.04	0.02	-0.01	0.07	-0.65	N/A	N/A	0.39	-0.13	0.04	-2.87	N/A	-0.58	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

Montana Board of Investments  
Comparative Performance  
Domestic Equity Managers

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Domestic Small Cap Equity</b>														
<b>BlackRock MSCI USA Small Cap Index (SA) - Net</b>	<b>8.00</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>08/01/2022</b>
MSCI US Sm Cap Index (USD) (Net)	7.88	5.25	-17.55	5.13	5.70	9.06	10.00	19.11	18.32	26.74	-10.40	16.75	-4.88	
Difference	0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
<b>BlackRock MSCI USA Small Cap Index (SA) - Gross</b>	<b>8.01</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>08/01/2022</b>
<b>iShares Core S&amp;P Small Cap ETF (IJR) - Net</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>10/01/2022</b>
S&P Sm Cap 600 Index (Cap Wtd)	9.19	3.51	-16.10	5.80	5.88	9.66	10.82	26.82	11.29	22.78	-8.48	13.23	9.19	
Difference	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Gross of fees performance is not available (N/A) for the following funds: iShares:Core S&P Tot USM (ITOT), iShares:Core S&P 500 (IVV), iShares:Core S&P Md-Cp (IJH), and iShares:Core S&P Small Cap ETF (IJR).

The current annual expense ratios for the iShares:Core S&P Tot USM (ITOT), iShares:Core S&P 500 (IVV), iShares:Core S&P Md-Cp (IJH), and iShares:Core S&P Small Cap ETF (IJR) are 0.03%, 0.03%, 0.05%, and 0.06%, respectively.

See the Addendum for custom index specification.

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. iShares:Russ 2000 ETF (IWM) was liquidated in Q4 2022 to fund iShares:Core S&P Small Cap ETF (IJR).

Montana Board of Investments  
Comparative Performance  
International Equity Managers

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>International Developed Large Cap Equity</b>														
<b>Acadian Asset Non-US Equity (SA) - Net</b>	13.13	3.02	-13.02	3.38	2.69	8.14	6.50	16.67	8.89	19.38	-13.44	34.76	3.51	11/01/2006
MSCI ACW Ex US Val Index (USD) (Net)	15.70	3.63	-8.59	0.06	-0.05	4.19	2.72	10.46	-0.77	15.72	-13.97	22.66	1.90	
Difference	-2.57	-0.61	-4.43	3.32	2.74	3.95	3.78	6.21	9.66	3.66	0.53	12.10	1.61	
<b>Acadian Asset Non-US Equity (SA) - Gross</b>	13.26	3.25	-12.61	3.89	3.20	8.69	7.04	17.23	9.45	19.98	-12.99	35.45	4.07	11/01/2006
IM ACWI Ex US Value (SA+CF) Median	17.73	5.00	-11.07	1.27	1.80	5.17	5.13	11.05	6.52	20.95	-14.78	26.02	3.64	
Rank	94	75	68	16	19	9	11	7	43	57	26	8	38	
<b>Lazard Asset Management (SA) - Net</b>	14.37	2.99	-13.28	-0.35	0.63	3.97	N/A	4.11	9.59	21.70	-14.32	27.00	2.39	06/01/2015
Lazard Custom Index	14.28	2.96	-16.00	0.07	0.56	4.64	3.04	7.82	10.65	21.51	-15.55	22.66	2.07	
Difference	0.09	0.03	2.72	-0.42	0.07	-0.67	N/A	-3.71	-1.06	0.19	1.23	4.34	0.32	
<b>Lazard Asset Management (SA) - Gross</b>	14.51	3.25	-12.84	0.14	1.13	4.50	N/A	4.62	10.14	22.31	-13.88	27.65	2.91	06/01/2015
IM ACWI Ex US Value (SA+CF) Median	17.73	5.00	-11.07	1.27	1.80	5.17	5.13	11.05	6.52	20.95	-14.78	26.02	3.41	
Rank	90	75	68	69	57	72	N/A	94	39	40	35	38	65	
<b>BlackRock ACW Ex US SuperFund A (CF) - Net</b>	14.17	2.89	-15.86	0.23	1.07	5.02	4.00	8.00	10.81	21.77	-13.99	27.49	5.43	06/01/2009
MSCI ACW Ex US Index (USD) (Net)	14.28	2.96	-16.00	0.07	0.88	4.80	3.80	7.82	10.65	21.51	-14.20	27.19	5.23	
Difference	-0.11	-0.07	0.14	0.16	0.19	0.22	0.20	0.18	0.16	0.26	0.21	0.30	0.20	
<b>BlackRock ACW Ex US SuperFund A (CF) - Gross</b>	14.19	2.92	-15.80	0.30	1.14	5.09	4.08	8.07	10.89	21.85	-13.93	27.58	5.51	06/01/2009
IM All ACWI Ex US (SA+CF) Median	14.94	4.29	-16.84	1.16	2.24	5.56	5.68	9.43	14.60	24.86	-14.64	28.74	7.01	
Rank	67	79	44	71	73	62	87	63	60	66	43	62	90	
<b>iShares:Core MSCI EAFE ETF (IEFA) - Net</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10/01/2022
MSCI EAFE IM Index (USD) (Net)	17.11	6.07	-15.53	0.59	1.30	4.50	4.86	11.08	8.47	22.44	-14.40	26.16	17.11	
Difference	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
<b>Baillie Gifford (SA) - Net</b>	13.89	2.67	-31.43	-2.18	0.77	4.73	N/A	1.69	34.22	34.34	-17.35	31.99	3.34	06/01/2015
MSCI ACW Ex US Grth Index (USD) (Net)	12.89	2.31	-23.05	-0.40	1.49	5.17	4.68	5.09	22.20	27.34	-14.43	32.01	3.51	
Difference	1.00	0.36	-8.38	-1.78	-0.72	-0.44	N/A	-3.40	12.02	7.00	-2.92	-0.02	-0.17	
<b>Baillie Gifford (SA) - Gross</b>	14.02	2.92	-31.11	-1.72	1.26	5.24	N/A	2.16	34.86	34.99	-16.93	32.66	3.85	06/01/2015
IM ACWI Ex US Growth (SA+CF) Median	13.93	4.56	-23.62	1.10	2.95	6.06	5.95	9.00	22.14	29.57	-13.77	32.56	4.61	
Rank	49	80	92	93	85	73	N/A	91	13	9	85	49	73	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. See the Addendum for custom index specification. iShares:MSCI EAFE ETF (EFA) was liquidated in Q4 2022 to fund iShares:Core MSCI EAFE ETF (IEFA).



Montana Board of Investments  
Comparative Performance  
International Equity Managers

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Invesco (SA) - Net</b>	<b>12.93</b>	<b>4.59</b>	<b>-17.80</b>	<b>-0.10</b>	<b>1.80</b>	<b>4.60</b>	<b>N/A</b>	<b>5.60</b>	<b>14.84</b>	<b>29.29</b>	<b>-15.17</b>	<b>24.92</b>	<b>3.04</b>	<b>06/01/2015</b>
MSCI ACW Ex US Grth Index (USD) (Net)	12.89	2.31	-23.05	-0.40	1.49	5.17	4.68	5.09	22.20	27.34	-14.43	32.01	3.51	
Difference	0.04	2.28	5.25	0.30	0.31	-0.57	N/A	0.51	-7.36	1.95	-0.74	-7.09	-0.47	
<b>Invesco (SA) - Gross</b>	<b>13.09</b>	<b>4.90</b>	<b>-17.32</b>	<b>0.47</b>	<b>2.40</b>	<b>5.24</b>	<b>N/A</b>	<b>6.20</b>	<b>15.51</b>	<b>30.05</b>	<b>-14.64</b>	<b>25.70</b>	<b>3.67</b>	<b>06/01/2015</b>
IM ACWI Ex US Growth (SA+CF) Median	13.93	4.56	-23.62	1.10	2.95	6.06	5.95	9.00	22.14	29.57	-13.77	32.56	4.61	
Rank	68	34	20	66	66	73	N/A	77	83	45	56	91	75	
<b>International Developed Small Cap Equity</b>														
<b>American Century Investment Mgmt (SA) - Net</b>	<b>9.33</b>	<b>1.87</b>	<b>-30.70</b>	<b>-1.05</b>	<b>-0.13</b>	<b>4.41</b>	<b>N/A</b>	<b>6.24</b>	<b>31.60</b>	<b>29.44</b>	<b>-20.76</b>	<b>43.80</b>	<b>3.49</b>	<b>03/01/2014</b>
MSCI ACW Ex US Sm Cap Grth Index (USD) (Net)	11.73	2.83	-26.09	0.65	0.76	4.75	5.35	11.53	23.69	24.61	-18.27	33.64	3.65	
Difference	-2.40	-0.96	-4.61	-1.70	-0.89	-0.34	N/A	-5.29	7.91	4.83	-2.49	10.16	-0.16	
<b>American Century Investment Mgmt (SA) - Gross</b>	<b>9.55</b>	<b>2.29</b>	<b>-30.13</b>	<b>-0.24</b>	<b>0.70</b>	<b>5.28</b>	<b>N/A</b>	<b>7.10</b>	<b>32.68</b>	<b>30.50</b>	<b>-20.09</b>	<b>44.99</b>	<b>4.36</b>	<b>03/01/2014</b>
IM ACWI Ex US Growth (SA+CF) Median	13.93	4.56	-23.62	1.10	2.95	6.06	5.95	9.00	22.14	29.57	-13.77	32.56	4.60	
Rank	100	86	87	77	91	73	N/A	65	26	42	100	6	66	
<b>BlackRock MSCI ACW Ex US Sm Cap Index (CF) - Net</b>	<b>13.46</b>	<b>3.94</b>	<b>-19.65</b>	<b>1.24</b>	<b>0.90</b>	<b>5.33</b>	<b>5.49</b>	<b>12.84</b>	<b>14.45</b>	<b>22.68</b>	<b>-17.85</b>	<b>31.96</b>	<b>5.85</b>	<b>02/01/2012</b>
MSCI ACWI Ex US Sm Cap Index IMI (USD) (Net)	13.31	3.83	-19.97	1.07	0.67	5.08	5.24	12.93	14.24	22.42	-18.20	31.65	5.62	
Difference	0.15	0.11	0.32	0.17	0.23	0.25	0.25	-0.09	0.21	0.26	0.35	0.31	0.23	
<b>BlackRock MSCI ACW Ex US Sm Cap Index (CF) - Gross</b>	<b>13.49</b>	<b>3.98</b>	<b>-19.57</b>	<b>1.33</b>	<b>1.02</b>	<b>5.47</b>	<b>5.64</b>	<b>12.98</b>	<b>14.50</b>	<b>22.90</b>	<b>-17.74</b>	<b>32.15</b>	<b>6.00</b>	<b>02/01/2012</b>
<b>Templeton Investment Counsel (SA) - Net</b>	<b>14.49</b>	<b>1.60</b>	<b>-23.39</b>	<b>-1.97</b>	<b>-0.95</b>	<b>3.29</b>	<b>N/A</b>	<b>11.79</b>	<b>9.98</b>	<b>24.17</b>	<b>-18.48</b>	<b>33.07</b>	<b>2.32</b>	<b>03/01/2014</b>
Templeton Custom Index	13.31	3.83	-19.97	1.07	0.28	5.18	4.97	12.93	14.24	22.42	-19.75	29.72	3.04	
Difference	1.18	-2.23	-3.42	-3.04	-1.23	-1.89	N/A	-1.14	-4.26	1.75	1.27	3.35	-0.72	
<b>Templeton Investment Counsel (SA) - Gross</b>	<b>14.72</b>	<b>2.02</b>	<b>-22.75</b>	<b>-1.16</b>	<b>-0.12</b>	<b>4.17</b>	<b>N/A</b>	<b>12.71</b>	<b>10.91</b>	<b>25.20</b>	<b>-17.78</b>	<b>34.21</b>	<b>3.21</b>	<b>03/01/2014</b>
IM ACWI Ex US Value (SA+CF) Median	17.73	5.00	-11.07	1.27	1.80	5.17	5.13	11.05	6.52	20.95	-14.78	26.02	3.25	
Rank	88	84	96	87	80	74	N/A	36	33	24	84	8	51	
<b>Acadian Ex US Small Cap (SA) - Net</b>	<b>13.35</b>	<b>1.41</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-11.92</b>	<b>03/01/2022</b>
MSCI ACW Ex US Sm Cap Index (USD) (Net)	13.31	3.83	-19.97	1.07	0.67	5.08	5.24	12.93	14.24	22.42	-18.20	31.65	-13.52	
Difference	0.04	-2.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.60	
<b>Acadian Ex US Small Cap (SA) - Gross</b>	<b>13.53</b>	<b>1.74</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-11.51</b>	<b>03/01/2022</b>
IM All ACWI Ex US (SA+CF) Median	14.94	4.29	-16.84	1.16	2.24	5.56	5.68	9.43	14.60	24.86	-14.64	28.74	-10.51	
Rank	78	90	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	61	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. See the Addendum for custom index specification.



Montana Board of Investments  
Comparative Performance  
International Equity Managers

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>International Emerging Equity</b>														
<b>BlackRock MSCI Emg Mkts Index NL (CF) - Net</b>	<b>9.66</b>	<b>-3.15</b>	<b>-20.22</b>	<b>-2.95</b>	<b>-1.63</b>	4.92	1.19	<b>-2.82</b>	17.92	18.12	<b>-14.69</b>	37.05	1.63	02/01/2012
MSCI Emg Mkts Index (USD) (Net)	9.70	-2.99	-20.09	-2.69	-1.40	5.17	1.44	-2.54	18.31	18.42	-14.57	37.28	1.87	
Difference	-0.04	-0.16	-0.13	-0.26	-0.23	-0.25	-0.25	-0.28	-0.39	-0.30	-0.12	-0.23	-0.24	
<b>BlackRock MSCI Emg Mkts Index NL (CF) - Gross</b>	<b>9.68</b>	<b>-3.11</b>	<b>-20.16</b>	<b>-2.85</b>	<b>-1.53</b>	5.04	1.33	<b>-2.71</b>	18.04	18.25	<b>-14.60</b>	37.16	1.78	02/01/2012
<b>iShares:Core MSCI EmMkts (IEMG)</b>	<b>10.19</b>	<b>-3.47</b>	<b>-21.88</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-21.88</b>	01/01/2022
MSCI Emg Mkts IM Index (USD) (Net)	9.50	-2.31	-19.83	-1.82	-1.10	5.16	1.64	-0.28	18.39	17.65	-15.05	36.83	-19.83	
Difference	0.69	-1.16	-2.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-2.05	

Gross of fees performance is not available (N/A) for the following funds: iShares:Core MSCI EAFE ETF (IEFA), International Equity Pool STIF, and iShares:Core MSCI Em Mkts (IEMG).

The current annual expense ratios for the iShares:Core MSCI EAFE ETF (IEFA), and iShares:Core MSCI Em Mkts (IEMG): are 0.07%, and 0.09%, respectively.

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. See the Addendum for custom index specification.

Montana Board of Investments  
 Comparative Performance  
 Core Fixed Income Managers

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>US Fixed Income Aggregate - Net</b>	<b>1.59</b>	<b>-2.99</b>	<b>-11.87</b>	<b>-2.24</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-1.52</b>	<b>7.65</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>-2.20</b>	<b>12/01/2019</b>
Bloomberg US Agg Bond Index	1.87	-2.97	-13.01	-2.71	0.02	0.89	1.06	-1.55	7.51	8.72	0.01	3.54	-2.66	
Difference	-0.28	-0.02	1.14	0.47	N/A	N/A	N/A	0.03	0.14	N/A	N/A	N/A	0.46	
<b>Reams Asset Core Plus (SA) - Net</b>	<b>3.06</b>	<b>-1.98</b>	<b>-12.05</b>	<b>0.58</b>	<b>2.18</b>	<b>2.61</b>	<b>2.19</b>	<b>-1.25</b>	<b>17.14</b>	<b>8.08</b>	<b>1.31</b>	<b>3.21</b>	<b>4.45</b>	<b>10/01/2008</b>
Reams Custom Index	2.24	-2.31	-12.99	-2.54	0.13	1.18	1.28	-1.10	7.58	8.72	0.01	3.83	3.07	
Difference	0.82	0.33	0.94	3.12	2.05	1.43	0.91	-0.15	9.56	-0.64	1.30	-0.62	1.38	
<b>Reams Asset Core Plus (SA) - Gross</b>	<b>3.11</b>	<b>-1.88</b>	<b>-11.88</b>	<b>0.76</b>	<b>2.37</b>	<b>2.80</b>	<b>2.37</b>	<b>-1.07</b>	<b>17.35</b>	<b>8.28</b>	<b>1.49</b>	<b>3.38</b>	<b>4.64</b>	<b>10/01/2008</b>
IM U.S. Broad Market Core+ FI (SA+CF) Median	2.14	-2.26	-12.95	-1.74	0.84	1.93	1.92	-0.25	8.96	9.90	-0.24	4.78	4.24	
Rank	11	36	21	5	6	19	23	86	3	93	5	95	30	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



Montana Board of Investments  
Comparative Performance  
Non-Core Fixed Income Managers

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Neuberger Berman High Yield (SA) - Net</b>	4.24	3.98	-11.34	-0.42	1.94	4.26	3.48	4.76	6.30	13.75	-1.99	5.80	5.37	01/01/2010
Bloomberg US HY 2% Issuer Cap Index	4.17	3.50	-11.18	0.03	2.30	5.04	4.03	5.26	7.05	14.32	-2.08	7.50	5.77	
Difference	0.07	0.48	-0.16	-0.45	-0.36	-0.78	-0.55	-0.50	-0.75	-0.57	0.09	-1.70	-0.40	
<b>Neuberger Berman High Yield (SA) - Gross</b>	4.30	4.08	-11.16	-0.15	2.28	4.65	3.88	4.96	6.75	14.26	-1.56	6.27	5.80	01/01/2010
IM U.S. High Yield Bonds (SA+CF) Median	4.05	3.73	-9.64	0.58	2.69	4.86	4.22	5.31	6.54	14.25	-1.62	7.47	5.94	
Rank	34	25	83	83	77	67	69	60	44	50	49	79	62	
<b>Oaktree US High Yield (SA) (CAPP) - Net</b>	4.66	4.20	-9.92	0.24	2.22	N/A	N/A	4.91	6.56	15.44	-3.99	N/A	2.22	01/01/2018
Bloomberg US HY 2% Issuer Cap Index	4.17	3.50	-11.18	0.03	2.30	5.04	4.03	5.26	7.05	14.32	-2.08	7.50	2.30	
Difference	0.49	0.70	1.26	0.21	-0.08	N/A	N/A	-0.35	-0.49	1.12	-1.91	N/A	-0.08	
<b>Oaktree US High Yield (SA) (CAPP) - Gross</b>	4.75	4.40	-9.60	0.65	2.69	N/A	N/A	5.34	7.07	16.02	-3.47	N/A	2.69	01/01/2018
IM U.S. High Yield Bonds (SA+CF) Median	4.05	3.73	-9.64	0.58	2.69	4.86	4.22	5.31	6.54	14.25	-1.64	7.47	2.69	
Rank	15	15	49	49	51	N/A	N/A	49	40	17	92	N/A	51	
<b>Shenkman High Yield Fixed Income (SA) (CAPP) - Net</b>	3.74	3.56	-8.87	0.33	2.39	N/A	N/A	4.24	6.32	13.65	-1.96	N/A	2.27	12/01/2017
Bloomberg US HY 2% Issuer Cap Index	4.17	3.50	-11.18	0.03	2.30	5.04	4.03	5.26	7.05	14.32	-2.08	7.50	2.32	
Difference	-0.43	0.06	2.31	0.30	0.09	N/A	N/A	-1.02	-0.73	-0.67	0.12	N/A	-0.05	
<b>Shenkman High Yield Fixed Income (SA) (CAPP) - Gross</b>	3.84	3.76	-8.52	0.76	2.85	N/A	N/A	4.68	6.82	14.18	-1.46	N/A	2.73	12/01/2017
IM U.S. High Yield Bonds (SA+CF) Median	4.05	3.73	-9.64	0.58	2.69	4.86	4.22	5.31	6.54	14.25	-1.64	7.47	2.72	
Rank	64	48	33	45	40	N/A	N/A	71	44	51	47	N/A	49	
<b>Cohen &amp; Steers Preferred Securities (SA) - Net</b>	2.27	0.73	-11.53	N/A	N/A	N/A	N/A	3.70	N/A	N/A	N/A	N/A	-1.87	11/01/2020
Cohen & Steers Preferred Securities Custom Benchmark	3.10	0.94	-12.02	N/A	N/A	N/A	N/A	2.72	N/A	N/A	N/A	N/A	-2.79	
Difference	-0.83	-0.21	0.49	N/A	N/A	N/A	N/A	0.98	N/A	N/A	N/A	N/A	0.92	
<b>Cohen &amp; Steers Preferred Securities (SA) - Gross</b>	2.35	0.90	-11.23	N/A	N/A	N/A	N/A	4.06	N/A	N/A	N/A	N/A	-1.53	11/01/2020
<b>Payden &amp; Rygel EMD (SA) - Net</b>	10.43	4.62	-15.45	N/A	N/A	N/A	N/A	-3.49	N/A	N/A	N/A	N/A	-9.67	01/01/2021
Payden & Rygel EMD Custom Benchmark	8.22	3.23	-15.97	N/A	N/A	N/A	N/A	-3.92	N/A	N/A	N/A	N/A	-10.15	
Difference	2.21	1.39	0.52	N/A	N/A	N/A	N/A	0.43	N/A	N/A	N/A	N/A	0.48	
<b>Payden &amp; Rygel EMD (SA) - Gross</b>	10.52	4.80	-15.15	N/A	N/A	N/A	N/A	-3.14	N/A	N/A	N/A	N/A	-9.35	01/01/2021
IM Emerging Markets Debt (SA+CF) Median	8.42	4.03	-12.24	-3.53	-0.64	2.79	1.22	-2.13	6.71	14.30	-5.25	12.43	-8.63	
Rank	9	30	70	N/A	N/A	N/A	N/A	57	N/A	N/A	N/A	N/A	70	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences. No peer group is shown for Cohen & Steers Preferred Securities (SA) due to the lack of suitable Preferred Securities peer groups.





Montana Board of Investments  
Comparative Performance  
TFIP Fixed Income Managers

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
<b>Trust Funds Investment Pool Fixed Income</b>	<b>2.11</b>	<b>-2.05</b>	<b>-11.24</b>	<b>-1.30</b>	<b>1.01</b>	<b>1.75</b>	<b>1.86</b>	<b>-0.47</b>	<b>8.84</b>	<b>9.12</b>	<b>0.25</b>	<b>3.83</b>	<b>5.15</b>	<b>10/01/1995</b>
Bloomberg US Agg Bond Index	1.87	-2.97	-13.01	-2.71	0.02	0.89	1.06	-1.55	7.51	8.72	0.01	3.54	4.29	
Difference	0.24	0.92	1.77	1.41	0.99	0.86	0.80	1.08	1.33	0.40	0.24	0.29	0.86	
<b>Trust Funds Investment Pool Fixed Income</b>	<b>2.11</b>	<b>-2.05</b>	<b>-11.24</b>	<b>-1.30</b>	<b>1.01</b>	<b>1.75</b>	<b>1.86</b>	<b>-0.47</b>	<b>8.84</b>	<b>9.12</b>	<b>0.25</b>	<b>3.83</b>	<b>5.15</b>	<b>10/01/1995</b>
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	1.82	-2.89	-12.95	-2.20	0.45	1.39	1.50	-1.23	8.51	9.19	0.06	4.01	4.69	
Rank	23	7	9	10	12	16	16	21	36	55	29	61	6	
<b>Shenkman High Yield Fixed Income (SA) (TFIP) - Net</b>	<b>3.70</b>	<b>3.55</b>	<b>-9.04</b>	<b>0.21</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>4.31</b>	<b>6.05</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>1.30</b>	<b>07/01/2019</b>
Bloomberg US HY 2% Issuer Cap Index	4.17	3.50	-11.18	0.03	2.30	5.04	4.03	5.26	7.05	14.32	-2.08	7.50	1.15	
Difference	-0.47	0.05	2.14	0.18	N/A	N/A	N/A	-0.95	-1.00	N/A	N/A	N/A	0.15	
<b>Shenkman High Yield Fixed Income (SA) (TFIP) - Gross</b>	<b>3.80</b>	<b>3.75</b>	<b>-8.68</b>	<b>0.63</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>4.74</b>	<b>6.54</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>1.73</b>	<b>07/01/2019</b>
IM U.S. High Yield Bonds (SA+CF) Median	4.05	3.73	-9.64	0.58	2.69	4.86	4.22	5.31	6.54	14.25	-1.64	7.47	1.71	
Rank	67	49	34	49	N/A	N/A	N/A	68	51	N/A	N/A	N/A	49	
<b>Oaktree US High Yield (SA) (TFIP) - Net</b>	<b>4.88</b>	<b>4.35</b>	<b>-9.51</b>	<b>0.44</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>4.93</b>	<b>6.72</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>1.60</b>	<b>08/01/2019</b>
Bloomberg US HY 2% Issuer Cap Index	4.17	3.50	-11.18	0.03	2.30	5.04	4.03	5.26	7.05	14.32	-2.08	7.50	1.01	
Difference	0.71	0.85	1.67	0.41	N/A	N/A	N/A	-0.33	-0.33	N/A	N/A	N/A	0.59	
<b>Oaktree US High Yield (SA) (TFIP) - Gross</b>	<b>4.98</b>	<b>4.54</b>	<b>-9.20</b>	<b>0.86</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>5.36</b>	<b>7.25</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>2.03</b>	<b>08/01/2019</b>
IM U.S. High Yield Bonds (SA+CF) Median	4.05	3.73	-9.64	0.58	2.69	4.86	4.22	5.31	6.54	14.25	-1.64	7.47	1.61	
Rank	7	11	44	43	N/A	N/A	N/A	49	37	N/A	N/A	N/A	31	
<b>Neuberger Berman High Yield (SA) (TFIP) - Net</b>	<b>4.03</b>	<b>3.71</b>	<b>-11.43</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>4.62</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>3.93</b>	<b>04/01/2020</b>
Bloomberg US HY 2% Issuer Cap Index	4.17	3.50	-11.18	0.03	2.30	5.04	4.03	5.26	7.05	14.32	-2.08	7.50	5.09	
Difference	-0.14	0.21	-0.25	N/A	N/A	N/A	N/A	-0.64	N/A	N/A	N/A	N/A	-1.16	
<b>Neuberger Berman High Yield (SA) (TFIP) - Gross</b>	<b>4.07</b>	<b>3.81</b>	<b>-11.25</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>4.81</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>4.19</b>	<b>04/01/2020</b>
IM U.S. High Yield Bonds (SA+CF) Median	4.05	3.73	-9.64	0.58	2.69	4.86	4.22	5.31	6.54	14.25	-1.64	7.47	5.41	
Rank	49	46	83	N/A	N/A	N/A	N/A	64	N/A	N/A	N/A	N/A	80	

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



Montana Board of Investments  
Comparative Performance  
Trust Accounts

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
Abandoned Mine Trust	0.88	1.41	1.68	0.84	1.36	1.27	1.19	0.13	0.73	2.41	1.85	1.04	3.67	12/01/1993
Barker Hughesville St Response	2.51	-0.21	-3.87	N/A	N/A	N/A	N/A	1.36	N/A	N/A	N/A	N/A	-0.07	05/01/2020
Belt Water Treatment Plant Fund	2.46	-0.14	-3.71	1.39	N/A	N/A	N/A	1.34	6.80	8.56	N/A	N/A	3.02	03/01/2018
Big Sky Economic Development Fund	2.70	-0.31	-4.27	1.33	2.58	2.98	2.91	1.45	7.12	8.67	0.48	3.97	4.33	07/01/2005
Butte Area One Restoration	2.34	-0.05	-3.26	1.29	2.35	2.47	2.19	1.26	6.07	6.76	1.24	2.92	2.94	11/01/2008
Clark Fork River Restoration	2.33	-0.04	-3.17	1.16	2.27	2.42	2.24	1.19	5.65	7.04	0.96	2.85	3.18	11/01/2008
Coal Tax Cultural Trust Fund	2.66	-0.32	-4.20	1.31	2.56	2.96	2.89	1.43	6.99	8.64	0.47	3.96	5.56	12/01/1993
Coal Tax Park Acquisition	2.58	-0.23	-4.02	1.30	2.56	2.95	2.87	1.37	6.86	8.63	0.48	3.96	5.53	12/01/1993
East Helena Compensation Fund	1.27	1.02	0.48	1.18	2.04	2.12	1.86	0.42	2.65	5.52	1.20	2.56	1.86	01/01/2013
East Helena Greenway Trail Maintenance	2.18	0.11	-2.81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.12	03/01/2021
Endowment for Children	2.63	-0.40	-4.18	1.31	2.54	2.89	2.82	1.41	7.01	8.54	0.46	3.89	4.28	08/01/2007
Flying J CECRA Facilities Fund	2.50	-0.20	-3.85	N/A	N/A	N/A	N/A	1.36	N/A	N/A	N/A	N/A	-0.04	05/01/2020
FWP License Account	1.55	0.59	-1.41	0.29	1.13	1.09	0.92	0.46	1.85	3.33	1.50	1.11	2.66	11/01/1997
FWP Mitigation Trust Fund	2.06	0.08	-2.79	0.64	1.69	1.46	1.31	0.98	3.84	5.46	1.14	1.15	3.58	12/01/1993
FWP Real Property Trust	2.60	-0.28	-4.13	1.26	2.54	2.90	2.81	1.38	6.83	8.62	0.51	3.80	4.98	12/01/1993
Group Benefits	1.40	0.80	-0.33	0.78	1.54	1.45	1.27	0.63	2.05	4.01	1.37	1.30	3.59	12/01/1993
Hail Insurance Investments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11/01/2022
Harold Hamm Endowment	2.53	-0.23	-3.94	1.31	2.55	N/A	N/A	1.43	6.71	8.45	0.57	1.11	2.18	07/01/2016
Invasive Species Trust Fund	2.38	0.05	-3.88	N/A	N/A	N/A	N/A	1.19	N/A	N/A	N/A	N/A	-0.90	10/01/2020
Libby Asbestos Site State Cost	2.43	-0.12	-3.60	N/A	N/A	N/A	N/A	1.25	N/A	N/A	N/A	N/A	0.01	05/01/2020
Luttrell Pit - Operational & Maintenance	2.41	0.09	-3.27	N/A	N/A	N/A	N/A	1.36	N/A	N/A	N/A	N/A	0.14	05/01/2020
Montana Pole	2.43	0.24	-2.92	1.22	2.34	2.62	2.51	1.14	5.61	7.48	0.74	3.38	4.70	09/01/1996
Montana State University	1.25	1.09	0.58	0.73	1.38	1.32	1.06	0.30	1.30	2.87	1.87	1.39	1.84	08/01/2004
Montana Tech-UM Agency Funds	0.98	1.31	1.36	0.86	1.41	1.28	0.97	0.20	1.01	2.56	1.91	1.22	1.70	03/01/2003
MT BOI - Clark Fork Site	2.62	-0.16	-3.95	1.28	2.47	2.80	2.64	1.44	6.65	8.00	0.67	3.64	3.71	11/01/2008
MT BOI UOFM Other	1.32	0.81	-0.16	1.33	1.99	2.06	1.80	0.73	3.47	4.54	1.42	2.15	2.76	08/01/2002
MUS Group Insurance	1.12	1.07	0.57	0.84	1.57	1.47	1.30	0.26	1.70	3.39	1.96	1.09	1.31	10/01/2011
MUS Workers Compensation	1.37	0.96	0.10	1.03	1.82	N/A	N/A	0.46	2.55	4.43	1.62	1.80	1.65	04/01/2016

Performance shown is gross of fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.



Montana Board of Investments  
Comparative Performance  
Trust Accounts

As of December 31, 2022

	QTD	FYTD	CYTD/ 1 Year	3 Years	5 Years	7 Years	10 Years	2021	2020	2019	2018	2017	Since Incep.	Inception Date
Older Montanans Trust	2.65	-0.36	-4.23	1.35	2.59	2.95	2.86	1.41	7.19	8.62	0.49	3.87	4.15	08/01/2007
Permanent Coal Trust Excl Crp	1.95	0.10	-2.02	1.74	2.64	2.93	2.98	1.82	5.57	6.81	1.28	3.49	5.33	12/01/1993
PERS Defined Cont Disability	7.12	1.22	-15.55	2.91	4.60	5.80	N/A	13.16	14.06	20.77	-4.88	14.57	5.54	09/01/2015
Potter Trust Fund	2.53	-0.23	-3.96	1.31	2.54	N/A	N/A	1.41	6.78	8.47	0.51	3.87	2.53	06/01/2016
Resource Indemnity Trust	2.71	-0.40	-4.44	1.31	2.61	3.01	2.94	1.48	7.23	8.88	0.44	4.01	5.63	12/01/1993
School Facilities Fund	2.77	-0.18	-4.24	1.27	2.27	N/A	N/A	1.39	6.97	7.88	-0.13	N/A	2.27	01/01/2018
Smelter Hill Up Restorative	2.41	-0.11	-3.54	1.05	2.06	1.99	1.73	1.29	5.62	5.64	1.57	1.85	2.05	11/01/2008
State Fund Insurance	2.97	-0.48	-7.68	0.79	2.42	2.94	3.09	3.04	7.62	9.65	0.38	5.05	5.11	12/01/1993
Streamside Tailings Operable Unit	2.48	-0.18	-3.70	1.26	2.42	2.76	2.69	1.27	6.47	7.92	0.57	3.69	4.84	02/01/1999
Subsequent Injury Fund	0.86	1.41	1.66	0.84	1.35	1.21	0.89	0.13	0.73	2.28	1.98	1.11	2.84	12/01/1993
Tobacco Trust Fund	2.69	-0.36	-4.40	1.30	2.56	2.96	2.90	1.51	7.10	8.67	0.46	3.96	5.05	01/01/2001
Treasurers	0.94	1.30	1.34	0.69	1.26	1.15	0.87	0.10	0.63	2.28	1.97	1.07	2.68	12/01/1993
Treasure State Endowment	2.69	-0.38	-4.37	1.31	2.59	2.99	2.92	1.47	7.15	8.81	0.46	4.00	5.50	12/01/1993
Treasure State Reg. Water System	2.69	-0.38	-4.37	1.31	2.59	2.99	2.92	1.47	7.15	8.80	0.45	4.00	5.20	06/01/2000
Trust and Legacy Account	2.70	-0.34	-4.37	1.32	2.60	3.00	2.94	1.47	7.19	8.84	0.43	4.00	6.19	07/01/1991
UCFRB Assess/Litig Cost Rec	2.68	-0.39	-4.37	1.18	2.46	2.84	2.76	1.53	6.68	8.50	0.49	3.77	5.13	07/01/1999
UCFRB Restoration Fund	2.63	-0.33	-4.22	1.25	2.55	2.85	2.76	1.36	6.90	8.52	0.67	3.73	5.06	06/01/1999
Upper Blackfoot Response	1.01	1.28	1.22	1.03	1.76	1.77	1.50	0.32	1.55	4.24	1.49	1.90	1.53	09/01/2010
Weed Control Trust	2.71	-0.40	-4.44	1.31	2.61	3.01	2.94	1.48	7.23	8.88	0.44	4.01	4.86	12/01/1993
Wildlife Habitat Trust	2.60	-0.27	-4.10	1.25	2.52	2.88	2.80	1.38	6.75	8.54	0.51	3.78	4.98	12/01/1993
Yellowstone Pipeline Cleanup Fund	1.78	0.50	-1.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.04	04/01/2021
Zortman/Landusky LT H2O	0.88	1.41	1.68	0.84	1.36	1.31	1.12	0.13	0.73	2.28	1.98	1.01	5.81	09/01/1999
Z/L Long Term H2O Trust Fund	0.88	1.41	1.68	0.84	1.36	1.32	1.12	0.13	0.73	2.28	1.98	1.08	3.77	09/01/2005

Performance shown is gross of fees. Fiscal year ends on 06/30. Since inception performance may vary from State Street reported performance due to calculation methodology differences.

### Performance Notes

- All gross and net performance data is provided by State Street Analytics (SSA). Reported gross returns for the retirement plans prior to 07/01/2002 are net of all fees.
- Gross performance for the retirement plans is calculated with fee accruals provided by Montana's Accounting department.
- Gross of fees performance is not available (N/A) for the following funds: SPDR S&P 500 ETF (SPY), Domestic Equity Pool STIF, iShares:Core S&P Md-Cp (IJH), iShares:Russ 2000 ETF (IWM), iShares:MSCI EAFE ETF (EFA), and International Equity Pool STIF. The current annual expense ratios are as listed below.

### Index Notes

- Retirement plan custom benchmarks are provided by State Street Bank and are calculated daily using actual allocations.
- The CAPP Custom Benchmark consists of the portfolio weighted average of the primary benchmark for each CAPP asset class.
- The Short Term Custom Benchmark consists of 100% ICE 1 Mo LIBOR Index (USD) through 4/30/2018, and 100% Federal Reserve US Treasury 1 Mo Constant Maturity Index thereafter.
- The Domestic Equity Custom Index consists of 100% S&P 1500 Comp Index through 04/30/2017 and 100% MSCI USA IM Index (USD) (Gross) thereafter.
- The International Equity Custom Index consists of 100% MSCI EAFE Index (USD) (Net) through 10/31/2006, 100% MSCI ACW Ex US Index (USD) (Net) through 06/30/2007, 92.5% MSCI ACW Ex US Index (USD) (Net) and 7.5% MSCI ACW Ex US SC IM Index (USD) (Net) through 02/28/2014, and 100% MSCI ACW Ex-US IM Index thereafter.
- The Real Estate Custom Index consists of 100% NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag) through 03/31/2017, 100% MSCI US REIT Index (USD) (Gross) through 06/30/2020, and 100% NCREIF ODCE (AWA) (1 Qtr Lag) Index thereafter.
- The Private Investments Custom Index consists of 100% S&P 1500 Comp Index+4% (1 Qtr Lag) through 03/31/2017, 100% MSCI US Small Cap Index (USD) (Gross) through 12/31/2020, and the portfolio weighted MSCI US SC / S&P LSTA US Leverage Loan 100 Index for PE / PC thereafter.
- The Lazard Custom Index consists of 100% MSCI ACW Ex US Value Index (USD) (Net) through 6/30/2018 and 100% MSCI ACW Ex US Index (USD) (Net) thereafter.
- The Templeton Custom Index consists of 100% MSCI ACW Ex US Small Cap Value Index (USD) (Net) through 5/31/2018, and 100% MSCI ACW Ex US Small Cap Index (USD) (Net) thereafter.
- The Reams Custom Index consists of 100% Bloomberg US Unv Bond Index through 03/31/2017, 100% Bloomberg US Agg Bond Index through 12/31/2019, and 100% Bloomberg US Unv Bond Index thereafter.
- The Cohen & Steers Custom Index consists of 60% ICE BofAML US IG Institutional Capital Securities Index, 20% ICE BofAML Core Fixed Rate Preferred Securities Index, and 20% Bloomberg Barclays Developed Market USD Contingent Capital Index.
- The Payden & Rygel Custom Index consists of 70% JP Morgan EMBI Global Diversified Index, 30% JP Morgan GBI-EM Global Diversified Index.
- The JPM US Equity Custom Benchmark consists of 100% S&P 500 Index (Cap Weighted) through 06/30/2019 and 100% MSCI US Index (USD) (Gross) thereafter.
- The Real Assets Custom Index consists of 100% MSCI All Country World Commodity Producers Index (USD) (Net) through 12/31/2020 and 33.33% MSCI All Country World Commodity Producers Index (USD) (Net), 33.33% MSCI All Country World Infrastructure Index, 33.33% Bloomberg Barclays Global Inflation Linked US TIPS Index thereafter.
- The Core Fixed Income Custom Index consists of 100% Bloomberg US Agg Bond Index through 03/31/2017, the portfolio weighted average of Broad Fixed Income - PAC Custom Blend, Bloomberg US Corp Inv Grade Index, Bloomberg US MBS Index, Bloomberg US Int TIPS Index, Bloomberg US Trsy Int Trm Index through 11/30/2019, and 100% Bloomberg US Agg Bond Index thereafter.
- The plan sponsor peer group was updated from All Public Plans >\$3B Total Fund Median to All Public Plans >\$5B Total Fund Median.
- As of 07/01/2021, the Trust Fund Custom Index Benchmark is the portfolio weighted averaged of the primary benchmark, consisting of NCREIF ODCE Index (1Q lag), Bloomberg US High Yield - 2% Issuer Cap Index, and Bloomberg US Aggregate Bond Index.

### Trust Accounts Comments

- Hail Insurance Investments was added in 11/2022.
- The Yellowstone Pipeline Cleanup Fund was added in 04/2021.
- The East Helena Greenway Trail Maintenance Fund was added in 03/2021.
- The Invasive Species Trust Fund was added in 10/2020.
- Barker Hughesville St Response, Libby Asbestos Site State Cost, Flying J CECRA Facilities Fund, and Luttrell Pit - Operations and Maintenance were added in 05/2020.
- The Belt Water Treatment Plant Fund was added in 03/2018.
- The School Facilities Fund was added in 01/2018.
- The Potter Trust Fund and the Harold Hamm Endowment were added in 06/2016.
- MUS Workers Compensation was added in 04/2016.

### Manager Transition Comments

- iShares:Russ 2000 ETF (IWM) and iShares:MSCI EAFE ETF (EFA) were liquidated in Q4 2022 to fund iShares:Core S&P Small Cap ETF (IJR) and iShares:Core MSCI EAFE ETF (IEFA), respectively.

**Manager Transition Comments (cont.)**

- BlackRock MSCI USA Small Cap Index was transitioned from a commingled fund to a separate account structure during Q3 2022 to obtain a lower fee structure.
- Acadian Ex US Small Cap (SA) was funded in 02/2022.
- DFA Emg Mkts Sm Cap;l (DEMSX) was liquidated in 02/2022.
- DFA Intl Sm Co;l (DFISX) was liquidated in 02/2022.
- iShares:MSCI Em Mkts (EEM) was liquidated in 01/2022.
- iShares:Core MSCI EmMkts (IEMG) was funded in 12/2021.
- SPDR S&P 500 ETF (SPY) was liquidated in 12/2021.
- iShares:Core S&P 500 (IVV) was funded in 11/2021.
- DFA US Sm Cap Tr (CF) was liquidated in 11/2021.
- Jacobs Levy 130/30 Large Cap (SA) was liquidated in 11/2021.
- J.P. Morgan 130/30 (SA) was liquidated in 11/2021.
- T. Rowe U.S. Structured Research (SA) was liquidated in 11/2021.
- Vaughan Nelson Management (SA) was liquidated in 11/2021.
- iShares:Core S&P Tot USM (ITOT) was funded in 11/2021.
- Payden & Rygel EMD (SA) was funded in 12/2020.
- Cohen & Steers Preferred Securities (SA) was funded in 10/2020.
- Neuberger Berman High Yield (SA) and TFIP Private Real Estate were funded in the Trust Fund Investment Pool during Q1 2020.
- Post High Yield Plus (SA), GMO:Bchmk-Fr All;III (GBMFX), and PIMCO:All Asset;Inst (PAAIX) were liquidated during Q3 2019.
- Oaktree US High Yield Fixed Income (SA) and Shenkman High Yield Fixed Income (SA) were funded in the Trust Fund Investment Pool during Q3 2019.
- Artisan Partners (SA), Iridian Asset Management (SA), Congress Mid Cap Growth (SA), TimeSquare Capital Management (SA), and Alliance Bernstein (SA) were liquidated in Q2 2019.
- BlackRock MSCI US Equity Index (CF) was transitioned into a separately managed account during Q1 2019.
- Northern Trust MSCI US Equity Index (SA), GMO:Bchmk-Fr All;III (GBMFX), and PIMCO:All Asset;Inst (PAAIX) were funded during Q4 2018.
- Voya Investment Management (SA) was liquidated in 07/2018.
- iShares:Russ 2000 ETF (IWM) was funded in 04/2018.
- Jacobs Levy 130/30 Large Cap (SA) was funded in 03/2018.
- Congress Mid Cap Growth (SA) was funded in 02/2018.
- Oaktree US High Yield (SA) and Shenkman High Yield Fixed Income (SA) were funded in 12/2017.
- Analytic Investors 130/30 (SA) was liquidated in 09/2017.
- Effective 07/2016, the Metropolitan West Capital Management legal entity merged into the Wells Capital Management Incorporated legal entity. The Metropolitan West Capital Mgmt (SA) has been updated to Wells Capital Management (SA) to reflect the change.
- Residual assets from the liquidation of AllianceBernstein Int'l Value (SA), Martin Currie (SA), Hansberger Global Investors (SA), and Aberdeen Total Return Bond Strategy (SA) were distributed in 06/2017.
- INTECH Enhanced Plus was liquidated in 06/2017.
- BlackRock MSCI US Equity Index (CF), BlackRock MSCI US Sm Cap Equity Index (CF), and iShares:Core S&P Md-Cp (IJH) were funded in 06/2017.
- SPDR S&P 500 ETF (SPY) and iShares:MSCI EAFE ETF (EFA) were re-funded in 06/2017.
- BlackRock Equity Index Fund A (CF) and BlackRock Mid Cap Equity Index A (CF) were liquidated in 05/2017.
- Nicholas Investment Partners was liquidated in 07/2016. Residual assets from liquidation were distributed in 03/2017.
- Wells Capital Management (SA), Domestic Equity Pool SPIF, and International Equity Pool SPIF were liquidated in 10/2016. Wells Capital Management (SA) residual assets from liquidation were distributed in 03/2017.
- DFA Emg Mkts Sm Cap;l (DEMSX) was funded in 02/2017.
- SPDR S&P 500 ETF (SPY) was liquidated in 01/2017.
- iShares:MSCI Em Mkts (EEM) was funded in 12/2016.
- SPDR S&P 500 ETF (SPY) was initially funded in 09/2015, was then liquidated in 12/2015, and was re-funded in 10/2016.
- iShares S&P SmallCap 600 Index ETF (IJR) was liquidated in 01/2016.
- Effective 05/2014, ING rebranded to Voya. The ING Investment Management (SA) has been updated to Voya Investment Management (SA) to reflect the change.

**Miscellaneous Comments**

- Fiscal year ends on 06/30.
- During Q4 2019 Diversifying Strategies investments were liquidated and Investment Grade Credit, US Treasury & Agency, and TIPS were consolidated into the Core Fixed Income composite.
- Non-Core Fixed Income currently consists of High Yield and EMD.
- Private Investments currently consist of Private Equity, Private Credit, Venture Capital, and Passive ETFs.
- During Q1 2021 the Natural Resources PAC was renamed to the Real Assets PAC.

**Montana Board of Investments  
Fee Schedule**

**As of December 31, 2022**

	<b>Fee Schedule</b>	<b>Market Value As of 12/31/2022 (\$)</b>
iShares:Core S&P Tot USM (ITOT)	0.03 % of Assets	166,715,104
iShares:Core S&P 500 (IVV)	0.03 % of Assets	124,541,672
iShares:Core S&P Md-Cp (IJH)	0.05 % of Assets	17,574,518
iShares:Core S&P Small Cap ETF (IJR)	0.06 % of Assets	74,875,761
iShares:Core MSCI EAFE ETF (IEFA)	0.07 % of Assets	136,043,548
iShares:Core MSCI EmMkts (IEMG)	0.09 % of Assets	65,550,128

ETF fees are sourced from Morningstar and/or the investment manager.

PORTLAND

BOISE

CHICAGO

NEW YORK

**Disclaimer of Warranties and Limitation of Liability** - This document was prepared by RVK, Inc. (RVK) and may include information and data from some or all of the following sources: client staff; custodian banks; investment managers; specialty investment consultants; actuaries; plan administrators/record-keepers; index providers; as well as other third-party sources as directed by the client or as we believe necessary or appropriate. RVK has taken reasonable care to ensure the accuracy of the information or data, but makes no warranties and disclaims responsibility for the accuracy or completeness of information or data provided or methodologies employed by any external source. This document is provided for the client's internal use only and does not constitute a recommendation by RVK or an offer of, or a solicitation for, any particular security and it is not intended to convey any guarantees as to the future performance of the investment products, asset classes, or capital markets.







# Investment Update

Board Meeting: February 22-23, 2023

Information as of: December 31, 2022

THIS PAGE INTENTIONALLY LEFT BLANK

# Table of Contents

CIO Update	4
• Total AUM	8
• Pension	11
• STIP	16
• TFIP	18
• SFIP	20
Macro Attribution	23
Domestic Equity	26
International Equity	29
Non-Core Fixed Income	32
Real Estate	36
Real Assets	40
Private Investments	44
Core Fixed Income	48
Appendix	53

# CIO Update

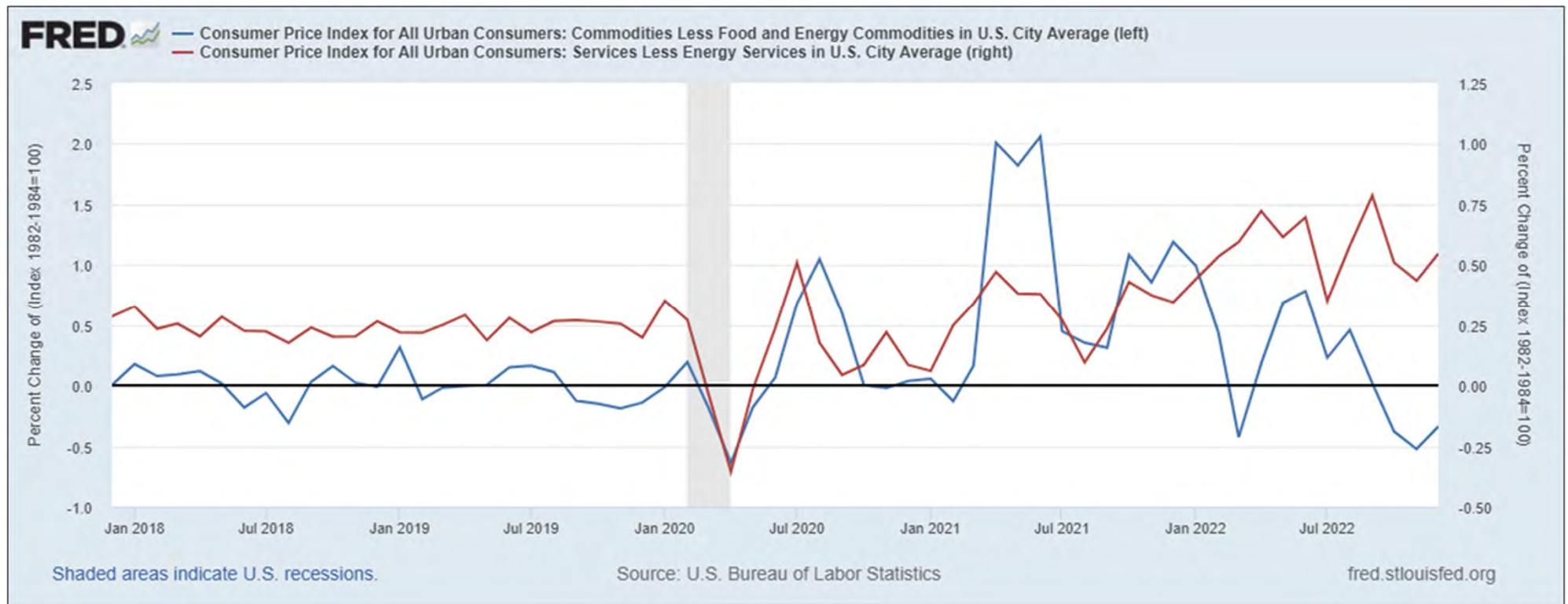
## Economic Environment

- **Leading Economic Index** – Steady decline over the last 10 months. The current Atlanta Fed GDP Now Forecast is for 0.7% growth in Q1 2023.
- **Job Growth** – Non-Farm Payrolls increased 349K on average over the last 6 months. Job growth was 517K in January.
- **Retail Sales** – Retail sales ex. auto decelerated in the 4<sup>th</sup> quarter with a month to month decline of 1.1% in December.
- **Inflation** – CPI ex. Food and Energy is up 6.5% over the year. However, Core CPI increased a more modest 0.3% month to month.
- **Housing** – Existing home sales and housing starts have fallen sharply as mortgage rates increased.
- **Currency** – The U.S. Dollar was exceptionally strong versus major world currencies in most of 2022. However, this dynamic has sharply reversed.

# CIO Update

## Economic Environment

Inflation in Core Services is still high versus Core Goods.



# CIO Update

## Economic Environment

Wage inflation remains above average and labor force participation remains below average.



# CIO Update

## Economic Environment

The U.S. dollar is still strong versus major currencies. However, the value has been declining in recent months.

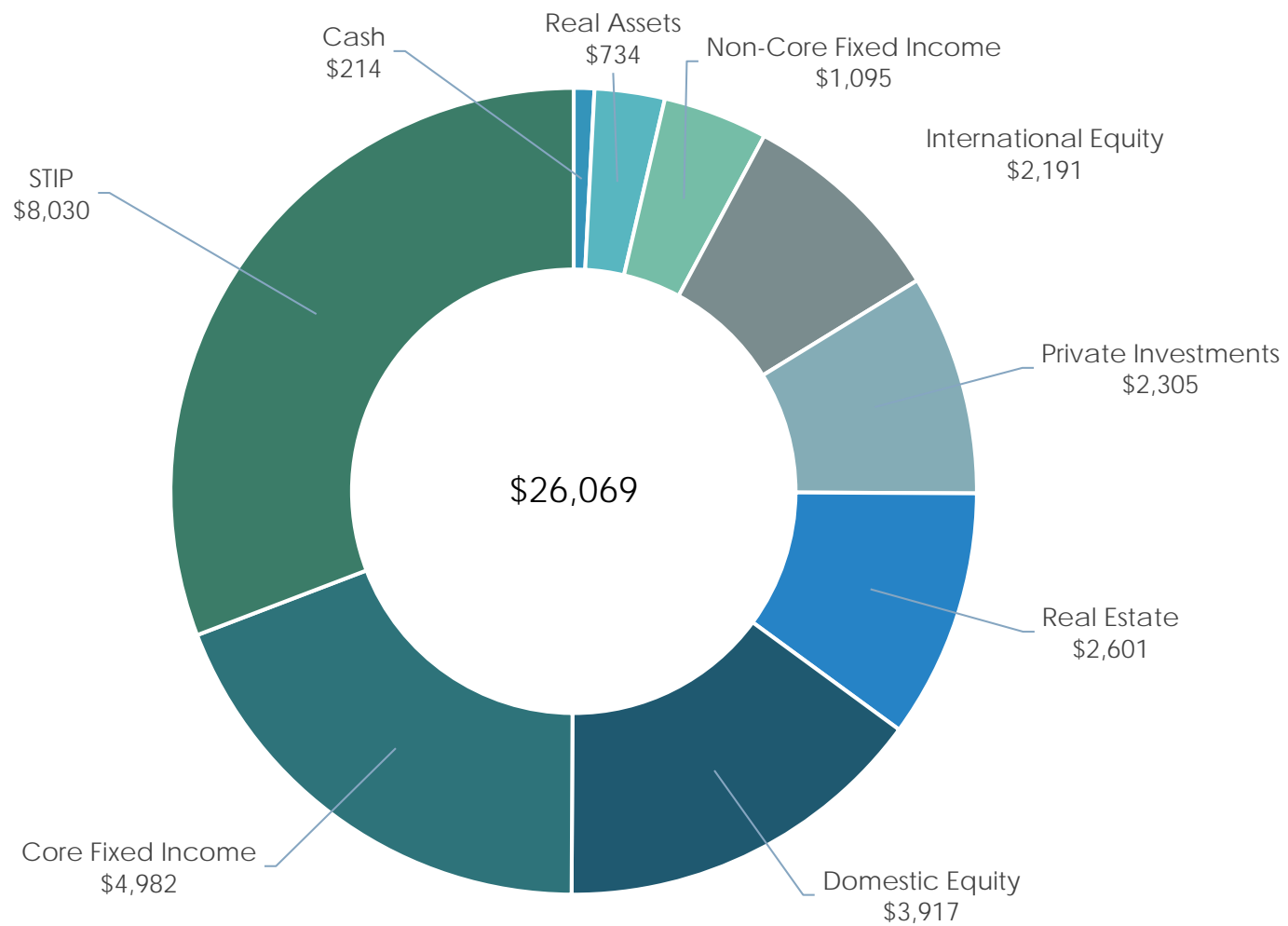
U.S. Dollar Index – February 2018 – February 2023



Source: Bloomberg 02/03/2023

# CIO Update

## AUM by Asset Class

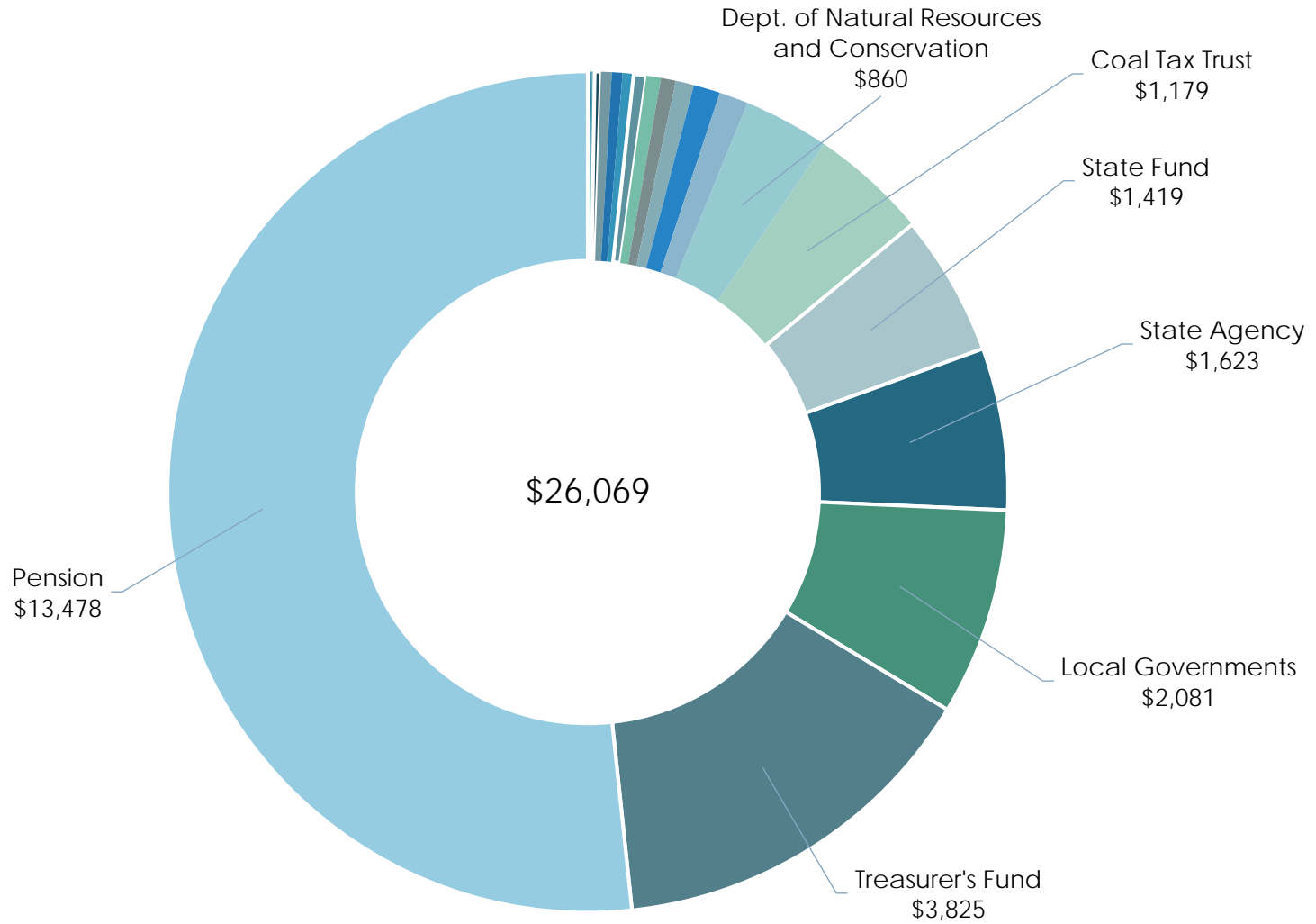


\* Dollar values are in \$1,000,000  
December 31, 2022



# CIO Update

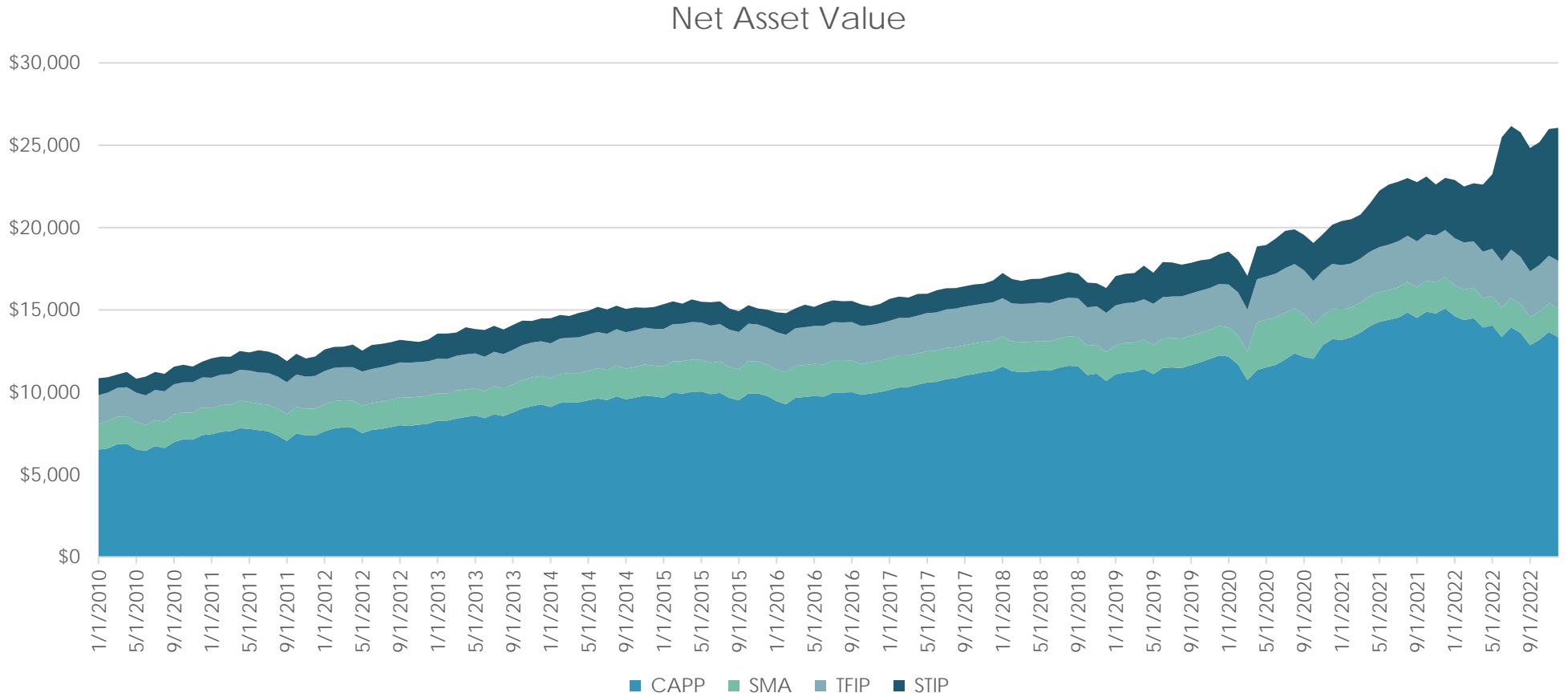
## AUM by Participant Type



\* Dollar values are in \$1,000,000  
December 31, 2022

# CIO Update

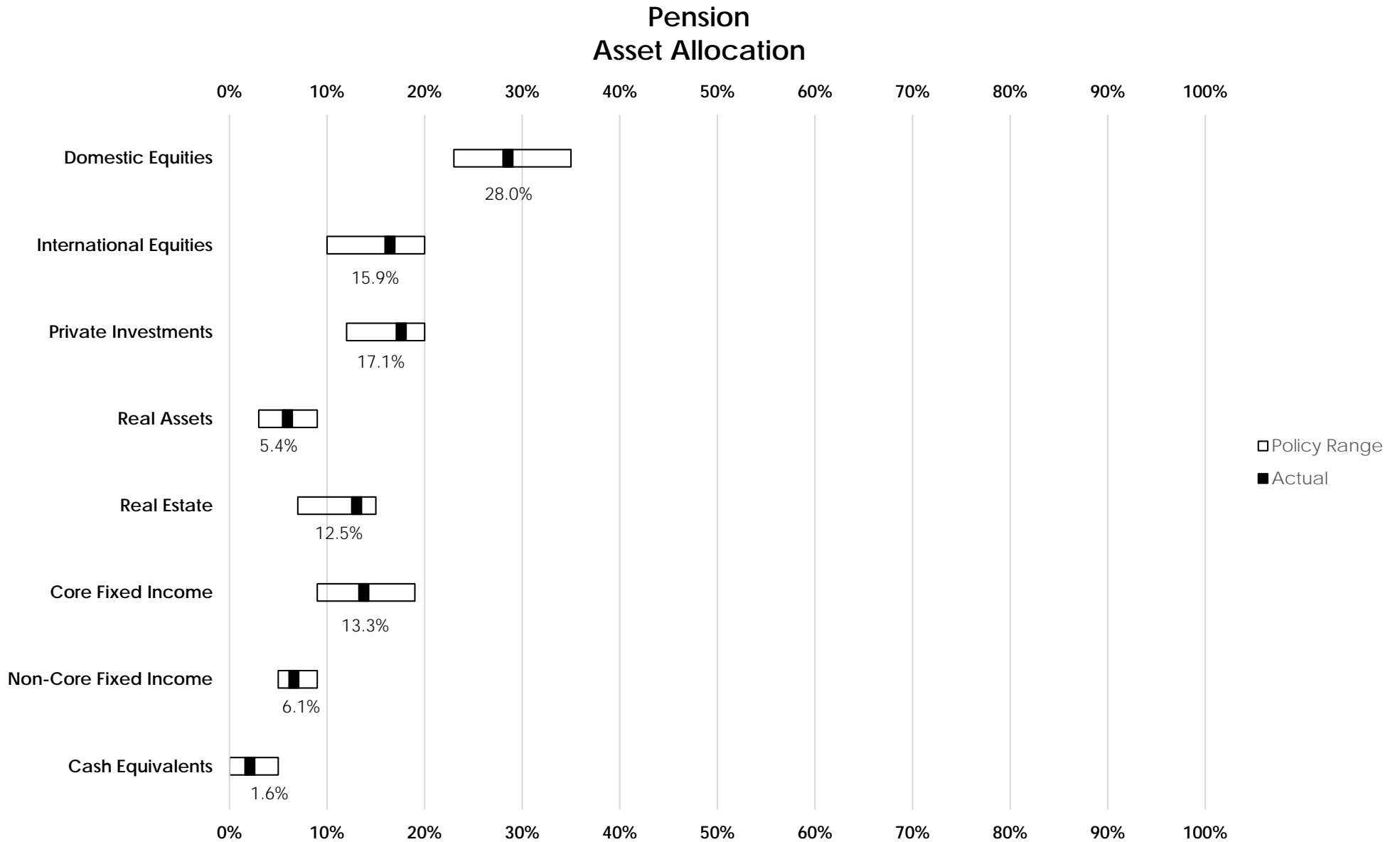
## AUM by Pool



\* Dollar values are in \$1,000,000  
December 31, 2022

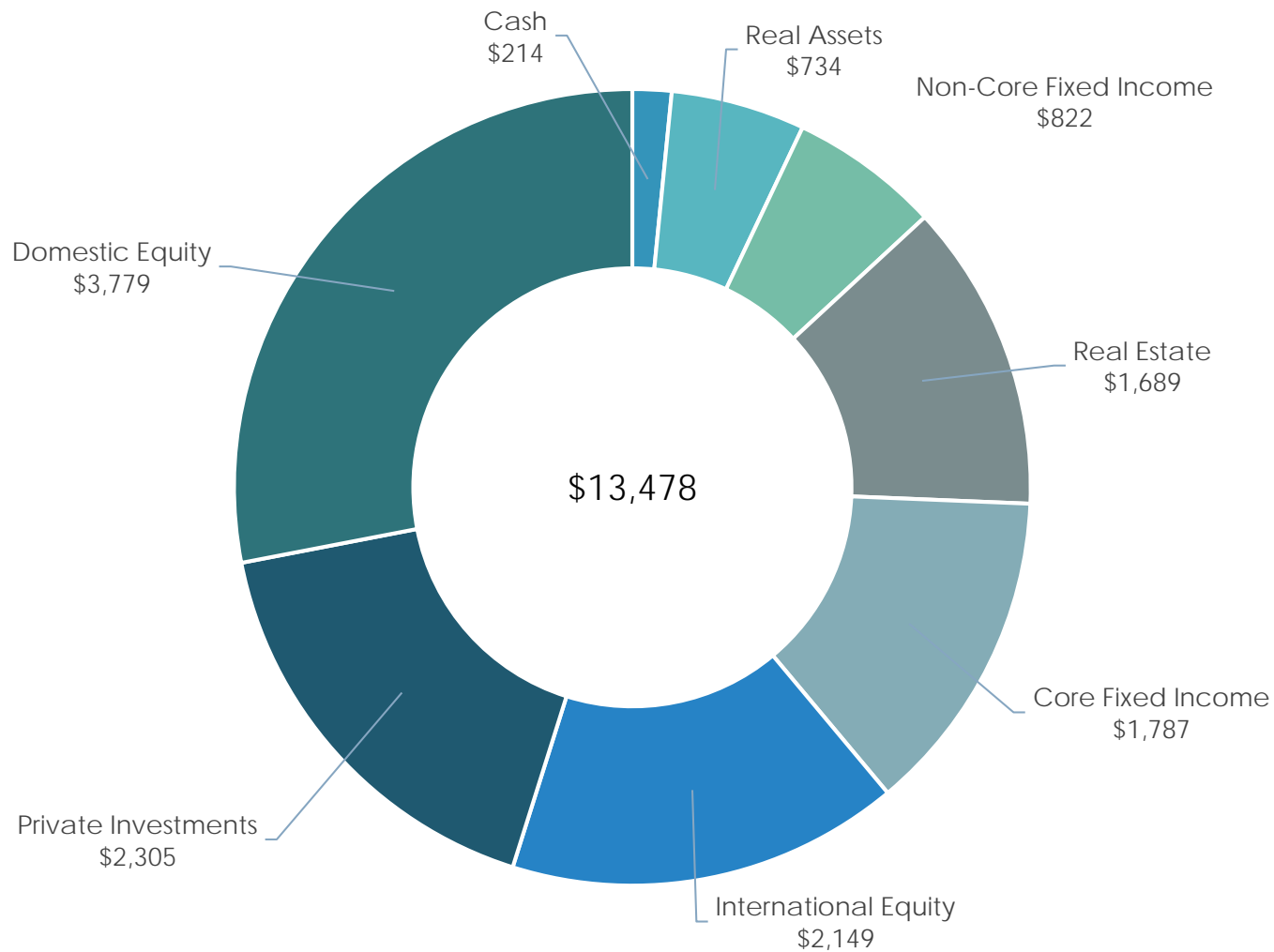
# CIO Update

## Pension Asset Allocation



# CIO Update

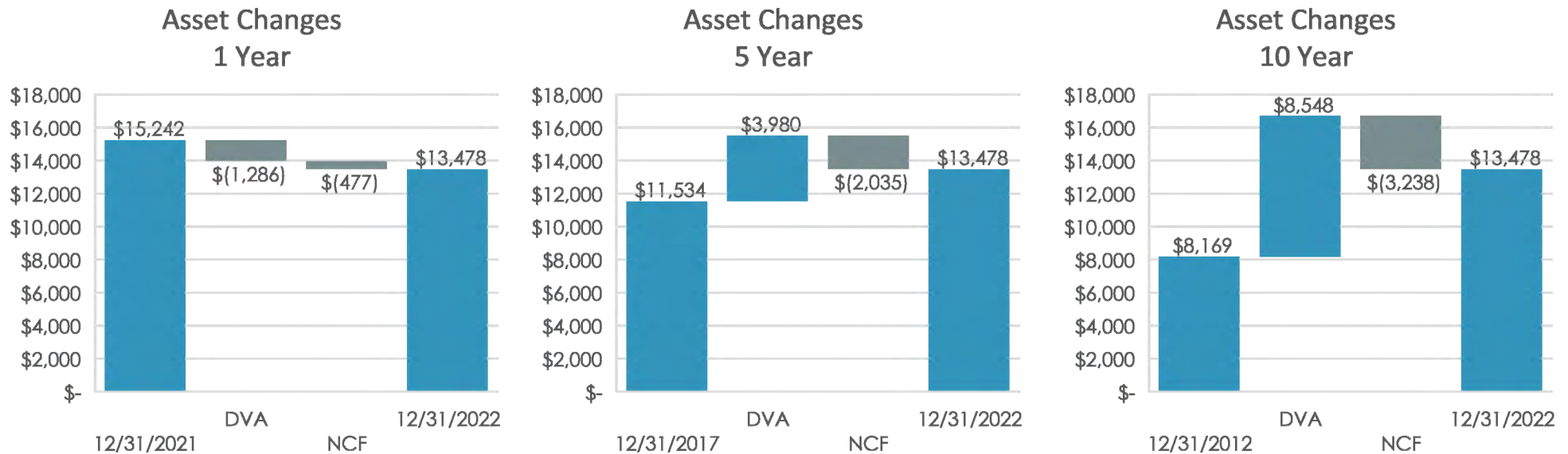
## Pension Asset Allocation



\* Dollar values are in \$1,000,000  
December 31, 2022

# CIO Update

## Pension Net Performance



- Dollar Value Added – The total dollar return of the portfolio including income and capital gains.
- Net Cash Flow - The total dollar amount distributed from portfolio assets to meet the deficit of contributions minus distributions.
  - A grey bar indicates an aggregate net outflow by all plans even though some plans may have experienced net inflows.
  - Though aggregates are shown, each plan is independent and not able to rely on other plans to meet their respective liabilities.

# CIO Update

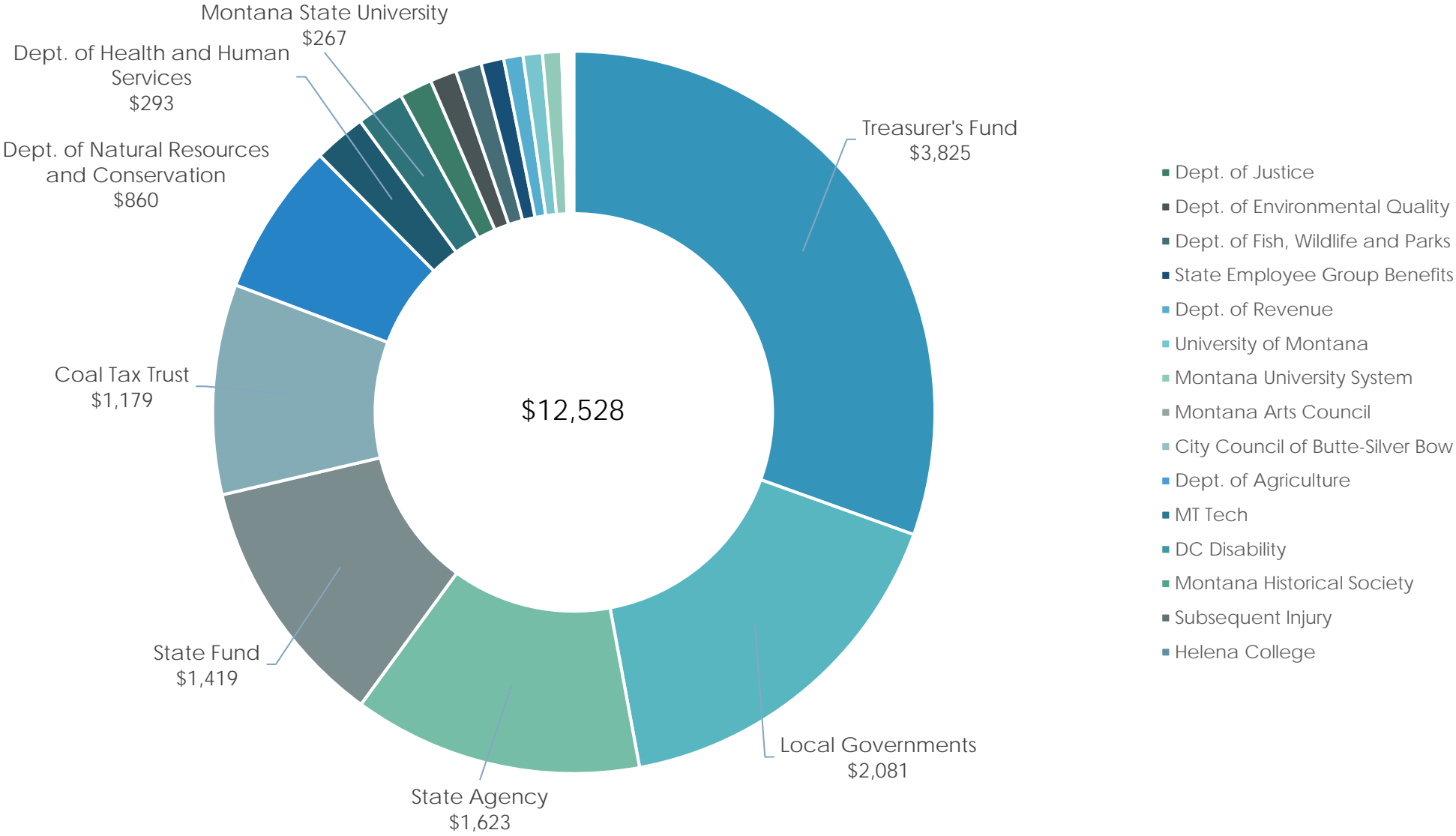
## Pension Net Performance

Performance	1 Year	3 Year	5 Year	10 Year	20 Year	Since Inception
Public Employees' Retirement	-8.48%	6.41%	6.50%	8.11%	7.56%	7.60%
Police Officers' Retirement	-8.48%	6.40%	6.50%	8.11%	7.51%	7.48%
Game Wardens' Retirement	-8.47%	6.40%	6.50%	8.10%	7.51%	7.52%
Sheriffs' Retirement	-8.47%	6.42%	6.50%	8.11%	7.55%	7.51%
Judges' Retirement	-8.50%	6.41%	6.50%	8.11%	7.56%	7.51%
Highway Patrol Retirement	-8.46%	6.42%	6.51%	8.12%	7.57%	7.50%
Teachers' Retirement	-8.51%	6.40%	6.49%	8.11%	7.56%	7.61%
Vol Firefighters' Retirement	-8.50%	6.41%	6.50%	8.10%	7.54%	7.33%
Firefighters' Retirement	-8.47%	6.41%	6.50%	8.11%	7.53%	7.47%

Inception 7/1/1994

# CIO Update

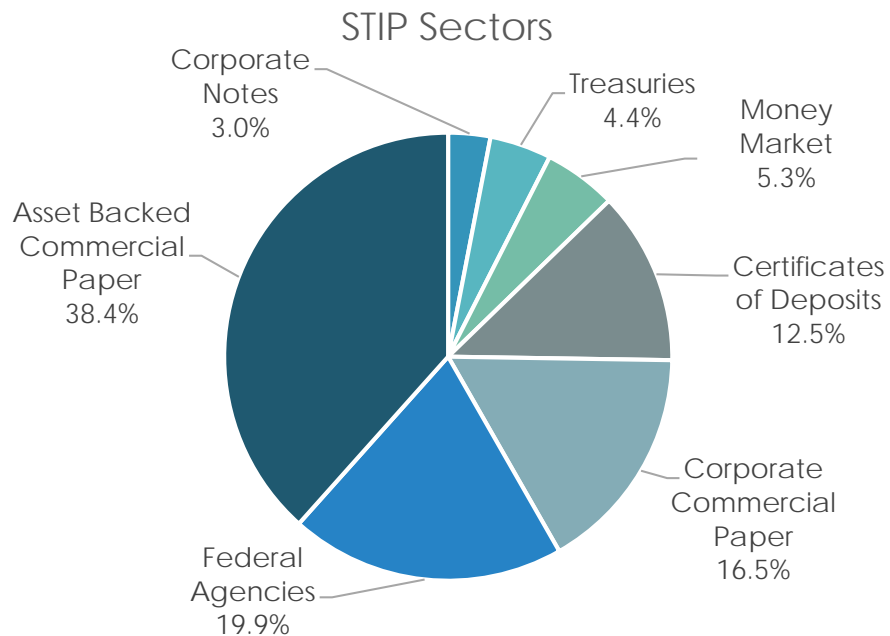
## AUM ex. CAPP



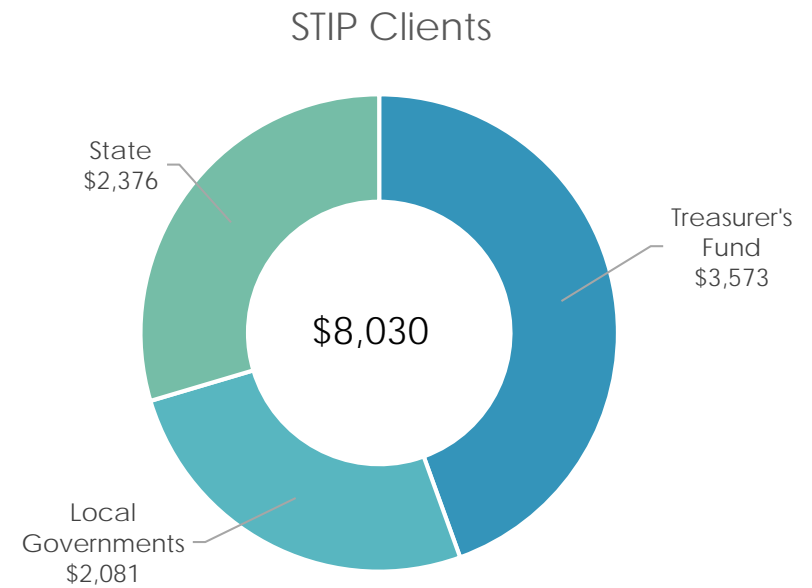
\* Dollar values are in \$1,000,000  
 December 31, 2022

# CIO Update

## Short Term Investment Pool



- The weighted average maturity of the portfolio was 67 days at quarter end.
- The STIP Reserve was \$62.3M at quarter end.



\* Dollar values are in \$1,000,000  
December 31, 2022

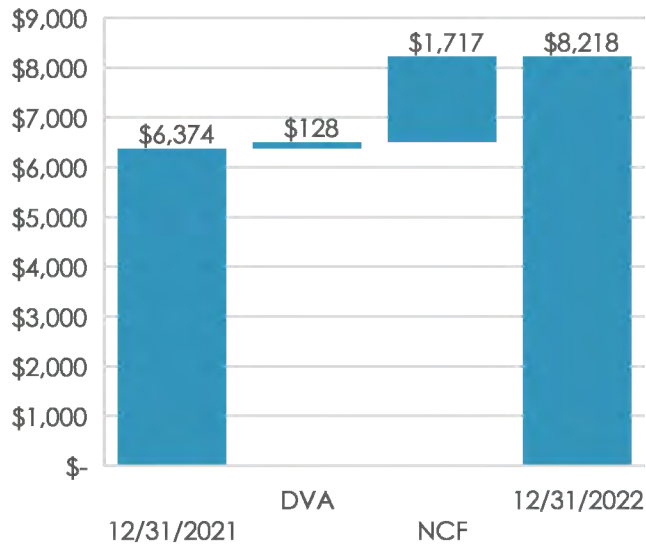


# CIO Update

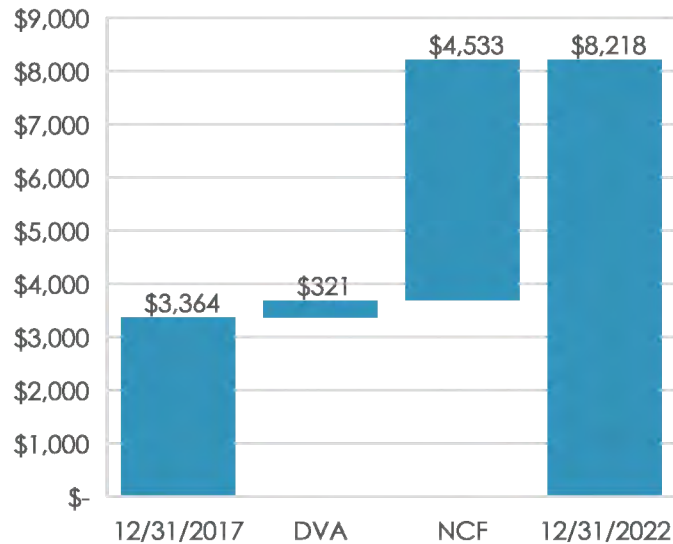
## Short Term Investment Pool

### STIP Net Performance

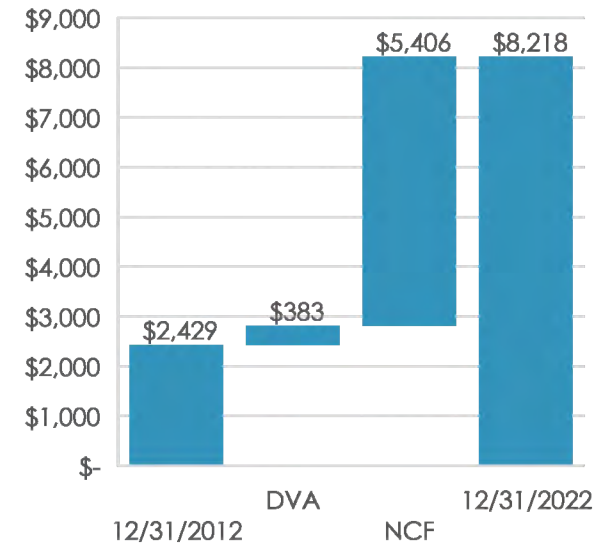
Asset Changes  
1 Year



Asset Changes  
5 Year



Asset Changes  
10 Year



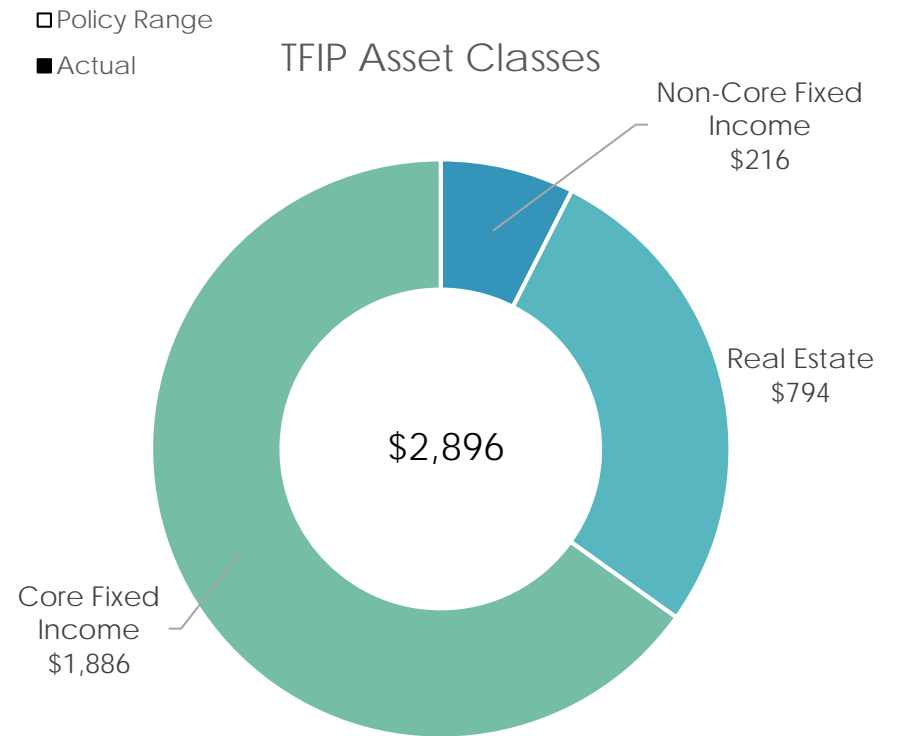
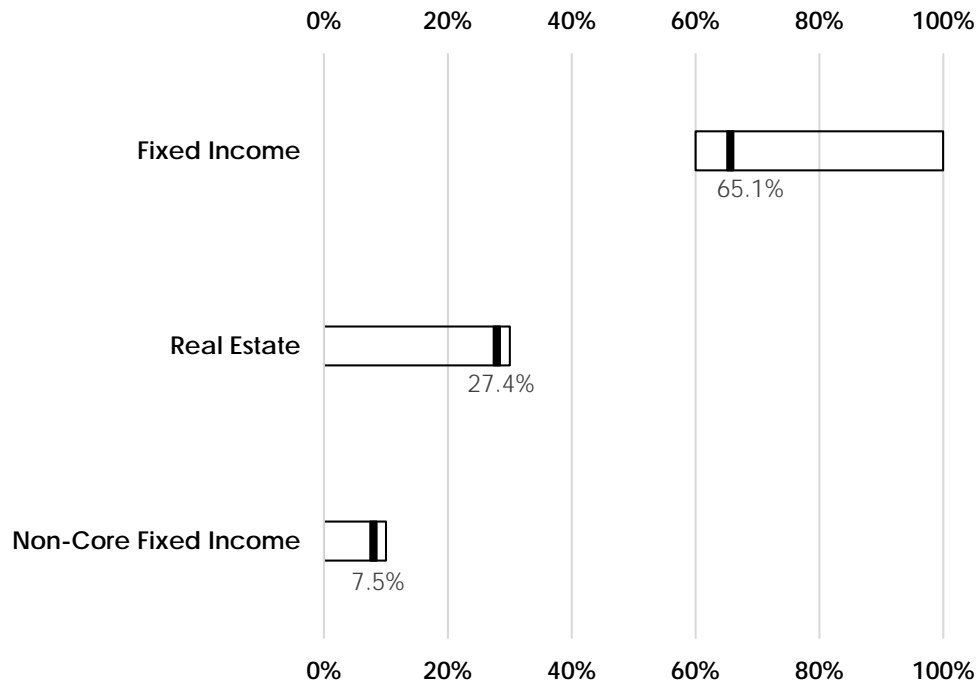
Performance	1 Year	3 Year	5 Year	10 Year	Since Inception
Short Term Investment Pool (STIP)	1.67%	0.83%	1.35%	0.90%	2.27%
Short Term Investment Pool Benchmark	1.69%	0.70%	1.23%	0.84%	2.18%

\* Dollar values are in \$1,000,000  
December 31, 2022

# CIO Update

## Trust Funds Investment Pool

TFIP Asset Allocation

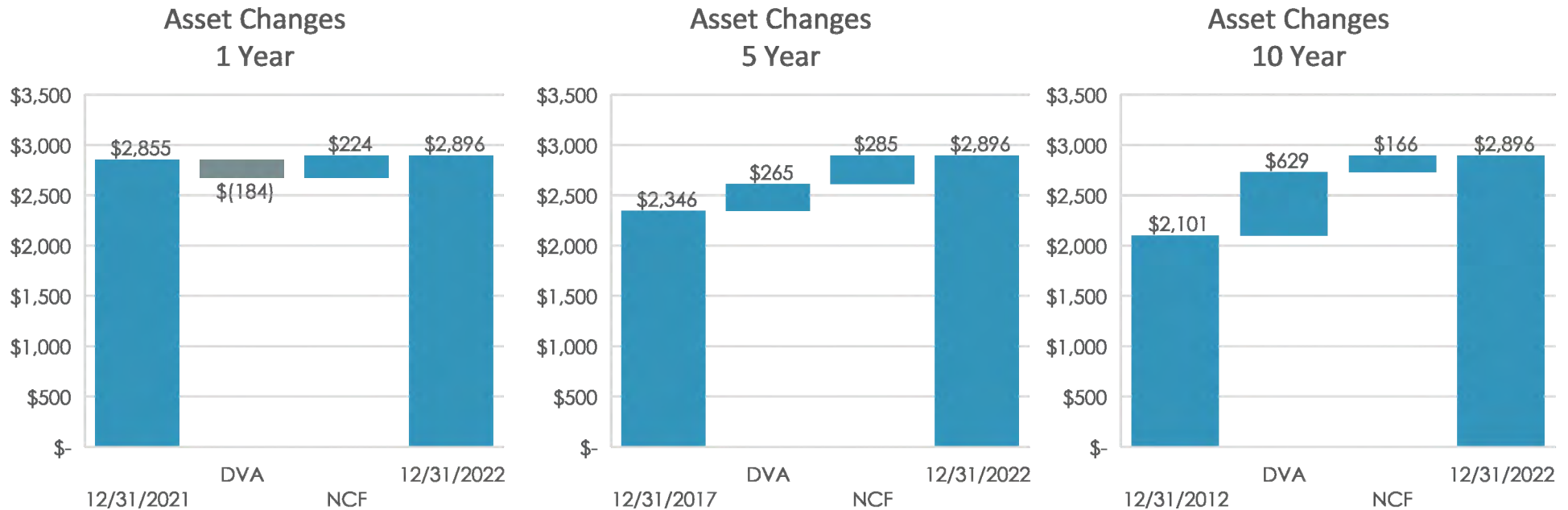


\* Dollar values are in \$1,000,000  
December 31, 2022

# CIO Update

## Trust Funds Investment Pool

### TFIP Net Performance



Performance	1 Year	3 Year	5 Year	10 Year	Since Inception
Trust Funds Investment Pool (TFIP)	-6.26%	0.67%	2.23%	2.76%	5.49%
Trust Funds Investment Pool Benchmark	-5.05%	0.93%	2.25%	2.18%	4.75%

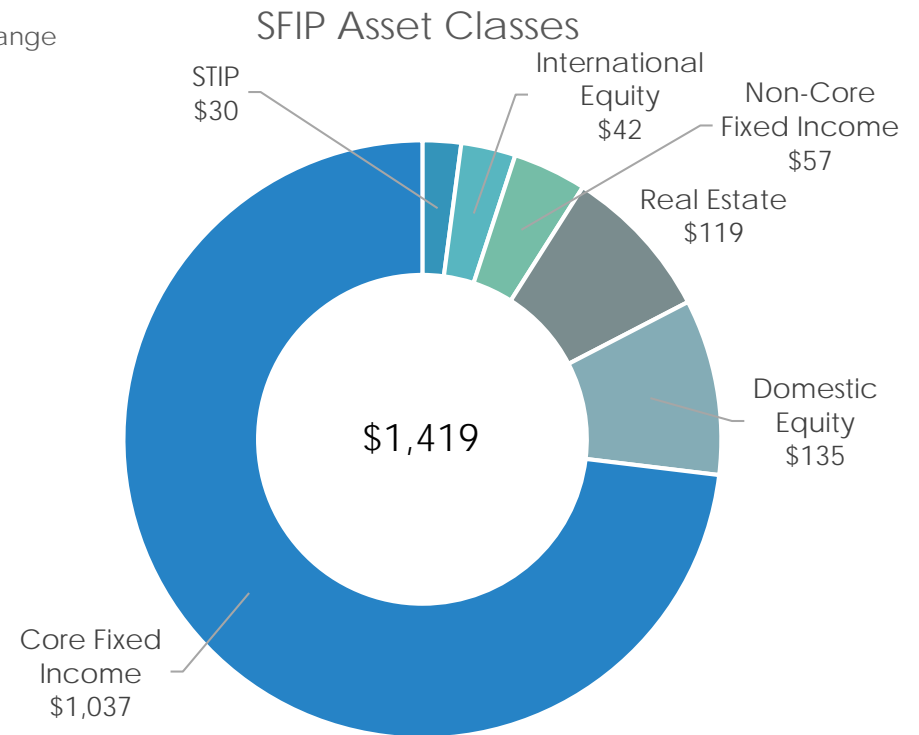
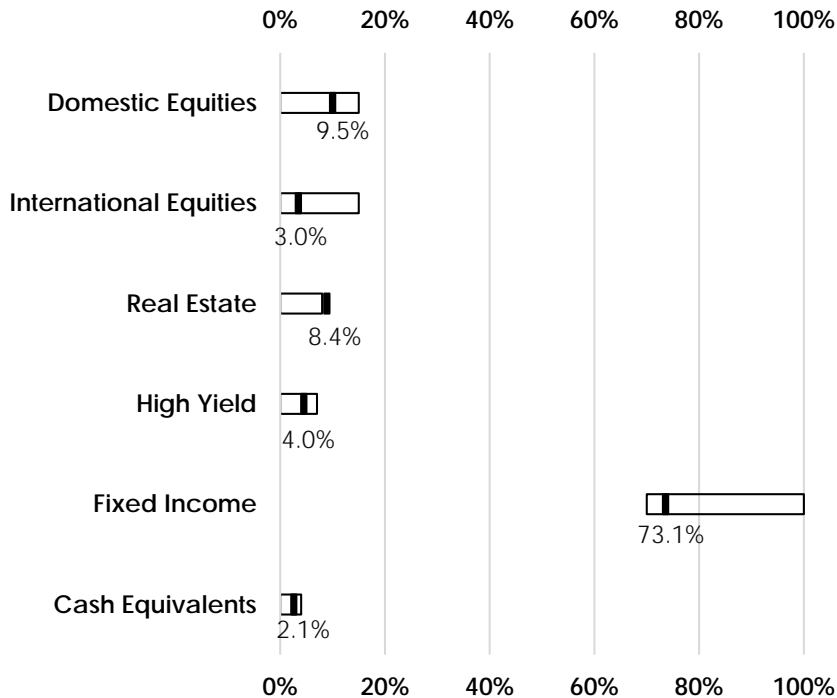
Yield	1 Year	3 Year	5 Year	10 Year
Trust Funds Investment Pool (TFIP)	3.43%	3.09%	3.17%	3.38%

\* Dollar values are in \$1,000,000  
December 31, 2022

# CIO Update

## State Fund Investment Pool

SFIP Asset Allocation

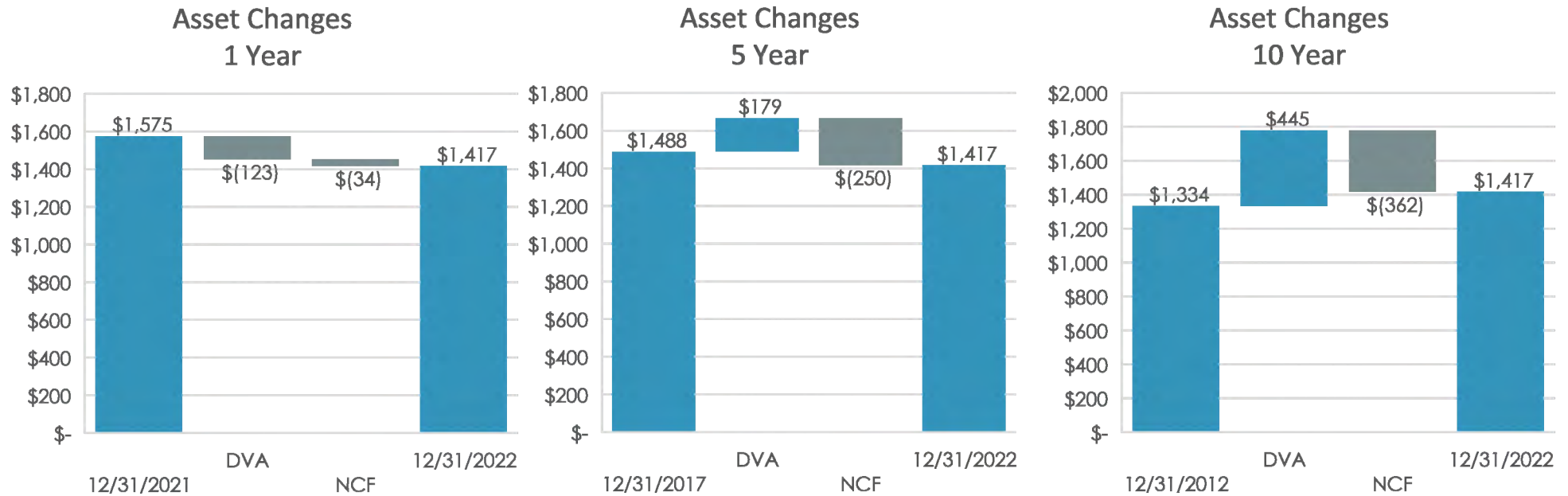


\* Dollar values are in \$1,000,000  
December 31, 2022

# CIO Update

## State Fund Investment Pool

### SFIP Net Performance



Performance	1 Year	3 Year	5 Year	10 Year	Since Inception
State Fund	-7.75%	0.72%	2.36%	3.06%	5.09%
State Fund Benchmark	-8.57%	0.27%	1.99%	2.71%	4.56%

\* Dollar values are in \$1,000,000  
December 31, 2022

# CIO Update

- The market remains concerned about the path of global monetary policy and possibility/severity of a recession.
- Onboarding the Backstop research management system for Private Investments, Real Estate, and Real Assets.
- Public Markets hired a convertible bond manager. Continuing evaluation of international equity managers/fees.
- Good progress integrating Solovis/Solovis Risk systems. Continual improvement of the reporting process.
- Assist the Executive Director and clients as needed on any legislative proposals or ad hoc requests.
- Sam Holman transitioning into the Fixed Income Analyst role. Ian Horwood promoted to Investment Analyst – Level III.

# Macro Attribution

## Key Takeaways – 1 Year

### Strategic Asset Allocation - What was the performance of our midpoint weighted benchmark portfolio?

- The Real Assets, Real Estate and Cash benchmarks had positive contributions to the pension, policy-neutral, -11.3% return.

### Tactical Asset Allocation - Did the actual asset class weights add additional return over the midpoint weighted benchmark portfolio?

- On average, we were slightly overweight Real Estate and Private Investments, while being slightly underweight or at the midpoint weight for the remaining asset classes.
- About \$235M of equity asset classes and \$241M of fixed income/cash asset classes were sold during the year to fund the pension net cash need of \$-476M.
- In aggregate, the overweighting/underweighting of the asset classes relative to their benchmarks increased the pension portfolio's return by 25 bps.

### Style Selection - Did the portfolio benchmarks add additional return over their asset class benchmarks?

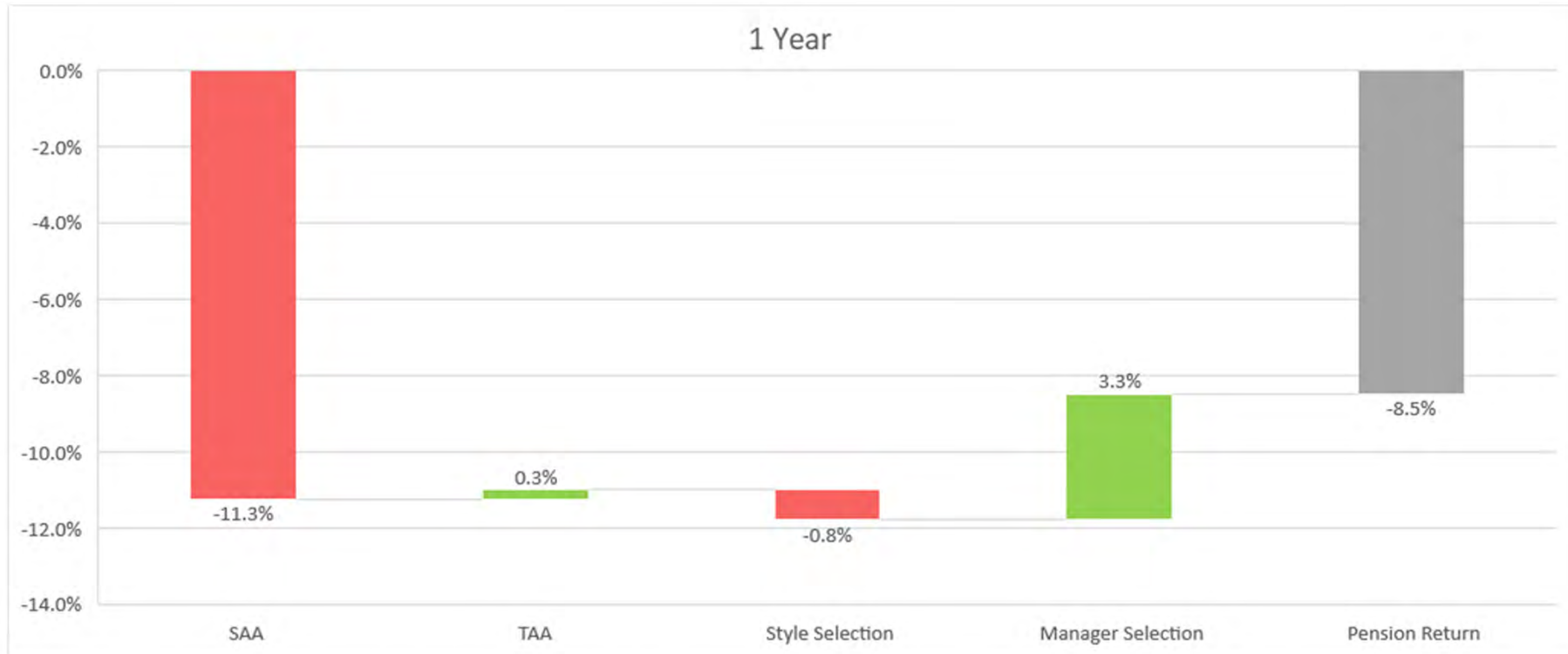
- Slightly higher exposure to developed growth benchmarks was the primary reason for International style underperformance of 12 bps.
- The Real Assets portfolio has about 55% exposure to commodities versus 33% in the custom benchmark. The strong outperformance of the Commodity Producers Index relative to Infrastructure and TIPS resulted in style outperformance of about 32 bps.
- Exposure to public REIT and public CMBS indexes caused style underperformance of 113 bps as private Real Estate assets outperformed public assets.

### Manager Selection - Did the portfolio managers add additional return over their portfolio benchmarks?

- In International Equity, there was mixed manager performance for a total underperformance of 13 bps.
- Within Core Fixed Income, our internal portfolio was a significant outperformer adding 16 bps.
- Private Investments was by far the main contributor to manager selection outperformance with Private Equity rather than Private Credit being the main contributor. Much of this can be attributed to the lag in pricing of private investments.
- Real Assets had manager selection effects of 32 bps, with Infrastructure being the primary positive contributor and, Commodities being a negative contributor.
- Real Estate selection effects were unusually small this period.

*Note: The publicly traded benchmarks for private asset classes are an imperfect proxy for actual holdings due to the pricing of private assets lagging their publicly traded benchmarks.*

# Macro Attribution



Strategic Asset Allocation (SAA) - The return that would have been achieved if we had invested in our asset class benchmarks at the midpoint weights

Tactical Asset Allocation (TAA) - The *additional* return earned by investing in the asset class benchmarks at our actual rather than midpoint weights.

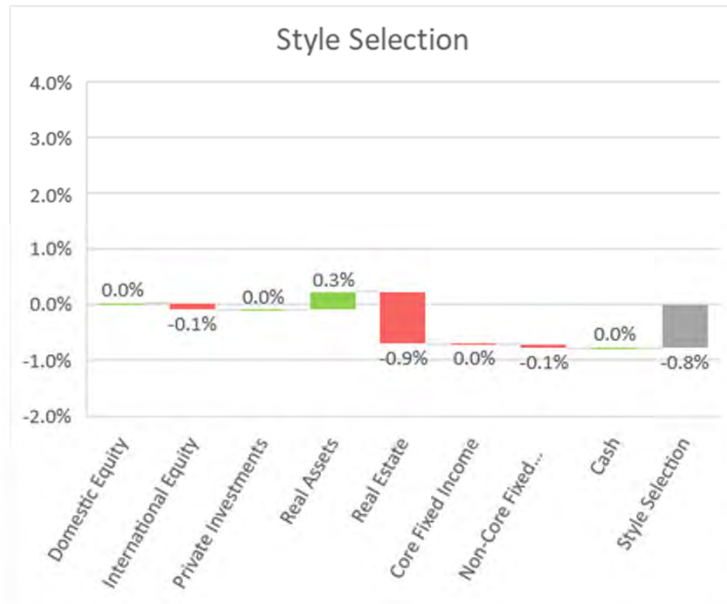
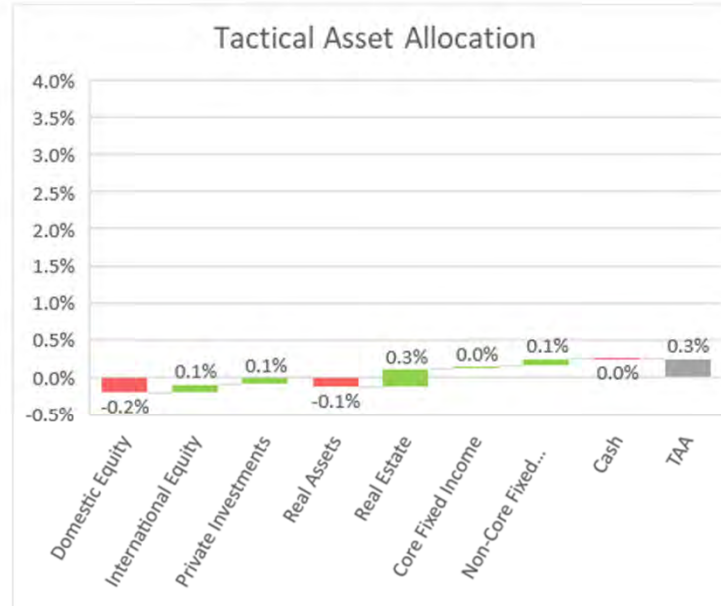
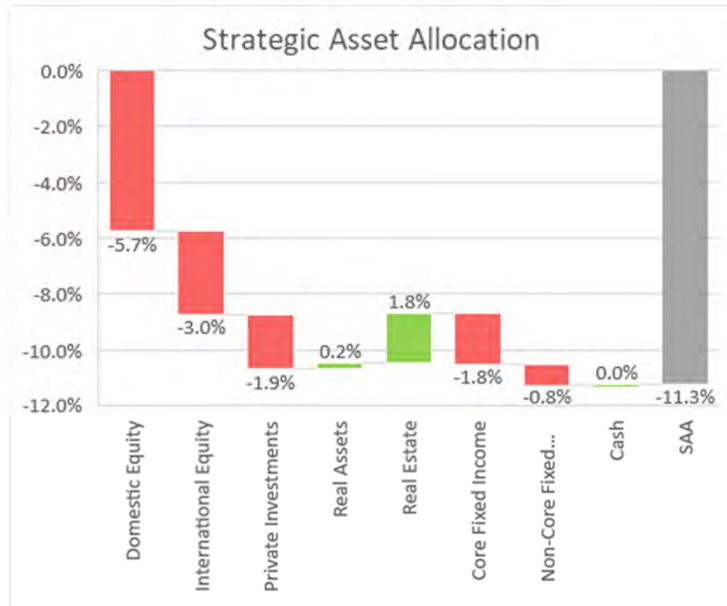
Style Selection (SS) - The *additional* return earned by investing in the underlying manager benchmarks rather than the asset class benchmarks.

Manager Selection - The *additional* return earned by investing in the underlying managers rather than the underlying manager benchmarks.

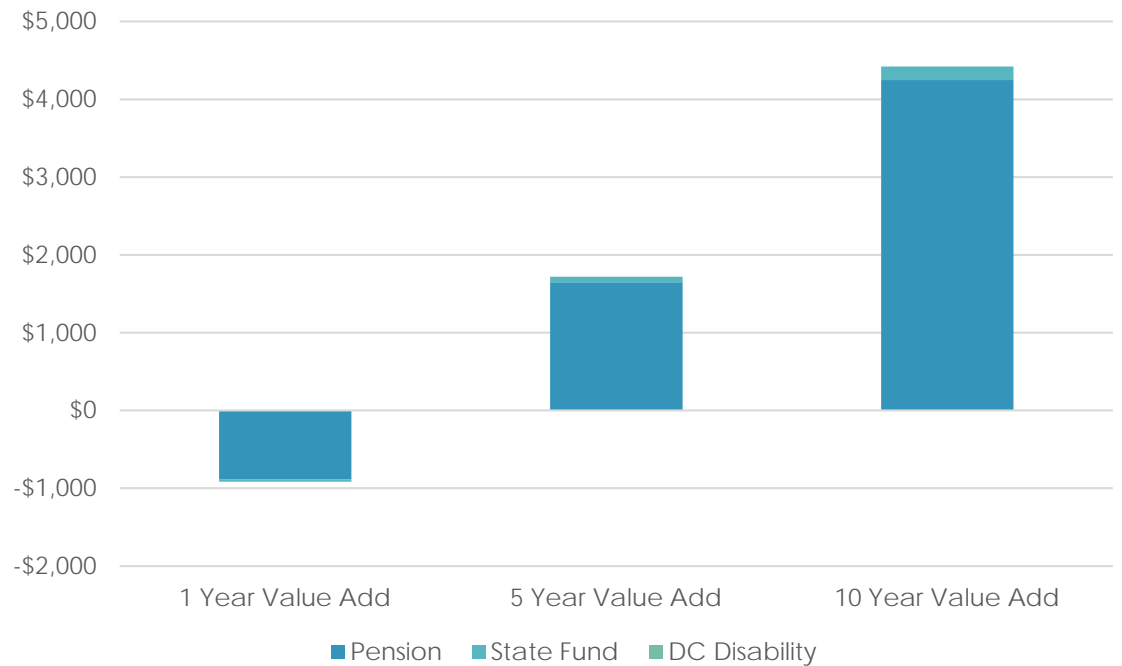
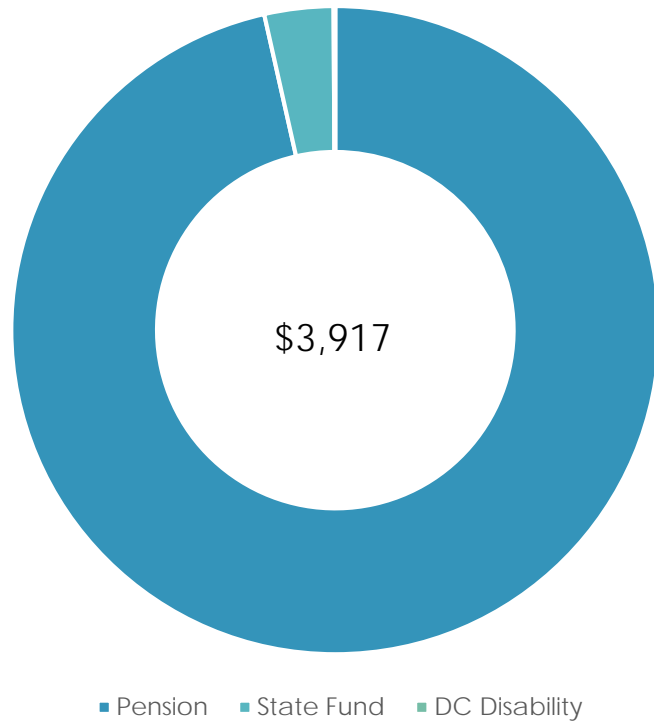
\* The valuation lag observed in Private Equity, Real Estate, and Natural Resources are likely to lead to large differences in returns between these asset classes and their benchmarks in short-mid term time periods. The manager selection component is therefore likely to be large for these asset class in the short and medium term.



# Macro Attribution



# Domestic Equity Ownership Breakdown

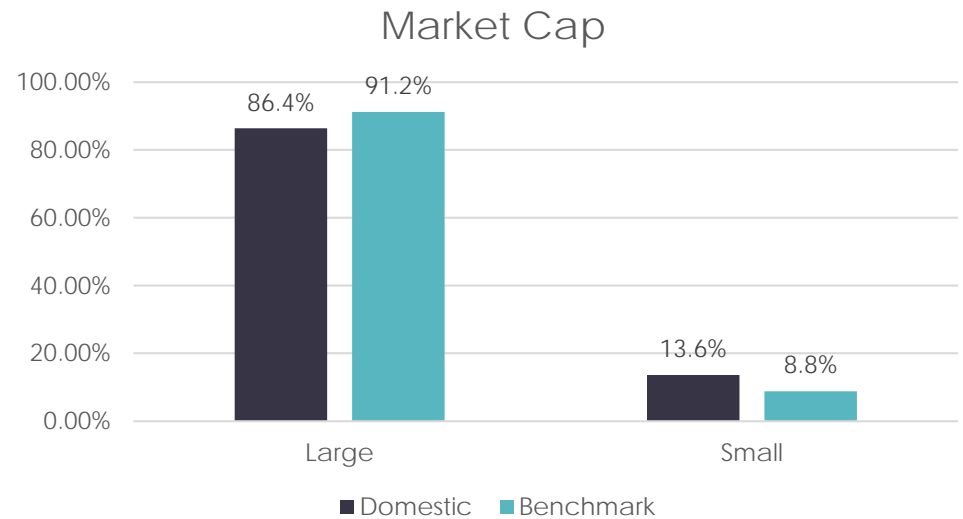
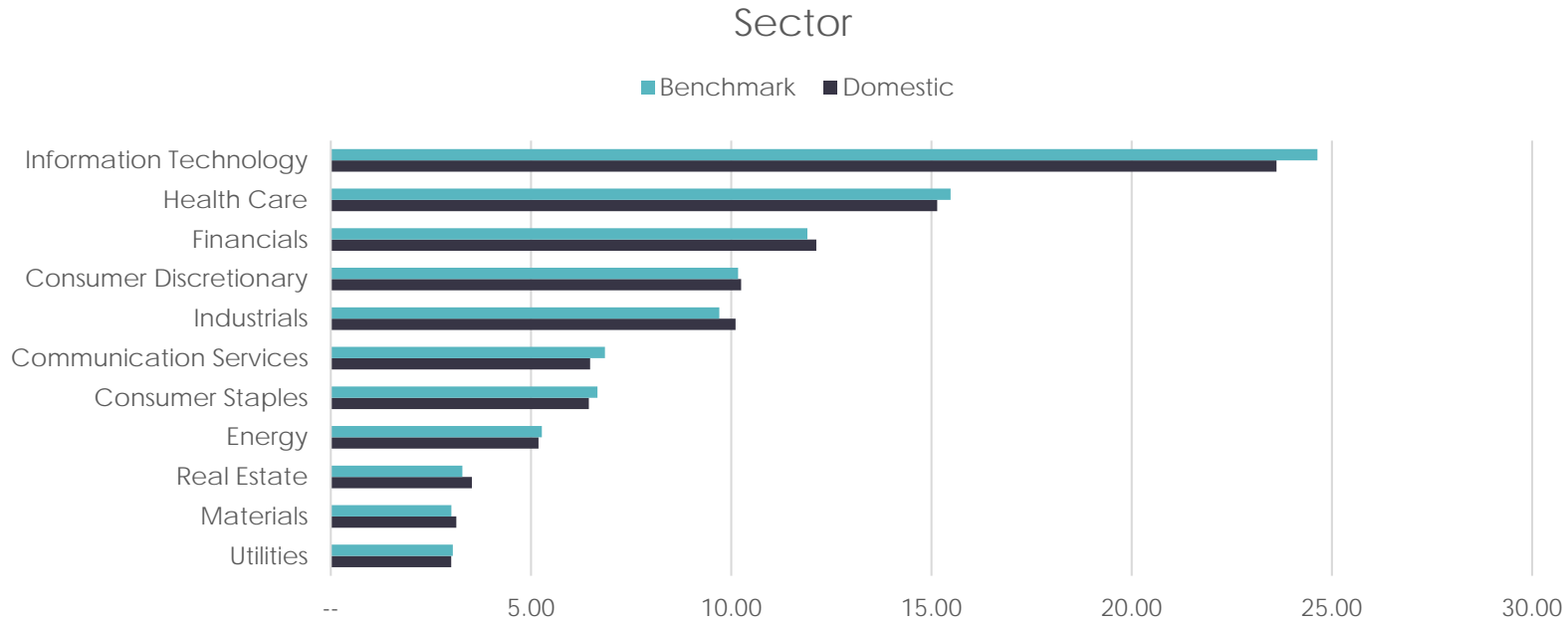


Performance	1 Year	1 Year Benchmark	5 Year	5 Year Benchmark	10 Year	10 Year Benchmark
Pension	-19.00%	-19.22%	8.48%	8.93%	11.89%	12.28%
State Fund	-18.11%	-18.11%	9.41%	9.42%	12.56%	12.56%
DC Disability	-19.49%	-19.53%	8.73%	8.65%	NA	NA

- Higher interest rates, persistent inflation, and commodity price shocks were the drivers of US equities in 2022. Stocks rebounded in 4Q22 as signs of cooling inflation and expectations the Fed will stop hiking rates provided some relief.
- The outperformance of value stocks over growth stocks that began in late 2021 continued in 2022, with large cap value outperforming large cap growth by over 20%. The S&P 600 Small Cap Index outperformed the S&P 500 by 160 bps.

\* Dollar values are in \$1,000,000  
December 31, 2022

# Domestic Equity Characteristics



# Domestic Equity Valuation

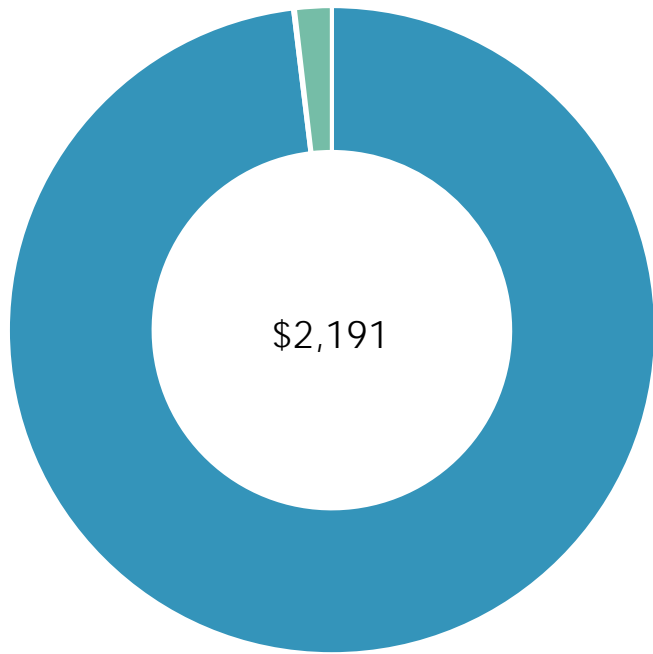
■ SPX Index - Price Earnings Ratio (P/E) 18.6038

## S&P 500 Index - Price/Earnings Ratio (Jan 1, 2013 to Jan 27, 2023)

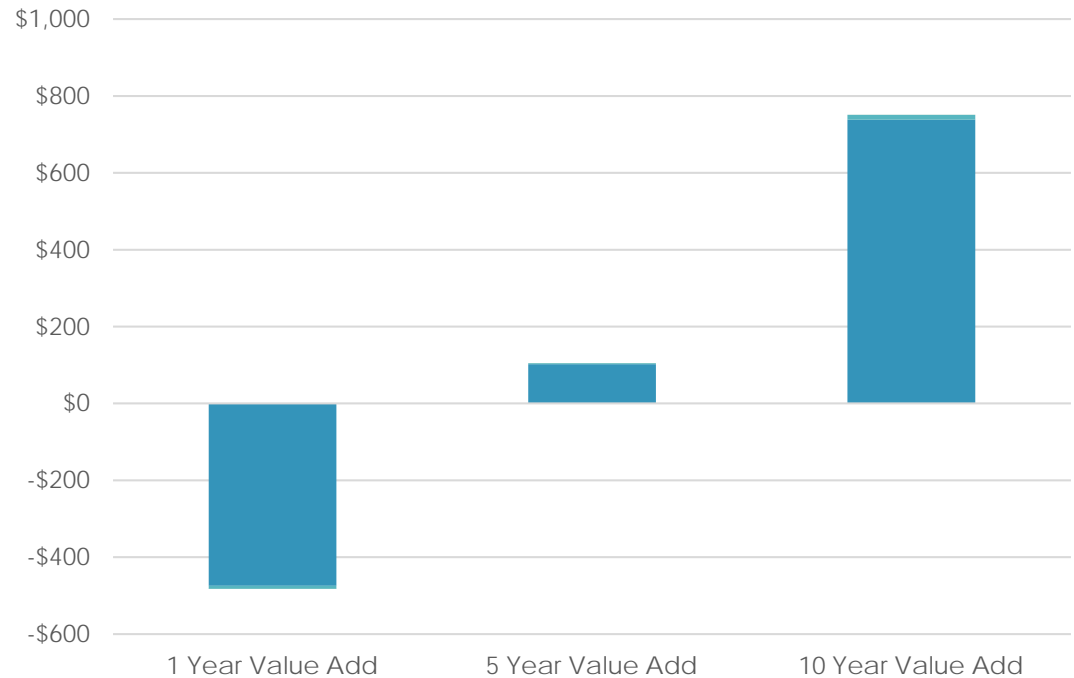


- A precipitous drop in P/E multiples weighed on US stocks in 2022. The forward P/E of the S&P 500 sits at 16.7x as of the end of 2022, close to its 25-year average.

# International Equity Ownership Breakdown



■ Pension ■ DC Disability ■ State Fund



■ Pension ■ State Fund ■ DC Disability

Performance	1 Year	1 Year Benchmark	5 Year	5 Year Benchmark	10 Year	10 Year Benchmark
Pension	-17.66%	-16.58%	1.00%	0.85%	4.23%	3.95%
State Fund	-15.97%	-16.00%	0.92%	0.88%	3.85%	3.80%
DC Disability	-15.71%	-16.00%	1.16%	0.88%	NA	NA

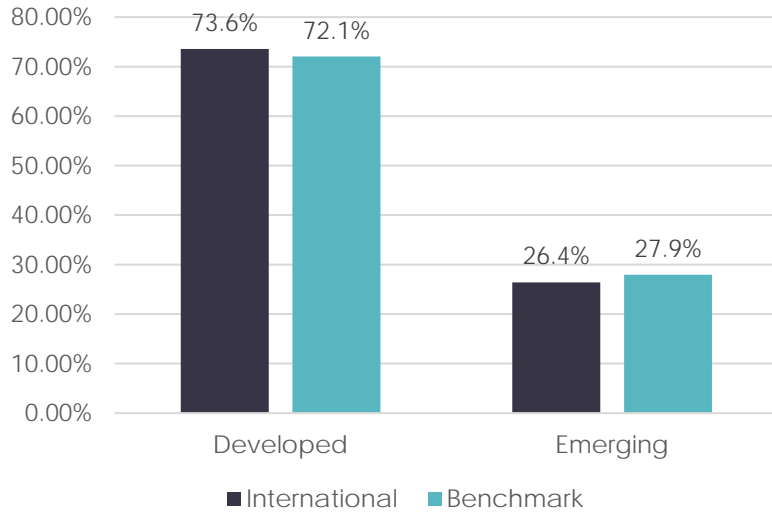
- While international equities traded off in 2022, avoiding the worst-case scenario with respect to European energy supply and a weaker US Dollar helped international stocks outperform US equities for the year.
- Developed markets outperformed emerging markets for the year, thanks to a late-year rebound in beaten-down European stocks and a drag from Chinese stocks in 2022.

\* Dollar values are in \$1,000,000

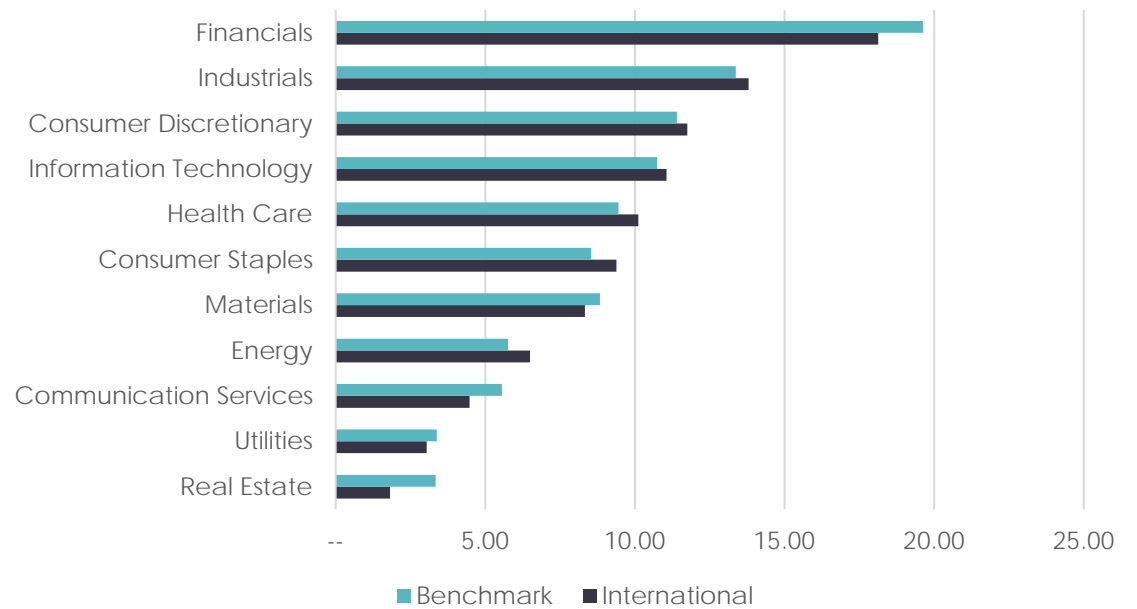
December 31, 2022

# International Equity Characteristics

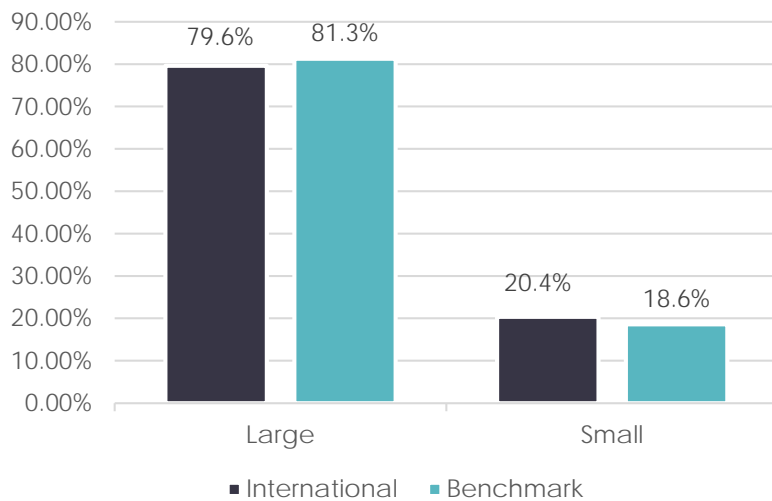
## Developed vs. Emerging Markets



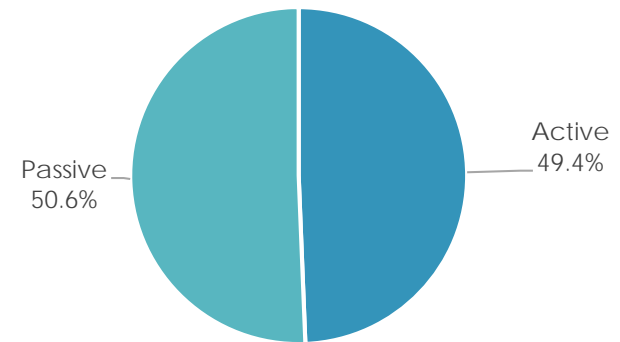
## Sector



## Market Cap



## Active vs. Passive



# International Equity Valuation

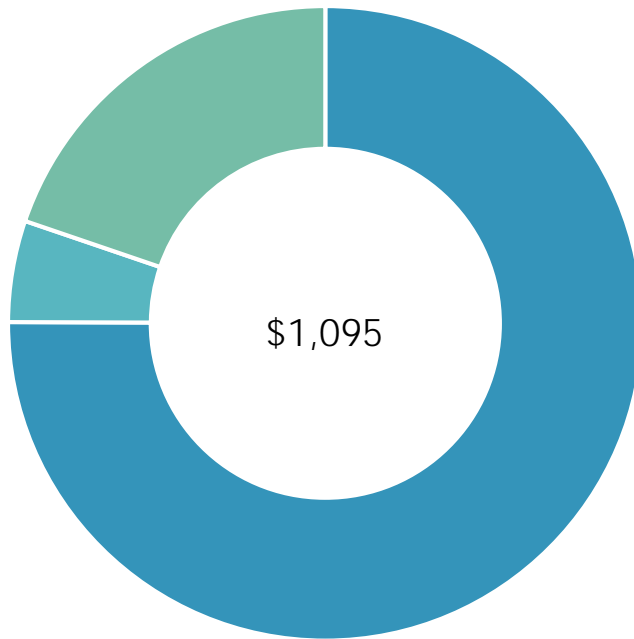
■ MXWDU Index - Price Earnings Ratio (P/E) 12.4274

## ACWI ex. U.S. Index - Price/Earnings Ratio (Jan 1, 2013 to Jan 27, 2023)



- International stocks continue to trade at a significant discount to US stocks.

# Non-Core Fixed Income Ownership Breakdown



■ Pension ■ State Fund ■ Trust Fund



■ Pension ■ State Fund ■ Trust Fund

Performance	1 Year	1 Year Benchmark	5 Year	5 Year Benchmark	10 Year	10 Year Benchmark
Pension	-11.27%	-11.18%	1.65%	2.30%	3.50%	4.03%
State Fund	-11.36%	-11.18%	NA	NA	NA	NA
Trust Fund	-10.04%	-11.18%	1.38%	2.30%	3.87%	4.03%

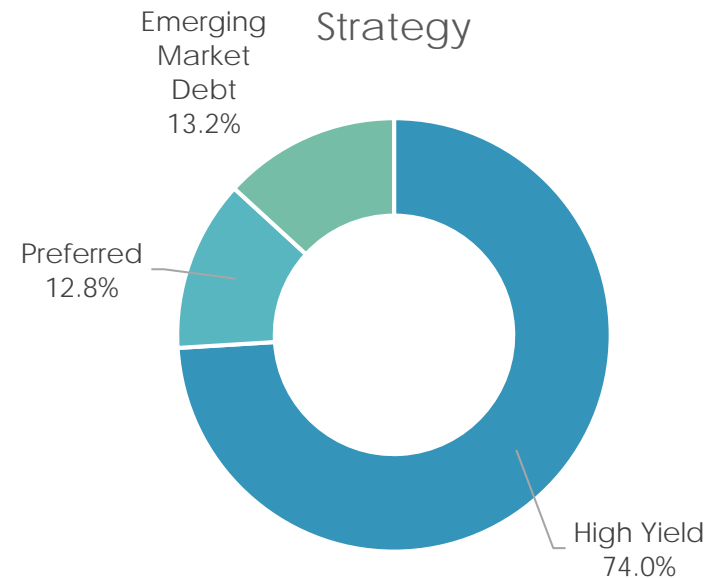
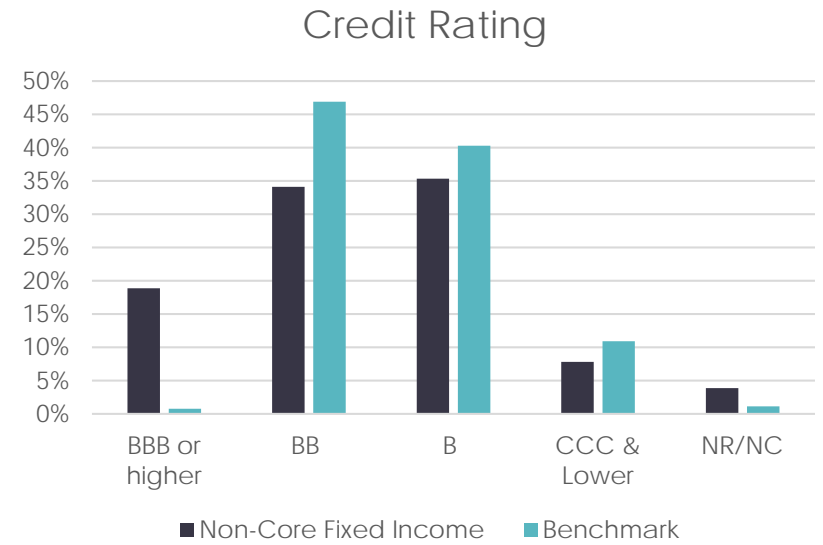
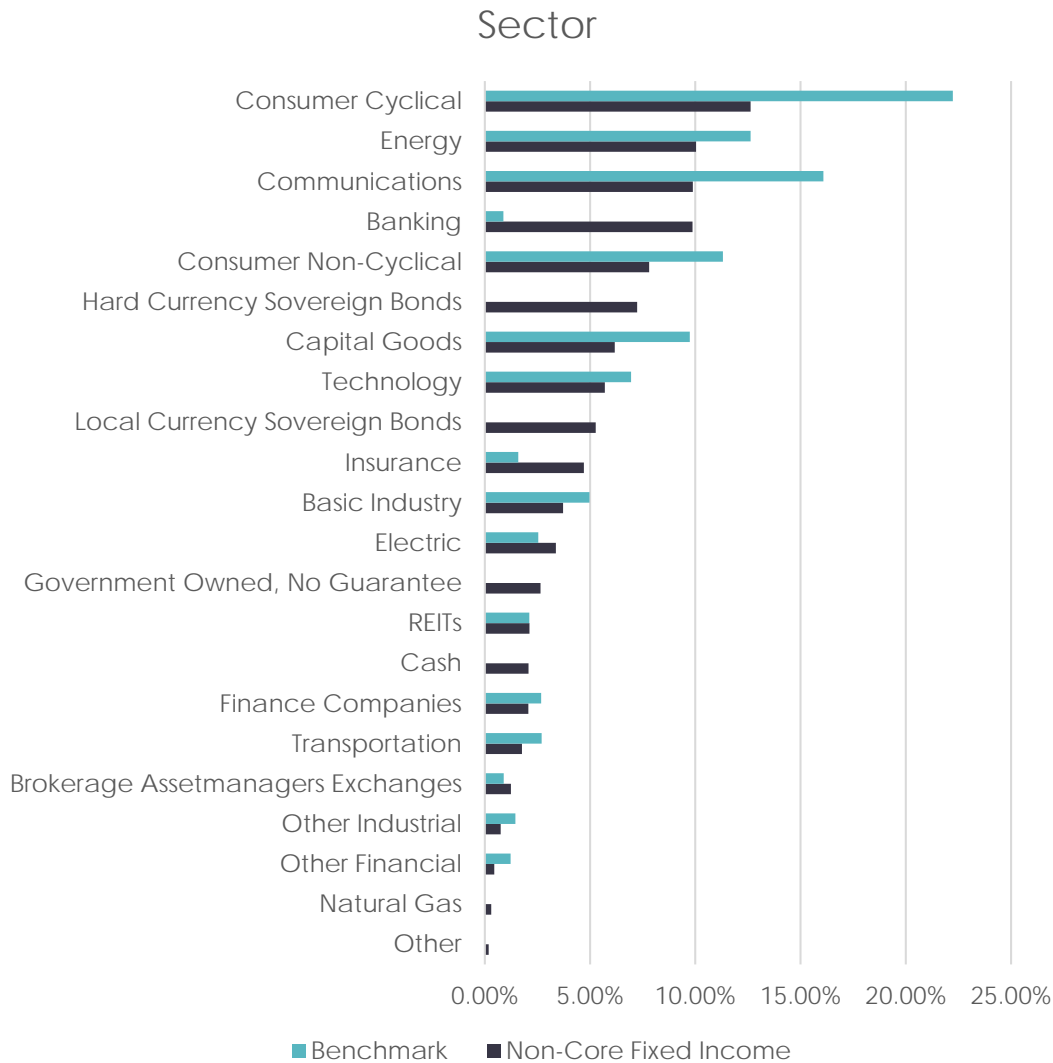
- Rising interest rates and stubborn inflation led to wider US high yield bond spreads through the middle of 2022. A rebound in high yield in 4Q22 tightened spreads by approximately 100 bps. Despite the strong sell-off in 2022, high yield bonds outperformed investment grade bonds for the year.
- Preferred securities and emerging market debt underperformed US high yield bonds for the year. Emerging market debt rebounded with a strong rally in 4Q22

\* Dollar values are in \$1,000,000

December 31, 2022

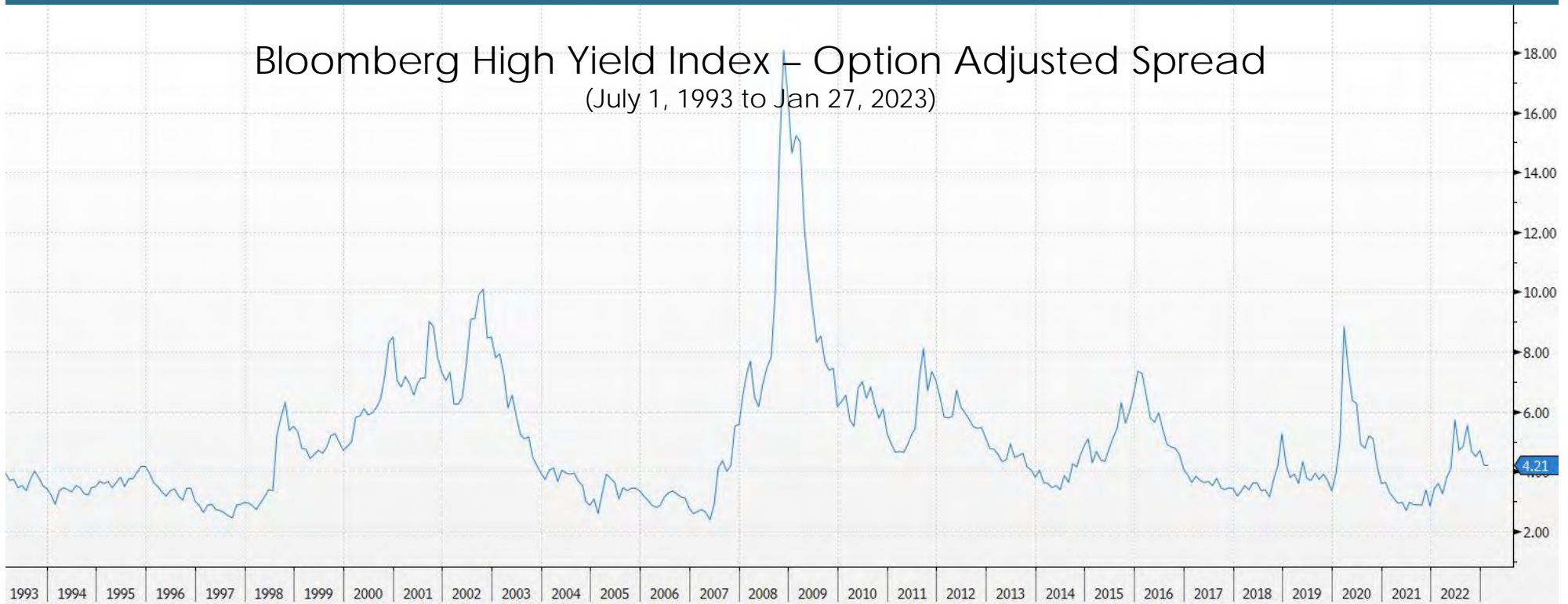


# Non-Core Fixed Income Characteristics



# Non-Core Fixed Income Valuation

Bloomberg High Yield Index – Option Adjusted Spread  
(July 1, 1993 to Jan 27, 2023)

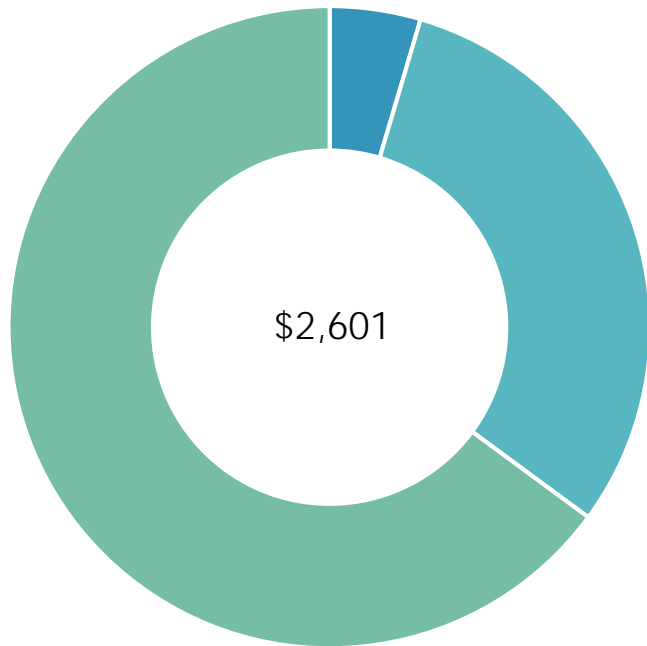


- After a year of stable high yield bond valuations in 2021, spread volatility increased in 2022.

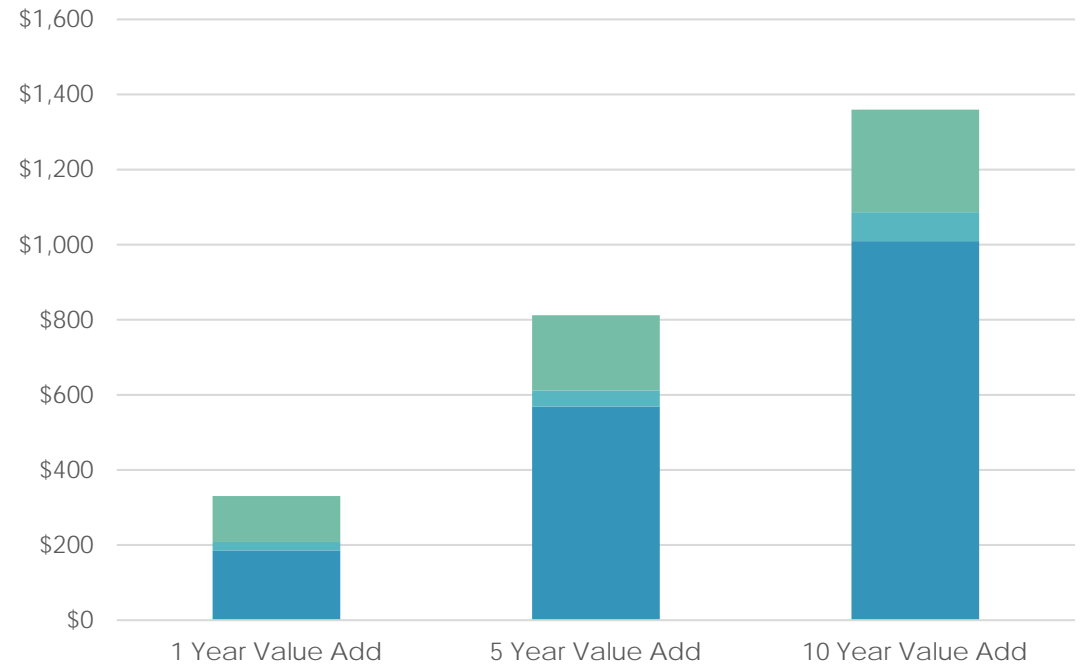
# Non-Core Fixed Income New Commitments FYTD

- **Zazove Associates - \$50M**

# Real Estate Ownership Breakdown



■ State Fund ■ Trust Fund ■ Pension



■ Pension ■ State Fund ■ Trust Fund

Performance	1 Year	1 Year Benchmark	5 Year	5 Year Benchmark	10 Year	10 Year Benchmark
Pension	12.00%	20.96%	9.36%	5.81%	10.12%	8.09%
State Fund	21.94%	20.96%	8.42%	9.26%	NA	NA
Trust Fund	19.80%	20.96%	8.42%	9.26%	8.93%	9.91%

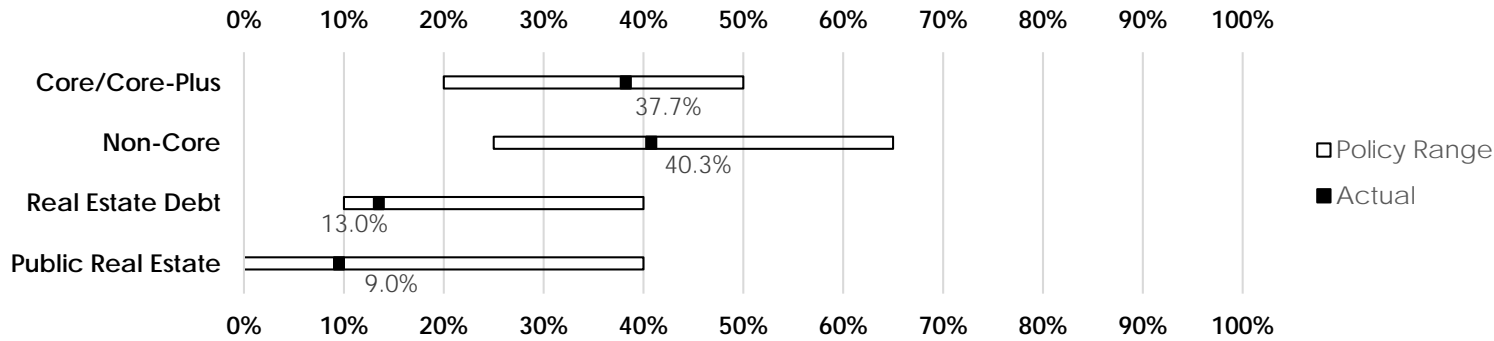
- Broadly speaking, the real estate debt and equity markets are in a holding pattern until Fed policy settles.
- Fundamentals are beginning to ease.

\* Dollar values are in \$1,000,000

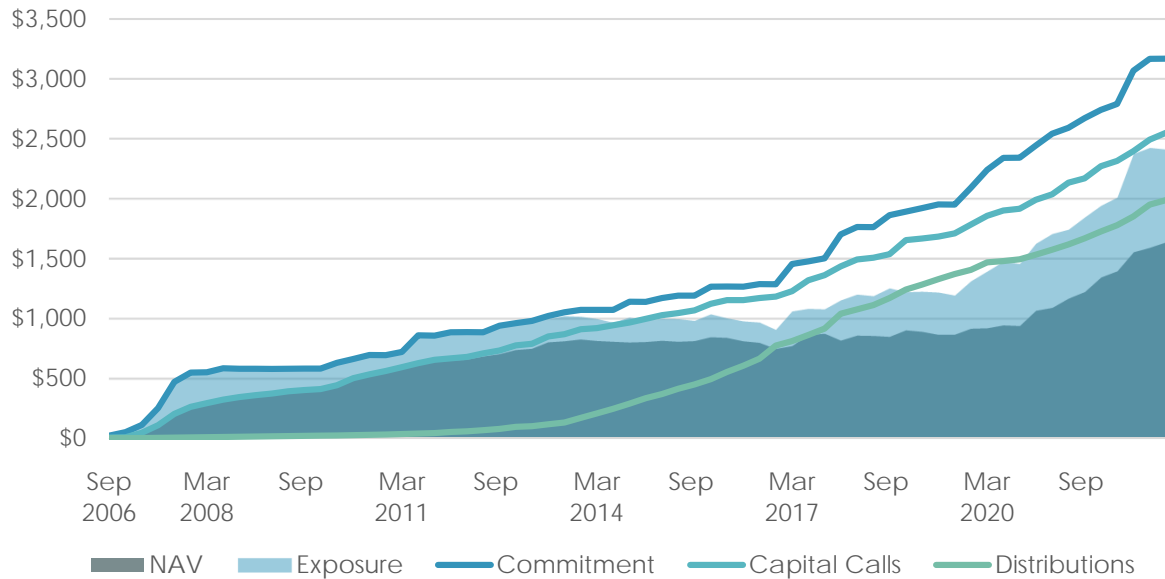
December 31, 2022

# Real Estate Characteristics

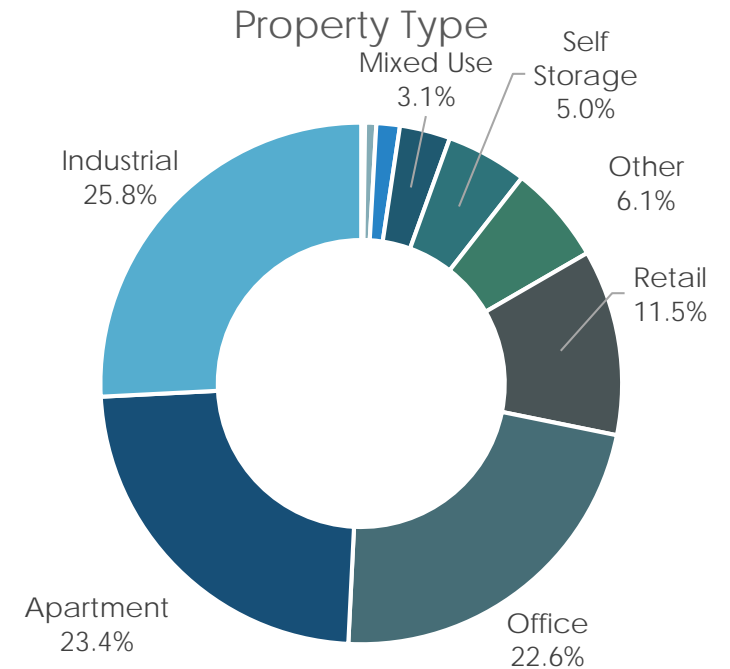
## Real Estate Asset Allocation



## Real Estate Over Time

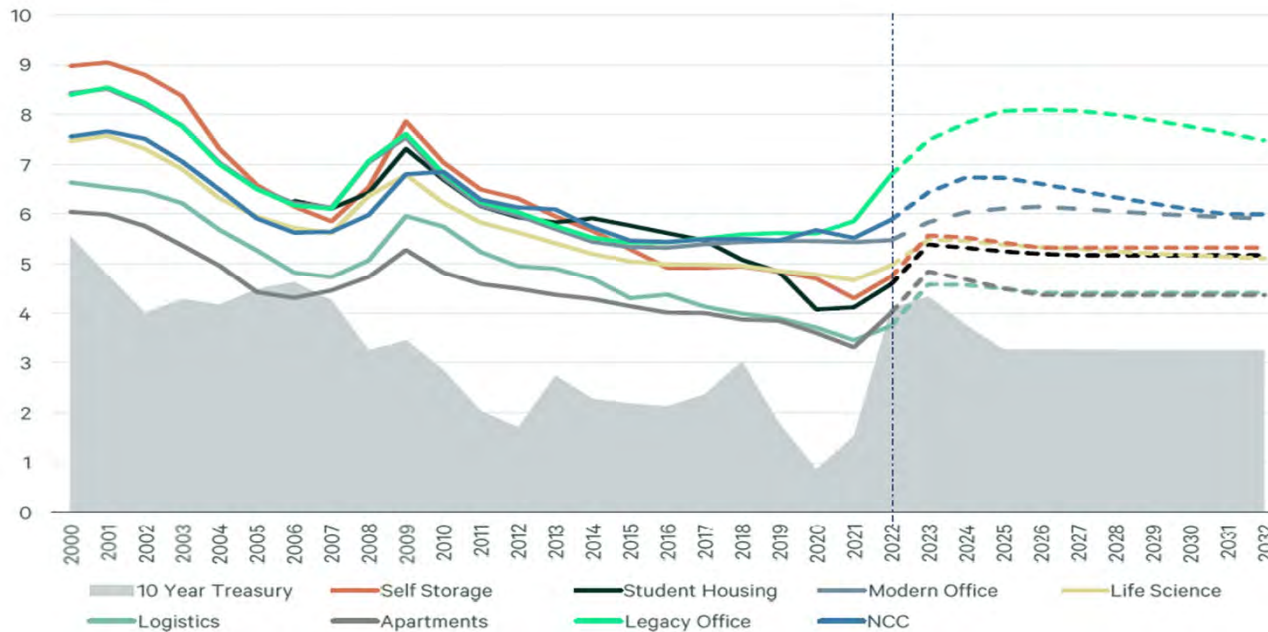


\* Dollar values are in \$1,000,000  
December 31, 2022



# Real Estate Valuation

Cap rate, % (main sectors)

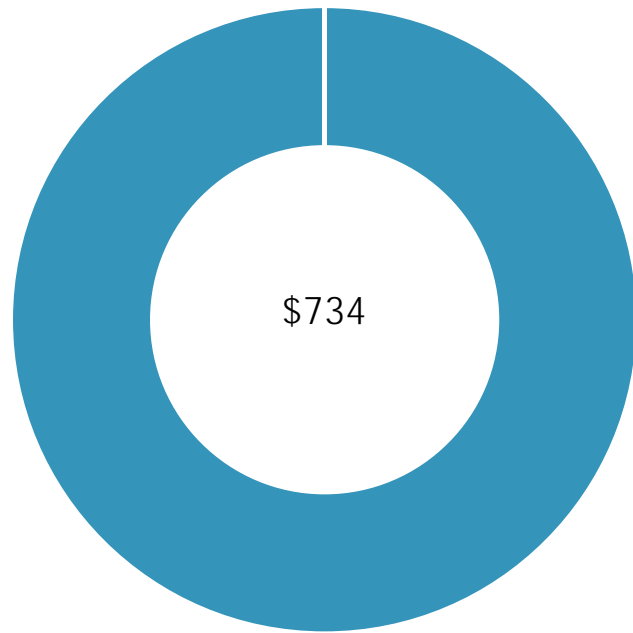


- Prices are slowly adjusting downward in the face of increasing interest rates and price discovery remains elusive in the transaction market.

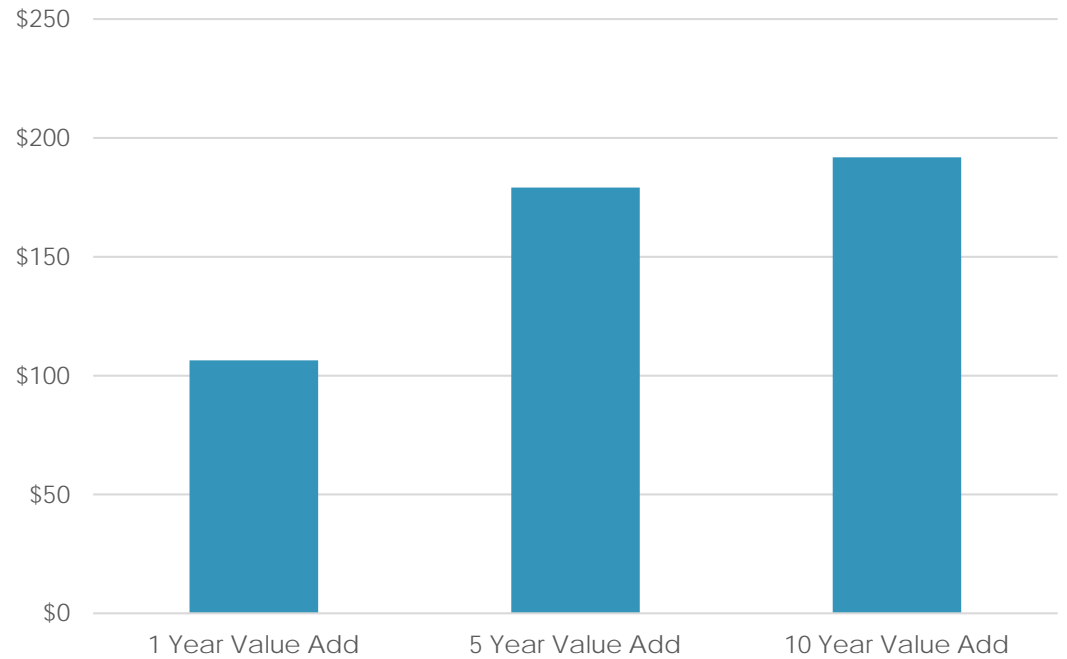
# Real Estate New Commitments FYTD

- Marcus Capital Partners Fund IV, LP - \$50M (CAPP)
- AEW Cold Storage Properties Fund, LP - \$80M (CAPP) / \$50M (TFIP)
- EverWest Silver Bow Holdings, LLC - \$100M (CAPP) / \$50M (TFIP)
- Sweet Grass-Equus, LP - \$100M (CAPP) / \$50M (TFIP)
- **Bell Value-Add Fund VIII, LP - \$50M (CAPP)**

# Real Assets Ownership Breakdown



■ Pension



■ Pension

Performance	1 Year	1 Year Benchmark	5 Year	5 Year Benchmark	10 Year	10 Year Benchmark
Pension	15.88%	1.36%	4.66%	0.10%	NA	NA

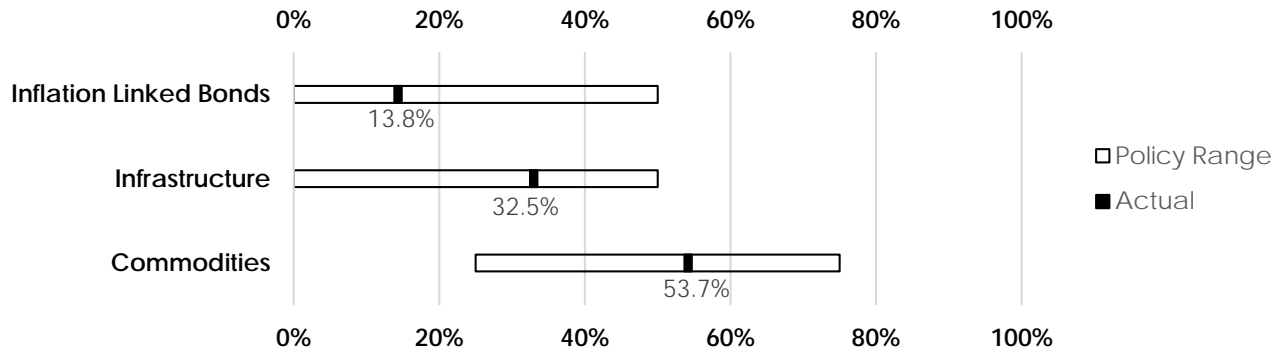
- Renewables are becoming more cost competitive and there has been increasing market adoption.

\* Dollar values are in \$1,000,000  
December 31, 2022

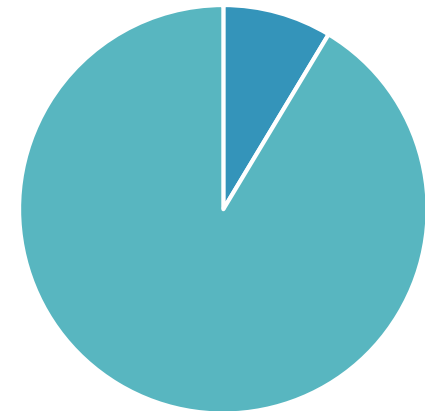


# Real Assets Characteristics

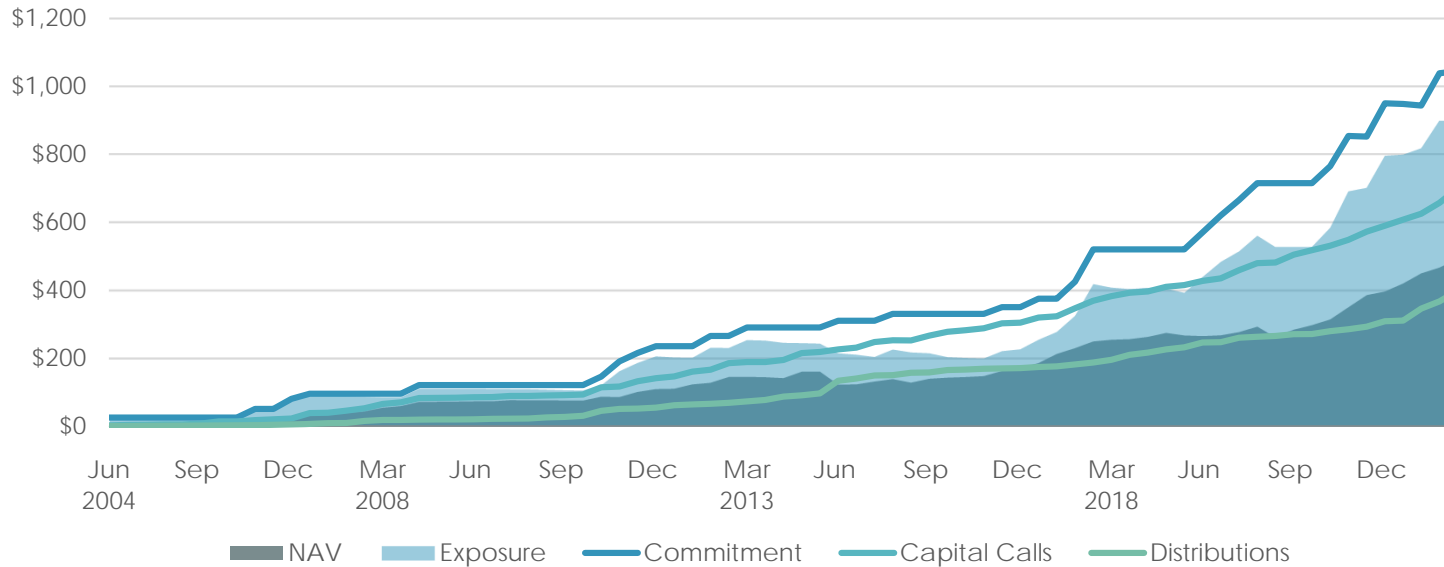
## Real Assets Asset Allocation



## Domestic vs. International



## Real Assets Over Time



\* Dollar values are in \$1,000,000  
December 31, 2022

# Real Assets Valuation

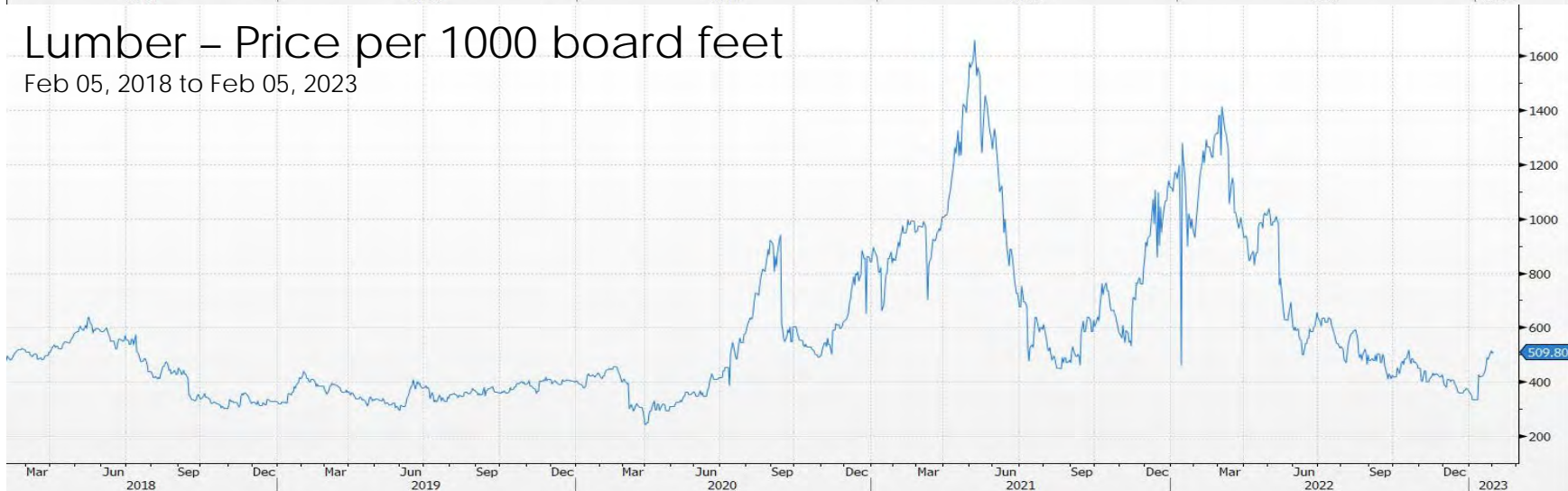
## Crude Oil (WTI) – Price per barrel

Feb 05, 2018 to Feb 05, 2023



## Lumber – Price per 1000 board feet

Feb 05, 2018 to Feb 05, 2023



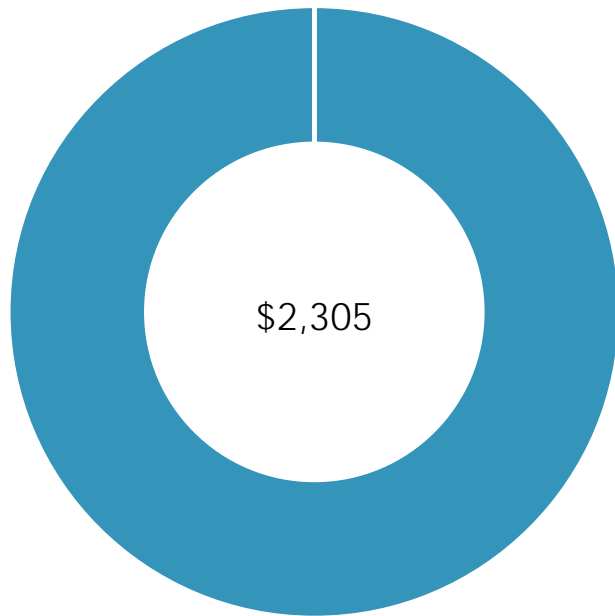
- Oil remains volatile given recent economic uncertainty, Russian sanctions, and China's reopening.
- Lumber prices back to pre-pandemic levels as demand falls. Housing starts have been mixed.

# Real Assets

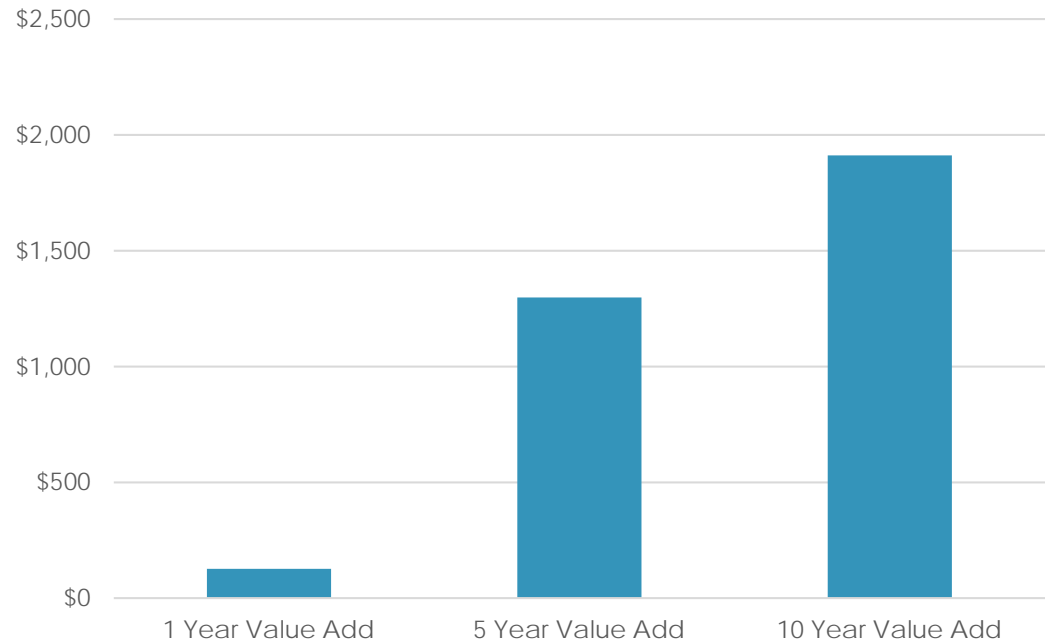
## New Commitments FYTD

- CBRE Musselshell Infrastructure Investments, LP - \$100M (CAPP) / \$50M (TFIP)

# Private Investments Ownership Breakdown



■ Pension



■ Pension

Performance	1 Year	1 Year Benchmark	5 Year	5 Year Benchmark	10 Year	10 Year Benchmark
Pension	5.94%	-13.85%	15.64%	6.48%	13.75%	12.09%

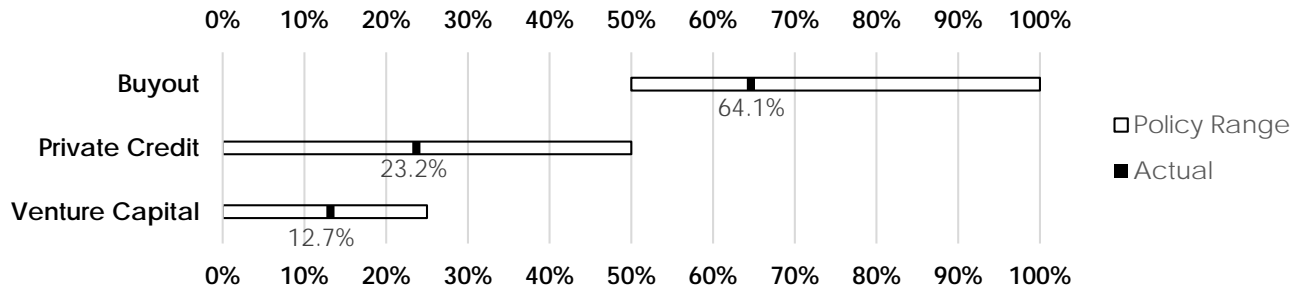
- Performance is strong in absolute and relative terms.
- With year-end audited valuations forthcoming, we expect some modest markdowns across the portfolio, primarily driven by Venture Capital. However, the overall portfolio is holding up very well.

\* Dollar values are in \$1,000,000

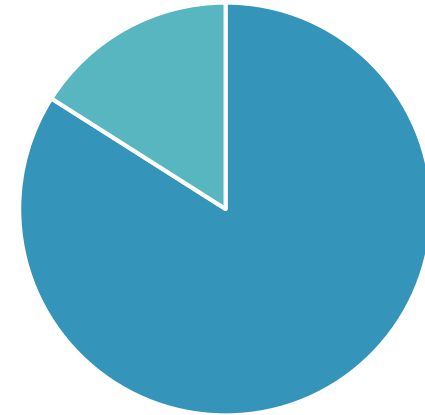
December 31, 2022

# Private Investments Characteristics

## Private Investments Asset Allocation

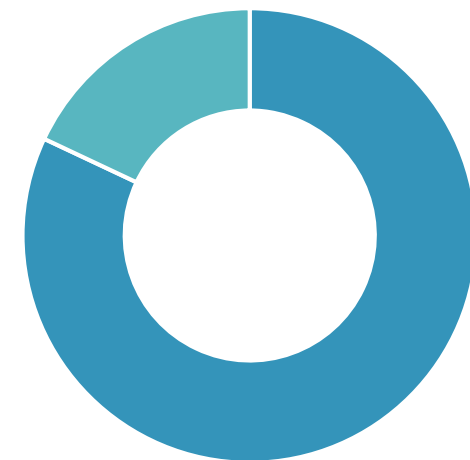


## Fund Type



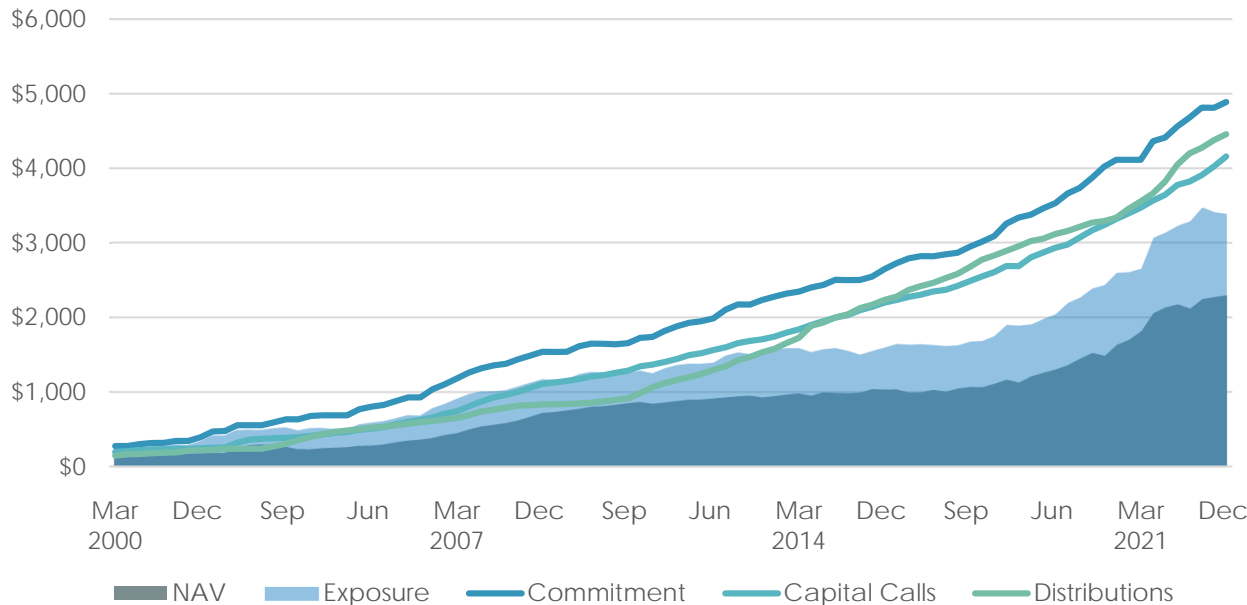
■ Direct Fund ■ Fund-of-Funds

## Domestic vs. International



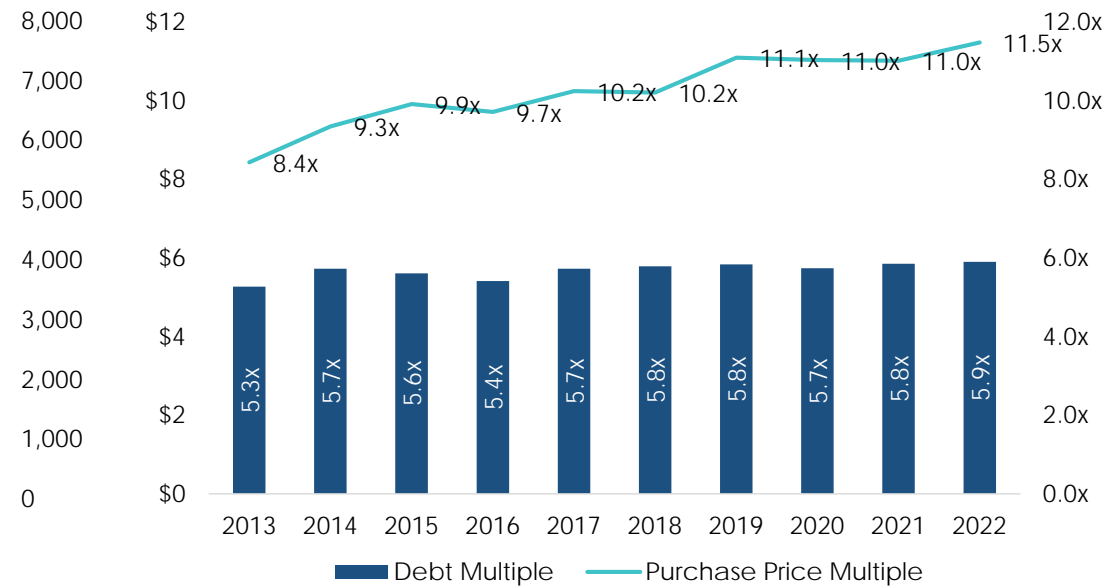
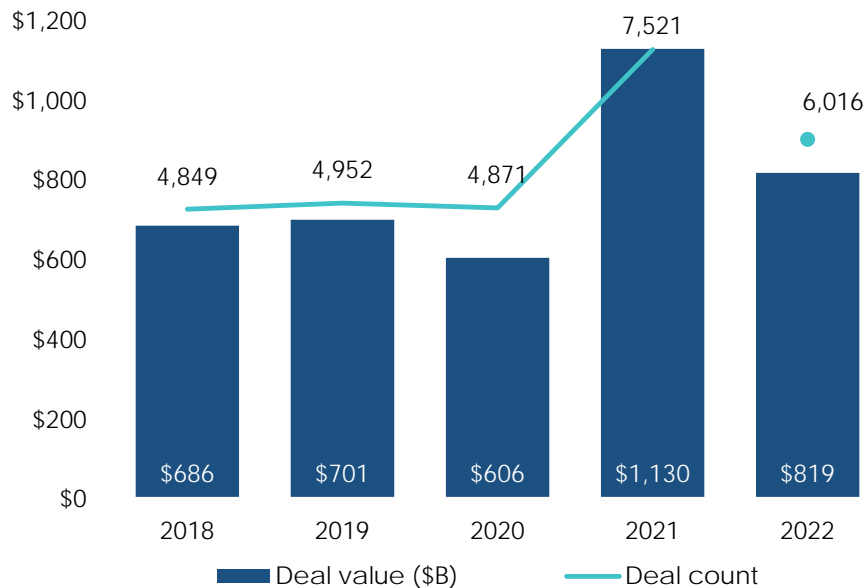
■ Domestic ■ International

## Private Investments Over Time



\* Dollar values are in \$1,000,000  
December 31, 2022

# Private Investments Valuation



- Coming off a record year of fiscal and monetary stimulus in 2021, US Buyout activity appears to be modestly declining. However, it remains slightly above longer-term average levels of deal value and deal count.
- US Buyout median valuations remain at elevated levels compared to longer-term historical averages.
- Debt usage remains consistent albeit slightly elevated relative to the past 10-year average.

Source: PitchBook

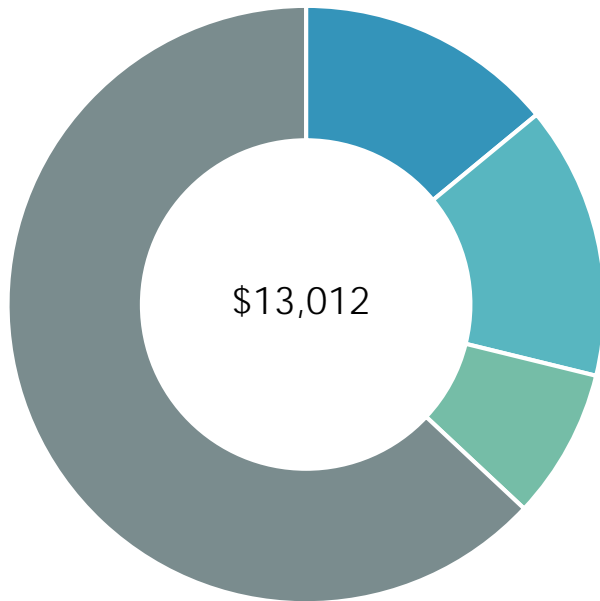
December 31, 2022

# Private Investments

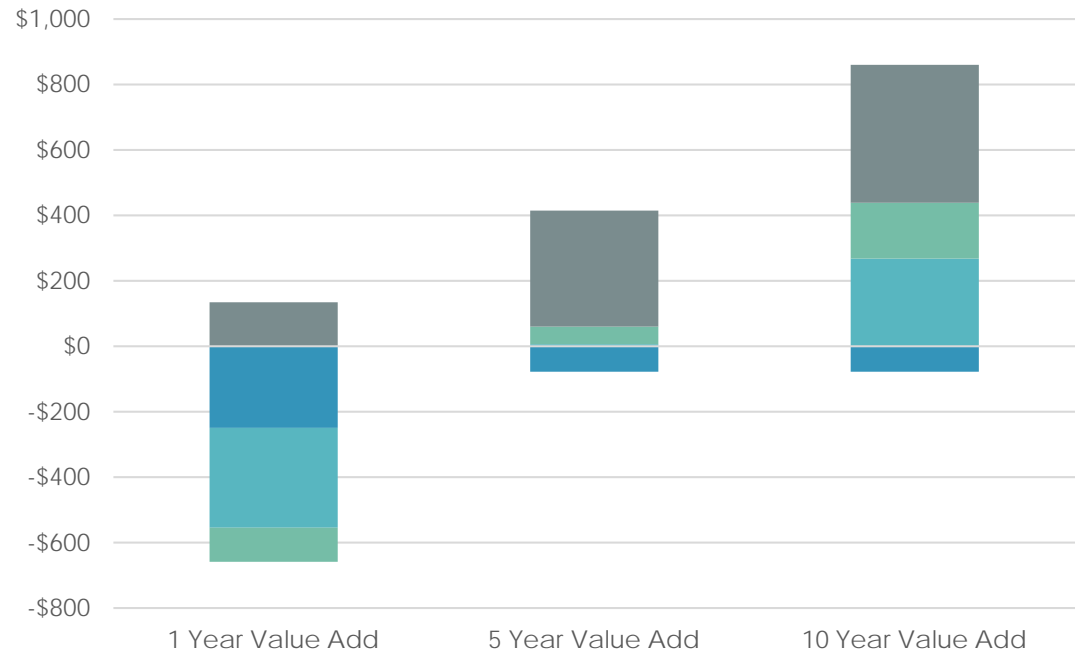
## New Commitments FYTD

- Deerpath Capital Advantage VI - \$75M
- Audax Private Equity Fund VII - \$60M
- **EQT Fund X, L.P. - \$60M**

# Core Fixed Income Ownership Breakdown



■ Pension ■ Trust Fund ■ State Fund ■ STIP



■ Pension ■ Trust Fund ■ State Fund ■ STIP

Performance	1 Year	1 Year Benchmark	5 Year	5 Year Benchmark	10 Year	10 Year Benchmark
Pension	-11.91%	-13.01%	0.26%	-0.27%	1.21%	0.80%
Trust Fund	-11.59%	-13.01%	0.48%	0.02%	1.58%	1.06%
State Fund	-8.49%	-13.01%	0.78%	0.02%	1.37%	1.06%
STIP	1.67%	1.69%	1.35%	1.23%	0.90%	0.84%

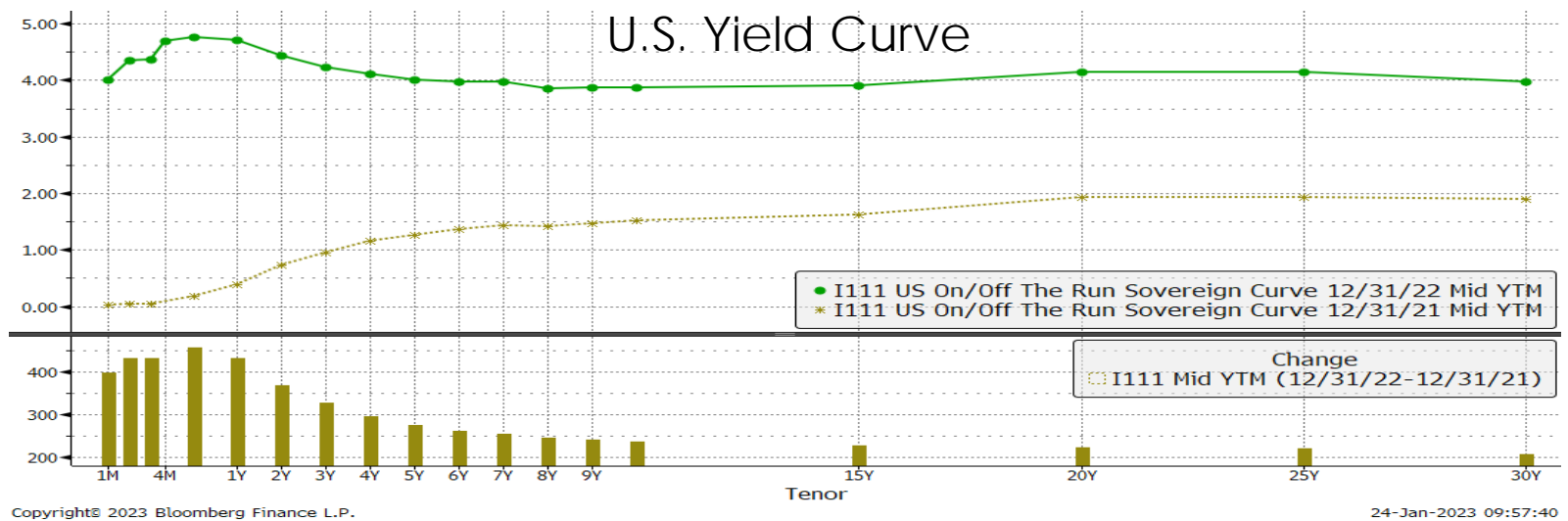
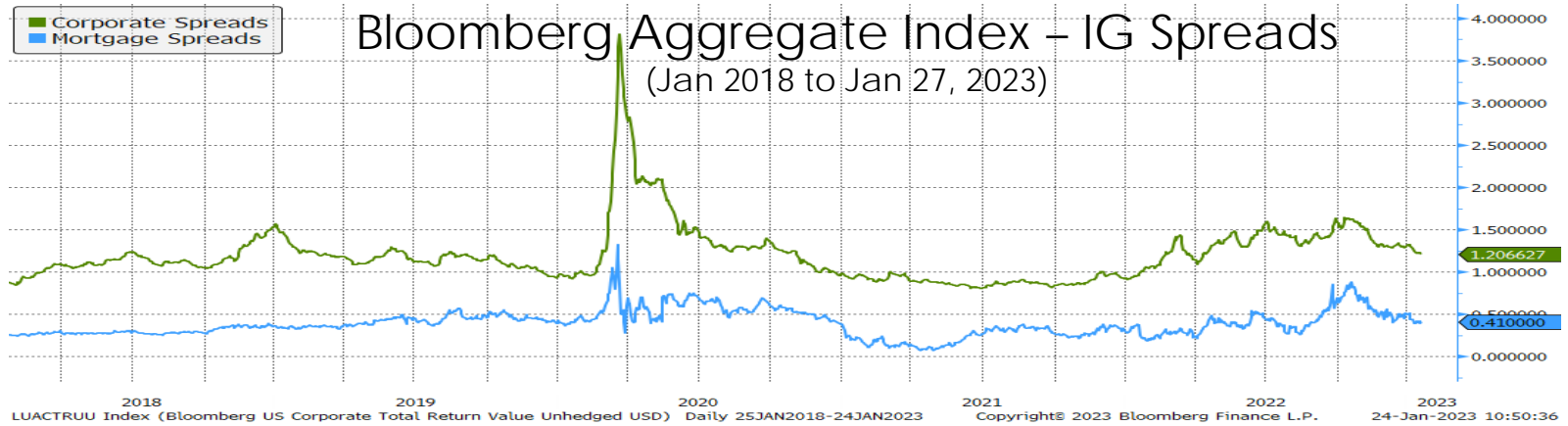
- Negative returns on the year were driven by the dramatic increase in interest rates.
- Higher yields may result in increased earnings to participants.
- Significant uncertainty exists on future rates of inflation and Federal Reserve actions.

\* Dollar values are in \$1,000,000

December 31, 2022



# Core Fixed Income Valuation



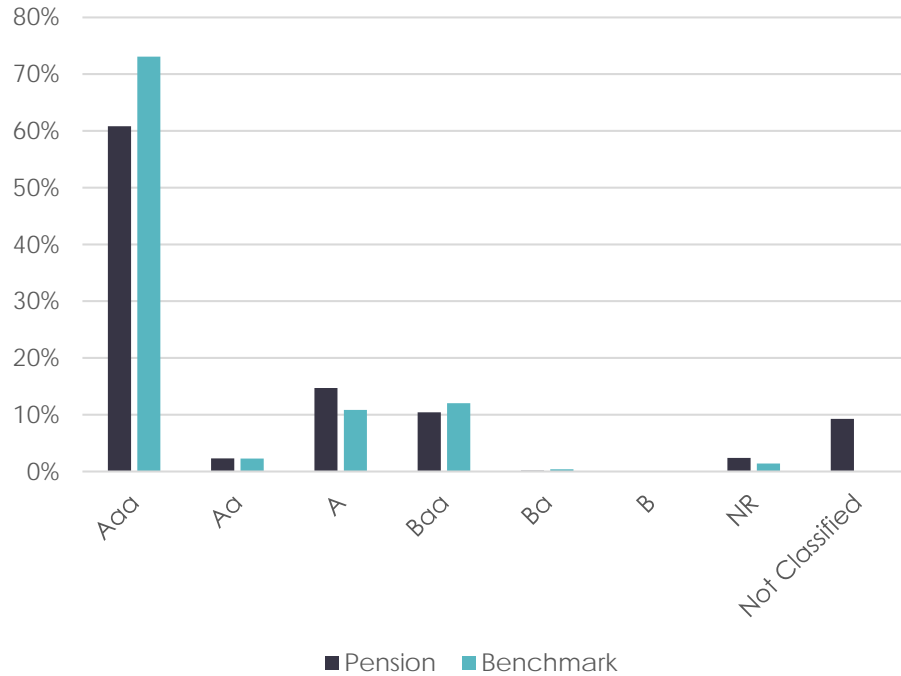
- Risk premiums have declined close to historical averages.
- The inversion of the yield curve is close to record levels.

# Core Fixed Income Characteristics - Pension

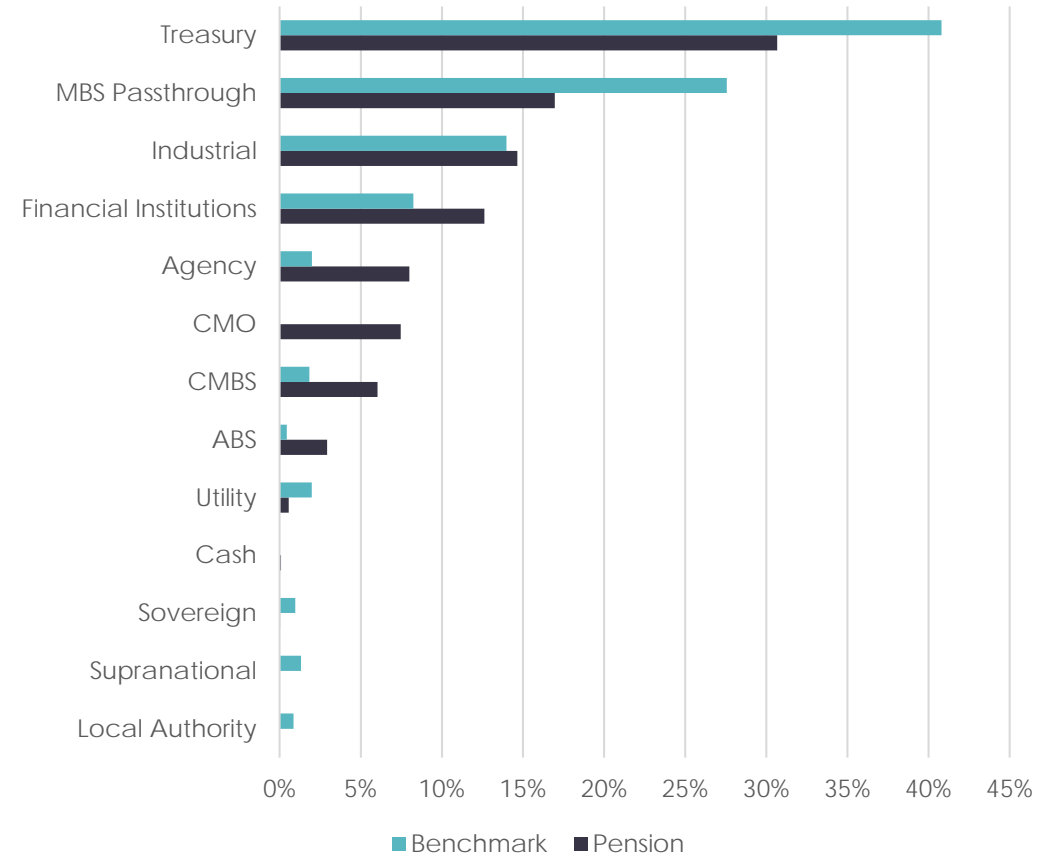
## Core Fixed Income

	Portfolio	Index	Difference	% of Index
Duration	5.97	6.15	-0.18	97.07%
Yield to Worst	4.78%	4.68%	0.10%	102.14%
CTD from Corporate	1.26	1.71	-0.45	73.68%

### Credit Rating



### Sector

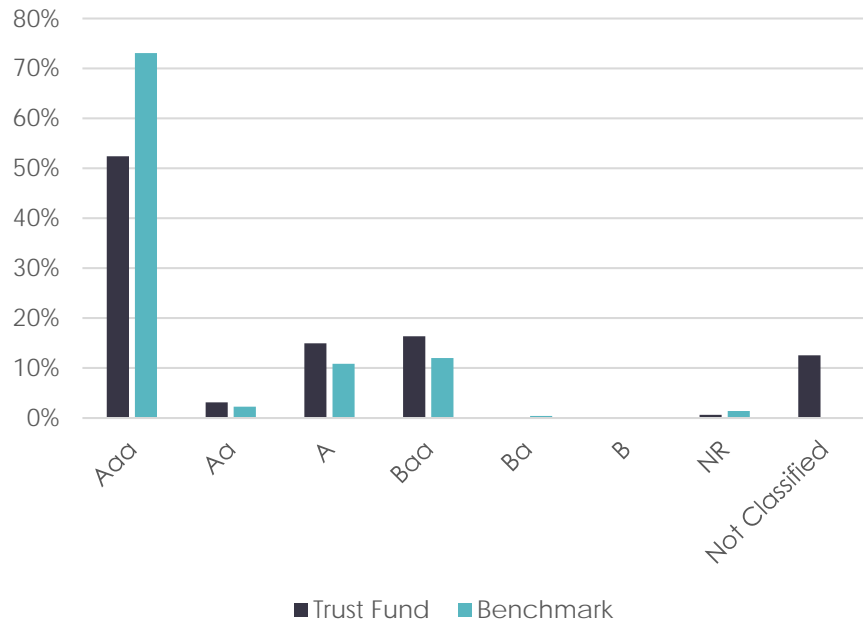


# Core Fixed Income Characteristics – Trust Fund

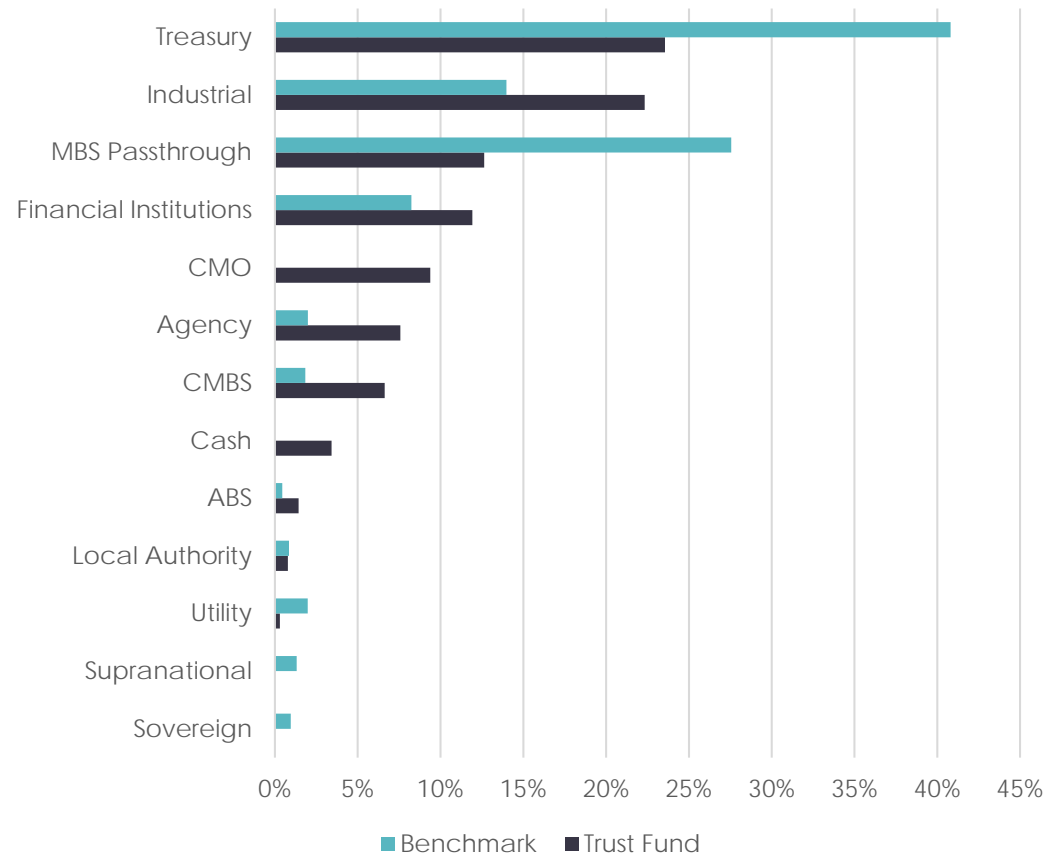
## Trust Funds Investment Pool

	Portfolio	Index	Difference	% of Index
Duration	5.93	6.15	-0.22	96.42%
Yield to Worst	4.90%	4.68%	0.22%	104.70%
CTD from Corporate	1.65	1.71	-0.06	96.49%

### Credit Rating



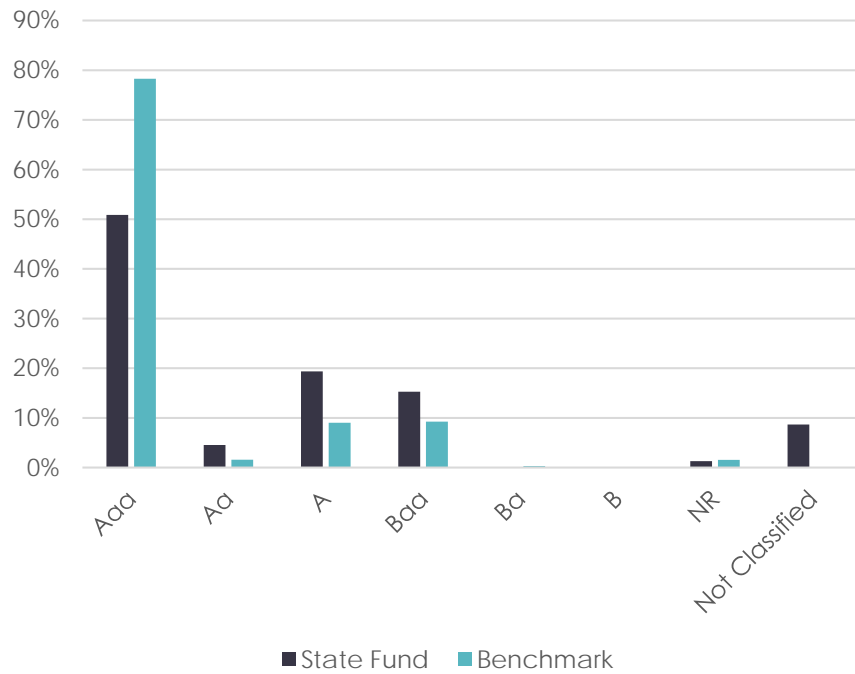
### Sector



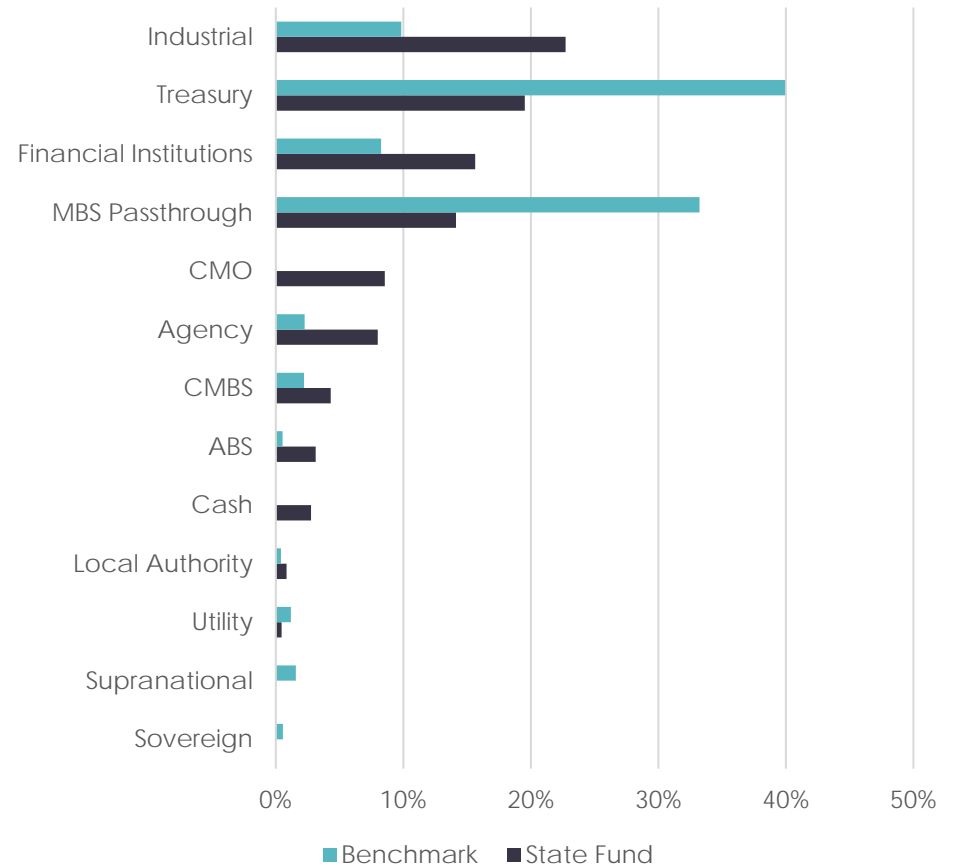
# Core Fixed Income Characteristics – State Fund

State Fund Investment Pool				
	Portfolio	Index	Difference	% of Index
Duration	4.11	4.47	-0.36	91.95%
Yield to Worst	4.91%	4.64%	0.27%	105.82%
CTD from Corporate	1.37	0.78	0.59	175.64%

Credit Rating



Sector

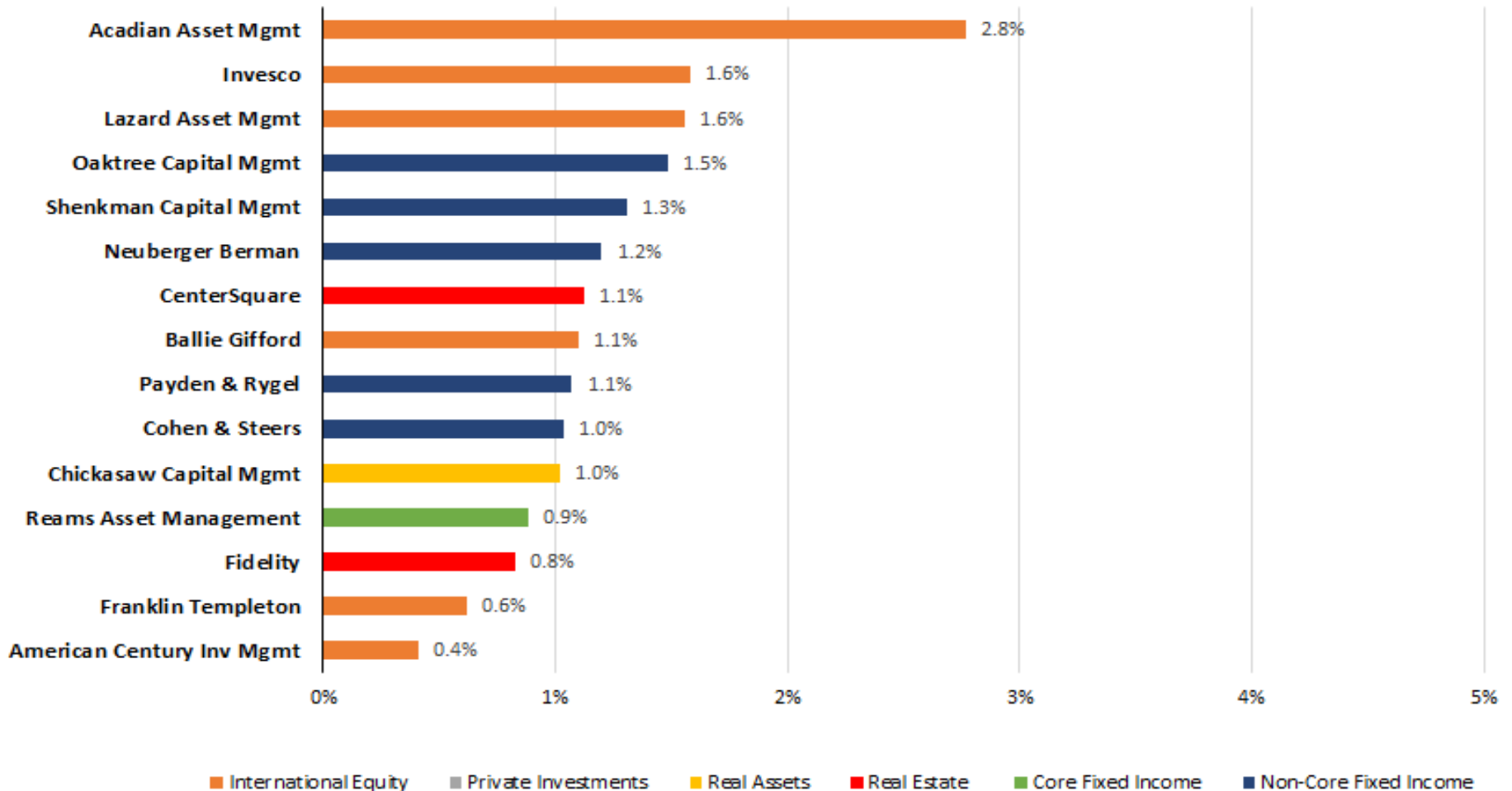


# APPENDIX

---

# Risk Management Pension Holdings

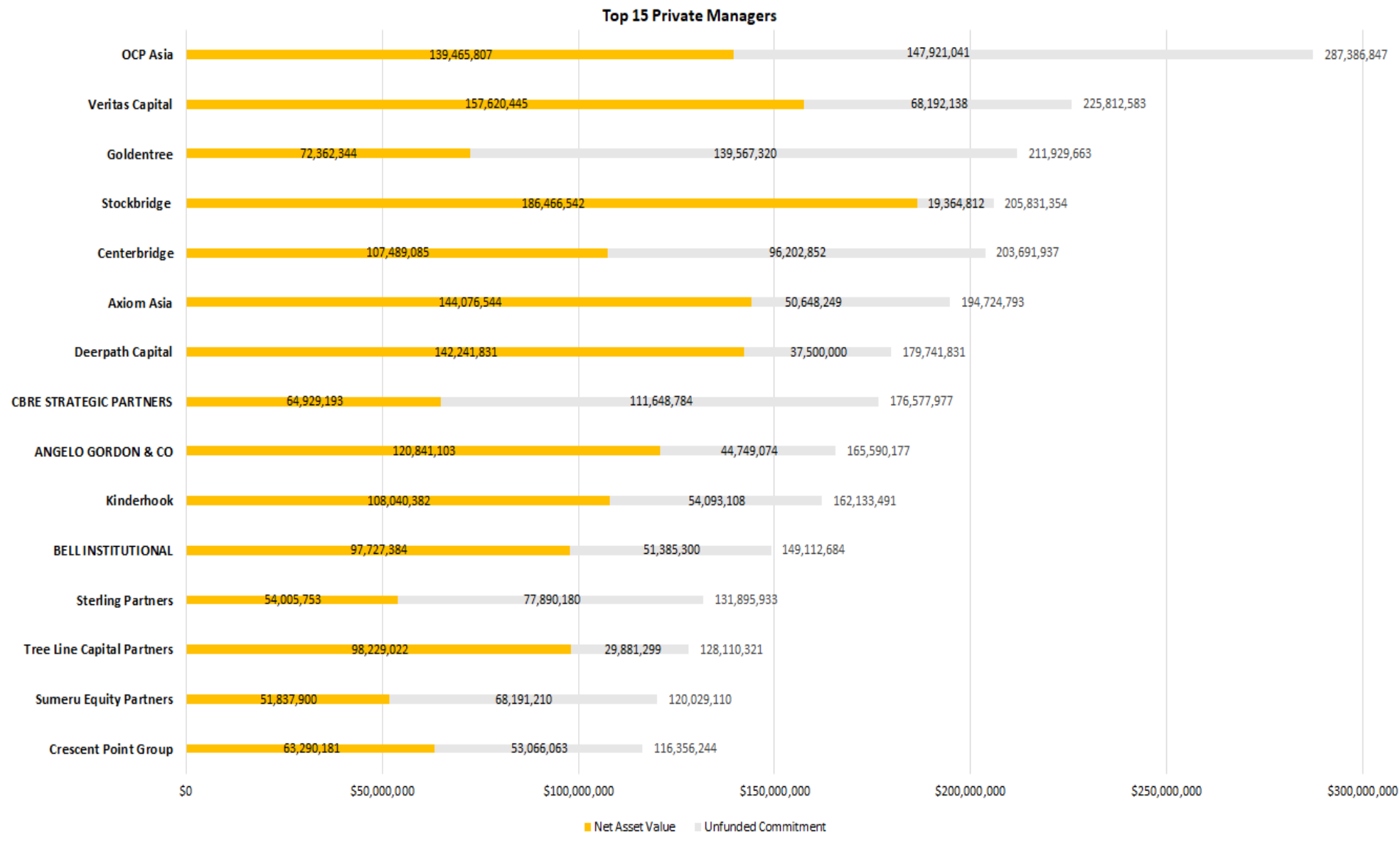
Top 15 Active Managers



\*Montana Public Retirement Plans shall have no greater than 5% of its Net Asset Value managed by any one external manager using an active investment strategy

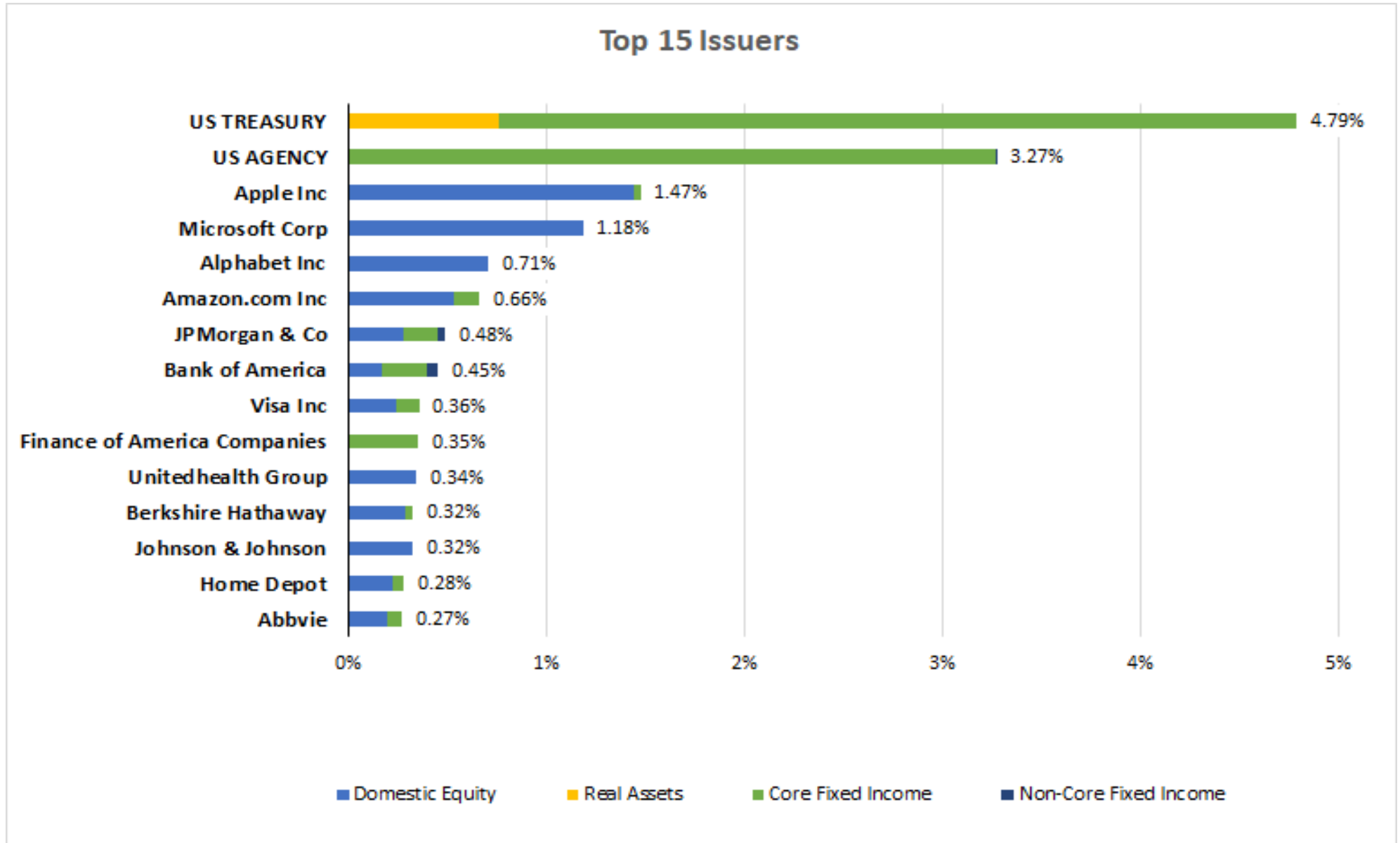
# Risk Management

## Pension Holdings



# Risk Management

## Pension Holdings





# State Fund Performance



# Trust Funds Investment Pool Performance





# 2023 Board of Investments Meetings

JANUARY						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

FEBRUARY						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

MARCH						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

APRIL						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

MAY						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

JUNE						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

JULY						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

AUGUST						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

SEPTEMBER						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

OCTOBER						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

NOVEMBER						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

DECEMBER						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

[Board Materials Due](#)  
[Board Packet Mailing](#)  
[Board Meeting Dates](#)

## BOI WORK AND EDUCATION PLAN

2022

2023

**February 16-17**

**Education:**

Outreach Efforts for the Board - In-State Loan and INTERCAP Programs  
Short Term Investment Pool

**Reports:**

Ethics Policy  
Disaster Recovery and Emergency Preparedness  
Quarterly Reports  
In-State Loan Reports  
INTERCAP Reports

**Committee Meetings:**

Audit: Financial Audit Report

**April 20**

**Education:**

Domestic Equity Asset Class Review  
RVK Annual Capital Market Assumptions

**Reports:**

Benchmarks Used by the Board

**May 25-26**

**Education:**

MT Buildings (Board as Landlord/Tenant Holdings)  
Investment Policy Statement Review  
Real Estate Asset Class Review

**Reports:**

Budget Status FYTD  
Quarterly Reports  
In-State Loan Reports  
INTERCAP Reports

**Committee Meetings:**

Audit: Accounting Staff Review  
HR: Staffing Level Review  
HR: Exempt Staff Compensation Review

**August 3-4**

**Education:**

Core Fixed Income Asset Class Review  
Budget Proposal for FY24-25

**Reports:**

Proxy Voting  
Budget Status Prior FY  
Quarterly Reports  
In-State Loan Reports  
INTERCAP Reports

**Committee Meetings:**

Audit: SOC I, Type 2 Report

**October 26-27**

**Education:**

Separate Accounts Investment Review  
First Reading - Asset Allocation Range Recommendation

**Reports:**

CEM, Inc Cost Reporting Analysis

**Committee Meetings:**

HR: Exempt Staff Performance Review

**December 6-7**

**Education:**

2023 Legislative Session  
Policy 217 - Reauthorization of Investment Vendors  
Adoption - Asset Allocation Range Approval

**Reports:**

Quarterly Reports  
In-State Loan Reports  
INTERCAP Reports

**Committee Meetings:**

Audit: Annual Report and Financial Statements

**February 22-23**

**Education:**

Cash Management of State Monies  
Custodial Banking Relationship and Continuity

**Reports:**

Ethics Policy  
Disaster Recovery and Emergency Preparedness  
Quarterly Reports  
In-State Loan Reports  
INTERCAP Reports

**Committee Meetings:**

Audit: Financial Compliance Audit Report

**April 12**

**Education:**

International Equities Asset Class Review  
RVK Annual Capital Market Assumptions

**Reports:**

Benchmarks Used by the Board

**May 24-25**

**Education:**

State Government Customer Relationships  
Investment Policy Statement Review  
Real Assets Asset Class Review

**Reports:**

Budget Status FYTD  
Quarterly Reports  
In-State Loan Reports  
INTERCAP Reports

**Committee Meetings:**

Audit: Accounting Staff Review  
HR: Staffing Level Review  
HR: Exempt Staff Performance and Compensation Review

**August 23-24**

**Education:**

Trust Funds Investment Review  
Non-Core Fixed Income Asset Class Review

**Reports:**

Budget Status Prior FY  
Quarterly Reports  
In-State Loan Reports  
INTERCAP Reports

**Committee Meetings:**

Audit: SOC I, Type 2 Report

**October 11**

**Education:**

Private Investments Asset Class Review  
First Reading - Asset Allocation Range Recommendation

**Reports:**

Securities Lending

**Committee Meetings:**

HR: Exempt Staff Performance Review

**December 13-14**

**Education:**

MPERA and TRS Relationship  
Policy 217 - Reauthorization of Investment Vendors  
Adoption - Asset Allocation Range Approval

**Reports:**

Quarterly Reports  
In-State Loan Reports  
INTERCAP Reports

**Committee Meetings:**

Audit: Annual Report and Financial Statements

# BOI TERMINOLOGY

## **ACTIVE MANAGEMENT** (typically with respect to stocks)

Investment method which involves hiring a manager to research securities and actively make investment decisions to buy and sell securities in an effort to outperform an assigned index, rather than purchasing a portfolio of securities that would simply replicate the index holdings (*'passive'* investing).

## **ACTUARIAL ASSUMED RATE** (pension concept)

The investment return rate used by actuaries that enables them to project the investment growth of retirement system assets into the future (typically perpetual).

## **ACTUARIAL FUNDING STATUS** (pension concept)

A measurement made by actuaries to measure a pension system's financial soundness (ratio of actuarial liabilities to the actuarial value of the assets available to pay the liabilities).

## **ALPHA** (investment term)

Return on an investment portfolio in excess of the market return or benchmark return; generally used in the context of *'active'* management (as passive management, by definition, does not seek excess returns, or *'alpha'*).

## **ALTERNATIVE INVESTMENTS**

A wide range of investments, other than traditional assets such as publicly traded stocks and bonds. The most common nontraditional or alternative investments are private equity, real estate, commodities, and hedge funds.

## **ARBITRAGE** (bond program)

A structural or systematic difference between investment types which may allow profiting from the *'difference,'* i.e., arbitrage. The most common context for the use of *'arbitrage'* at the BOI is the federal law that prevents *'arbitrage,'* i.e., the profiting of investing tax-exempt securities (e.g., INTERCAP) into taxable yields investments (such as U.S. Treasuries).

## **ASSET ALLOCATION AND ASSET ALLOCATION RANGE** (general investment principle)

The Board's invested assets are divided or allocated into various asset classes such as stocks and bonds, each with its own characteristics, with the objective of attaining an optimal mix of risk and return. The total expected return of a portfolio is primarily determined by the mix or allocation to its underlying assets classes. Given the importance of *'asset allocation,'* the BOI Board sets the asset allocation *'range'* for each broad investment type or asset class.

## **ASSET-BACKED SECURITY**

Bonds or notes backed by loan paper or accounts receivable originated by banks, credit card companies, or other providers of credit. Not mortgages.

## **AVERAGE LIFE** (fixed income, particularly bonds)

The average time period the debt is expected to be outstanding. This is typically the maturity date for a traditional bond structure; however, it will be shorter for bonds having a sinking fund or amortizing payment structure.

## **BANKER'S ACCEPTANCE**

A short-term credit investment which is created by a non-financial firm and whose payment is guaranteed by a bank. Often used in importing and exporting, and as a discount money market fund investment.

## **BARCLAY'S AGGREGATE INDEX (fixed income)**

A composite of outstanding bond issues, including corporate, structured, and government bonds whose overall investment features such as return and investment type are tracked over many years. This is the most common benchmark used for comparing the performance of a portfolio that invests in U.S. investment grade fixed income securities. Formerly known as the Lehman Aggregate bond index.

## **BASIS POINTS (investment jargon)**

A basis point is 1/100<sup>th</sup> of a percentage. Ten basis points is one tenth of a percent, typically written as 10 bps.

## **BENCHMARK (standard investment concept)**

The concept of employing a particular independent or market investment return as a measurement to judge an investment portfolio's return; typically chosen investment benchmarks have the following attributes: they are investible, quantifiable, chosen in advance, easily understandable, and have a long history; common examples are the S & P 500 Index and the Barclay's Aggregate Index.

## **BETA (investment jargon)**

A measure of the risk (or volatility) of a security or a portfolio in comparison to the market as a whole. If the stock or portfolio moves identically to that market, its beta value is 1; if its price volatility (or movement) is greater than that market's price volatility, it is said to have beta greater than 1.

## **CAP, AS IN LARGE 'CAP' (generally for stocks, e.g., public equities)**

'Cap' is short for capitalization, as a reference to the market value of a publicly-traded company. The current stock price times the total shares outstanding of the company equals its market capitalization or market 'cap'; often used contextually such as 'large-cap,' 'mid-cap,' and 'small-cap' for different sized public companies.

## **CERTIFICATE OF DEPOSIT (CD):**

A short-or medium-term, interest-bearing deposit obligation offered by banks and savings and loans. These may include "Yankee CDs" which are CDs issued by foreign banks or their U.S. affiliates in the U.S. which are denominated in U.S. dollars

## **CLAWBACK (private equity)**

A clause in the agreement between the general partner and the limited partners of a private equity fund. The clawback gives limited partners the right to reclaim a portion of distributions to a general partner for profitable investments based on significant losses from later investments in a portfolio which ultimately resulted in the general partner receiving more distributions than it was legally entitled to.

## COMMERCIAL PAPER

An unsecured obligation issued by a corporation or bank to finance its short-term credit needs, such as accounts receivable and inventory. Maturities typically range from two (2) to two hundred seventy (270) days. Commercial paper is available in a wide range of denominations, can be either discounted or interest-bearing, and usually a limited or nonexistent secondary market. Commercial paper is usually issued by companies with high credit ratings, meaning that the investment is almost always relatively low risk.

## CORE (context varies for equity, fixed income, real estate)

In equity and fixed income, 'core' refers to investments that are generally always found in the portfolio and normally expect to hold for a very long time e.g. 'core' holdings of the largest U.S. companies, or U.S. treasuries; in real estate, 'core' generally refers to the best quality of real estate holdings such as prime commercial property in major metropolitan cities that have low leverage and low levels of vacancy.

## CORPORATE NOTE

A type of unsecured debt issued by a corporation that may be longer-term than Commercial Paper, but shorter-term than a typical Corporate Bond.

## CORRELATION (common statistical concept)

A measure of how two or more investment values or two asset classes move relative to each other during the same time period. A central concept in portfolio construction is to seek investments whose values do not move *together* at the same time, i.e., are uncorrelated. A correlation of 1 means that two or more investments 'move' precisely together.

## CREDIT ENHANCEMENT (bond program)

At BOI, the term generally refers to credit support or a bond or loan guarantee. For example, the Board's INTERCAP bonds are 'enhanced' by the BOI's performance guarantee bringing down the yearly interest rate.

## CUSTOM BENCHMARK (or sometimes custom index)

A way to measure investment performance using a tailor-made measurement versus a generic industry-standard benchmark. At the BOI, total pension performance is measured against the Board's 'custom index' or 'custom benchmark' which is a weighted blend of all the underlying asset class benchmarks used to measure the asset class returns.

## DERIVATIVES (investment jargon)

Investment securities whose performance itself depends (or is 'derived') from another underlying investment return. Examples include stock options, puts/calls, and forward currency contracts whose returns are based on the underlying stock or currency.

## DEVELOPED MARKETS (equity)

Countries having a long period of stable industrialization; or are the most economically developed.

## DISCOUNT (fixed income, generally)

Used most often with respect to bonds, the price paid that is less than face (or 'par') value. A \$1 million face-value of a bond purchased for less than a million is bought at a 'discount.' Described as the difference between a bond's current market price and its face or redemption value.



### **DIVERSIFICATION** (standard investment concept)

The concept of spreading risk by putting assets in several investment categories, each having different attributes with respect to type, expected return, risk, and correlation, to best protect against the risk of loss.

### **DURATION** (bonds)

Almost exclusively used when discussing fixed income bonds, a measurement of how sensitive a bond's change in price is to a change in general market interest rates, expressed in years (specifically calculated as a weighted average term to maturity of the bond's cash flows). The greater the duration of a bond, the greater the volatility of price for changes in market interest rates.

### **EFFICIENCY** (usually when discussing various stock markets)

Used to describe markets where it is very difficult to achieve return in excess of that of the overall market from individual stock selection. When information is widely available on a company and its securities are traded regularly the market is considered 'efficient.'

### **EMERGING MARKETS** (most often for public equities)

Certain international securities markets that are typically small, new, have low turnover, and are located in countries where below-average income prevails and is developing in response to the spread of capitalism.

### **ENHANCED** (pertaining to stocks)

Generally linked with 'index' as in enhanced index, an indexed investment management style that has been modified to include the portfolio manager's idea of how to outperform the index by omitting some stocks in the index and overweighting others in a limited manner designed to enhance returns but at minimal risk.

### **EXCESS RETURNS** (standard investment concept)

Returns are 'excess' if they are more than the market or more than the benchmark they are measured against.

### **EXEMPT STAFF VS. CLASSIFIED STAFF** (specific to Montana state government)

"Exempt" refers to the Board's eleven employees who, under state law, do not fall under the state's standard employment rules (the 'classified' staff).

### **FIDUCIARY** (from the Latin verb, *fidere*, to trust)

The concept of trust and watchfulness; a fiduciary is charged with the responsibility of investing the money wisely for the beneficiary's benefit. Board members are the ultimate 'fiduciaries' for the Board's assets and are obligated to be a good agent.

### **FTE** (state government jargon)

An acronym in state government: "full time equivalent" as in full time employee. The concept is a slot or position, not the actual individuals. The BOI is currently authorized for 32 FTE's.

### **FUND OF FUNDS** (private equity)

A concept used in alternative investments referring to using an investment manager to invest in **other** managers or funds, as opposed to making direct investments in funds.

### **GAAP/GASB** (accounting terminology)

GAAP...Generally Accepted Accounting Principles; Montana state law uses GAAP accounting principles unless specifically allowed otherwise. GASB...Government Accounting Standards Board, the board that sets GAAP standards for U.S. governments (FASB...Financial Accounting Standards Board, the entity for commercial and business accounting standards).

### **GENERAL OBLIGATION** (municipal finance term)

Used to describe the promise that a government makes to bond holders, backed by taxing and further borrowing power, it is generally considered the highest level of commitment to bondholders. At the local government level, general obligation bonds typically require a vote of the residents.

### **GENERAL PARTNER VS. LIMITED PARTNER** (private equity)

In private equity, the general partner is responsible for the operations of the partnership and makes the actual underlying investment decisions; the limited partner is the investor, and therefore has limited liability for investment decisions; the BOI is the 'limited' partner in its private equity fund investments (and real estate funds as well).

### **GROWTH** (as to style public equities)

An investment style that more heavily invests in companies whose earnings are expected to grow at an above average rate to the market. A growth stock usually does not pay a dividend, as the company would prefer to reinvest retained earnings in capital projects to grow the company (vs. 'value,' which considers buying established companies they feel are trading at bargain prices to the fundamental analysis of the company's financial statements and internal competitive factors).

### **INDENTURE** (bond and loan programs)

The central document describing the contract between investors and the borrower or user of the proceeds. The Board's INTERCAP program is structured around a bond indenture.

### **HEDGE FUND** (as defined by Investopedia)

An aggressively managed portfolio of investments that uses advanced investment strategies such as *leverage*, long, short and *derivative* positions in both domestic and international markets with the goal of generating high returns (either in an absolute sense or over a specified market *benchmark*).

### **HURDLE RATE** (private equity)

a minimum return per annum that must be generated for limited partners of a private equity fund before the general partner can begin receiving a percentage of profits from investments.

### **INDEX** (investment concept)

Typically, a single measure of a broadly-based group of investments that can be used to judge or be compared to the return performance of an individual investment or manager.

### **INDEXING** (investment concept)

Typically refers to investing in a portfolio to match a broad range of investments that are set within a pre-determined grouping, such as the S&P 500, so as to match its performance; such investing is generally labeled 'passive' or indexed investing; or buying shares in an Index Fund.

### IN-STATE LOAN PROGRAM (Montana-specific)

Programs that are funded by the state's coal severance tax monies.

### INTERNAL SERVICE VS. ENTERPRISE FUND (state accounting concept)

Within Montana state government: a program whose funding is dependent on **mandatory participation** by another state government program is labeled an 'internal' service fund; a program whose funding is dependent on voluntary participation is labeled an enterprise fund. At BOI, the investment program is an internal service fund because participation is not voluntary; the Board's bond and loan programs, because their use is voluntary, are accounted for as an enterprise.

### INVESTMENT GRADE (bonds)

Bond ratings from Moody's, Standard and Poor's, and Fitch high enough to be considered secure enough for most investors (bonds rated AAA – BBB). Below investment-grade bonds (below BBB) are generally considered to have a more speculative outlook and carry more risk of default.

### IRR (private equity)

A measure of investment performance, short for 'internal rate of return,' expressed as a percentage (the 'internal rate of return' number, or discount rate) that mathematically will equalize the total future cash flows of an investment to the initial cash outflow of the investment, the concept accounts for the time value of money.

### LEVERAGE (investment concept)

As an investment concept, a way to increase a return on an investment through a combination of one's own money and by borrowing additional money to enhance such an investment; high 'leverage' is also associated with high risk.

### LINK DEPOSIT

The Link Deposit program can provide a financial institution a long-term fixed rate funding source "linked" to a specific loan. The State of Montana provides the financial institution funding in the form of a deposit through the Montana Board of Investments using coal tax funds.

### MASTER LIMITED PARTNERSHIP

An investment structure that combines the tax benefits of a limited partnership with the liquidity of a common stock. While an MLP has a partnership structure, it issues shares that trade on an exchange like common stock. MLPs are often broadly associated with energy companies operating in midstream services.

### MEAN VARIANCE OPTIMIZATION MODEL ('Modern Portfolio Theory')

A theory that it is possible to construct a portfolio to maximize the return for the least amount of risk or volatility. This theory is based on various asset types and their level of expected return, risk (volatility) and their correlation with each other or how the asset values move with each other. The central idea of the model is to blend investments so that in total, they provide both the best expected return and optimal amount of diversification to minimize deep performance swings (volatility); a central tenant is that long term historical returns are indicative of future returns.

### **MEZZANINE FINANCE** (private equity)

Subordinated debt with an equity 'kicker' or ability to share in the equity value of the company. It is typically lower quality because it is generally subordinated to debt provided by senior lenders such as banks, thus is considered higher risk.

### **MULTIPLE** (as in "multiple" of invested capital, private equity)

The ratio of total cash returned over the life of the investment plus the investment's residual value over the total cash expended in making the investment. A multiple of 2 means, regardless of the total investment time period, that total cash returned was twice the cash invested.

### **130/30 STRATEGY** (public equities)

Also called 'partial long short,' this strategy involves the establishment of a short position in select stocks while taking the proceeds of those shorts and buying additional long positions in stocks. The net effect is an overall market position that is 100% long, but the active decisions on individual stock selections are amplified by this ability to short. If the stock selections are successful, the strategy enables the portfolio to profit more than if a stock had simply not been owned, as with traditional long-only portfolios.

### **OPPORTUNISTIC** (real estate)

In real estate, a euphemism for the most risky real estate investments, typically distressed, raw land, newly developed buildings or other high risk investments in the real estate sector, (versus, 'core,' which are the best quality fully leased commercial properties).

### **OVERWEIGHT OR UNDERWEIGHT** (investment concept)

Generally, the level of holdings of a certain type of investment that is above or below either a benchmark's weight (portion of total investment), or the percentage held of a particular asset class compared to the Board's asset allocation policy weight. Also used to describe an external investment manager's decision to have more (or less) of a particular investment than the percentage or weighting found in the benchmark.

### **P/E RATIO** (equity)

The price of a publicly traded stock divided by its estimated or actual earnings is the price/earnings or P/E ratio. This can also be calculated for a stock index or portfolio of stocks. Over the last 100 years, the S&P 500 has had an overall P/E ratio of about 15, or a total index price of about 15 times the annual earnings of its underlying companies.

### **PACING STUDY** (private equity)

An analysis of the likely timing and amount of the drawdown of committed but yet uninvested monies and the estimated distributions or returns from the funds held in an alternative investment portfolio, generally used to judge the future size of the portfolio and its potential liquidity needs, i.e., cash funding demands.

### **PAR** (fixed income)

The initial principal amount designated by the issuer of the bond, or face value of a bond.

### **PASSIVE**

For investments, generally not materially participating in an investment decision, meaning an investment portfolio whose returns follows that of a broad market index, such as an investable stock index, i.e. the S & P 500.

**PASSIVE MANAGEMENT OR PASSIVE INVESTMENT** (most often in public equities, but not exclusively)

An investment style where a fund's portfolio mirrors a market index, such as the S&P 500, with limited selection decisions by the manager, resulting in market returns. Passive management is the opposite of active management in which a fund's manager attempts to beat the market with various investment strategies and buy/sell decisions of a portfolio of securities to enhance returns.

**PASSIVE WEIGHT** (generally equities)

The percentage of a stock held in a particular index portfolio, or percentage of an overall asset class that is held in passive portfolios.

**POLICY PORTFOLIO**

A fixed-target asset allocation, as opposed to asset allocation ranges, which theoretically allows gauging whether deviations from the target portfolio had a positive or negative impact on overall performance.

**PORTABLE ALPHA** (public equities)

An investment strategy which involves the active selection of securities while neutralizing overall beta or market risk. This often involves the use of derivative investments such as futures to replicate the market return, either taking a short or long position, while then selecting securities which are expected to add return in an absolute sense or in addition to the market return. As an example, this strategy can be found with certain hedge funds where a market exposure is shorted while individual securities such as specific stocks are purchased that are expected to outperform the general market. The concept of portable applies when the ability to generate positive alpha can be overlaid or ported onto a portfolio. This is not a strategy employed by any of MBOI's existing managers.

**PREMIUM** (fixed income)

Most often the amount paid over the stated face amount (often called 'par') of a bond, but also used in other contexts, typically paying more (the premium) than a market price (as in a take-over bid for a company).

**PRIVATE ANNUAL WAGE**

The private annual wage is determined annually by the Montana Department of Labor & Industry using the average annual employment divided by the total wages.

**PROXY** (publicly traded companies)

An agent legally authorized to act on behalf of another party. Shareholders not attending a company's annual meeting may choose to vote their shares by proxy by allowing someone else to cast votes on their behalf, but the word 'proxy' is used more frequently colloquially as a 'close approximation.'

### **PRUDENT EXPERT, PRUDENT PERSON** (a central fiduciary concept)

These legal terms have long histories of court-determined standards of care, deriving originally under English common law. The BOI is empowered to operate under the 'prudent expert rule,' which states that the Board shall manage a portfolio:

- a) *with the care, skill, prudence, and diligence, under the circumstances then prevailing, that a prudent man acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims;*
- b) *diversify the holdings of each fund within the unified investment program to minimize the risk of loss and to maximize the rate of return unless, under the circumstances, it is clearly prudent not to do so; and*
- c) *discharge the duties solely in the interest of and for the benefit of the funds forming the unified investment program.*

At an 'expert' level; there is more room for accepting risk under the prudent expert rule than the prudent person rule.

### **REBALANCING** (general investment term)

The process of realigning the weightings of the portfolio of assets. Rebalancing involves periodically buying or selling assets in the portfolio to maintain the original desired level of asset allocation and/or to stay within predetermined asset category range; it is part of a disciplined investment approach within modern portfolio theory.

### **REPURCHASE AGREEMENT**

A contract in which the seller of securities, such as Treasury Bills, agrees to buy them back at a specified time and price. May also be called "Repo" or "Buyback." Typically used as a short-term form of collateralized borrowing by a bank or securities dealer.

### **RESOLUTION** (government term)

Generally, a formal and written action by a governmental (or corporate) body that has long term significance and requiring a vote of the governing body. BOI uses 'resolutions' generally only for its most significant and long term actions and/or policies.

### **REVERSE REPURCHASE AGREEMENT**

A purchase of securities with an agreement to resell them at a higher price at a specific future date. The investor essentially borrows money and allows its securities to be held as collateral. Reverse Repurchase Agreements occur most often in government securities or other securities that are highly valued and thus considered a good form of collateral.

### **SECURITIES LENDING** (general investment)

Investments that are temporarily borrowed by other investors for a fee; the BOI allows most of its publicly traded investments to be loaned for additional marginal income.

### **STANDARD DEVIATION** (common statistical concept)

A specific statistic that measures the dispersion of returns from the mean over a specific time period to determine the "historical volatility" of returns for a stock, or portfolio, or asset class; more specifically a single unit (i.e., one standard deviation) of dispersion that accounts for approximately 66% of all data around a mean using a 'normal' (or 'uniform' or 'bell-shaped' curve; as opposed to a skewed or asymmetrical) distribution. The standard deviation is used as a gauge for the amount of expected future volatility.

### **SABHRS** (accounting jargon)

Montana state government's State Accounting, Budgeting and Human Resource System; the State's central information management system. BOI investment and other financial data must tie and be reported on this system, which is the official book of record and includes the state's financial statements.

### **STYLE DRIFT** (often in reference to public equity managers, but applicable to other managers, too)

As the name implies, a divergence from an investor's professed investment bias or style or objective.

### **TRANCHE**

A division or portion of a pool or whole; specifically: an issue of bonds derived from a pooling of like obligations (such as securitized mortgage debt) that is differentiated from other issues especially by maturity or rate of return.

### **TRACKING ERROR** (statistical concept in investments)

A measurement of the standard deviation of a portfolio's return versus the return of the benchmark it was attempting to outperform. The concept is often used when discussing investment managers. For example, some styles are expected to have high 'tracking errors,' (e.g., deep 'value' investors who buy companies that may be dogs for years), versus passive managers, whose stock volatility is expected to be very close to their benchmark. Tracking error can either be intentional or unintentional; it can also be regarded as an accepted deviation or contrary to the management agreement. High *unexpected* tracking error is generally a serious concern to be examined and understood.

### **UNDERWRITER** (bond program)

In investments, the agent who buys investments to be resold to the public; at BOI, the investment firms that buy the Board's bonds to be resold to the public.

### **UNIFIED INVESTMENT PROGRAM** (Montana Constitution)

The Program in the State's constitution requiring a central investment program which the legislature has assigned to the BOI.

### **VALUE** (as to style when discussing public equities)

An investment style that focuses on buying established companies that investors believe are undervalued and trading at bargain prices to the fundamental analysis of the company's financial statements and internal competitive factors.

### **VENTURE CAPITAL** (private equity)

A higher-risk/high-return type of investing in startup firms and small businesses with perceived long-term growth potential. Sometimes these are already existing business ventures with limited operating history that need additional management expertise and access to capital. (For start-ups, 'seed capital,' or 'angel investor' are terms differentiating this even higher risk type of investment.)

### **VOLATILITY** (investment jargon)

A statistical measure of the dispersion of returns for a given security or market index. Volatility is typically measured by using the standard deviation of returns from the security or market index. Commonly, the higher the volatility, the riskier the security.

### **YIELD** (general investment, but most often within fixed income)

The amount returned to the investor above the original investment generally expressed as a percentage. Yield can be thought of as the expected return from the combination of interest and price accrual or amortization to maturity (in the case of a bond trading at a discount or premium to par).

### **YIELD CURVE** (fixed income)

A line that plots the prevailing interest rates at a given time for bonds ranging in maturity from as short as three months out to 30 years. When plotted across these various maturities (typically 2, 5, 7, 10 and 30 years), the resultant line is shaped like a curve with generally low interest rates (the yield) for shorter maturities and gradually higher interest rates for longer maturities, because generally investors demand higher interest rates for longer term investments. The yield curve for U.S. Treasury debt is the most common when referring to the prevailing level of interest rates.



**MONTANA BOARD OF INVESTMENTS**  
**ACRONYM INDEX**

ACH.....	Automated Clearing House
ADV.....	Uniform Application for Investment Adviser Registration and Report by Exempt Reporting Advisor
AUM.....	Assets Under Management
ADR.....	American Depository Receipts
AOF.....	All Other Funds
ARC.....	Actuarially Required Contribution
BOI.....	Board of Investments
CAPP.....	Consolidated Asset Pension Pool
CFA.....	Chartered Financial Analyst
EM.....	Emerging Market
FOIA.....	Freedom of Information Act
FWP.....	Fish Wildlife and Parks
FX.....	Foreign Exchange
IPS.....	Investment Policy Statement
IRP.....	Intermediary Relending Program
LDI.....	Liability-Driven Investing
MBOH.....	Montana Board of Housing
MBOI.....	Montana Board of Investments
MDEP.....	Montana Domestic Equity Pool
MLP.....	Master Limited Partnership
MFFA.....	Montana Facility Finance Authority
MPEP.....	Montana Private Equity Pool
MPT.....	Modern Portfolio Theory
MSTA.....	Montana Science and Technology Alliance
MTIP.....	Montana International Pool

MTRP ..... Montana Real Estate Pool

MTSBA ..... Montana School Boards Association

MVO ..... Mean-Variance Optimization

NAV ..... Net Asset Value

PERS ..... Public Employees' Retirement System

PFL ..... Partnership Focus List

QZAB ..... Qualified Zone Academy Bonds

QSCB ..... Qualified School Construction Bonds

RFBP ..... Retirement Funds Bond Pool

RFP ..... Request for Proposal

SABHRS ..... Statewide Accounting Budgeting and Human Resource System

SLQT ..... Securities Lending Quality Trust

SOC1 ..... Service Organization Controls 1 (Audit)

SSBCI ..... State Small Business Credit Initiative

STIP ..... Short Term Investment Pool

TFBP ..... Trust Funds Bond Pool

TFIP ..... Trust Funds Investment Pool

TIF ..... Tax Increment Financing

TIFD ..... Tax Increment Financing District

TRS ..... Teachers' Retirement System

TUCS ..... Trust Universe Comparison Service

UIP ..... Unified Investment Program

VIX ..... Volatility Index

## ASSET CLASS ACRONYMS

DEPAC .....	Domestic Equity Pension Asset Class
IEPAC .....	International Equity Pension Asset Class
PEPAC .....	Private Equity Pension Asset Class
NRPAC .....	National Resources Pension Asset Class
REPAC .....	Real Estate Pension Asset Class
TIPAC .....	TIPS Pension Asset Class
BFPAC.....	Broad Fixed Income Pension Asset Class
USPAC .....	UST/AGY Pension Asset Class
IGPAC .....	Investment Grade Corp Pension Asset Class
MBPAC.....	MBS Pension Asset Class
HYPAC .....	High Yield Pension Asset Class
DSPAC .....	Diversified Strategies Pension Asset Class
CPAC.....	Cash Pension Asset Class