

MONTANA

BOARD OF INVESTMENTS

REGULAR BOARD MEETING
APRIL 23, 2025

- Tab 1 CALL TO ORDER – Jeff Meredith, Chairman** **9:00 AM**
- A. Notice of Video Recording of Meeting
 - B. Roll Call
 - C. Public Comment – *Public Comment on issues with Board Jurisdiction*
 - D. Approval of February 26, 2025, Meeting Minutes
 - E. Comments from TRS and PERS Board Members
 - F. Comments from Board Legislative Liaisons
- Tab 2 EXECUTIVE DIRECTOR REPORTS – Dan Villa** **9:30 AM**
- A. Member Requests from Prior Meeting
 - B. Monthly Snapshot
 - C. Benchmarks Used by the Board
 - D. Resolution for Transfer of Investment Authority for the Defined Contribution/Deferred Compensation Plans with Montana Public Employee Retirement Administration - ***Decision***
- Tab 3 INTERNATIONAL EQUITY ASSET CLASS REVIEW – Jason Brent & Steve Strong** **10:00 AM**
- Tab 4 CAPITAL MARKET ASSUMPTIONS - RVK** **11:00 AM**
- RECAP OF STAFF TO DO LIST AND ADJOURNMENT – Jeff Meredith, Chairman**

MONTANA

BOARD OF INVESTMENTS

REGULAR BOARD MEETING MINUTES

FEBRUARY 26, 2025

Official meeting minutes are the recordings posted at <https://leg.mt.gov/lrd/>
(timestamps may differ)

Call to Order

Board Chair Jeff Meredith called the Board of Investments meeting to order at 10:19 a.m. on Wednesday, February 26, 2025.

Attendance

Board Members Present: Jeff Meredith, Tim Kober, Mark Barry, Cindy Younkin, Dwaine Iverson, Dan Trost, Porter Bennett, John Milanovich

Board Members Absent: Maggie Peterson

Legislative Liaisons Present: None

Legislative Liaisons Absent: Awaiting Appointments

Board Staff Present: Brenda Thomas, Cort Jensen, Dan Villa, Doug Hill, Eron Krpan, Ethan Hurley, Ethan Kittle, Jason Brent, Jessilynn Salois, John Carpenter, John Romasko, Jon Putnam, Julie Feldman, Ian Horwood, Kirsten Haswell, Louise Welsh, Mark Lodman, Matt Hoffman, Peggy MacEwen, Peggy Saarela, Polly Boutin, Roberta Diaz, Sam Holman, Savannah Morgan, Sheli Jacoby, Steve Strong, Tammy Lindgren, Thomas Winkler, Willie Gross

Interested Parties Present: Becky Gratsinger – RVK; Paige Blaser – RVK; Jim Voytko – RVK; John Kevin Balaod – With Intelligence

Tab 1 CALL TO ORDER (00:46)

A. Notice of Video Recording (00:55)

Chair Meredith advised of audio and video recording of the meeting.

B. Roll Call (01:04)

The roll was taken. Six Board members were present, forming a quorum.

Member Dan Trost joined the meeting in person at 10:30 a.m.

Member Porter Bennett joined the meeting online at 11:05 a.m.

C. Public Comment (01:51)

Chair Meredith asked for public comment. None was given.

D. Approval of Minutes (02:02)

November 20, 2024, Regular Board Meeting Minutes and December 5, 2024, Special Board Meeting Minutes

Member Younkin motioned to approve. Member Iverson seconded the motion, which passed unanimously.

E. Administrative Business (03:05)

Chair Meredith welcomed new Board member John Milanovich.

1. Audit Committee Report (07:25)

Committee Chair Barry briefed the Board.

Committee Chair Barry motioned for full Board approval of the FY24 Unified Investment Program and Enterprise Program Financial Statements. Member Younkin seconded the motion, which passed unanimously.

2. Loan Committee Report (11:46)

Committee Chair Kober briefed the Board.

Chair Meredith called for a motion to approve the BretzCo, LLC BOI loan participation amount of \$2,502,000 and the Mining City Real Estate, LLC BOI loan participation amount of \$840,000. Member Trost motioned to approve the loan requests. Member Younkin seconded the motion, which passed unanimously.

F. Comments from Pension Board Members (13:30)

Member Trost briefed the Board.

G. Comments from Legislative Liaisons (14:32)

The Board is currently waiting for new legislative liaisons to be appointed.

Tab 2 EXECUTIVE DIRECTOR REPORTS (14:45)

A. New Employee Introduction

Executive Director Villa introduced Ethan Kittle, the new investment analyst with the Fixed Income team.

B. Member Requests from Prior Meeting

Executive Director Villa briefed the Board.

C. Monthly Snapshot

Executive Director Villa briefed the Board.

D. Ethics Policy 20.100 – Board Member Compliance

Executive Director Villa briefed the Board.

E. Disaster Recovery and Emergency Preparedness

Executive Director Villa briefed the Board.

F. Custodial Bank Relationship and Continuity

Executive Director Villa briefed the Board.

G. Fiduciary and Due Diligence Review – Update

Executive Director Villa briefed the Board.

Tab 3 MONTANA LOAN PROGRAM (39:05)

A. Commercial and Residential Portfolios Report

Doug Hill briefed the Board and answered questions.

Tab 4 BOND PROGRAM (52:10)

A. INTERCAP

Louise Welsh briefed the Board and answered questions.

B. Montana Housing Infrastructure Revolving (MHIR) Bond Program Portfolio Report

Louise Welsh briefed the Board and answered questions.

Tab 5 INVESTMENT POLICY STATEMENT - Decision (01:03:41)

Jon Putnam briefed the Board and answered questions.

Chair Meredith called for a motion to approve the new Investment Policy Statement 40.956 for the NRDP Libby Settlement Account. Member Barry motioned for approval. Member Younkin seconded the motion, which passed unanimously.

Tab 6 CASH MANAGEMENT OF STATE MONIES (01:07:04)

John Carpenter and Polly Boutin briefed the Board and answered questions.

Tab 7 RVK (01:30:33)

Becky Gratsinger and Jim Voytko briefed the Board and answered questions.

Tab 8 INVESTMENT UPDATE (02:34:41)

CIO Update (02:34:46)

Jon Putnam briefed the Board.

Macro Attribution (02:58:39)

Eron Krpan briefed the Board.

Domestic Equity, International Equity, and Non-Core Fixed Income (03:04:07)

Jason Brent briefed the Board.

Real Estate and Real Assets (03:14:55)

Ethan Hurley briefed the Board.

Private Investments (03:26:19)

Thomas Winkler briefed the Board.

Core Fixed Income (03:35:42)

John Romasko briefed the Board.

RECAP OF STAFF TO-DO LIST AND ADJOURNMENT (04:43:23)

Chair Meredith adjourned the meeting at 3:07 p.m.

MONTANA BOARD OF INVESTMENTS

APPROVE: _____

Jeff Meredith, Board Chair

ATTEST: _____

Dan Villa, Executive Director

DATE: _____

MONTANA

BOARD OF INVESTMENTS

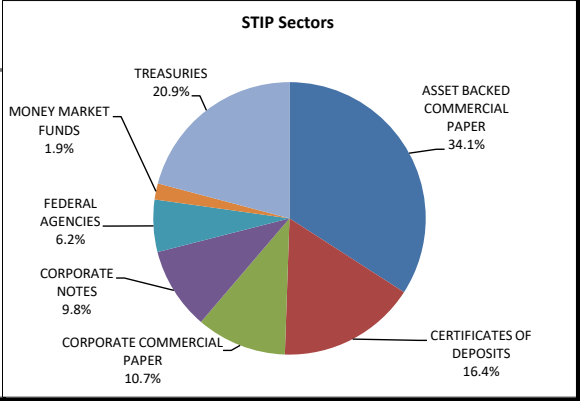
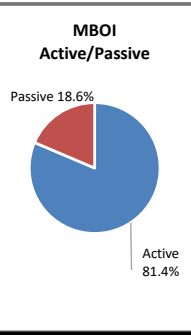
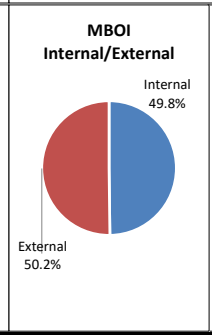
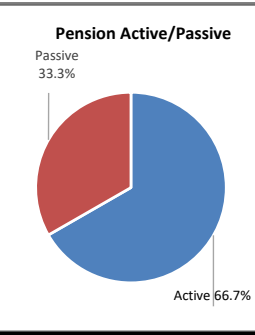
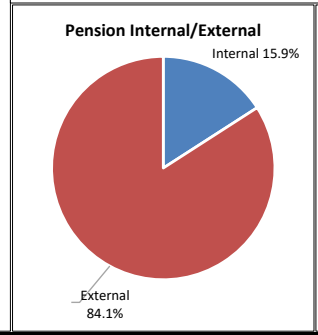
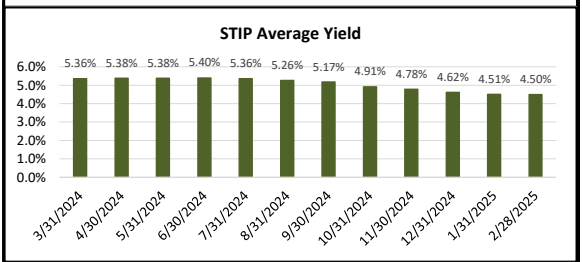
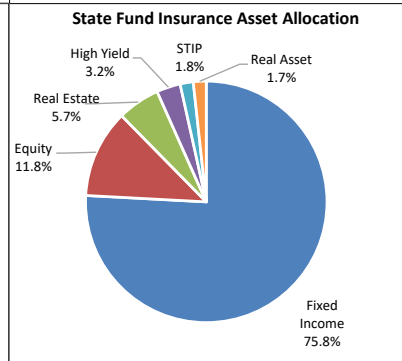
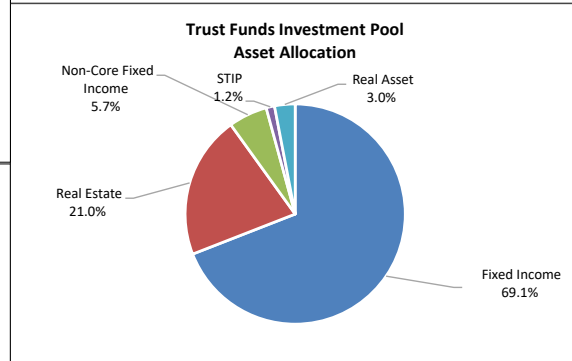
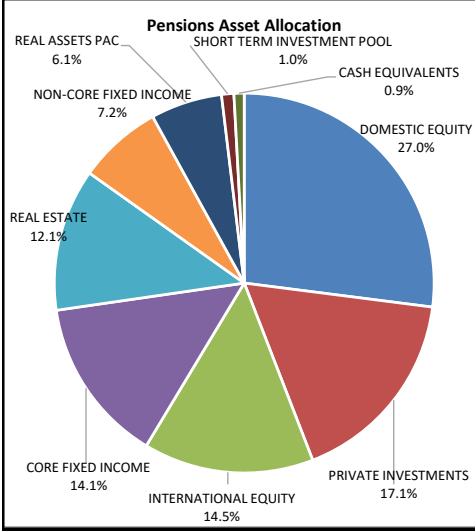
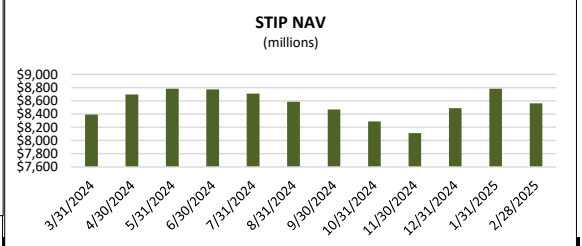
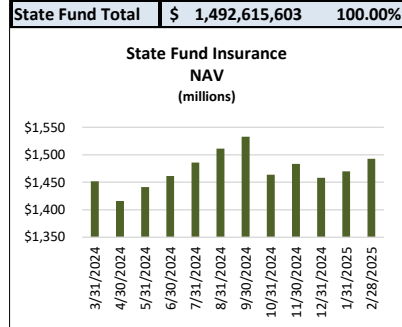
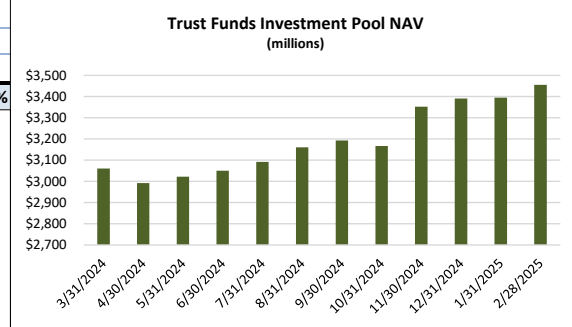
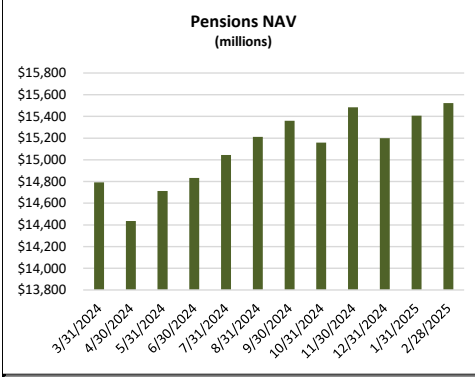
TO: Members of the Board
FROM: Dan Villa, Executive Director
DATE: April 23, 2025
RE: Executive Director Report

- A. Member Requests from Prior Meeting
- B. Monthly Snapshot – *Attached*
- C. Benchmarks Used by the Board – *Attached*
- D. Resolution for Transfer of Investment Authority for the Defined Contribution/Deferred Compensation Plans with Montana Public Employee Retirement Administration - ***Decision***

MBOI Snapshot
Asset Management View
2/28/2025 Unaudited
Assets Under Management \$29,011,192,677



Pensions	NAV	%	TFIP	NAV	%	State Fund	NAV	%	Other Fixed Income & Pending	\$
Pensions Total	\$ 15,522,557,606	100.0%	TFIP Total	\$ 3,455,084,705	100.00%	State Fund Total	\$ 1,492,615,603	100.00%	STIP Total	\$ 8,519,473,273 100.00%
DOMESTIC EQUITY	\$ 4,194,668,139	27.0%	Fixed Income	\$ 2,386,579,547	69.07%	Fixed Income	\$ 1,132,066,165	75.84%	ASSET BACKED COMMERCIAL PAPER	\$ 2,906,481,153 34.12%
PRIVATE INVESTMENTS	\$ 2,654,496,938	17.1%	Real Estate	\$ 724,847,657	20.98%	Equity	\$ 176,004,049	11.79%	CERTIFICATES OF DEPOSITS	\$ 1,399,453,835 16.43%
INTERNATIONAL EQUITY	\$ 2,250,591,678	14.5%	Non-Core Fixed Income	\$ 197,025,252	5.70%	Real Estate	\$ 84,899,665	5.69%	CORPORATE COMMERCIAL PAPER	\$ 912,693,108 10.71%
CORE FIXED INCOME	\$ 2,186,507,422	14.1%	Real Asset	\$ 104,275,346	3.02%	High Yield	\$ 47,722,823	3.20%	CORPORATE NOTES	\$ 832,119,175 9.77%
REAL ESTATE	\$ 1,882,715,384	12.1%	STIP	\$ 42,356,903	1.23%	STIP	\$ 26,235,006	1.76%	FEDERAL AGENCIES	\$ 528,131,289 6.20%
NON-CORE FIXED INCOME	\$ 1,111,537,558	7.2%				Real Asset	\$ 25,687,895	1.72%	MONEY MARKET FUNDS	\$ 163,000,000 1.91%
REAL ASSETS PAC	\$ 945,054,006	6.1%						TREASURIES	\$ 1,777,594,713 20.87%	
SHORT TERM INVESTMENT POOL	\$ 162,350,062	1.0%								
CASH EQUIVALENTS	\$ 134,636,419	0.9%								




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 \$135,751,371 is attributable the portion of STIP held within CAPP \$132,987,903 and TFIP \$42,179,695 as a cash investment and distributions held over month end \$39,416,227. Such value is represented in the NAV for the CAPP and STIP columns.

MBOI Snapshot
Asset Ownership View
2/28/2025 Unaudited



Total Funds \$(000)	CAPP Holdings		STIP Holdings*		TFIP Holdings		Other Holdings ¹		Total Net Asset Value	
	\$15,360,208	52.95%	\$8,383,722	28.90%	\$3,455,076	11.91%	\$1,812,187	6.25%	\$29,011,193	
Pensions	CAPP	%	STIP	%	TFIP	%	Other	%	Total	
FIREFIGHTERS RETIREMENT	\$ 731,232	98.99%	\$ 7,435	1.01%	\$ -	0.00%	\$ -	0.00%	\$ 738,667	
GAME WARDENS RETIREMENT	\$ 366,541	98.99%	\$ 3,734	1.01%	\$ -	0.00%	\$ -	0.00%	\$ 370,275	
HIGHWAY PATROL RETIREMENT	\$ 229,889	99.00%	\$ 2,326	1.00%	\$ -	0.00%	\$ -	0.00%	\$ 232,215	
JUDGES RETIREMENT	\$ 142,201	99.00%	\$ 1,439	1.00%	\$ -	0.00%	\$ -	0.00%	\$ 143,639	
POLICE OFFICERS RETIREMENT	\$ 647,390	99.00%	\$ 6,548	1.00%	\$ -	0.00%	\$ -	0.00%	\$ 653,938	
PUBLIC EMPLOYEES RETIREMENT	\$ 7,386,817	98.97%	\$ 76,715	1.03%	\$ -	0.00%	\$ -	0.00%	\$ 7,463,532	
SHERIFFS RETIREMENT	\$ 585,097	98.93%	\$ 6,340	1.07%	\$ -	0.00%	\$ -	0.00%	\$ 591,436	
TEACHERS RETIREMENT	\$ 5,215,695	98.91%	\$ 57,253	1.09%	\$ -	0.00%	\$ -	0.00%	\$ 5,272,948	
VOL FIREFIGHTERS RETIREMENT	\$ 55,346	99.00%	\$ 560	1.00%	\$ -	0.00%	\$ -	0.00%	\$ 55,906	
Total	\$ 15,360,208	98.95%	\$ 162,350	1.05%	\$ -	0.00%	\$ -	0.00%	\$ 15,522,558	
Trust Funds	CAPP	%	STIP	%	TFIP	%	Other	%	Total	
ABANDONED MINE RECLAMATION	\$ -	0.00%	\$ 8,086	99.66%	\$ -	0.00%	\$ 28	0.34%	\$ 8,113	
BARKER HUGHESVILLE ST RESPONSE	\$ -	0.00%	\$ 1,876	19.53%	\$ 7,700	80.15%	\$ 32	0.33%	\$ 9,608	
BELT WATER TREATMENT PLANT	\$ -	0.00%	\$ 6,104	21.51%	\$ 22,180	78.16%	\$ 93	0.33%	\$ 28,377	
BUTTE AREA ONE REST	\$ -	0.00%	\$ 1,127	18.97%	\$ 4,795	80.71%	\$ 20	0.33%	\$ 5,941	
BUTTE AREA REDEVELOP AUTHORITY	\$ -	0.00%	\$ 1,995	14.60%	\$ 11,629	85.08%	\$ 45	0.33%	\$ 13,669	
CLARK FORK REST	\$ -	0.00%	\$ 5,469	21.55%	\$ 19,826	78.12%	\$ 83	0.33%	\$ 25,378	
CLARK FORK SITE RESP ACTION	\$ -	0.00%	\$ 6,642	12.52%	\$ 46,223	87.15%	\$ 173	0.33%	\$ 53,039	
COAL TAX PARK TRUST FUND	\$ -	0.00%	\$ 3,113	9.85%	\$ 28,406	89.83%	\$ 103	0.33%	\$ 31,623	
CULTURAL TRUST FUND	\$ -	0.00%	\$ 541	3.16%	\$ 16,548	96.52%	\$ 56	0.33%	\$ 17,145	
DEBT AND LIABILITY FREE ACCOUNT	\$ -	0.00%	\$ 269,801	95.06%	\$ -	0.00%	\$ 14,012	4.94%	\$ 283,813	
E HELENA GREENWAY TRAIL MAINT	\$ -	0.00%	\$ 283	29.20%	\$ 682	70.47%	\$ 3	0.33%	\$ 968	
EAST HELENA COMPENSATION FUND	\$ -	0.00%	\$ 1,461	96.28%	\$ 51	3.36%	\$ 5	0.36%	\$ 1,518	
ENDOWMENT FOR CHILDREN	\$ -	0.00%	\$ 52	3.47%	\$ 1,430	96.21%	\$ 5	0.33%	\$ 1,487	
FLYING J CECRA FACILITIES FUND	\$ -	0.00%	\$ 554	19.85%	\$ 2,226	79.82%	\$ 9	0.33%	\$ 2,789	
FWP MITIGATION TRUST	\$ -	0.00%	\$ 3,374	32.17%	\$ 6,837	65.18%	\$ 279	2.66%	\$ 10,490	
HAROLD HAMM ENDOWMENT	\$ -	0.00%	\$ 10	18.44%	\$ 43	81.23%	\$ 0	0.33%	\$ 53	
INVASIVE SPECIES TRUST FUND	\$ -	0.00%	\$ 958	29.25%	\$ 2,305	70.42%	\$ 11	0.33%	\$ 3,274	
KIYO POW WOW	\$ -	0.00%	\$ 91	30.31%	\$ 180	59.69%	\$ 30	10.00%	\$ 301	
LIBBY ASBESTOS SITE STATE COST	\$ -	0.00%	\$ 722	15.08%	\$ 4,053	84.60%	\$ 16	0.33%	\$ 4,791	
LUBRECHT FRST CRBN OFSET CREDIT	\$ -	0.00%	\$ 761	30.31%	\$ 1,499	59.69%	\$ 251	10.00%	\$ 2,512	
LUTTRELL PIT - OPER & MAINT	\$ -	0.00%	\$ 293	14.69%	\$ 1,694	84.98%	\$ 7	0.33%	\$ 1,993	
MONTANA HIST AND CIVICS ENDOW	\$ -	0.00%	\$ 344	20.32%	\$ 1,344	79.36%	\$ 5	0.32%	\$ 1,693	
MONTANA HISTORICAL SOCIETY	\$ -	0.00%	\$ 1,142	26.52%	\$ 3,150	73.15%	\$ 14	0.33%	\$ 4,306	
MONTANA STATE LIBRARY TRUST	\$ -	0.00%	\$ 193	13.54%	\$ 1,231	86.13%	\$ 5	0.33%	\$ 1,429	
MT POLE SUPERFUND SETTLEMENT	\$ -	0.00%	\$ 4,770	24.98%	\$ 14,262	74.69%	\$ 63	0.33%	\$ 19,095	
NOXIOUS WEED MGMT TRUST FUND	\$ -	0.00%	\$ -	0.00%	\$ 10,245	99.68%	\$ 33	0.32%	\$ 10,279	
OLDER MONTANANS TRUST FUND	\$ -	0.00%	\$ 12	3.42%	\$ 325	96.25%	\$ 1	0.33%	\$ 338	
POTTER TRUST FUND	\$ -	0.00%	\$ 48	18.22%	\$ 214	81.45%	\$ 1	0.33%	\$ 262	
PUBLIC SCHOOL TRUST	\$ -	0.00%	\$ 11,150	1.18%	\$ 934,353	98.50%	\$ 3,111	0.33%	\$ 948,614	
REAL PROPERTY TRUST FUND	\$ -	0.00%	\$ 456	6.28%	\$ 6,774	93.39%	\$ 24	0.33%	\$ 7,253	
RESOURCE INDEMNITY TRUST FUND	\$ -	0.00%	\$ 23	0.02%	\$ 105,170	99.65%	\$ 343	0.32%	\$ 105,536	
SMELTER HILL UPLANDS REST FUND	\$ -	0.00%	\$ 1,283	15.07%	\$ 7,207	84.60%	\$ 28	0.33%	\$ 8,518	
STREAMSIDE TAILINGS OU FUND	\$ -	0.00%	\$ 2,110	12.74%	\$ 14,394	86.93%	\$ 54	0.33%	\$ 16,558	
TOBACCO TRUST FUND	\$ -	0.00%	\$ 6,626	2.15%	\$ 300,153	97.52%	\$ 1,001	0.33%	\$ 307,780	
UPPER BLACKFT RESP ACT & REST	\$ -	0.00%	\$ 682	88.80%	\$ 83	10.86%	\$ 3	0.34%	\$ 768	
UPPER CLRK FK RIVER BASIN RES	\$ -	0.00%	\$ 459	2.00%	\$ 22,354	97.67%	\$ 74	0.33%	\$ 22,887	
UPPER CLRK FK RIVER BASIN REST	\$ -	0.00%	\$ 3,574	5.33%	\$ 63,282	94.34%	\$ 219	0.33%	\$ 67,075	
WILDLIFE HABITAT TRUST FUND	\$ -	0.00%	\$ 1,771	10.49%	\$ 15,050	89.18%	\$ 55	0.33%	\$ 16,876	
YELLOWSTONE PIPELINE CLEANUPFD	\$ -	0.00%	\$ 2,086	33.87%	\$ 4,053	65.80%	\$ 20	0.33%	\$ 6,160	
ZORTMAN/LANDUSKY LT WATER	\$ -	0.00%	\$ 17,681	99.66%	\$ -	0.00%	\$ 61	0.34%	\$ 17,742	
ZORTMANLANDUSKY LT WATER TRUST	\$ -	0.00%	\$ 22,995	99.66%	\$ -	0.00%	\$ 79	0.34%	\$ 23,074	
Total	\$ -	0.00%	\$ 390,716	18.67%	\$ 1,681,950	80.36%	\$ 20,455	0.98%	\$ 2,093,121	
Coal Severance	CAPP	%	STIP	%	TFIP	%	Other	%	Total	
BIG SKY ECONOMIC DEV FUND	\$ -	0.00%	\$ 4,885	3.20%	\$ 147,088	96.47%	\$ 489	0.32%	\$ 152,463	
COAL SEVERANCE TAX PERM FUND	\$ -	0.00%	\$ 12,310	2.25%	\$ 339,188	61.90%	\$ 196,462	35.85%	\$ 547,960	
CONSERVATION DISTRICT FUND	\$ -	0.00%	\$ 9,057	23.85%	\$ 28,817	75.87%	\$ 107	0.28%	\$ 37,982	
MONTANA COAL ENDOWMENT FUND	\$ -	0.00%	\$ 3,069	1.14%	\$ 265,940	98.54%	\$ 877	0.32%	\$ 269,887	
MT COAL ENDOWMENT REGIONAL WAT	\$ -	0.00%	\$ 1,192	1.27%	\$ 92,044	98.40%	\$ 304	0.32%	\$ 93,539	
SCHOOL FACILITIES FUND	\$ -	0.00%	\$ 5,464	2.57%	\$ 206,292	97.10%	\$ 688	0.32%	\$ 212,443	
Total	\$ -	0.00%	\$ 35,978	2.74%	\$ 1,079,369	82.13%	\$ 198,927	15.14%	\$ 1,314,274	
Operating Funds	CAPP	%	STIP	%	TFIP	%	Other	%	Total	
FWP GENERAL LICENSE ACCOUNT	\$ -	0.00%	\$ 66,821	68.01%	\$ 29,631	30.16%	\$ 1,796	1.83%	\$ 98,249	
MONTANA LOCAL GOVERNMENTS	\$ -	0.00%	\$ 1,931,617	99.65%	\$ -	0.00%	\$ 6,810	0.35%	\$ 1,938,426	
MONTANA STATE AGENCIES	\$ -	0.00%	\$ 2,441,271	99.66%	\$ -	0.00%	\$ 8,427	0.34%	\$ 2,449,698	
MONTANA STATE UNIVERSITY	\$ -	0.00%	\$ 314,857	84.45%	\$ 56,702	15.21%	\$ 1,283	0.34%	\$ 372,842	
MONTANA TECH	\$ -	0.00%	\$ 7,681	94.18%	\$ 447	5.48%	\$ 28	0.34%	\$ 8,156	
MT HOUSING INFRASTRUCTURE	\$ -	0.00%	\$ 39,152	36.73%	\$ -	0.00%	\$ 67,453	63.27%	\$ 106,605	
REPAYMENT ACCOUNT	\$ -	0.00%	\$ 1,220	99.66%	\$ -	0.00%	\$ 4	0.34%	\$ 1,224	
STATE TREASURER'S FUND	\$ -	0.00%	\$ 2,580,447	82.47%	\$ 525,259	16.79%	\$ 23,335	0.75%	\$ 3,129,041	
UNIVERSITY OF MONTANA	\$ -	0.00%	\$ 102,268	77.73%	\$ 28,886	21.96%	\$ 407	0.31%	\$ 131,561	
WORK FORCE HOUSING	\$ -	0.00%	\$ 11,291	94.85%	\$ -	0.00%	\$ 613	5.15%	\$ 11,904	
Total	\$ -	0.00%	\$ 7,496,624	90.89%	\$ 640,926	7.77%	\$ 110,156	1.34%	\$ 8,247,706	
Insurance Reserves	CAPP	%	STIP	%	TFIP	%	Other	%	Total	
HAIL INSURANCE INVESTMENTS	\$ -	0.00%	\$ -	0.00%	\$ -	0.00%	\$ 0	100.00%	\$ 0	
MONTANA STATE FUND	\$ -	0.00%	\$ 26,162	1.75%	\$ -	0.00%	\$ 1,466,453	98.25%	\$ 1,492,616	
MUS GROUP INSURANCE	\$ -	0.00%	\$ 82,363	84.75%	\$ 12,530	12.89%	\$ 2,286	2.35%	\$ 97,179	
MUS WORKERS COMPENSATION	\$ -	0.00%	\$ 10,156	71.89%	\$ 3,924	27.78%	\$ 48	0.34%	\$ 14,127	
OLD FUND LIABILITY DEFEASANCE	\$ -	0.00%	\$ 44,155	99.66%	\$ -	0.00%	\$ 153	0.34%	\$ 44,308	
PERS-DCRP LT DISABILITY PLAN	\$ -	0.00%	\$ 949	8.16%	\$ -	0.00%	\$ 10,672	91.84%	\$ 11,621	
STATE EMPLOYEE GROUP BENEFITS	\$ -	0.00%	\$ 132,172	77.03%	\$ 36,377	21.20%	\$ 3,029	1.77%	\$ 171,578	
SUBSEQUENT INJURY TRUST FUND	\$ -	0.00%	\$ 2,098	99.66%	\$ -	0.00%	\$ 7	0.34%	\$ 2,105	
Total	\$ -	0.00%	\$ 298,054	16.26%	\$ 52,831	2.88%	\$ 1,482,649	80.86%	\$ 1,833,534	

Short Term Investment Pool			
Account	# Accounts	Total Market Value	%
Total State	371	6,642,330,112	77.4%
Total Local	206	1,935,897,107	22.6%
Total STIP	577	\$ 8,578,227,219	100.0%
STIP Reserve		\$ 100,887,833	
Prior month average STIP Yield		4.4952%	

Intercep Statistics	
Loans Outstanding	\$ 66,665,924
Bonds Outstanding	\$ 68,000,000
Number of Borrowers	127
Loan Rate	5.00%

MONTANA

BOARD OF INVESTMENTS

TO: Members of the Board
FROM: Jon Putnam, Chief Investment Officer
DATE: April 23, 2025
RE: Asset Class Benchmark Review

BOI's current asset class benchmarks are listed below (page 3). No changes are recommended.

Benchmarks are selected based on seven factors endorsed by the CFA Institute. An optimal benchmark is: **S**pecified in advance, **A**ppropriate, **M**easurable, **U**nambiguous, **R**elevant, **A**ccountable, and **I**vestable. These factors can be remembered with the acronym **SAMURAI**.

BOI's public equity benchmarks (Domestic & International) conform to all seven factors. Investors can invest in these benchmarks at a relatively low cost and obtain the return offered by the passive benchmark.

BOI's public fixed income benchmarks (Core & Cash) conform to most of the seven factors. However, it is impossible to replicate these fixed-income benchmarks fully. The benchmarks are not investable, but they provide a reasonable approximation of fixed income risk and return characteristics and are a valid point of reference to gauge success.

In Non-Core fixed income, BOI measures itself against a high yield benchmark, although we invest in other non-core fixed income subsectors. Using a blended benchmark would provide limited additional insight, given the disparate strategies in the asset class. Across all fixed-income strategies, staff is more concerned with downside protection than beating the benchmark.

BOI's illiquid asset class benchmarks (Private Investments, Real Estate, and Real Assets) face several inherent challenges in conforming to the seven factors. The main hurdle is the absence of comparable, investable indices for these asset classes. For example, it is not possible to invest in a "private equity index" because no investable index captures all private equity investment opportunities.

Additional challenges include extended time horizons, the existence of lock-up periods, less liquid fund structures, and lower levels of information transparency and frequency. Below are a few of the more notable challenges explained in greater detail.

- **J-Curve Effect** – The performance of illiquid asset classes can send deceptive signals, as return patterns typically follow a trajectory referred to as a "J-Curve". This return pattern stems from the fact that capital is called for investment over several years, and the timing of cash flows is uncertain. The J-Curve produces negative returns in the early years, as capital calls and manager fees comprise most cash flows, followed by increasing returns as investments mature. This can create the perception that illiquid investment returns significantly trail public markets in the early years and substantially exceed public markets in the later years.

- **Lagged Valuations** – Asset prices for illiquid investments are typically estimated quarterly, resulting in a significant return lag relative to public markets. Within illiquid and private asset classes, limited or selective data is available from managers as well as the underlying investments.

The above-mentioned obstacles limit the utility of benchmarks for illiquid asset classes – especially when evaluated over short time horizons. Given the obstacles, it is clear there is no perfect benchmark for illiquid asset classes. All benchmarks currently available have some shortcomings with respect to the SAMURAI standard. However, staff has selected benchmarks that provide a reasonable approximation of the risk and return characteristics of the assets over the long term.

In addition, staff supplements the asset class benchmarks with other information when evaluating the attractiveness of each asset class, sub-asset class, manager, or individual investment. For example, staff considers the performance of previous funds versus peers across multiple metrics and benchmarks when evaluating private investment managers.

In conclusion, staff recognizes the tradeoffs and shortcomings of some of the asset class benchmarks. Nevertheless, we believe the current benchmarks are consistent with industry best practices. The selected benchmarks provide useful information regarding asset class performance and progress toward BOI's long-term goals. Staff will continue to supplement this information to gain a full understanding of the portfolio's performance and its underlying holdings.

Asset Class	Pension Benchmarks
Domestic Equity	MSCI USA Investable Market Index (IMI)
International Equity	MSCI All Country World Index (ACWI) ex USA Investable Market Index (IMI)
Core Fixed Income	Bloomberg US Aggregate Bond Index
Non-Core Fixed Income	Bloomberg US High Yield 2% Issuer Cap Index
Private Investments	Weighted average of Private Equity and Private Credit
Private Equity	MSCI USA Small Cap Index
Private Credit	S&P/LSTA 100 Leveraged Loan Index
Real Assets	Weighted average of the Commodity, Infrastructure, and TIPS Indices
Commodity	MSCI All Country World Index (ACWI) Commodity Producers
Infrastructure	MSCI All Country World Index (ACWI) Infrastructure
Treasury Inflation Protected Securities	Bloomberg US Treasury Inflation Protected Securities (TIPS) Index
Real Estate	National Council of Real Estate Investment Fiduciaries (NCREIF) Fund Index - Open End Diversified Core Equity (ODCE) Index
Cash or Short-Term Investment Pool	Federal Reserve US Treasury Constant Maturity 1-Month Index
Asset Class	Trust Funds Investment Pool Benchmarks
Investment Grade Fixed Income	Bloomberg US Aggregate Bond Index
Real Estate	National Council of Real Estate Investment Fiduciaries (NCREIF) Fund Index - Open End Diversified Core Equity (ODCE) Index
Non-Core Fixed Income	Bloomberg US High Yield 2% Issuer Cap Index
Real Assets	50% MSCI All Country World Index (ACWI) Commodity Producers and 50% MSCI All Country World Index (ACWI) Infrastructure
Asset Class	State Fund Investment Pool Benchmarks
Investment Grade Fixed Income	Bloomberg US Aggregate Bond Index
Public Equity	Weighted average of Domestic and International Equity
Domestic Equity	S&P 500 Index
International Equity	MSCI All Country World Index (ACWI) ex USA Investable Market Index (IMI)
Real Estate	National Council of Real Estate Investment Fiduciaries (NCREIF) Fund Index – Open End Diversified Core Equity (ODCE) Index
Non-Core Fixed Income	Bloomberg US High Yield 2% Issuer Cap Index
Real Assets	50% MSCI All Country World Index (ACWI) Commodity Producers and 50% MSCI All Country World Index (ACWI) Infrastructure

MONTANA

BOARD OF INVESTMENTS

TO: Members of the Board
FROM: Dan Villa, Executive Director
DATE: April 23, 2025
RE: Resolution for Transfer of Investment Authority for the Defined Contribution/Deferred Compensation Plans with Montana Public Employee Retirement Administration

Attached is an MOU for your consideration to have the Board of Investments begin performing investment manager selection for the Defined Contribution and Deferred Compensation Plans for the Montana Public Employees Retirement Administration. I've also attached the statute allowing this investment alternative.

Director Holahan of MPERA, Chief Investment Officer Putnam, and I are all supportive. We believe the transfer of authority is supported by BOI's core competency of investment underwriting and management. Director Holahan, CIO Putnam, and I are available for questions.

Investment Alternatives -- Notice Of Changes -- Default Fund

19-3-2122. Investment alternatives -- notice of changes -- default fund. (1) The board shall provide for at least eight investment alternatives within the defined contribution plan. In providing for the plan's investment alternatives, only a vendor or vendors offering suitable and well-managed investments, licensed to conduct business in Montana, and regulated by the United States securities and exchange commission may be used, unless exempt from the commission's regulation.

(2) The investment alternatives must include at least three that offer plan members the following:

(a) the ability to materially affect the potential return on amounts in the member's retirement account and the degree of risk to which those amounts are subject;

(b) a range of investment alternatives that:

(i) provides sound and diversified funds;

(ii) offers, under each alternative, a materially different risk and return characteristic than found in the other alternatives;

(iii) allows the member or beneficiary to choose among them to achieve a portfolio with an aggregate risk and return characteristic to achieve a point within the risk and return range normally appropriate for the member or beneficiary based on age, income, and individual retirement goals; and

(iv) tends to minimize through diversification the overall risk of large losses.

(3) The investment alternatives may include the investment alternatives offered to members of the state deferred compensation plan pursuant to chapter 50 of this title.

(4) The board shall from time to time review the suitability and management of investment alternatives and may change the alternatives to be offered. The board shall notify affected members of potential changes before any changes become effective.

(5) Assets within each member's retirement account must be invested as directed by the member.

(6) The board shall provide for a balanced fund to be established as a default investment fund. In the case of a member failing to direct how the member's retirement account is to be invested, the member's entire account must be invested in the default fund.

(7) This section does not prohibit the board from contracting with the board of investments established in **2-15-1808** to provide one or more investment alternatives within the plan.

Defined Contribution/Deferred Compensation Coordination & Efficiency Project

Board Meeting: April 23, 2025

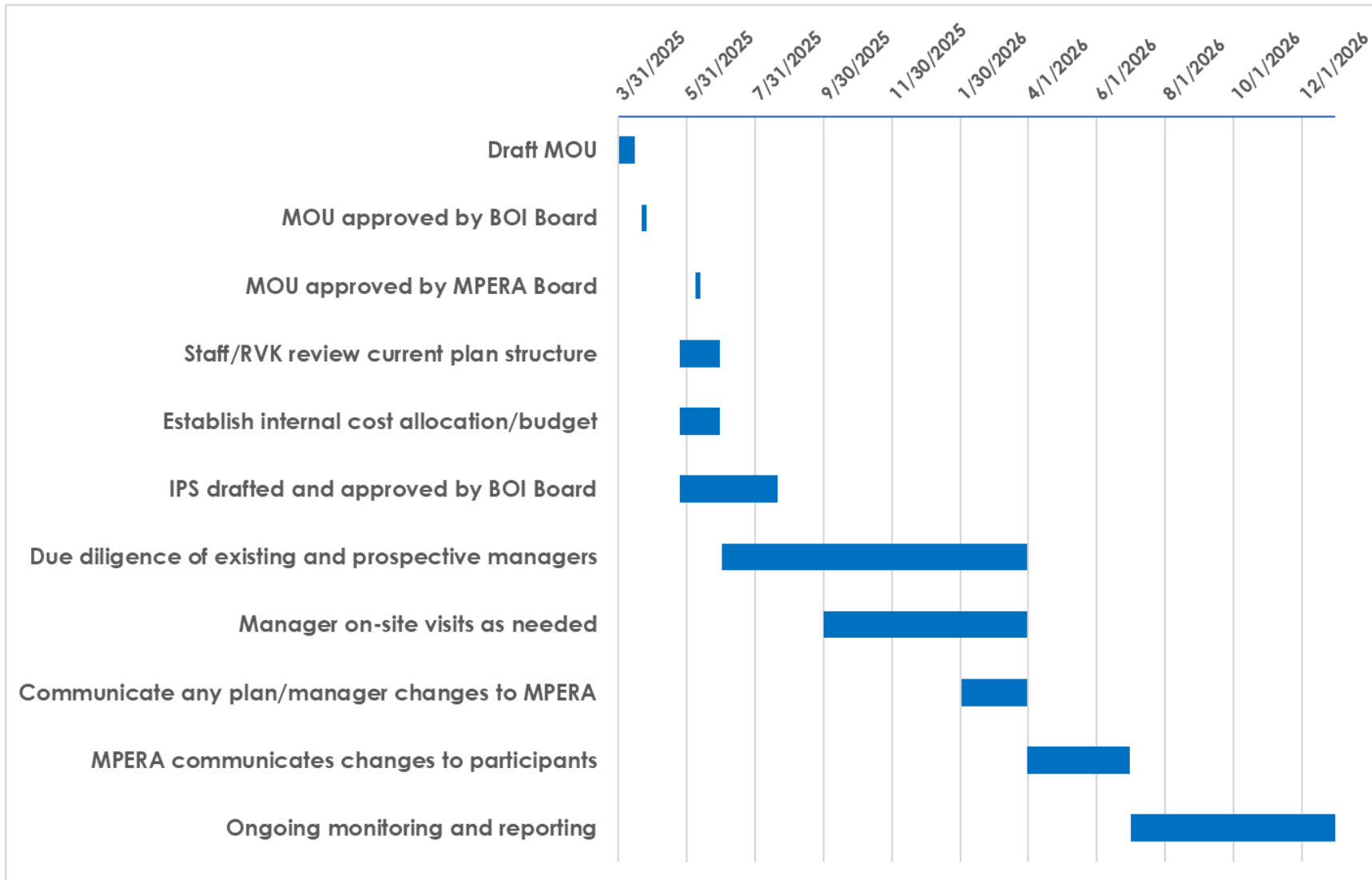
Jon Putnam, CIO

Dan Villa, Executive Director

401 (a)/457(b) Project Benefits

- **Estimated participant fee savings of approximately \$1 million**
 - Negotiate lower fees using BOI scale/relationships (\$650K+ savings)
 - Utilize efficient BOI internal management (\$350K+ savings)
- **Efficient allocation of investment resources**
 - Tap into BOI professional investment expertise
 - Apply expert due diligence process to manager selection for the defined contribution/deferred compensation plans
 - Utilize in-house investment tools to monitor managers
 - Leverage BOI's existing market relationships
 - BOI costs spread across \$30 billion of AUM
 - Combine RVK consulting contracts for BOI/MPERA
- **Increased diversification**
 - Potential to add/enhance participant choices in some asset classes

401 (a)/457(b) Project Timeline



MONTANA

BOARD OF INVESTMENTS

POLICY NUMBER: 40.400

EFFECTIVE DATE: TBD

TITLE: State of Montana 401(a) Defined
Contribution Retirement Plan

SUPERSEDES: NEW

BOARD ADOPTION: TBD

REVIEWED: April 23, 2025

I. Introduction

- A. The State of Montana Public Employee 401 (a) Defined Contribution Plan (the “Plan”) was formally adopted by the 1999 legislature and began operation in 2002. The plan is a qualified pension plan established for the exclusive benefit of participants and their beneficiaries.
- B. The Public Employee Retirement Board has contracted with the Montana Board of Investments (the Board) to manage the investment options of the defined contribution plan for plan members in accordance with Title 19, Chapter 2, Part 5, Montana Code Annotated.
- C. This policy is effective upon adoption and supersedes all previous Investment Policy Statement (IPS) related to the investment management of the State of Montana 401 (a) Defined Contribution Plan.

II. Purpose

- A. The purpose of this policy statement is to provide a broad strategic framework for the State of Montana Public 401(a) Employee Defined Contribution plan under the guidance of the Montana Board of Investments.

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.
 1. Section 17-6-201, MCA:
 - a) Established the Unified Investment Program.
 - b) Created the Board.
 - c) Gave the Board sole authority to invest state funds, including the public retirement plans (Plans) in accordance with state law and the state constitution.
- B. Resolutions signed by both the Montana Public Employee Retirement Board and the Board of Investments outlines the role of the Montana Board of Investments to manage and provide investment options for the participants of the Defined Contribution Plan.
- 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. Discharging its duties solely in the interest of and for the beneficiaries of the funds managed.
- D. Montana’s defined contributions plan laws are found in Title 19, Chapter 3, Part 21. The deferred compensation laws are found in Title 19, Chapter 50, Part 1.

Adopted: TBD

Revised: NEW

Reviewed: April 23, 2025

- E. The Montana Public Employee Retirement Board is empowered by MCA 19-3-2122(7) to contract with the BOI for one or more options for defined contributions and per MCA 19-50-102 for deferred compensation as well

IV. Investment Objectives

- A. Strategic—The objective is to provide a range of prudent investment options with varying degrees of risk and return, which allows participants to construct a diversified asset allocation consistent with their unique circumstances (e.g., age, income, risk tolerance, retirement goals).
- B. Performance - Investment performance is measured over a market cycle (7-10 years) for each manager selection or asset class based on a relevant benchmark that adheres to industry best practices.
- C. Time Horizon - The Board seeks to provide options for employees to accommodate portfolios with a variety of time horizons. DC participants may have different investment time horizons and can direct their own investments accordingly.

V. Roles and Responsibilities

A. Board of Investments

1. The Board is responsible for approving the IPS for the Defined Contribution Retirement Plan and has the authority to select appropriate investment options for participants.
2. The Board reviews this document periodically and approves any changes needed to the policy.
3. As described in the Board of Investments Governance Manual, the Board delegates authority to the Executive Director, Chief Investment Officer (CIO), and other Staff to execute the day-to-day duties required to carry out the Board's mission.

A. Executive Director

1. The Executive Director is empowered by the Board to sign all documents required to conduct Board business.
 - a) Unless there are specific written policies or instructions from the Board to the contrary.
2. The Executive Director and the CIO are authorized jointly to contract for investment manager services and, if deemed appropriate, terminate them.
3. The Executive Director is responsible for establishing the financial reporting procedures and collecting and reporting all income.

B. Chief Investment Officer

1. The Board empowers the CIO 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 IPS changes for Board approval.

C. Staff

1. The staff is responsible for:
 - a) Managing day-to-day operations and delegating work to external resources as appropriate.
 - b) Monitoring all investment managers' due diligence activities and recommending changes to the CIO.
 - c) Monitoring and reporting to the Board on the performance of each asset class and the individual managers.
 - d) Informing the Board of any new managers or terminations.

e) Reporting any deviations from the IPS Policy to the Board.

D. Investment Consultant

1. The investment consultant assists the CIO and staff with policy recommendations and provides advice to the Board.
2. The investment consultant also assists staff in monitoring all external managers and reports to the Board independently.

E. 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 staff regarding administrative, accounting, and reconciliation issues, as well as any requests from the investment consultant, plan administrator, and the master custodian.

VI. Investment Options

A. The Board will maintain investment options in the plan. The Board expects to offer investment options in the following categories, which may include active and/or passive fund management:

1. Domestic Equity
2. International Equity
3. Bonds
4. Real Estate
5. Real Assets
6. Target Date Funds

B. The Board may offer additional investment alternatives to meet participants' changing needs or changes in the investment industry.

VII. Risk Management

A. Evaluation of Investment Managers - Board staff have detailed processes for investing in new managers and overseeing existing manager relationships. These processes shall include, but are not limited to, an ongoing examination of manager investment strategy, philosophy and process, team/staffing, operations and compliance, risk management and legal functions. These processes will be regularly evaluated to comport with industry best practices.

B. Constraints

1. Liquidity—Participants may move their assets daily from one investment alternative to another, subject to any limitations set by that specific investment alternative. The Board seeks to offer a range of investment alternatives within the plan to provide sufficient liquidity to accommodate participant needs.
2. Tax Considerations - The Plan is exempt from federal and state income taxes. Participants' contributions to the Plan are not taxed. The appreciation of participants' assets in the Plan is not taxed. Therefore, tax-advantaged investments are not offered by the Board.
3. Legal Considerations - The Plan is governed by applicable federal and state statutes and regulations, including Section 401(a) of the Internal Revenue Code of 1986, as amended, and Title 19, Chapters 2 and 3 of the Montana Code Annotated. MPERB's Defined Contribution Plan Document provides additional legal information.
4. Financial Management - The cost of administering and accounting for each investment fund must be deducted from the income from each fund per 17-6-201 (7), MCA.

C. Monitoring/Reporting - Transparency

1. Managers shall submit periodic reports to facilitate the Staff's monitoring of the Managers' conformance to investment restrictions and performance objectives.
2. Staff shall provide regular reporting to the Board regarding the performance of the managers.
3. Staff will discuss and communicate any key information discovered due to the ongoing Manager monitoring process that might assist the Board in understanding the risks associated with the manager selections for the Defined Contribution Retirement Plan.

VIII. Investment Policy Statement Review

- A. Per the Board's Governance Policy, "the Board shall create, maintain, and revise as necessary IPS for each separate account it manages. The IPS shall cite the law establishing the account if such law exists, cite 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. The authority to approve IPS may not be delegated to staff."

DRAFT

Authority: Montana Constitution, Article VIII, Section 13
 Section 2-15-1808, MCA
 Section 17-1-113, MCA
 Section 17-2-102, MCA
 Sections 17-6-201 through 17-6-203, MCA
 Sections 19-2-503 through 19-2-505, MCA
 Section 19-3-2122, MCA
 Section 19-17-106, MCA
 Sections 19-17-201 and -202, MCA
 Section 19-17-302, MCA
 Section 19-18-403, MCA
 Section 19-19-203, MCA
 Sections 19-20-215, -409, and -501, MCA
 Sections 19-50-102, MCA

RESOLUTION NO. ____

RESOLUTION OUTLINING THE MONTANA BOARD OF INVESTMENTS ROLE IN PROVIDING MANAGING AND PROVIDING OPTIONS FOR THE DEFINED CONTRIBUTION PLAN AND THE DEFERRED COMPENSATION PLAN FOR THE MONTANA PUBLIC EMPLOYEE RETIREMENT ADMINISTRATION

WHEREAS, the Board of Investments of the State of Montana, established under § 2-15-1808, MCA, has the sole authority for administering all public funds under the Unified Investment Program, including the assets of the deferred benefit public pension funds established in Article VIII, § 13 of the Montana Constitution; and

WHEREAS, the Montana Public Employee Retirement Board, established under § 2-15-1009, MCA, administers and operates the state's retirement systems, pursuant to Title 19, chapter 2, part 3 of the Montana Code Annotated; and

WHEREAS, the Montana Public Employee Retirement Board seeks to have the Board of Investments manage all of the retirement system funds; and

WHEREAS, the Board of Investments agrees to manage public employee retirement funds on behalf of the Montana Public Employee Retirement Board;

BE IT RESOLVED by the Board of Investments of the State of Montana ("BOI") and by the Montana Public Employee Retirement Board ("MPERA"), as follows:

1. AUTHORITY

Article VIII, § 13 provides, in part:

Investment of public funds and public retirement system and state compensation insurance fund assets. (1) The legislature shall provide for a unified investment program for public funds and public retirement system and state compensation insurance fund assets and provide rules therefor, including supervision of investment of surplus funds of all counties, cities, towns, and other local governmental entities.

* * *

(3) Investment of public retirement system 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 an enterprise of a similar character with similar aims. Public retirement system assets may be invested in private corporate capital stock.

The Montana Constitution chartered the Legislature to established the Unified Investment Program for public funds pursuant to Article VIII, Section 13 of the Montana Constitution and § 17-6-201, MCA, created the Montana Board of Investment, and gave the Board authority to administer public funds. The Legislature obligated the BOI to manage the assets under the prudent expert principle, requiring the Board to:

- (a) discharge the 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 a like character 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.

§ 17-6-201(1), MCA.

MPERA investments are subject to the requirements of Title 19, chapter 3 of the Montana Code Annotated. The defined contribution plan is instituted in § 19-3-2102, MCA, and affords the Board, in part, the ability to “contract for plan administration.”

Montana’s public employees’ deferred compensation plan was created by the Legislature pursuant to § 19-50-102(1), MCA:

- (1) The state or a political subdivision may establish deferred compensation plans that are eligible under section 457 of the Internal Revenue Code, 26 U.S.C. 457, as amended, and in compliance with regulations of the U.S. department of the treasury. Eligible deferred compensation plans for employees may be established in addition to any retirement, pension, or other benefit plan administered by the state or a political subdivision.

Under the same section, the Legislature established the guidelines for investment and management by MPERA or its designated agent. *Id.*

It is the intent of the Legislature for the defined contribution plan that: “the administrative structure for the plan be configured in an economical and efficient manner.” § 19-3-2103(2), MCA. MPERA may contract with BOI to provide investment alternatives within the defined contribution plan. § 19-3-2122(7), MCA. To meet the statutory objectives of the deferred compensation plan and the defined benefit plan, the Public Employees’ Retirement Board is contracting with the Board of Investment to provide plan members investment options for both the defined contribution plan and deferred compensation plan.

2. BOARD OF INVESTMENTS REPRESENTATIONS

BOI has the authority under Article VIII, § 13 of the Montana Constitution and Title 17, chapter 6, part 2 of the Montana Code Annotated to manage, administer, and invest all public funds, including retirement funds, on behalf of the state of Montana and for its public employees.

BOI shall provide investment options to plan members from all Montana Public Employee Retirement Administration defined contribution and deferred compensation assets in accordance with applicable provisions of Title 17, chapter 6, part 2, of the Montana Code Annotated and in

the same manner that a prudent expert acting in a fiduciary capacity and familiar with the circumstances would use in a like capacity, in accordance with Article VIII, § 13 of the Montana Constitution and § 17-6-201, MCA. BOI shall comply with the requirements of the defined contribution plan and deferred compensation plan in accordance with Title 19, chapter 2, part 5, Montana Code Annotated.

BOI shall report annually to MPERA on the investment options and management of the defined contribution and deferred compensation plans.

3. PUBLIC EMPLOYEE RETIREMENT BOARD REPRESENTATIONS

MPERA has the authority to establish and manage the defined contribution plan in accordance with Title 19, chapter 3, part 21 of the Montana Code Annotated, and that under these same provisions, MPERA may contract for the management of asset investment associated with the defined contribution plan.

MPERA has the authority to establish and manage the deferred compensation plan in accordance with §§ 19-50-102 and 19-50-202, MCA, respectively, and that under these same provisions, MPERA may contract for the management and investment of the assets associated with the defined contribution plan. Under this resolution MPERA contracts with and delegates to BOI the investment of the deferred compensation plan.

Under this resolution MPERA contracts with and delegates to BOI the selection of investment options to plan members of the defined contribution plan and deferred compensation plan. MPERA will continue to provide for diligent oversight of the plans.

MPERA shall provide BOI information necessary for BOI to select managers of the assets of the two plans, including all contracts for investment and management of the assets.

MPERA shall continue to meet its obligations to report annually to BOI in accordance with § 19-2-410, MCA.

4. STATEMENT OF UNDERSTANDING

MPERA shall transfer to BOI all investment management functions of the defined contribution plan and the deferred compensation plan. BOI will thereafter manage and oversee providing investment options to plan members for each of the plans.

BOI and MPERA agree that the officers and staff of BOI are authorized to manage all funds and assets in the defined contribution plan and deferred compensation plan to meet its fiduciary obligations and to provide sound investment options to plan members, including but not limited to negotiating and contracting with investment managers for the management of the funds and assets in the defined contribution plan and the deferred compensation plan.

BOI and MPERA agree that the transfer of assets to BOI for providing plan members investment options within the deferred compensation plan does not affect existing contracts MPERA has

with political subdivisions authorizing eligible employees of the political subdivision to participate in the deferred compensation program, as described in § 19-50-201, MCA.

BOI and MPERA shall work together to meet all requirements necessary under constitutional and statutory law for the management of the defined contribution plan and deferred compensation plan assets for BOI to provide prudent, sound, and diversified investment opportunities to plan members.

5. TERM

This Resolution is effective July 1, 2025, and shall remain in effect indefinitely, unless terminated by agreement of the parties or by the force of law. This agreement shall be subject to the constitutional and statutory provisions cited above, as the same may be amended from time to time.

PASSED AND APPROVED by the Board of Investments of the State of Montana this ___ day of April, 2025.

JEFF MEREDITH, Chair

Attest:

DAN VILLA, Executive Director

Approved for legal content:

CORT JENSEN, Chief Legal Counsel

PASSED AND APPROVED by the Montana Public Employee Retirement Board this ___ day of April, 2025.

MAGGIE PETERSON, President

Attest:

WILLIAM HOLAHAN, Executive Director

Approved for legal content:

NICK DOMITROVICH, Chief Legal Counsel

Montana International Equities Asset Class Review

Presented by:

Jason Brent, CFA, CAIA, Director of Public Market Investments
Steve Strong, Senior Investment Analyst

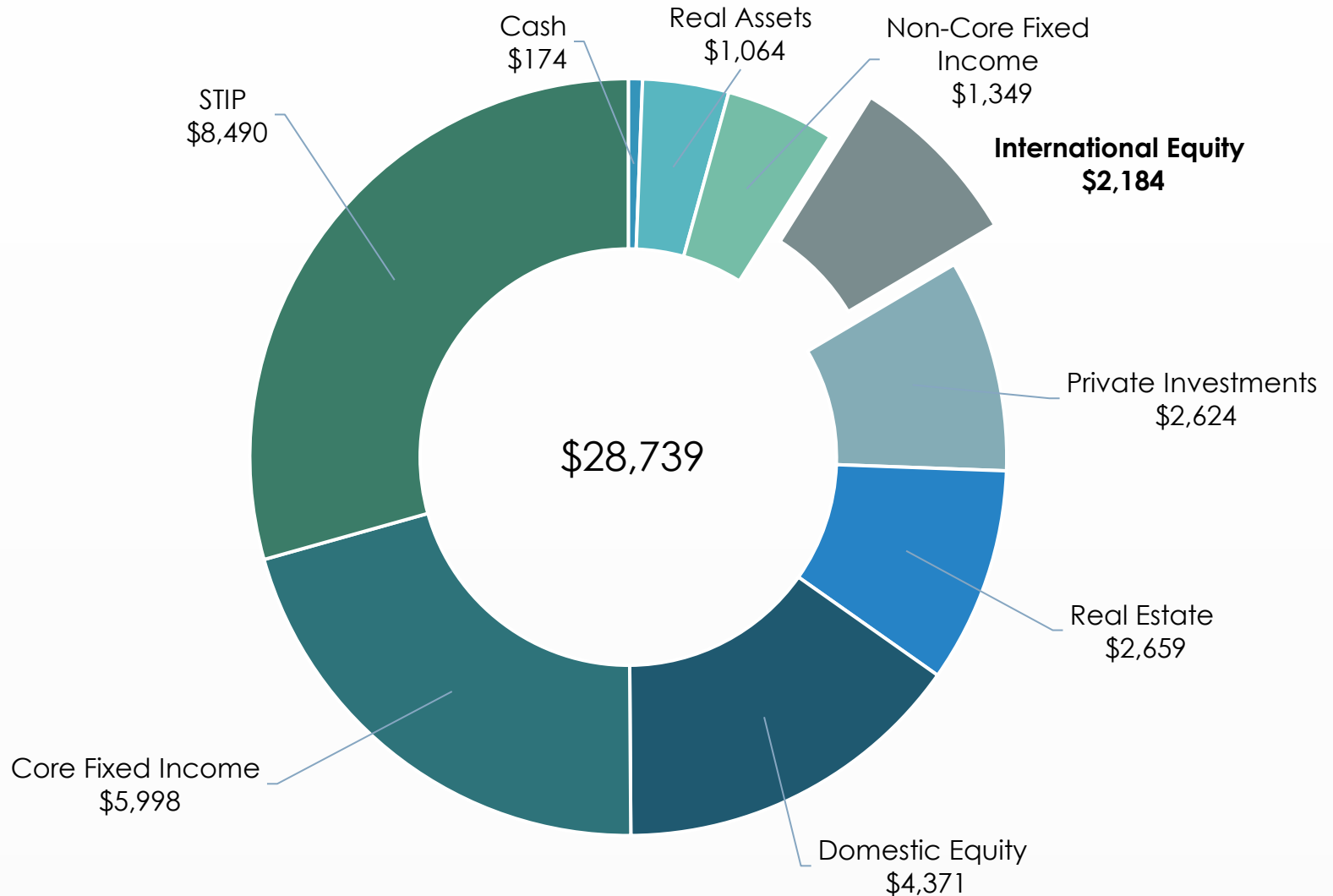
Date:

April 23, 2025

International Equities Overview

- Equity investments in publicly-traded companies based outside the U.S.
 - What makes a company “international”?
- Externally managed
 - Actively-managed portfolios
 - Objective is to outperform a benchmark index
 - Indexed investments
 - Objective is to match the performance of a benchmark index

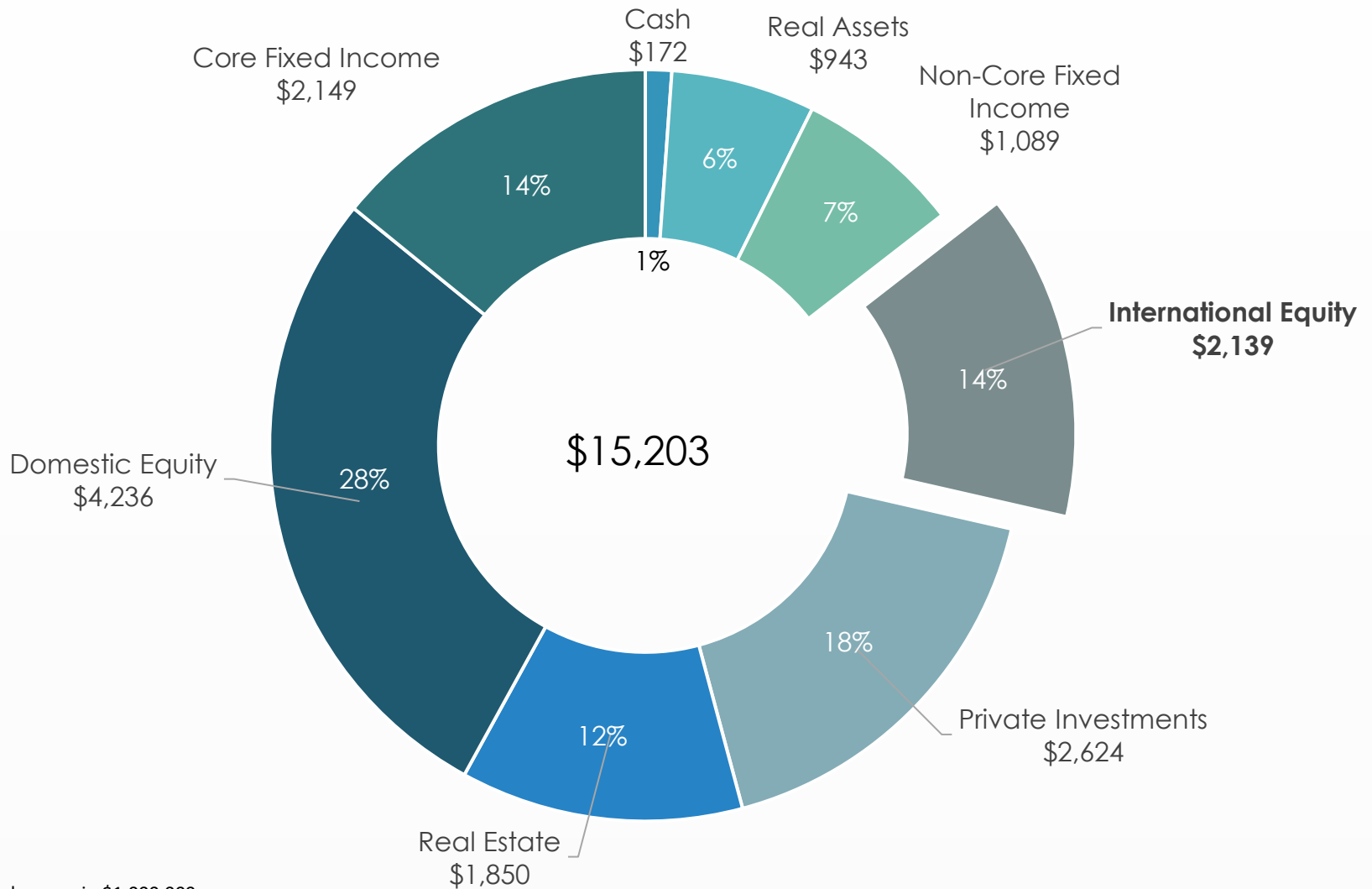
AUM by Asset Class



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

December 31, 2024

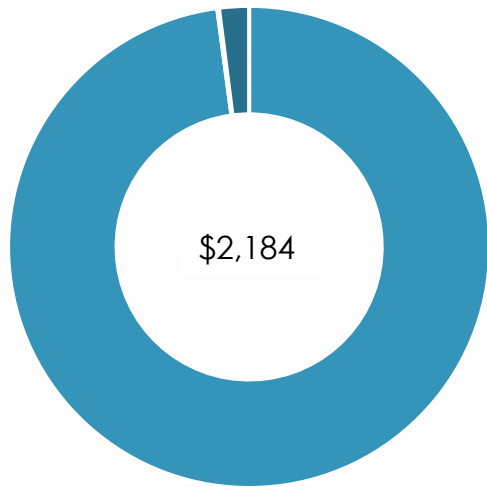
AUM by Asset Class (CAPP)



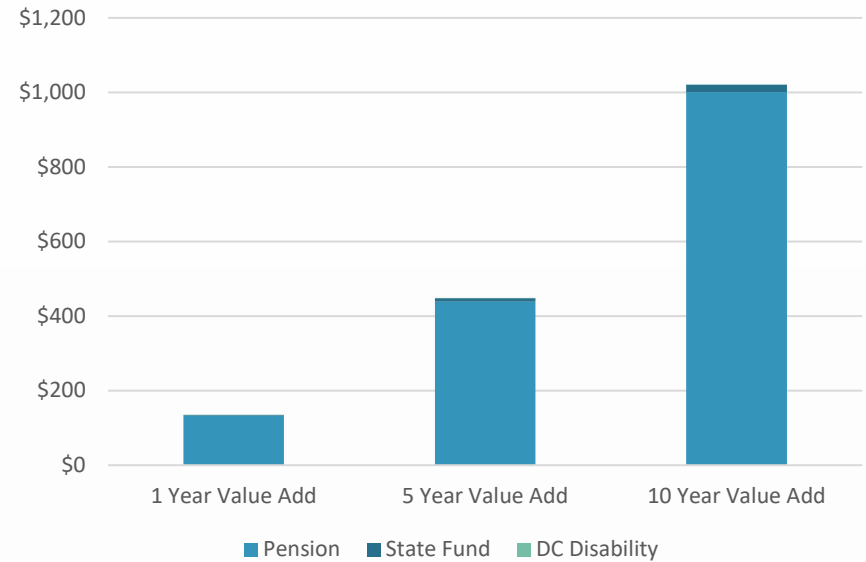
* Dollar values are in \$1,000,000

December 31, 2024

Ownership & Performance



■ Pension ■ DC Disability ■ State Fund



Performance	1 Year	1 Year Benchmark	5 Year	5 Year Benchmark	10 Year	10 Year Benchmark
Pension	6.45%	5.23%	4.26%	4.12%	5.19%	4.91%
State Fund	5.36%	5.53%	4.08%	4.10%	4.81%	4.80%
DC Disability	5.53%	5.53%	4.30%	4.10%	NA	NA

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

December 31, 2024

Policies

- CAPP Asset Class benchmark: MSCI All Country World ex-US Investable Market Index (IMI)
- CAPP Restrictions
 - Approved range of 10-20% of the Consolidated Asset Pension Pool
 - Currently 14.1%
 - Small Cap weight not to exceed the benchmark weight +10%
 - Currently +7.6%
 - Percentage of passive/indexed investments shall be greater than 35%
 - Currently 40.4%
 - Percentage in Emerging Markets shall not exceed + or – 10% of the benchmark weight
 - Currently +0.9%

Policies

- State Fund Restrictions
 - Maximum of 4% of the SFIP assets invested in International Equity
 - Currently 3.0%
- DC Disability Plan Restrictions
 - Approved range of 10-30% of the DC Disability Plan assets
 - Currently 22.8%

Philosophy/Strategy

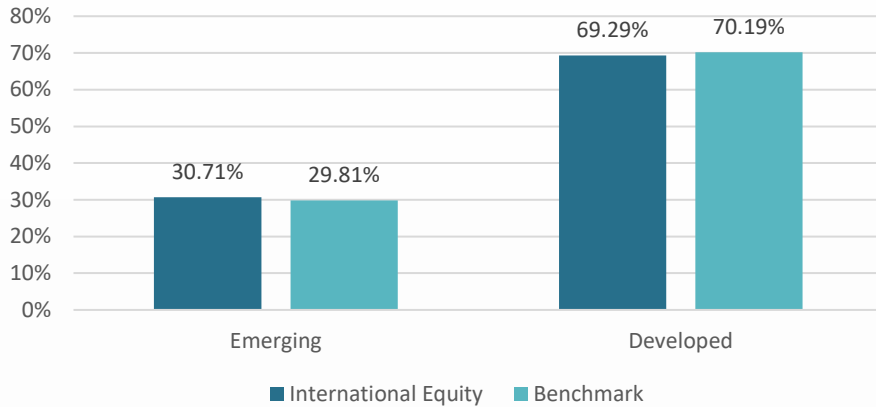
- Long-term focus
- Active vs. passive management
- Well-diversified portfolios
 - By sector
 - By country/region
 - By market cap
- Developed vs. Emerging Markets
 - MSCI ACWI ex-US mandates (combines Developed & Emerging Markets)
 - EM classification according to MSCI methodology
 - EM allocation is largely determined by the allocation decisions of the external managers
 - EM weight can be adjusted through use of EM index funds and ETFs

Structure

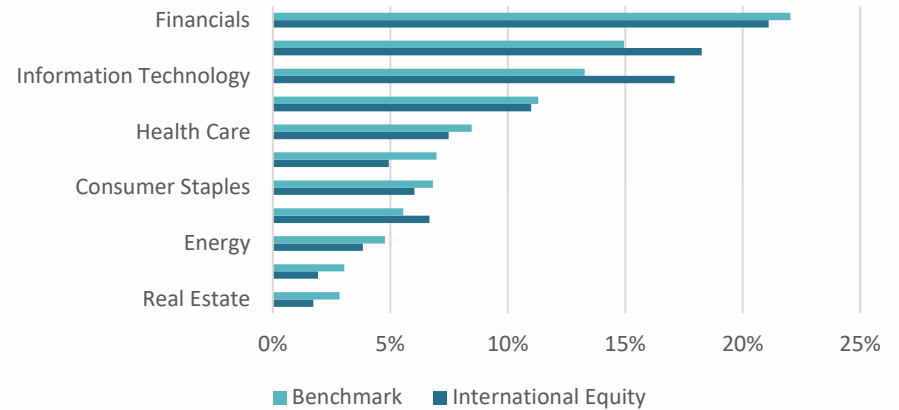
- Types of portfolios
 - Separate accounts (active managers)
 - Commingled funds (index funds)
 - ETFs
- Portfolio construction
 - Developed vs. Emerging Markets
 - Growth and Value styles
 - Style-neutral portfolio
 - Large Caps vs. Small Caps
 - Manager sizing

Structure

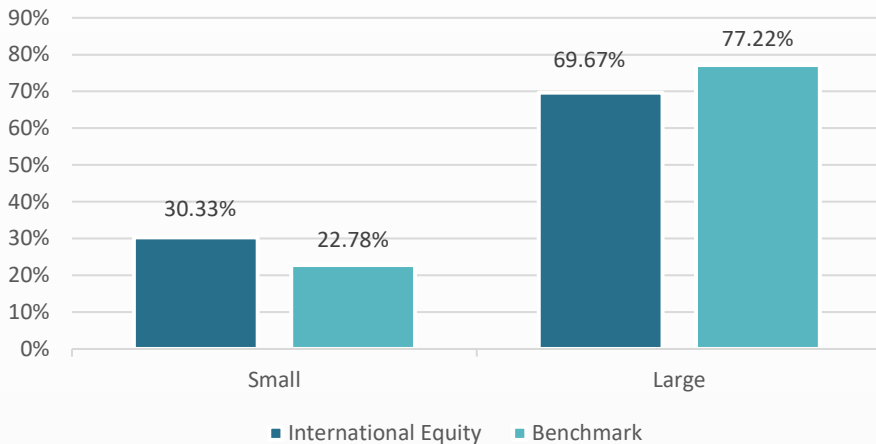
Developed vs. Emerging Markets



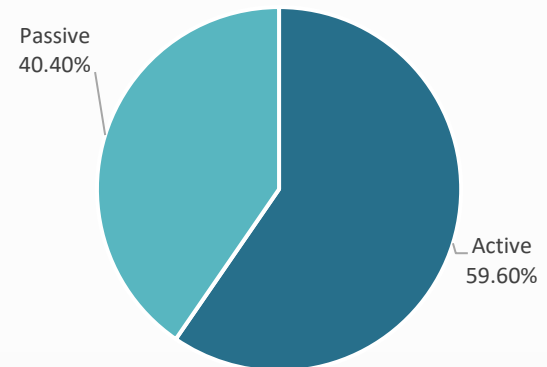
Sector



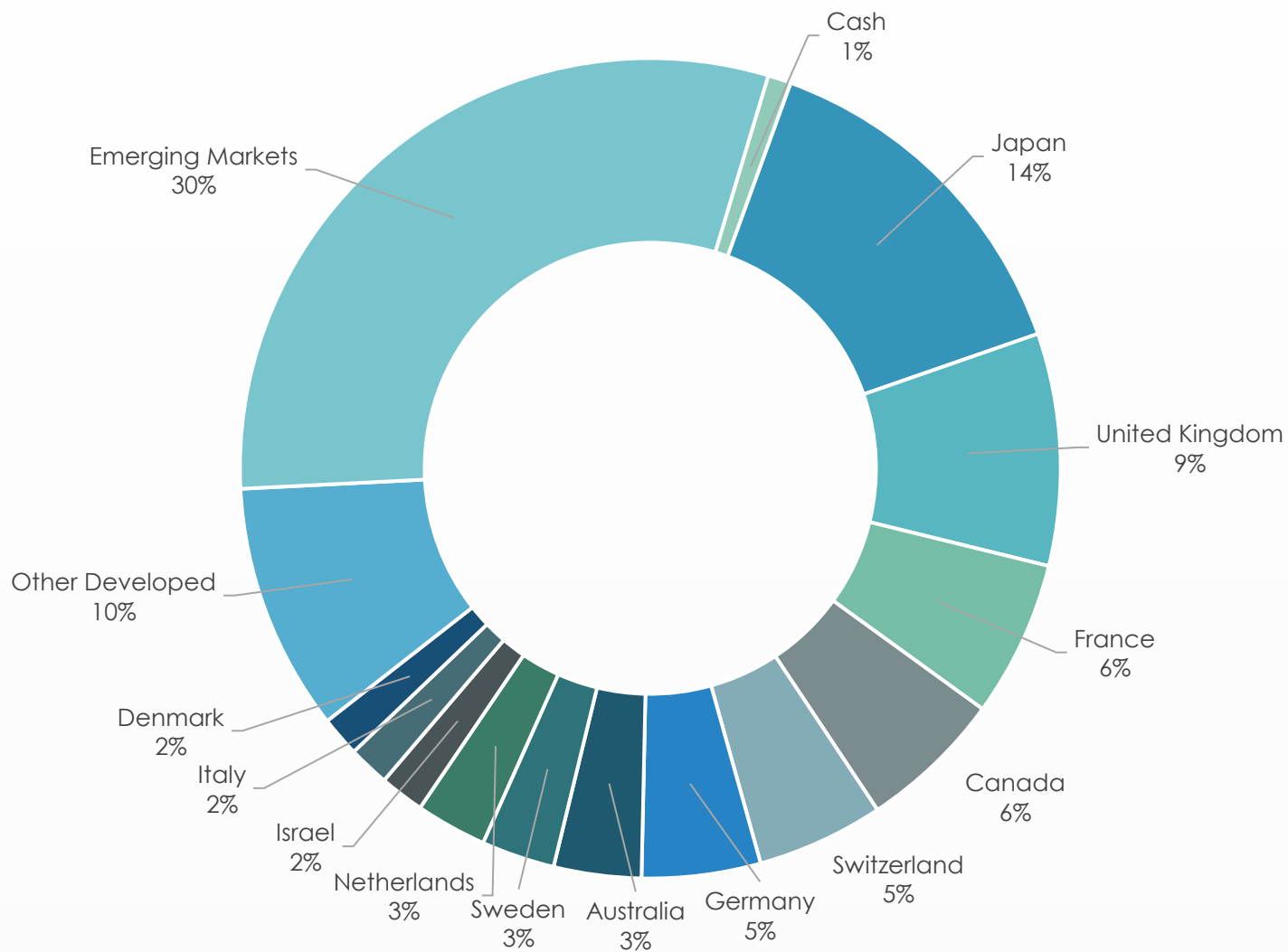
Market Cap



Active vs. Passive



Structure



Portfolios

Manager	Style	Process	\$ Mil.
Passive			
BlackRock ACWI ex-US	Core	-	\$ 612.5
BlackRock ACWI ex-US Small Cap	Core	-	\$ 102.6
IEFA ETF (EAFE)	Core	-	\$ 84.2
IEMG ETF (Emerging Markets)	Core	-	\$ 63.7
Active			
Acadian Large Cap	Value	Quantitative	\$ 351.0
Acadian Small Cap	Core	Quantitative	\$ 235.5
Baillie Gifford	Growth	Fundamental	\$ 165.8
Invesco	Growth	Fundamental	\$ 269.2
Lazard	Value	Fundamental	\$ 253.0

International vs. Domestic Equities

- Size of the investable universe
- Different sector exposures
 - More Financials and Industrials in international, less in Technology
- Lower average market capitalization
- Less concentration in a small number of stocks
- Local shares (ordinaries) and American Depositary Receipts (ADRs)
- Currency market movements affect the returns of the Asset Class

International vs. Domestic Equities



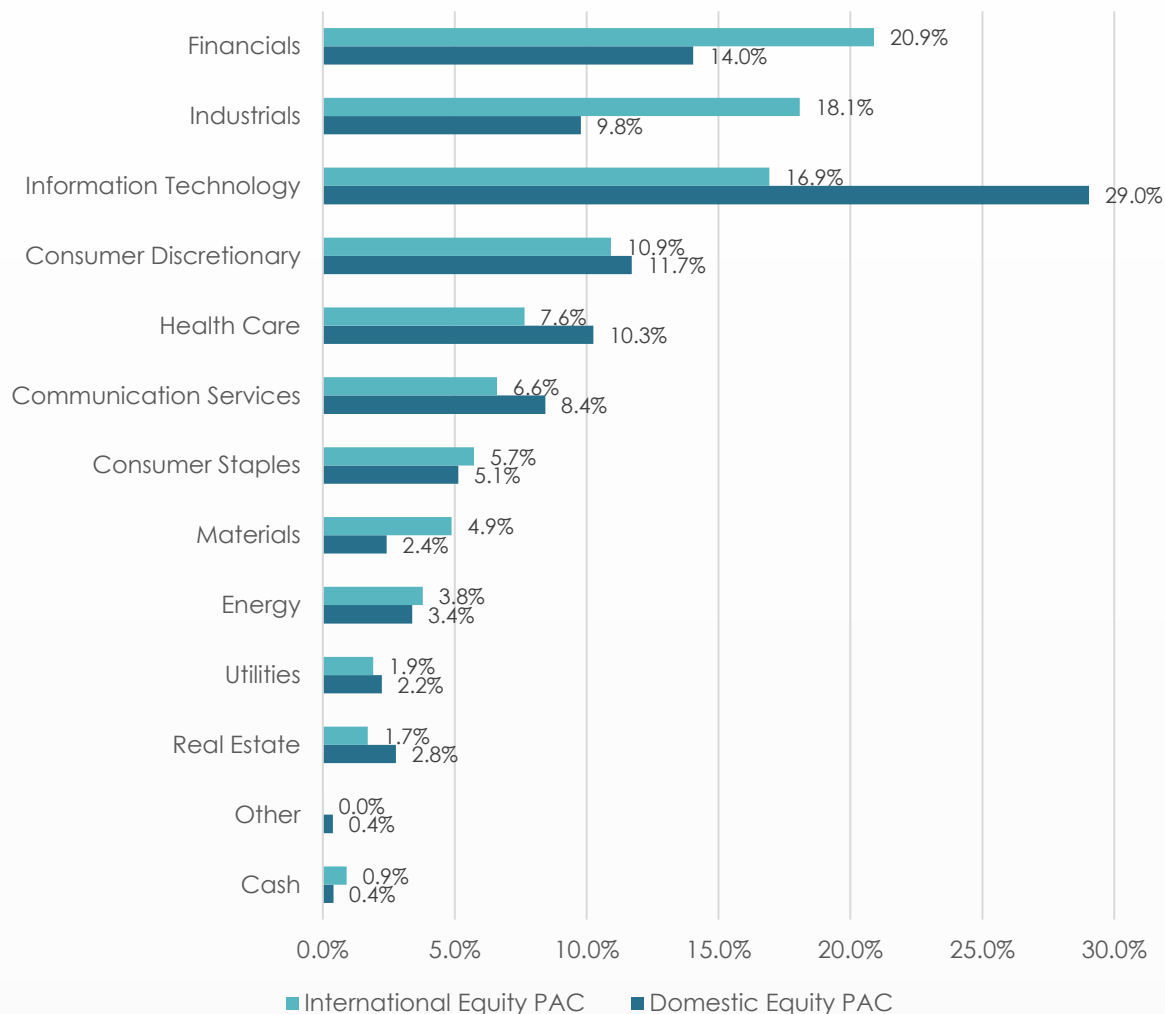
Index	2024			2023			2022			2021			2020			2019			2018		
	Local	USD	Diff	Local	USD	Diff	Local	USD	Diff	Local	USD	Diff	Local	USD	Diff	Local	USD	Diff	Local	USD	Diff
ACWI ex-US	13.2%	6.1%	-7.1%	14.7%	16.2%	1.5%	-9.2%	-15.6%	-6.4%	13.5%	8.3%	-5.2%	6.5%	11.1%	4.6%	21.4%	22.1%	0.7%	-10.2%	-13.8%	-3.6%
EAFE	11.8%	4.3%	-7.5%	16.8%	18.9%	2.1%	-6.5%	-14.0%	-7.5%	19.2%	11.8%	-7.4%	1.3%	8.3%	7.0%	22.3%	22.7%	0.4%	-10.5%	-13.4%	-2.9%
EM	13.7%	8.1%	-5.6%	10.3%	10.3%	0.0%	-15.2%	-19.7%	-4.5%	0.1%	-2.2%	-2.3%	19.5%	18.7%	-0.8%	18.5%	18.9%	0.4%	-9.7%	-14.2%	-4.5%

Source: JPMorgan Guide to the Markets

International vs. Domestic Equities

Characteristics

	International Equity PAC	Domestic Equity PAC
Dividend Yield	2.79	1.26
Est 3-5 Yr EPS Growth	11.32	14.10
Price/Book	1.78	4.30
Price/Cash Flow	8.52	15.43
P/E using FY1 Est	13.86	22.92
Price/Sales	1.27	2.54
ROE	16.93	26.18
Market Cap (Wtd. Avg., \$Bil.)	82	914
Number of Holdings	7,243	4,092



Due Diligence & Research

- External Manager Evaluation Policy
- Staff performs due diligence and ongoing research
 - Quarterly review process
 - Manager Scorecard
 - Analytic tools (FactSet and Bloomberg)
 - Research database tools (eVestment)
 - On-site visits
- Continual development of a “bench” of managers of interest
- RVK involvement

Recent Initiatives

Initiative	Status
Achive meaningful allocations for external managers	Completed
Improve fee efficiency	Completed/Ongoing
Maintain return profile	Improved
Increase exposure to active management	Completed/Ongoing
Relax manager constraints on EM %	Completed

Summary

- Well-diversified exposure to international equities
- Long-term focus
- Externally managed through active and indexed strategies
- Thorough investment process and commitment to ongoing research
- Exposures are all within policy limits

RVK

Capital Market Assumptions

Montana Board of Investments

April 23, 2025

Capital Market Assumptions

An input into MBOI's annual asset allocation study

- We will be conducting an asset allocation study later this year.
 - As part of that process, we will meet with MBOI staff to review asset allocation and range structures to discuss with the Board.
- Capital Market Assumptions (CMAs) are one input in the asset allocation process, but there are several other factors, such as:
 - Portfolio purpose (e.g., retirement plan, insurance pool, trust fund pool), constraints, and asset classes included
 - Asset class minimum and maximums
 - Return goals
 - Risk tolerance, including expected down-market performance over varying time periods
 - Liquidity requirements
- This presentation reviews RVK's process for creating CMAs and the resulting 2025 assumption set of expected return, risk, and correlations.
- Typically, CMAs don't vary significantly year-over-year due to the long horizon date.

Capital Market Assumptions

- *Philosophy*
- *Historical Perspective*
- *Key 2025 Observations*
- *Assumption Set*
- *Capital Market Line*
- *Correlation*
- *Assumption Components*

Capital Market Assumptions

Philosophy

- Each year, RVK's general consulting and research teams collaborate to review the capital market environment and update long-term, forward-looking capital market assumptions (CMAs) for each asset class utilized by our clients.
- The forecast horizon is for long-term periods, typically 10 years or more.
- The components we estimate include:
 - Return
 - Risk (volatility of returns)
 - Correlation (relationship of asset class returns with all other asset classes)
- Return assumptions are generally index-based, net of fees, and assume no investment manager alpha.
- Annual updates are typically gradual and incorporate historical performance, current valuations, as well as the overall economic environment.

What does it mean to get CMAs “right”?

Relative accuracy is more important...

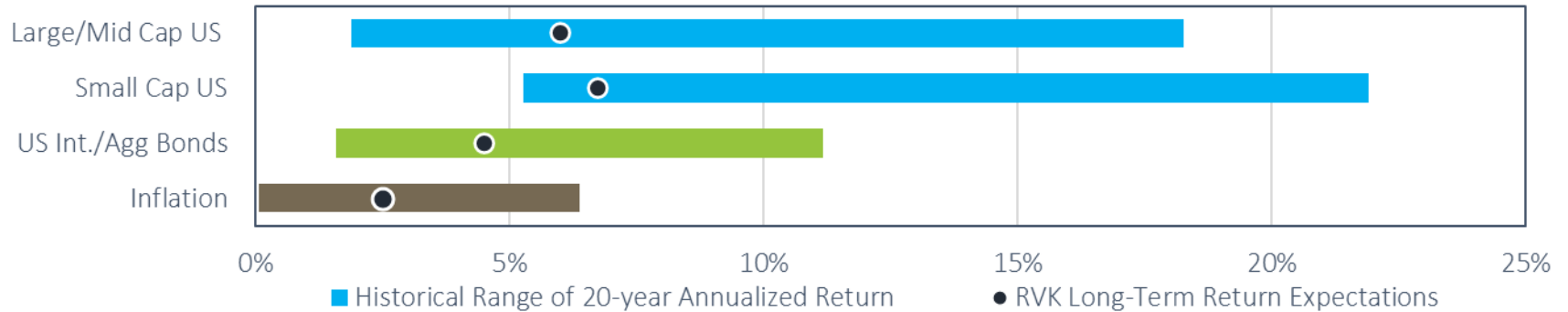
- **Relative Accuracy:** Assumptions capture the relative relationships between asset classes, which are vitally important to trade-off decisions when modeling.
 - Having some assumptions that are spot on, and others that are far off, will produce unbalanced and poorly diversified portfolios.

...but “absolute” accuracy matters too—though perhaps not as much

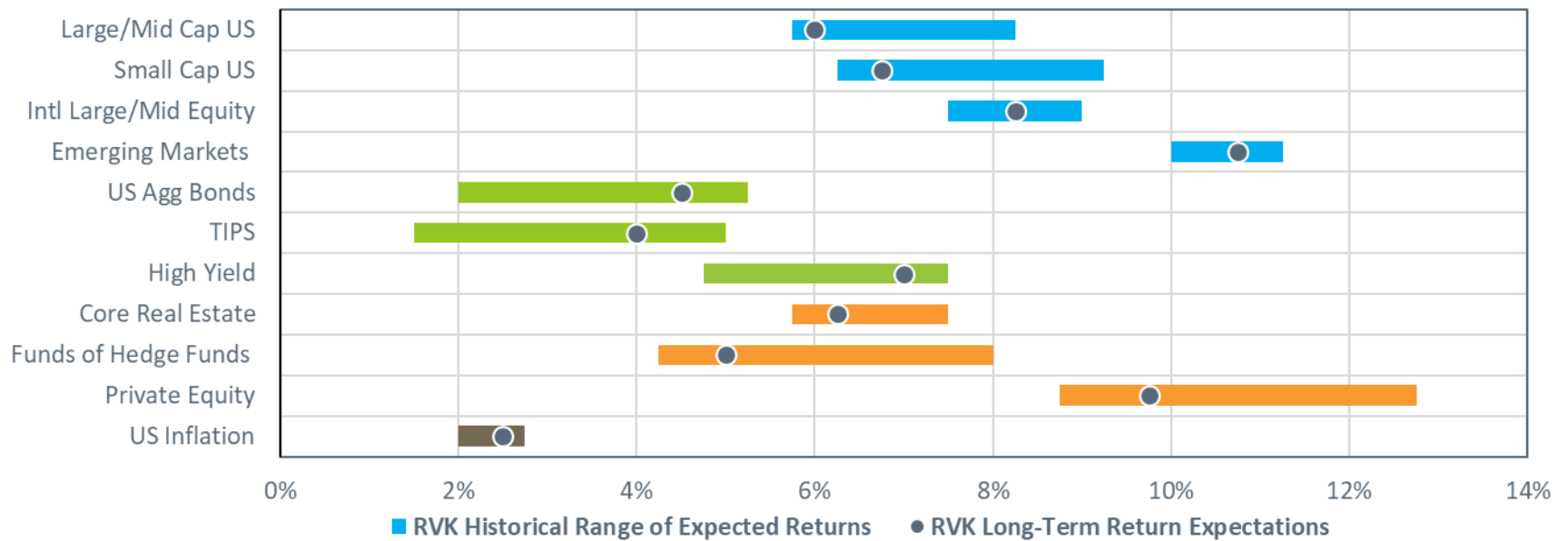
- **Absolute Accuracy:** Assumptions reflect the absolute values experienced in future long-term market environments.
 - Having assumptions that are too high or too low across the board can cause a Fund to believe it can distribute more than it can afford or restrict spending more than necessary.

Historical Perspective of Expected Returns

RVK Long-Term Expected Returns vs. Historical Range of Returns¹



2025 Expected Returns vs. RVK Historical Range of Expected Returns²



¹ Historical range shows the minimum and maximum 20-year annualized return for a given asset class based on monthly rolling 20-year annualized return series starting from Jan 1926. Large/Mid Cap US is represented by SBBI US Large Stock; Small Cap US by SBBI US Small Stock; US Int./Agg Bonds by SBBI US Intermediate Government Jan 1926 – December 1999 and Barclays US Aggregate Bond Index thereafter; US Inflation by SBBI US Inflation.

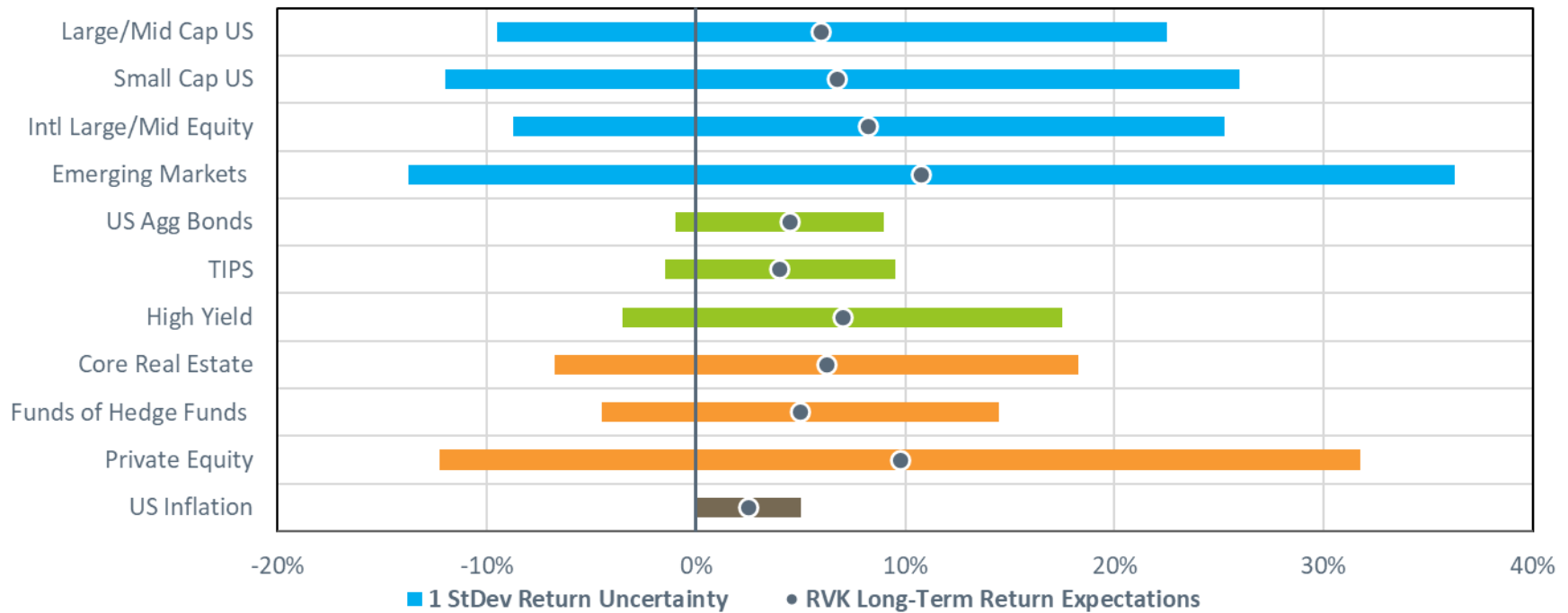
² Data shown includes 2006 through 2025 Capital Market Assumptions for selected asset classes.



Range of Potential Outcomes for Expected Returns

- Although asset class projected outcomes are displayed symmetrically below, asset classes with non-normal distributions are accounted for in companion monte carlo testing.

RVK 2025 Long-Term Return Expectations and Uncertainty of Returns Distribution



* StDev return uncertainty is based on RVK 2025 CMA risk assumption for each asset class.

Themes for 2025 Capital Market Assumptions

Inflation

Past and future inflation levels are studied and considered given market conditions, break-even indicators, sovereign intervention, and inflation component pricing behavior. *Our 2025 inflation assumption remained constant. This reflects short-term inflationary concerns while also accounting for long-term deflationary factors such as deficits, debt, demographics, automation, and globalization.*

Equity Valuations

Mean reversion is considered for asset classes that demonstrated weak/strong performance over the last year (or longer). *Equity return assumptions were decreased, given elevated valuation levels following strong 2024 returns.*

Bond Yields

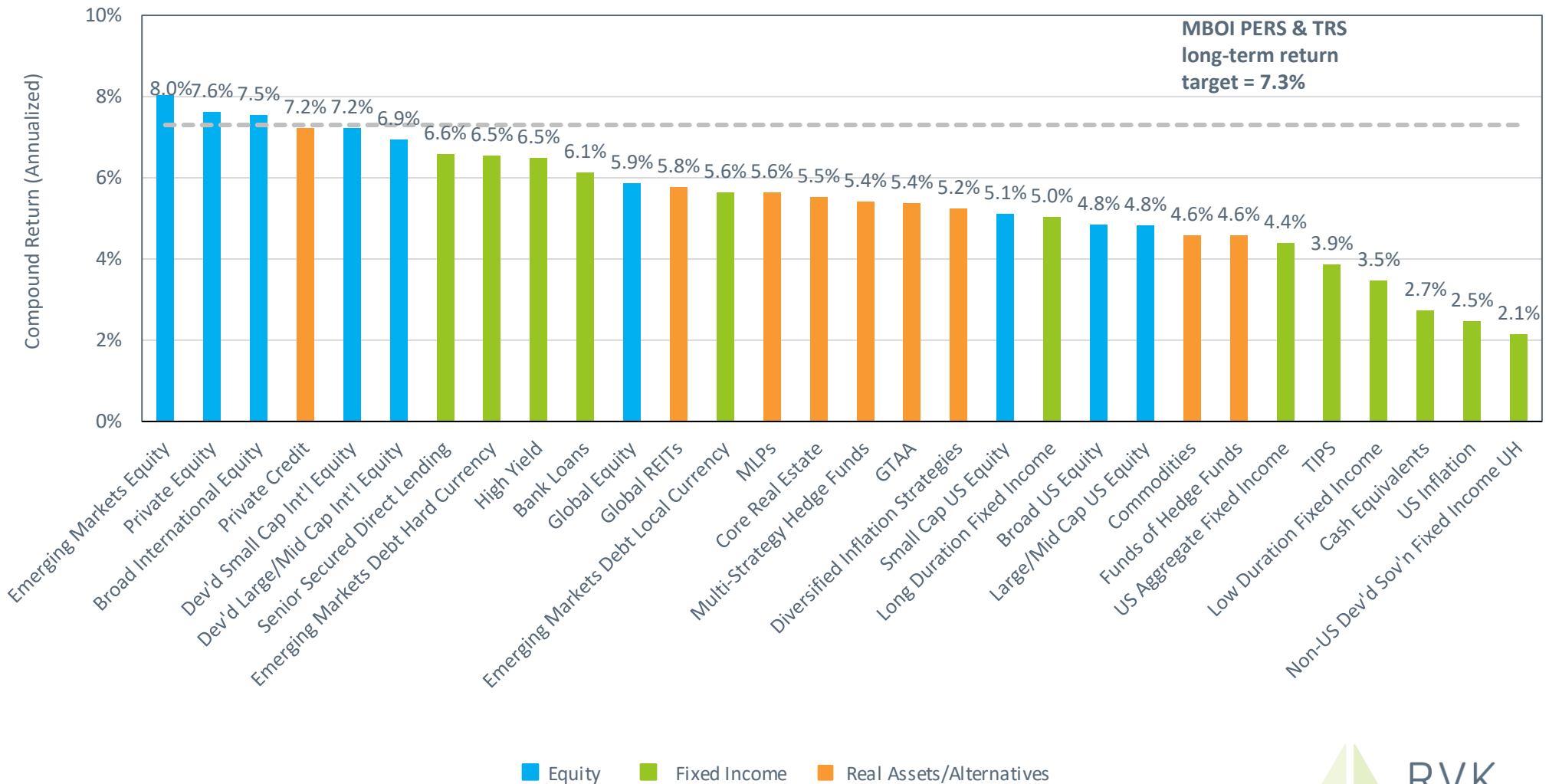
Yield history, current environment, and prospective environments are considered. *The majority of domestic fixed income return assumptions were increased—further shrinking the equity risk premium—and reflects elevated current yields and a “higher-for-longer” interest rate environment.*

RVK 2025 Assumptions vs. 2024

Asset Class	2024			2025			Change (2025 - 2024)		
	Nominal Return (Arith.)	Risk (St. Dev.)	Nominal Return (Geo.)	Nominal Return (Arith.)	Risk (St. Dev.)	Nominal Return (Geo.)	Nominal Return (Arith.)	Risk (St. Dev.)	Nominal Return (Geo.)
Large/Mid Cap US Equity	6.50%	16.00%	5.32%	6.00%	16.00%	4.81%	-0.50%	0.00%	-0.51%
Small Cap US Equity	7.00%	19.00%	5.35%	6.75%	19.00%	5.10%	-0.25%	0.00%	-0.25%
Broad US Equity	6.50%	16.10%	5.30%	6.04%	16.04%	4.84%	-0.46%	-0.06%	-0.46%
Dev'd Large/Mid Cap Int'l Equity	8.25%	17.00%	6.94%	8.25%	17.00%	6.94%	0.00%	0.00%	0.00%
Dev'd Small Cap Int'l Equity	9.00%	20.00%	7.21%	9.00%	20.00%	7.21%	0.00%	0.00%	0.00%
Emerging Markets Equity	11.25%	25.00%	8.54%	10.75%	25.00%	8.03%	-0.50%	0.00%	-0.51%
Broad International Equity	9.15%	18.85%	7.56%	9.07%	18.47%	7.54%	-0.08%	-0.38%	-0.02%
Global Equity	7.55%	16.60%	6.29%	7.09%	16.34%	5.86%	-0.46%	-0.26%	-0.43%
US Aggregate Fixed Income	4.00%	5.00%	3.88%	4.50%	5.00%	4.38%	0.50%	0.00%	0.50%
Non-US Dev'd Sov'n Fixed Income UH	2.50%	8.50%	2.15%	2.50%	8.50%	2.15%	0.00%	0.00%	0.00%
Emerging Markets Debt Hard Currency	7.00%	10.00%	6.54%	7.00%	10.00%	6.54%	0.00%	0.00%	0.00%
Emerging Markets Debt Local Currency	6.00%	11.50%	5.38%	6.25%	11.50%	5.63%	0.25%	0.00%	0.25%
TIPS	4.00%	5.50%	3.85%	4.00%	5.50%	3.85%	0.00%	0.00%	0.00%
Low Duration Fixed Income	3.25%	2.50%	3.22%	3.50%	2.50%	3.47%	0.25%	0.00%	0.25%
Long Duration Fixed Income	5.00%	10.00%	4.53%	5.50%	10.00%	5.03%	0.50%	0.00%	0.50%
High Yield	7.00%	10.50%	6.49%	7.00%	10.50%	6.49%	0.00%	0.00%	0.00%
Bank Loans	6.50%	9.00%	6.12%	6.50%	9.00%	6.12%	0.00%	0.00%	0.00%
Core Real Estate	5.75%	12.50%	5.02%	6.25%	12.50%	5.52%	0.50%	0.00%	0.50%
Global REITs	7.75%	21.00%	5.76%	7.75%	21.00%	5.76%	0.00%	0.00%	0.00%
MLPs	8.25%	23.00%	5.89%	8.00%	23.00%	5.63%	-0.25%	0.00%	-0.26%
Funds of Hedge Funds	5.00%	9.50%	4.57%	5.00%	9.50%	4.57%	0.00%	0.00%	0.00%
Multi-Strategy Hedge Funds	5.75%	8.50%	5.41%	5.75%	8.50%	5.41%	0.00%	0.00%	0.00%
GTAA	5.75%	9.00%	5.37%	5.75%	9.00%	5.37%	0.00%	0.00%	0.00%
Private Credit	8.00%	13.00%	7.23%	8.00%	13.00%	7.23%	0.00%	0.00%	0.00%
Senior Secured Direct Lending	7.00%	9.50%	6.58%	7.00%	9.50%	6.58%	0.00%	0.00%	0.00%
Private Equity	9.75%	22.00%	7.61%	9.75%	22.00%	7.61%	0.00%	0.00%	0.00%
Commodities	6.25%	17.50%	4.84%	6.00%	17.50%	4.58%	-0.25%	0.00%	-0.25%
Diversified Inflation Strategies	6.00%	11.85%	5.34%	5.90%	11.85%	5.24%	-0.10%	0.00%	-0.10%
US Inflation	2.50%	2.50%	2.47%	2.50%	2.50%	2.47%	0.00%	0.00%	0.00%
Cash Equivalents	2.75%	2.00%	2.73%	2.75%	2.00%	2.73%	0.00%	0.00%	0.00%

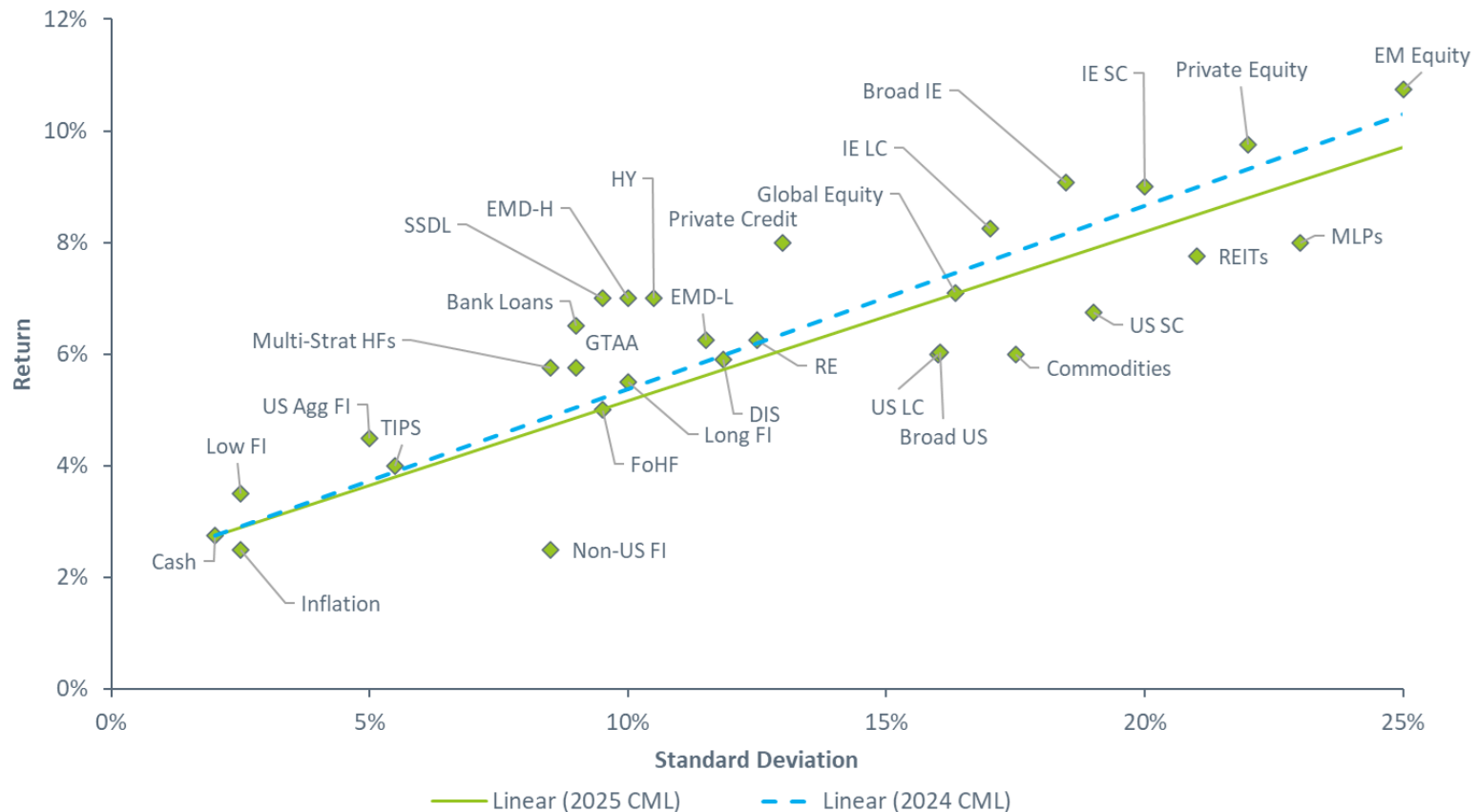
RVK 2025 Expected Geometric Returns

- It is important to note that the asset allocation exercise is not to select only asset classes that individually meet a portfolio's long-term return target.
- In the modeling process, each asset class is considered for its contribution to the portfolio through the multiple lenses of expected return, risk, and correlation.



Capital Market Line

- The capital market line represents the return and risk attributes of each asset class and reflects the discipline that return and risk are related and asset classes should be triangulated as an assumption set.
- Note that the return and risk relationships resulting from our 2025 process represent lower return potential for similar risk levels—the Capital Market Line has modestly rotated down.



Correlation

- Correlation is a quantitative measure of the degree to which asset classes move relative to each other. Correlation values can fall between 1.00 and -1.00.
- Diversification opportunities exist because the returns of different asset classes do not always move in the same direction at the same time, or with the same magnitude.

MBOI 2025 Correlation Matrix

<u>2025 Correlation Matrix</u>	Broad US Equity	Broad International Equity	US Agg Fixed Income	TIPS	High Yield Fixed Income	Private Credit	Convertibles	Real Estate	Private Core Infrastructure	Private Equity	Commodities	Cash Equivalents
Broad US Equity	1.00	0.87	0.27	0.35	0.77	0.79	0.86	0.33	0.12	0.67	0.46	-0.05
Broad International Equity	0.87	1.00	0.31	0.39	0.80	0.85	0.78	0.31	0.16	0.70	0.59	-0.02
US Agg Fixed Income	0.27	0.31	1.00	0.78	0.38	-0.06	0.27	0.10	0.03	0.02	-0.01	0.08
TIPS	0.35	0.39	0.78	1.00	0.49	0.16	0.37	0.25	-0.08	0.22	0.27	0.00
High Yield Fixed Income	0.77	0.80	0.38	0.49	1.00	0.86	0.79	0.23	0.04	0.51	0.48	-0.08
Private Credit	0.79	0.85	-0.06	0.16	0.86	1.00	0.74	0.41	0.13	0.74	0.64	-0.07
Convertibles	0.86	0.78	0.27	0.37	0.79	0.74	1.00	0.25	0.12	0.74	0.45	-0.11
Real Estate	0.33	0.31	0.10	0.25	0.23	0.41	0.25	1.00	0.45	0.53	0.31	-0.22
Private Core Infrastructure	0.12	0.16	0.03	-0.08	0.04	0.13	0.12	0.45	1.00	0.14	-0.09	0.11
Private Equity	0.67	0.70	0.02	0.22	0.51	0.74	0.74	0.53	0.14	1.00	0.42	-0.21
Commodities	0.46	0.59	-0.01	0.27	0.48	0.64	0.45	0.31	-0.09	0.42	1.00	-0.04
Cash Equivalents	-0.05	-0.02	0.08	0.00	-0.08	-0.07	-0.11	-0.22	0.11	-0.21	-0.04	1.00

Summary of Expected Return Methodology

- Many asset class expectations are built utilizing a building block methodology with expected inflation as a common element.

Building Block Methodology	Income	+	Inflation	+	Real Growth	±	Valuation Change
Cash Equivalents	Income + Expected interest rate changes						
Fixed Income	Income + OAS change + Expected interest rate changes (and duration impact)						
TIPS	Real Income + Inflation						
Public Equity	Income + Inflation + Real GDP/earnings growth +/- Currency Effect +/- Valuation						
Core Real Estate	Income + Inflation +/- Valuation – Manager Fees						
Hedge Funds	Income (collateral return, cash) + Beta return + Alpha return (net)						
Commodities	Collateral return (cash assumption) + Spot return (inflation assumption) + Roll return						

Spread Methodology	Beta assumption	+	Illiquidity premium
Private Credit	Bank loan assumption + Return premium		
Private Equity	US Large/Mid cap equity assumption + Return premium		

Asset Blend Methodology	
GTAA	30% global equity + 25% US Agg fixed income + 5% int'l developed fixed income + 10% EMD (local) + 10% TIPS + 10% high yield + 10% commodities
Diversified Inflation Strategies	1/3 TIPS + 1/3 commodities + 1/3 global REITs

While the above factors generally inform the direction and magnitude of the capital market assumptions, RVK also considers qualitative, triangulation, and other factors as needed, when arriving at final assumption values.



Capital Market Assumptions

Capital Market Assumptions

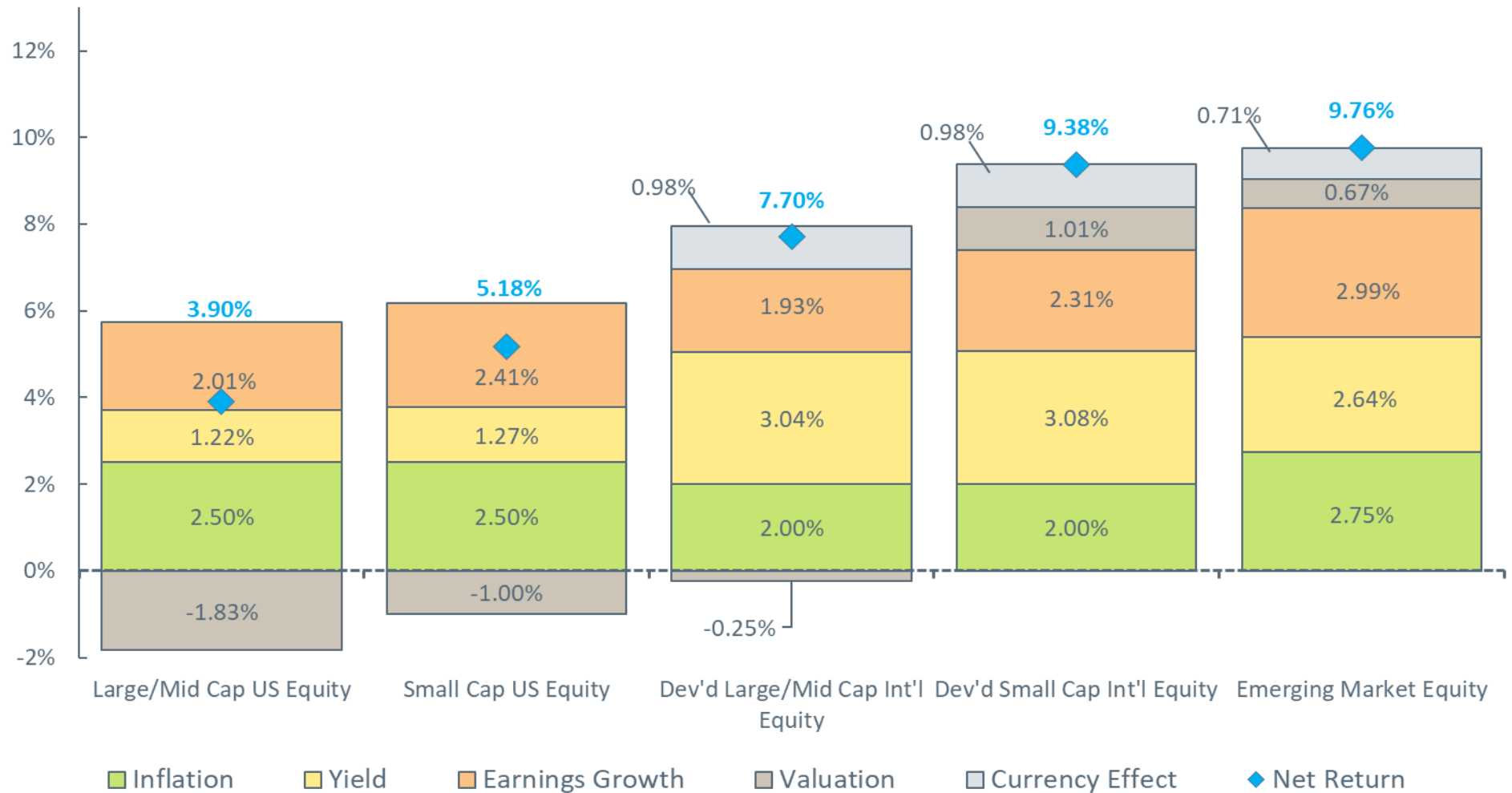
A review of key asset classes

- The following pages provide a view into the process of developing key asset class assumptions.
- There are many more asset classes and assumption construction components that are detailed in our related white paper.
- When clients have bespoke asset class construction that differ from our primary assumptions, we are happy to create custom assumptions that are then tested to ensure they will function well as part of a capital market line.

RVK Return Methodology for Equities

- Quantifying the equity building blocks is one step in the process.
- Note the differentiated inflation assumptions of major regions.
- Valuation elements detract from expected returns for US equity.

2025 Decomposition of the Building Blocks for Public Equity Asset Classes

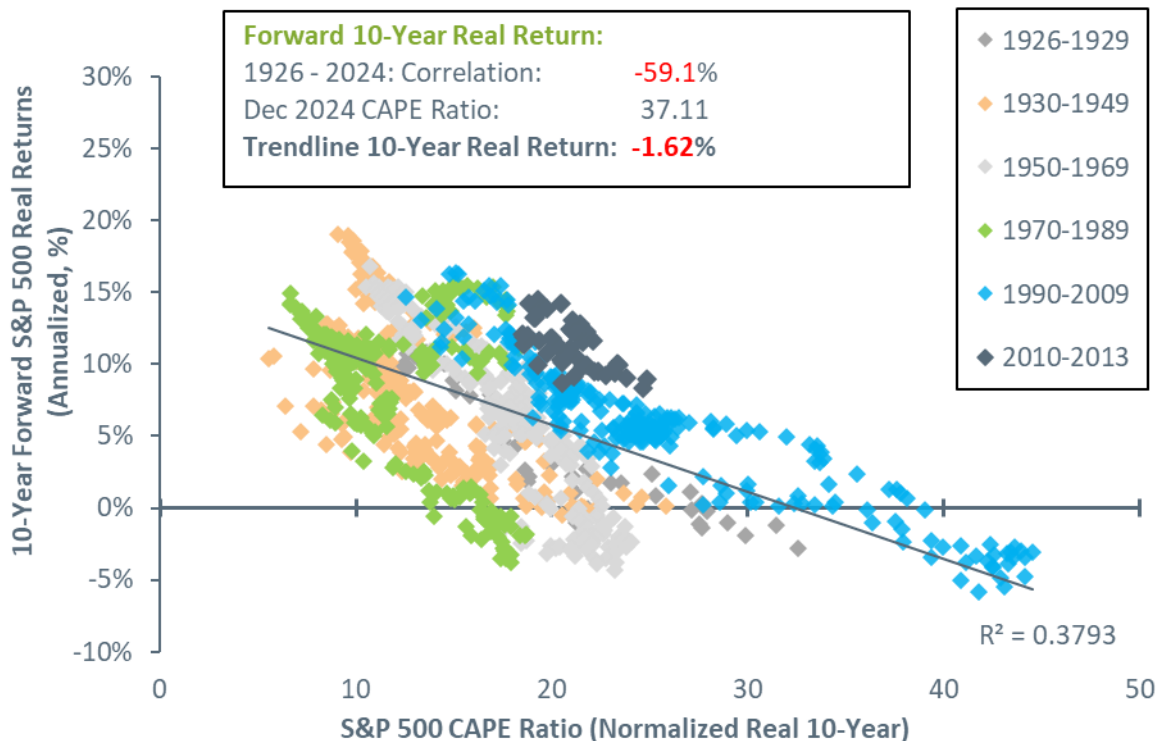


Source: FactSet (2025). Data as of December 31, 2024.

Public Equity – Domestic

Public Equity: US									
Asset Class	2024			2025			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Large/Mid Cap US	6.50%	16.00%	5.32%	6.00%	16.00%	4.81%	-0.50%	--	-0.51%
Small Cap US	7.00%	19.00%	5.35%	6.75%	19.00%	5.10%	-0.25%	--	-0.25%
Broad US Equity	6.50%	16.10%	5.30%	6.04%	16.04%	4.84%	-0.46%	-0.06%	-0.46%

Relationship Between Valuations and Forward 10-Year Returns



- US equity return forecasts all decreased relative to 2024.
- The decrease was mostly driven by elevated valuations, as domestic equities rallied in 2024 supported by strong consumer spending, technology (AI) developments, and prospects of near-term monetary easing.
- Year-end LC US valuation, as represented by the Shiller CAPE ranked in the 98th percentile of historical values going back to 1926.
- Thus, return assumptions remain lower than historical averages.

RVK Broad US Equity assumption is a combination of 95.3% Large/Mid Cap US Equity and 4.7% Small Cap US Equity.
 Source: RVK, based on data from FactSet (2025). December 2024 CAPE ratio uses the S&P 500 earnings estimate for the Q4 2024.



Public Equity – International

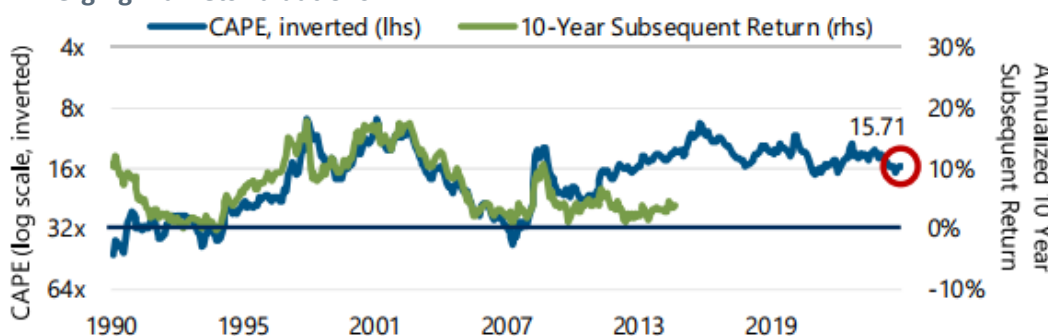
Public Equity: International									
Asset Class	2024			2025			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Intl Large/Mid Equity	8.25%	17.00%	6.94%	8.25%	17.00%	6.94%	--	--	--
Intl Dev'd Small Cap	9.00%	20.00%	7.21%	9.00%	20.00%	7.21%	--	--	--
Emerging Markets	11.25%	25.00%	8.54%	10.75%	25.00%	8.03%	-0.50%	--	-0.51%
Broad International	9.15%	18.85%	7.56%	9.07%	18.47%	7.54%	-0.08%	-0.38%	-0.02%

Valuations: Cyclically-Adjusted P/E

EAFE valuations



Emerging markets valuations



- Developed international equity assumptions were unchanged due to offsetting factors of improved dividend yields as well as inflation and currency expectations paired with deteriorating real growth/earnings expectations and valuations.
- The Emerging markets return assumption was decreased due to lower real growth/earnings expectations, lower dividend yields, and increased valuations.

RVK Broad International Equity is a mix of 60.5% Dev'd Large/Mid Cap Int'l Equity, 9.7% Dev'd Small Cap Int'l Equity, and 29.8% Emerging Markets Equity.

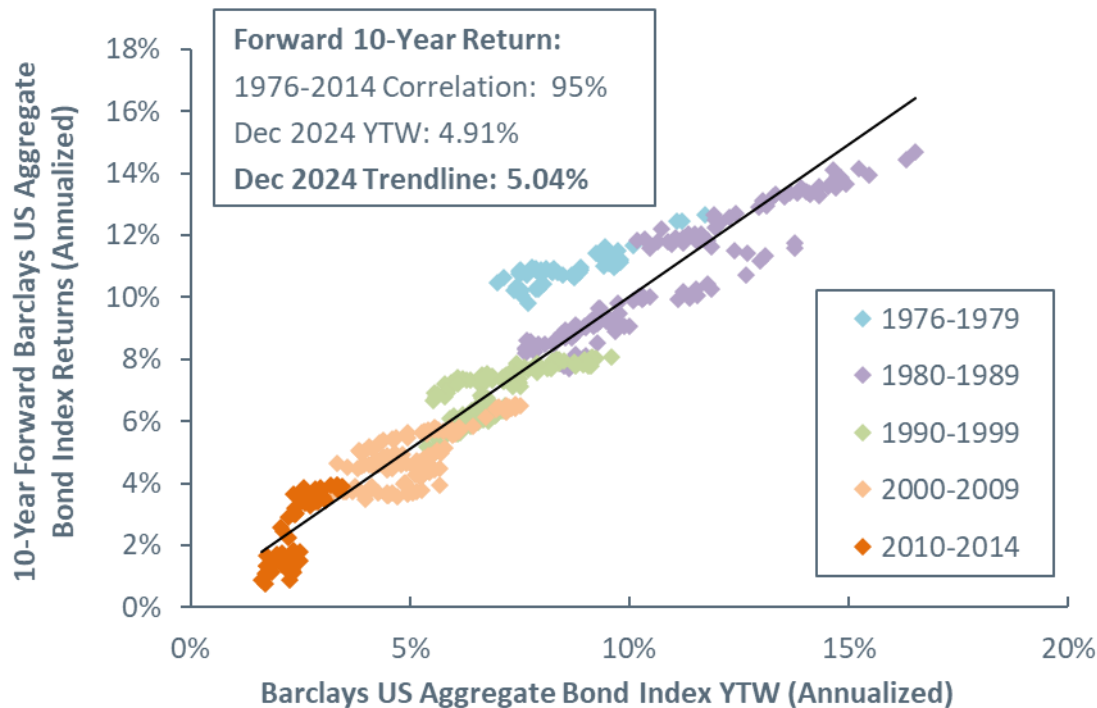
Source: Research Affiliates (RA); EAFE valuations represented by MSCI EAFE CAPE calculations by RA since December 1982; EM represented by MSCI EM CAPE calculations by RA since Jan 1990. Data as of December 31, 2024.



Fixed Income

Fixed Income									
Asset Class	2024			2025			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
US Aggregate	4.00%	5.00%	3.88%	4.50%	5.00%	4.38%	+0.50%	--	+0.50%
Non-US Dev. Sovereign	2.50%	8.50%	2.15%	2.50%	8.50%	2.15%	--	--	--
Low Duration	3.25%	2.50%	3.22%	3.50%	2.50%	3.47%	+0.25%	--	+0.25%
Long Duration	5.00%	10.00%	4.53%	5.50%	10.00%	5.03%	+0.50%	--	+0.50%
TIPS	4.00%	5.50%	3.85%	4.00%	5.50%	3.85%	--	--	--

Relationship Between YTW and Forward 10-Year Returns

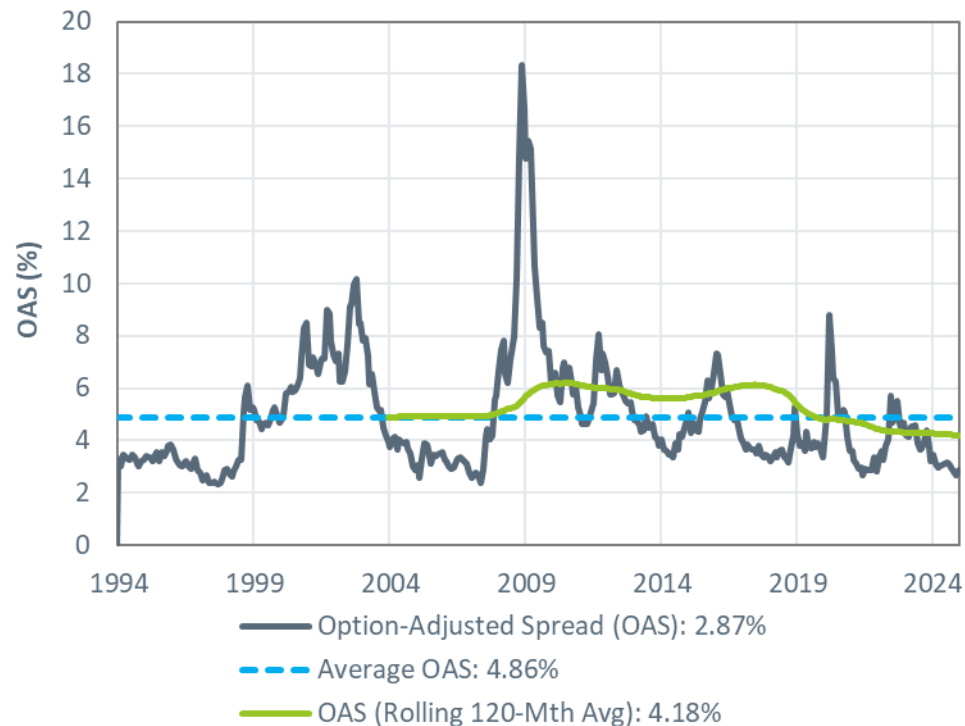


- The starting bond yield has historically been rather strongly correlated with future bond returns.
- Domestic fixed income return assumptions were increased, reflecting increased yields and somewhat offsetting spread changes, as well as the expectation that the inverted yield curve will normalize over time but remain “higher for longer” overall.
- Duration changes were generally nominal and thus did not have material impacts on return forecasts.

Fixed Income – Spread Assets

Fixed Income: Spread Sectors									
Asset Class	2024			2025			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
High Yield	7.00%	10.50%	6.49%	7.00%	10.50%	6.49%	--	--	--
Emerging Markets Debt (HC)	7.00%	10.00%	6.54%	7.00%	10.00%	6.54%	--	--	--
Emerging Markets Debt (LC)	6.00%	11.50%	5.38%	6.25%	11.50%	5.63%	+0.25%	--	+0.25%
Bank Loans	6.50%	9.00%	6.12%	6.50%	9.00%	6.12%	--	--	--

BB US Corporate High Yield Index Option-Adjusted Spread (OAS)

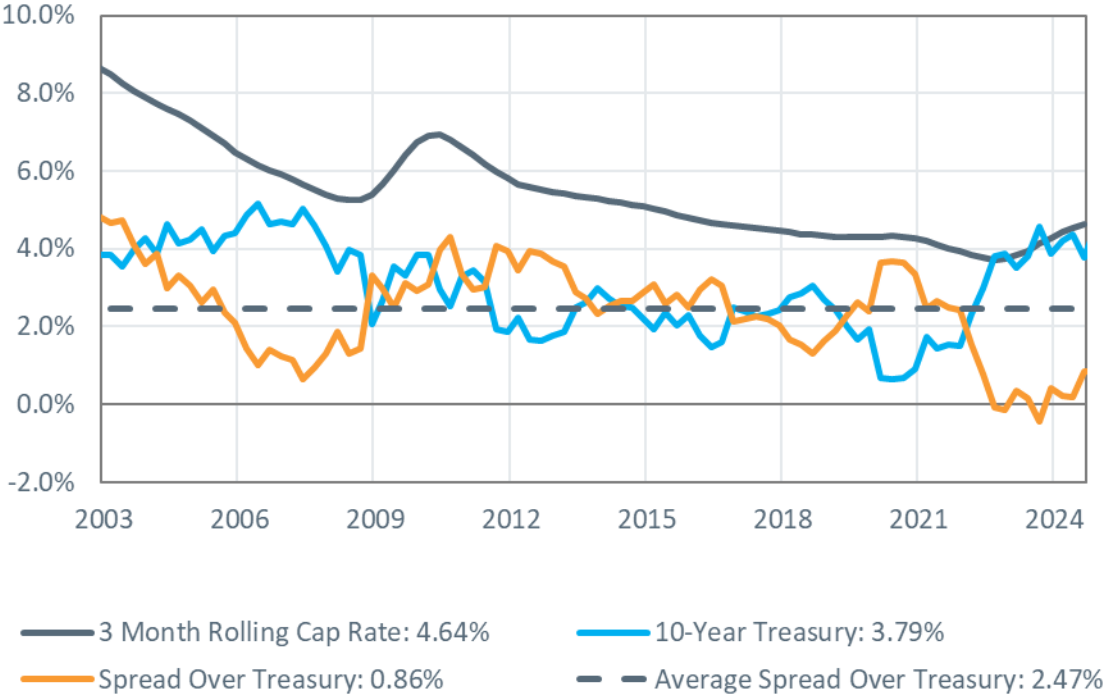


- Bank loans return assumption was kept constant as tightening spreads were offset by starting yields remaining elevated relative to long-term averages.
- Increased starting yields and currency valuation for emerging markets debt (LC) led to an increase in the return assumption.
- High yield and emerging markets debt (HC) were left unchanged.

Real Estate

Real Estate									
Asset Class	2024			2025			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Core Real Estate	5.75%	12.50%	5.02%	6.25%	12.50%	5.52%	+0.50%	--	+0.50%
Global REITs	7.75%	21.00%	5.76%	7.75%	21.00%	5.76%	--	--	--

Cap Rates and Spread to Treasuries



- The core real estate return assumption was increased, due to improved valuations and increased income.
- Cap rates increased modestly in 2024.
- However, on a relative basis spreads over Treasuries remained well below long-term averages.
- The global REITs assumption remained unchanged as yields and valuations did not significantly change.

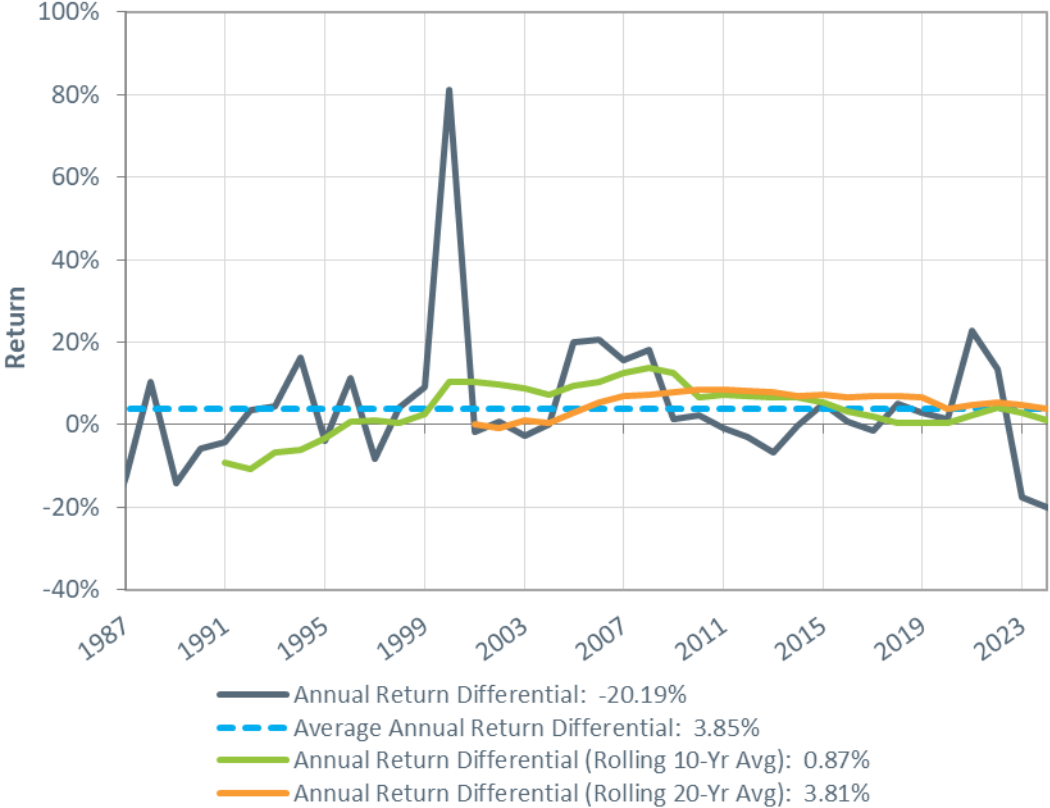
Source: NCREIF and FactSet (2025). Data as of September 30, 2024.



Private Equity

Private Equity									
Asset Class	2024			2025			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Private Equity	9.75%	22.00%	7.61%	9.75%	22.00%	7.61%	--	--	--

**Annual Return Differential:
Cambridge US PE & VS Aggregated Index vs. S&P 500 Index**



- The private equity return assumption was unchanged relative to 2024 due to offsetting factors—a decreased return assumption for US Large/Mid Cap and an increased premium assumption.
- Our illiquidity premium assumption increased to 275 basis points (geometric) above Large/Mid Cap US Equities, due to a variety of factors including the changing characteristics of the public market reference index.

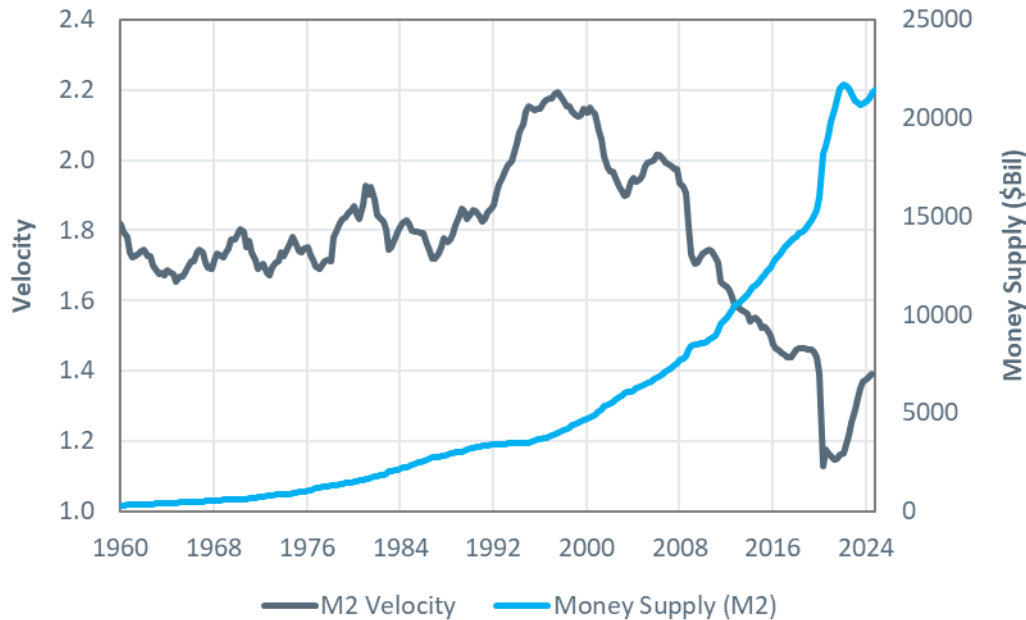
Source: Cambridge Associates LLC and FactSet (2025). Data as of June 30, 2024. Cambridge index is pooled horizon internal rates of return, net of fees, expenses, and carried interest.



US Inflation & Cash Equivalents

US Inflation & Cash Equivalents									
Asset Class	2024			2025			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
US Inflation	2.50%	2.50%	2.47%	2.50%	2.50%	2.47%	--	--	--
Cash Equivalents	2.75%	2.00%	2.73%	2.75%	2.00%	2.73%	--	--	--

Supply and Velocity of Money



- The inflation assumption remained constant, balancing the uncertainty of near-term inflationary pressures and long-term deflationary factors.
- The cash assumption maintained a positive real return and was unchanged.

As of December 31, 2024	5-Year	7-Year	10-Year	20-Year	30-Year
Treasury Yield	4.38%	4.48%	4.58%	4.86%	4.78%
TIPS Yield	2.00%	2.13%	2.24%	2.41%	2.48%
Implied Expected Inflation	2.38%	2.35%	2.34%	2.45%	2.30%

Next Steps

Applying Capital Market Assumptions: Modeling

Next Steps

- We will discuss our assumptions, asset allocation models, and stress testing with MBOI staff in August.
 - This is an iterative process with the ability to model “what if” scenarios if change is considered.
- As with any asset allocation study, it is important to consider the efficiency of current portfolio construction and the impact of possible change as well as implementation considerations.
- A successful asset allocation process does not always result in portfolio construction change; it can result in re-underwriting the current structure if still optimal.

RVK

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2025 Board of Investments Calendar

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

2024

February 28-29

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 10

Education:

Domestic Equity Asset Class Review
RVK Annual Capital Market Assumptions

Reports:

Benchmarks Used by the Board

May 22-23

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:

HR: Staffing Level Review
HR: Exempt Staff Compensation Review

August-24

Education:

Core Fixed Income Asset Class Review
Budget Proposal for FY24-25
INTERCAP Annual Detail Report

Reports:

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

October 9

Education:

Separate Accounts Investment Review
First Reading - Asset Allocation Range Recommendation

Reports:

CEM, Inc Cost Reporting Analysis

Committee Meetings:

HR: Exempt Staff Performance Review
Audit: SOC I, Type 2 Report

November 20-21

Education:

2025 Legislative Session
Adoption - Asset Allocation Range Approval

Reports:

Securities Litigation
Policy 217
LPAC
Quarterly Reports
In-State Loan Reports
INTERCAP Reports

Committee Meetings:

Audit: Annual Report and Financial Statements

2025

February 26-27

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 23

Education:

International Equities Asset Class Review
RVK Annual Capital Market Assumptions

Reports:

Benchmarks Used by the Board

May 28-29

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:

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

August 20-21

Education:

Trust Funds Investment Review
Non-Core Fixed Income Asset Class Review
INTERCAP Annual Detail Report

Reports:

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

October 15

Education:

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

Reports:

Securities Lending

Committee Meetings:

HR: Exempt Staff Performance Review
Audit: SOC I, Type 2 Report

December 10

Education:

MPERA and TRS Relationship
Adoption - Asset Allocation Range Approval

Reports:

Securities Litigation
Policy 217
LPAC
Quarterly Reports
In-State Loan Reports
INTERCAP Reports

Committee Meetings:

Audit: Annual Report and Financial Statements



MONTANA LEGISLATIVE BRANCH

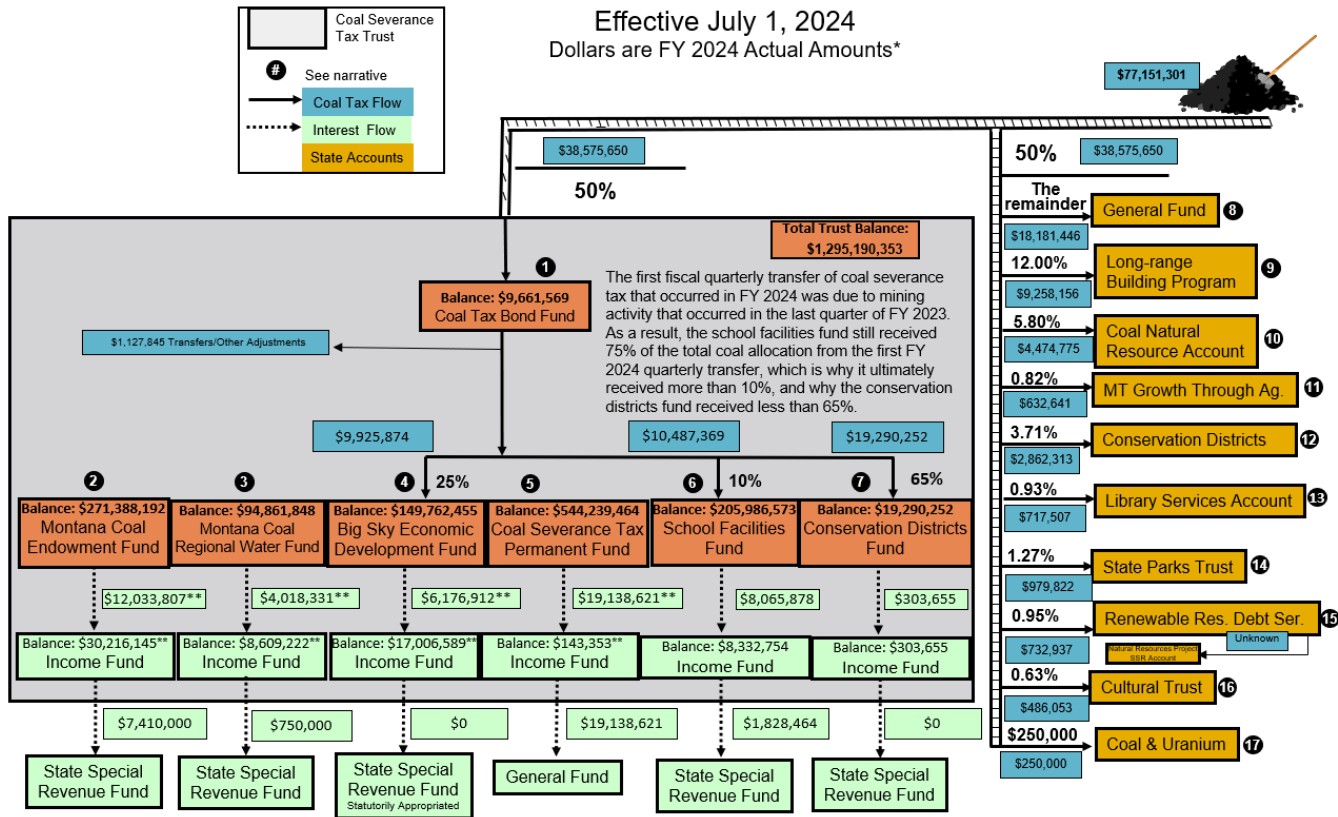
Legislative Fiscal Division

Room 110 Capitol Building * P.O. Box 201711 * Helena, MT 59620-1711 * (406) 444-2986 * FAX (406) 444-3036

Director
AMY CARLSON

COAL SEVERANCE TAX TRUST FUND

Effective July 1, 2024
Dollars are FY 2024 Actual Amounts*



* Current year
** Excludes unrealized investment gains and losses

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 1/100th 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 temporally 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