

**House Business and Labor Committee**

**HB 347 – Establish qualifications for & continuing education of Bd. Of Investments**

**Handouts referenced in testimony**

**Hearing - February 5, 2015**

Complete referenced documents provided to Chairman Berry for the record:

- Green Sheets, prepared by Legislative Services

From Montana Board of Investment website, board meeting materials:

- Montana Board of Investments CEM Benchmarking Results, August 2014
- RVK, Montana Board of Investments, Investment Performance Analysis, Period Ended: September 30, 2014



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Montana's Public Employees' Retirement Plans: Summary Tables  
 (Source: Actuarial Valuations and Montana Board of Investments)

Table 6 – INVESTMENT DATA

SYSTEM Year enacted	TEACHERS' RETIREMENT SYSTEM (TRS) 1937	PERS DEFINED BENEFIT PLAN (PERS-DBRP) 1945	JUDGES (JRS) 1967	HIGHWAY PATROL OFFICERS' (HPORS) 1945	SHERIFFS' (SRS) 1974	GAME WARDENS' AND PEACE OFFICERS' (GWPORS) 1963	MUNICIPAL POLICE OFFICERS (MPORS) 1974	FIREFIGHTERS UNIFIED (FURS) 1981
Amount invested (market value on 6/30/14)	\$3.65 billion	\$4.94 billion	\$84.22 million	\$126.01 million	\$284.65 million	\$138.74 million	\$ 319.19 million	\$321.56 million
Rate of return for composite index FY2014	18.15%	18.15%	18.14%	18.16%	18.13%	18.11%	18.14%	18.13%
Rate of rate return on pension fund	17.17%	17.16%	17.16%	17.17%	17.14%	17.12%	17.20%	17.19%
5-year compound rate of return, composite index	13.99%	13.99%	13.95%	14.00%	13.93%	13.91%	13.93%	13.92%
5-year compound rate of return, on pension fund	13.28%	13.27%	13.24%	13.29%	13.22%	13.20%	13.24%	13.23%
Percentage growth in total assets between FY 2013 and FY 2014 valuations	10.79%	11.01%	11.58%	10.87%	12.59%	15.46%	13.72%	14.21%
Percentage growth in total liabilities between FY2013 and FY 2014 valuations	4.58%	4.66%	2.77%	4.45%	7.20%	10.44%	5.39%	5.60%

# MONTANA BOARD OF INVESTMENTS

## SUMMARY OF RETIREMENT PLANS

Rates of Returns

Periods Ending December 31, 2014



STATE STREET

	MKT VAL \$(000)	Month	QTR	FYTD	1 Year	3 Years	5 Years	10 Years	ITD	INCEPT. DATE
PUBLIC EMPLOYEES RETIREMENT PLAN										
TOTAL - Gross	4,975,540	-0.31	2.25	2.11	8.61	13.40	11.18	6.90	8.08	07-01-94
TOTAL - Net All	4,975,540	-0.35	2.15	1.90	8.07	12.83	10.59	6.43	7.83	07-01-94
FIREFIGHTERS RETIREMENT PLAN										
TOTAL - Gross	322,957	-0.31	2.25	2.11	8.61	13.40	11.14	6.88	7.90	07-01-94
TOTAL - Net All	322,957	-0.35	2.15	1.90	8.07	12.83	10.55	6.41	7.65	07-01-94
GAME WARDENS RETIREMENT PLAN										
TOTAL - Gross	142,726	-0.31	2.24	2.11	8.57	13.36	11.13	6.84	7.96	07-01-94
TOTAL - Net All	142,726	-0.35	2.15	1.90	8.03	12.79	10.55	6.37	7.71	07-01-94
HIGHWAY PATROL RETIREMENT PLAN										
TOTAL - Gross	126,483	-0.31	2.26	2.12	8.62	13.41	11.19	6.90	7.94	07-01-94
TOTAL - Net All	126,483	-0.35	2.16	1.91	8.08	12.84	10.60	6.43	7.69	07-01-94
JUDGES RETIREMENT PLAN										
TOTAL - Gross	85,159	-0.31	2.25	2.11	8.60	13.38	11.16	6.89	7.95	07-01-94
TOTAL - Net All	85,159	-0.35	2.15	1.90	8.06	12.81	10.57	6.42	7.70	07-01-94
POLICE RETIREMENT PLAN										
TOTAL - Gross	319,422	-0.31	2.25	2.11	8.61	13.40	11.14	6.85	7.91	07-01-94
TOTAL - Net All	319,422	-0.35	2.15	1.90	8.07	12.84	10.56	6.38	7.66	07-01-94

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# MONTANA BOARD OF INVESTMENTS

## SUMMARY OF RETIREMENT PLANS

Rates of Returns

Periods Ending December 31, 2014



STATE STREET

	MKT VAL \$(000)	Month	QTR	FYTD	1 Year	3 Years	5 Years	10 Years	ITD	INCEPT. DATE
SHERIFFS RETIREMENT PLAN										
TOTAL - Gross	289,011	-0.31	2.25	2.11	8.59	13.37	11.14	6.87	7.95	07-01-94
TOTAL - Net All	289,011	-0.35	2.15	1.90	8.05	12.80	10.55	6.41	7.70	07-01-94
VOLUNTEER FIREFIGHTERS RETIREMENT PL										
TOTAL - Gross	32,488	-0.31	2.26	2.14	8.63	13.40	11.21	6.87	7.71	07-01-94
TOTAL - Net All	32,488	-0.35	2.17	1.93	8.09	12.83	10.63	6.41	7.46	07-01-94
TEACHERS RETIREMENT PLAN										
TOTAL - Gross	3,643,360	-0.32	2.25	2.12	8.63	13.41	11.19	6.90	8.10	07-01-94
TOTAL - Net All	3,643,360	-0.36	2.15	1.91	8.09	12.84	10.61	6.43	7.85	07-01-94
TOTAL RETIREMENT PLANS										
TOTAL - Gross	9,937,145	-0.31	2.25	2.12	8.61	13.41	11.18	6.90	8.08	07-01-94
TOTAL - Net All	9,937,145	-0.35	2.15	1.90	8.07	12.83	10.59	6.43	7.82	07-01-94

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# Summary of key takeaways

## Returns

- Your 4-year net total return was 11.3%. This was above the U.S. Public median of 10.4% and above the peer median of 10.2%.
- Your 4-year policy return was 11.5%. This was above the U.S. Public median of 10.4% and above the peer median of 10.1%.

## Implementation impact

- Your 4-year implementation impact was -0.2%. This was below the U.S. Public median of 0.1% and below the peer median of 0.1%.

## Cost and cost effectiveness

- Your investment cost of 56.7 bps was below your benchmark cost of 63.2 bps. This suggests that your fund was slightly low cost compared to your peers.
- Your fund was slightly low cost because you had a lower cost implementation style and you paid less than peers for similar mandates..
- Your fund had a 4-year implementation impact of -0.2% and cost savings of 3.8 bps on the cost effectiveness chart.

### 24 Month Systematic Work and Education Plan 2015

Completed 2012	Completed 2013	Completed 2014	Proposed 2015	
		X	X	Accounting Review
X	X	X	X	Annual report and financial statements
X	X	X	X	Asset Allocation Range Approval (Board must review/approve annually as per policy)
X	X		X	Capital Market/Asset Allocation
X	X	X	X	Audit (Financial)
	X		X	Benchmarks used by Board
	X		X	Board as a rated investment credit, a bond issuer and a credit enhancer
X	X	X	X	Board member education
X	X	X	X	Board's budget
	X		X	Board as landlord/tenant holdings
	X		X	Board's website
X		X		Cash Management of state monies
X	X	X	X	Cost reporting including CEM, Inc. analysis
		X		Custodial bank relationship, performance, continuity
	X		X	Customer relationships (State government)
	X	X		Disaster Recovery and other emergency preparedness
X	X	X	X	Exempt staff performance and raises (HR policy requires annual consideration)
X	X	X	X	Ethics policy – (Board policy requires annual affirmations)
X	X		X	Fixed Income
	X		X	In-state Loan program
X		X		INTERCAP program
X	X	X	X	Internal controls
X	X	X	X	Investment Policy Statements Review (Governance policy requires annual review)
X	X	X	X	Legislative session and interim matters
	X	X		Outreach efforts for Board - loan and municipal programs
X	X	X	X	PERS and TRS relationship
X		X		Private Equity
		X		Proxy voting public equities
X		X		Public Domestic Equities
X		X		Public International Equities
X		X		Real Estate and timberland
X	X	X	X	Resolution 217 update of current Investment Firms (Board policy requires annual update)
X	X	X	X	Resolution 218, role of deputy director to serve as acting executive if necessary
	X		X	Securities Lending
X	X	X	X	Securities Litigation
X	X	X	X	Staffing levels (required biannually in board policy)
	X		X	State Fund as major client

## Systematic Work and Education Plan 2015

- Feb. 24-25**     **Quarterly Meeting**  
Quarterly reports and subcommittee meetings  
Annual Report and Financial Statements  
Financial Audit  
Ethics  
Board's real property holdings  
Securities lending
- April 7**        **Non-Quarterly Meeting**  
All policy review  
Capital market/asset allocation overview  
Board as a rated credit  
In – state loan programs  
RVK presentation (TBD)  
Board education and possible conferences (IFE usually in June)
- May 19-20**    **Quarterly Meeting**  
Quarterly reports and subcommittee meetings  
Fixed income  
Fixed income trust clientele joint presentations (and luncheon)  
Board's web site  
State Fund as major BOI client  
Staffing level review
- August 18-19** **Quarterly Meeting**  
Quarterly reports and subcommittee meetings  
CEM Benchmarking  
MBOI Budget and legislative-related action-decision  
Internal Controls  
Fiscal Year performance through June 30<sup>th</sup>  
RVK presentation (TBD)
- October 6**     **Non-Quarterly Meeting**  
TBD
- Nov. 17-18**    **Quarterly Meeting**  
Quarterly reports and subcommittee meetings  
Affirm or Revise Asset Allocation  
Resolution 217  
Resolution 218  
PERS/TRS annual update  
Benchmarks used by Board  
Securities litigation status  
Exempt staff annual review  
Accounting Review

## Summary of FY 2014 Actuarial Valuations: FINAL

Compiled by Sheri Scurr, Legislative Services Division  
From TRS Board and PER Board June 30, 2014, Actuarial Valuations

System	Funded Ratio (percentage)	Covered Payroll	ARC Shortfall (% payroll)	ARC Shortfall (as dollar amt - increases annually)	Amortization period (years)
PERS-DB	75%	\$ 1,129,109,402	0%	\$ 0	29.3
TRS	66%	\$ 750,604,000	0%	\$ 0	28.0
SRS	81%	\$ 64,672,635	4.01%	\$ 2,593,373	does not amortize
MPORS	63%	\$ 44,426,617	0%	\$ 0	19.6
GWPORS	84%	\$ 41,636,566	2.41%	\$ 1,003,411	does not amortize
FURS	72%	\$ 39,891,869	0%	\$ 0	11.3
HPORS	64%	\$ 14,149,269	0.14%	\$ 19,809	30.3
JRS	155%	\$ 6,354,763	0%	\$ 0	0
<b>TOTAL</b>				<b>\$ 3,616,603</b>	

**Notes:**

1. Actuarial valuation results for TRS and PERS assume ***no reduction in Guaranteed Annual Benefit Adjustments (GABA)*** for current retirees and members hired prior to July 1, 2013. The GABA reductions in HB 377 for TRS and HB 454 for PERS from the 2013 Session were enjoined by the court in separate cases pending the outcome of litigation.
2. Funded ratio means current assets compared to current liabilities. When a plan is 100% funded, it means current assets are sufficient to pay 100% of current liabilities.
3. ARC means the Annual Required Contribution rate required to amortize the unfunded liabilities over 30 years as determined by the system's actuary. Unfunded liabilities are the liabilities that cannot be paid with current assets, but that are being paid off over time. This time period is called the "amortization period".
4. The ARC shortfall as a percent of payroll is the contribution rate increase above current contributions that is needed to amortize the system's unfunded liabilities in 30 years. If a plan's liabilities are being paid off over a period of 30 years or less, there is no shortfall because a 30-year amortization period is considered actuarially sound.
5. The ARC shortfall as a dollar amount is the amount of money required in the first year of the biennial budget, in addition to current contributions to amortize the system's unfunded liabilities in 30 years. The amount required would increase each year as the payroll increases. This amount was calculated by legislative staff, so is not in the valuation.
6. Actuarial valuations are based on economic and demographic assumptions. The governing boards have the constitutional duty to adopt these assumptions and they do so based on experience studies. Experience studies are conducted approximately every 5 years. The legislature may not alter these assumptions. The major actuarial assumptions for the FY 2014 actuarial valuations were as follows:

Major Economic Assumptions	TRS	MPERA Systems
Investment rate of return	7.75%	7.75%
Wage growth	4.0%	4.0%
Inflation	3.25%	3.0%

Montana's Public Employees' Retirement Plans: Summary Tables (Source: FY 2014, Actuarial Valuations)

**Table 1 – CONTRIBUTIONS, COSTS, AND AMORTIZATION PERIOD**

SYSTEM Year enacted	TEACHERS' RETIREMENT SYSTEM (TRS) 1937	PERS DEFINED BENEFIT PLAN (PERS-DBRP) 1945	JUDGES (JRS) 1967	HIGHWAY PATROL OFFICERS' (HPORS) 1945	SHERIFFS' (SRS) 1974	GAME WARDENS' AND PEACE OFFICERS' (GWPOS) 1963	MUNICIPAL POLICE OFFICERS (MPORS) 1974	FIREFIGHTERS' UNIFIED (FURS) 1981
Employer contributions on 7/1/14  <i>*percentages in this table are of covered salary</i>	<b>School Districts:</b> 8.57% plus <b>State GF:</b> 2.49%  <b>State agencies &amp; University System:</b> 10.95% plus <b>State GF:</b> 0.11	8.27% Reduced when amortization period is 25 yrs or less <b>Schools:</b> 7.9% <b>State GF</b> 0.37%  <b>Local Government</b> 8.17% <b>State GF:</b> 0.1%	25.81%	<b>Pre-7/1/13</b> 26.15%  <b>On 7/1/13</b> 28.15%	10.115%	9.00%	14.41%	14.36%
Employee contributions on 7/1/14	Tier one: 7.15% plus 1% supplemental contribution until 90% funded  Tier two <b>post 7/1/13:</b> 8.15%	7.90%  Reduced to 6.9% when amortization period is 25 yrs or less	7.00%	<b>Pre-7/1/97 not electing GABA:</b> 11%  <b>Post 7/1/97 or electing GABA:</b> 11.05%	9.245%	10.56%	<b>Non-GABA Pre-7/1/79</b> 7.0% <b>Pre-7/1/97</b> 8.5% <b>With GABA</b> 9%	<b>Pre-7/1/97 not electing GABA</b> 9.5% <b>7/1/97 or electing GABA</b> 10.7%
Funding from other sources	U- System: 4.72% of MUS- RP payroll \$25 million State General Fund	Coal Tax 3.09% (\$33.7 Million)	None	State General Fund 10.18%	None	None	State General Fund 29.37%	State General Fund 32.61%
Total statutory contributions	19.21%	19.36%	32.81%	49.38%	19.36%	19.56%	52.78%	57.66%
Normal cost	9.13%	11.63%	24.47%	24.46%	18.29%	18.58%	25.65%	26.51%
Percentage used to fund unfunded liabilities	9.77%	7.42%	8.19%	24.69%	.90%	.81%	26.93%	30.96%
Years to amortize unfunded liability	28 yrs	29.3 yrs	0 yrs	30.3 yrs	Does not amortize	Does not amortize	19.6 yrs	11.3 yrs

Montana's Public Employees' Retirement Plans: Summary Tables  
 (Source: June 30, 2014, Actuarial Valuations)

**Table 2 – ACTUARIAL DATA**

SYSTEM Year enacted	TEACHERS' RETIREMENT SYSTEM (TRS)	PERS DEFINED BENEFIT PLAN (PERS-DBRP)	JUDGES (JRS)	HIGHWAY PATROL OFFICERS' (HPORS)	SHERIFFS' (SRS)	GAME WARDENS' AND PEACE OFFICERS' (GWPORS)	MUNICIPAL POLICE OFFICERS (MPORS)	FIREFIGHTERS' UNIFIED (FURS)
Actuarial Value Funded ratio	65.5%	74.4%	155.1%	63.9%	81.3%	83.7%	63.0%	71.8%
Actuarial value of assets	\$3.40 billion	\$4.6 billion	\$78.5 million	\$117.2 million	\$264.9 million	\$129.4 million	\$298.7 million	\$300.9 million
Actuarial liability	\$5.19 billion	\$6.2 billion	\$50.6 million	\$183.4 million	\$326.1 million	\$155.6 million	\$474.3 million	\$419.0 million
Unfunded portion of accrued actuarial liability	\$1.79 billion	\$1.6 billion	(\$27.9 million)	\$66.2 million	\$61.1 million	\$25.2 million	\$175.6 million	\$118.1 million
Projected ARC shortfall	0%	0%	0%	0.14%	4.01%	2.41%	0%	0%
Projected ARC shortfall as annual dollar amount	\$0	\$0	\$0	\$ 19,809	\$2,593,373	\$1,003,441	\$0	\$0

Montana's Public Employees' Retirement Plans: Summary Tables (Source: June 30, 2014, Actuarial Valuation)

**Table 3 - BENEFIT ELIGIBILITY AND BASIC FORMULA**  
(multiplier x highest avg compensation x years of service)

SYSTEM Year enacted	TEACHERS' RETIREMENT SYSTEM (TRS)	PERS DEFINED BENEFIT PLAN (PERS-DB)	JUDGES (JRS)	HIGHWAY PATROL OFFICERS' (HPORS)	SHERIFFS' (SRS)	GAME WARDENS' AND PEACE OFFICERS' (GWPORS)	MUNICIPAL POLICE OFFICERS' (MPORS)	FIREFIGHTERS' UNIFIED (FURS)
Service and Age eligibility criteria for full retirement	<b>Pre-July 1, 2013</b> 25 yrs, any age or 5 yrs, age 60  <b>July 1, 2013</b> 30 yrs, age 55 or 5 yrs, age 60	<b>Pre-July 1, 2011</b> 30 yrs service, any age or 5 yrs service, age 60 or; any service, age 65 <b>July 1, 2011</b> 5 yrs, age 65, or age 70 any years	5 yrs, age 60	20 yrs, any age, or 5 yrs and age 50, whichever occurs later	20 yrs, any age	20 yrs, age 50 or 5 yrs, age 55	20 yrs, any age or 5 yrs, age 50	20 yrs, any age or 5 yrs, age 50
Minimum service for vesting	5 yrs	5 yrs	5 yrs	<b>Pre-July 1, 2013</b> 5 yrs <b>July 1, 2013</b> 10 yrs	5 yrs	5 yrs	5 yrs	5 yrs
Highest average compensation (HAC) period used in benefit calculation	<b>Pre-July 1, 2013</b> 3 yrs  <b>July 1, 2013</b> 5yrs	<b>Pre-July 1, 2011</b> 3 yrs <b>July 1, 2011</b>  5 yrs	3 yrs	3 yrs	<b>Pre-July 1, 2011</b> 3 yrs <b>July 1, 2011</b> 5 yrs	<b>Pre-July 1, 2011</b> 3 yrs <b>July 1, 2011</b> 5 yrs	3 yrs  (final avg, not highest avg.)	3 yrs
Service retirement benefit multiplier	<b>Pre-July 1, 2013</b> 1.67% per yr  <b>July 1, 2013</b> 1.67% per year or if 30 years and age 60  Tier 2 members receive 1.85% per year	<b>Pre-July 1, 2011</b> < 25 yrs service: 1.78571% 25 yrs or more: 2% <b>July 1, 2011</b> up to 10 yrs service: 1.5% 10 yrs to less than 30 yrs: 1.78571% 30 yrs or more: 2% <b>Money Purchase Option</b> The greater of the above or actuarial equivalent of 2X member's accumulated contributions plus interest set by board (0.25% - for FY2014-15)	3.33% to 15 yrs plus 1.785% x yrs of service greater than 15	2.6% per yr	2.5% per yr	2.5% per yr	2.5% per yr	2.5% per yr
Social Security coverage	Yes (most members)	Yes (most members)	Yes	No	Yes	Yes	No	No

Montana's Public Employees' Retirement Plans: Summary Tables (Source: FY 2014, Actuarial Valuations)

**Table 4 – ACTIVE MEMBERSHIP**

SYSTEM Year enacted	TEACHERS' RETIREMENT SYSTEM (TRS) 1937	PERS DEFINED BENEFIT PLAN (PERS-DBRP) 1945	JUDGES (JRS) 1967	HIGHWAY PATROL OFFICERS' (HPORS) 1945	SHERIFFS' (SRS) 1974	GAME WARDENS' AND PEACE OFFICERS' (GWPORS) 1963	MUNICIPAL POLICE OFFICERS (MPORS) 1974	FIREFIGHTERS' UNIFIED (FURS) 1981
Total active members	18,300	28,229	55	229	1307	955	743	616
Average age	45.6 yrs	48.8 yrs	59.8 yrs	40.7 yrs	40.5 yrs	42.5 yrs	38.8 yrs	39.7 yrs
Average years of service	11.6 yrs	9.8 yrs	9.9 yrs	10.4 yrs	7.4 yrs	7.7 yrs	8.9 yrs	10.8 yrs
Average annual salary – Full time members	\$51,967	\$39,709	\$118,093	\$60,704	\$49,291	\$42,365	\$59,830	\$64,115
Number of participating employers	370	541	1	1	57	7	32	25
Employers' Covered Payroll	\$750.6 million	\$1.1 billion	\$6.4 million	\$14.1 million	\$64.6 million	\$41.6 million	\$44.4 million	\$39.9 million

Montana's Public Employees' Retirement Plans: Summary Tables  
(Source: June 30, 2014, Actuarial Valuations)

Table 5 – RETIREE AND BENEFIT RECIPIENT DATA

SYSTEM Year enacted	TEACHERS' RETIREMENT SYSTEM (TRS) 1937	PERS DEFINED BENEFIT PLAN (PERS-DBRP) 1945	JUDGES (JRS) 1967	HIGHWAY PATROL OFFICERS' (HPORS) 1945	SHERIFFS' (SRS) 1974	GAME WARDENS' AND PEACE OFFICERS' (GWPORS) 1963	MUNICIPAL POLICE OFFICERS (MPORS) 1974	FIREFIGHTERS' UNIFIED (FURS) 1981
Number of benefit recipients	14,349	20,081	67	322	533	203	716	595
Average age of current retirees	70.6 years	72 years	76 years	70 years	65 years	68 years	67 years	69 years
Average age at retirement	58 years	60 years	62 years	49 years	53 years	56 years	48 years	51 years
Average years of service at retirement	26 years	20 years	17 years	24 years	20 years	20 years	20 years	24 years
Average annual benefit (service retirement)	\$21,153	\$15,205	\$45,460	\$30,279	\$24,772	\$20,817	\$27,803	\$32,624
Post-retirement benefit adjustment (GABA)	<b>If hired before 07/01/2013</b> 1.5% (3 year waiting period)	<b>If hired before 07/01/07</b> 3.0% GABA (after 1 year)	<b>Pre-7/1/97</b> Benefits increased same as salary of sitting judge	<b>Pre-7/1/97 not electing GABA</b> 2% of base salary of probationary officer	<b>If hired before 07/01/07</b> 3.0% GABA (after 1 year)	<b>If hired before 07/01/07</b> 3.0% GABA (after 1 year)	<b>Pre-7/1/97 not electing GABA</b> ½ of monthly salary of new officer	<b>Pre-7/1/97 not electing GABA</b> ½ of monthly salary of new firefighter
<i>*GABA reductions for pre-7/1/13 members in TRS and PERS from 2013 Session have been enjoined by the court and are not reflected in this row.</i>	<b>If hired after 07/01/2013</b> Equal to or greater than 0.50% but no more than 1.50% depending on the funded status of the plan.(3-year waiting period)	<b>If hired on or after 07/01/07</b> 1.5% GABA (after 1 year)  <b>If hired after 07/01/2013</b> 1.5%, reduced 0.1% for every 2 yrs below 90%funded (3-year waiting period)	<b>All post-7/1/97 or who elected GABA</b> 3.0% GABA (after 1 year)	<b>All post-7/1/97 or who elected GABA</b> 3.0% GABA (after 1 year)  <b>Hired on or after 07/01/13</b> 1.5% GABA (after 3 years)	<b>If hired on or after 07/01/07</b> 1.5% GABA (after 1 year)	<b>If hired on or after 07/01/07</b> 1.5% GABA (after 1 year)	<b>All post-7/1/97 or who elected GABA</b> 3.0% GABA (after 1 year)	<b>All post-7/1/97 or who elected GABA</b> 3.0% GABA (after 1 year)

Montana's Public Employees' Retirement Plans: Summary Tables  
 (Source: Actuarial Valuations and Montana Board of Investments)

**Table 6 – INVESTMENT DATA**

SYSTEM Year enacted	TEACHERS' RETIREMENT SYSTEM (TRS) 1937	PERS DEFINED BENEFIT PLAN (PERS-DBRP) 1945	JUDGES (JRS) 1967	HIGHWAY PATROL OFFICERS' (HPORS) 1945	SHERIFFS' (SRS) 1974	GAME WARDENS' AND PEACE OFFICERS' (GWPORS) 1963	MUNICIPAL POLICE OFFICERS (MPORS) 1974	FIREFIGHTERS' UNIFIED (FURS) 1981
Amount invested (market value on 6/30/14)	\$3.65 billion	\$4.94 billion	\$84.22 million	\$126.01 million	\$284.65 million	\$138.74 million	\$ 319.19 million	\$321.56 million
Rate of return for composite index FY2014	18.15%	18.15%	18.14%	18.16%	18.13%	18.11%	18.14%	18.13%
Rate of rate return on pension fund	17.17%	17.16%	17.16%	17.17%	17.14%	17.12%	17.20%	17.19%
5-year compound rate of return, composite index	13.99%	13.99%	13.95%	14.00%	13.93%	13.91%	13.93%	13.92%
5-year compound rate of return, on pension fund	13.28%	13.27%	13.24%	13.29%	13.22%	13.20%	13.24%	13.23%
Percentage growth in total assets between FY 2013 and FY 2014 valuations	10.79%	11.01%	11.58%	10.87%	12.59%	15.46%	13.72%	14.21%
Percentage growth in total liabilities between FY2013 and FY 2014 valuations	4.58%	4.66%	2.77%	4.45%	7.20%	10.44%	5.39%	5.60%

Montana's Public Employees' Retirement Plans: Summary Tables  
 (Source: June 30, 2013, Actuarial Valuation)

**Table 7 – VOLUNTEER FIREFIGHTER'S COMPENSATION ACT**  
 (established in 1935)

Minimum service and age for normal (unreduced) retirement	Age 55 and 20 years of service; or age 60 and 10 years of service
Vested	10 Years
Basic benefit formula	\$7.50 per year of service, up to maximum of \$225 per month. Members that retire on or after 7/1/2011 can increase their benefit for over 30 years of service if the system is funded in 20 years or less.
Disability	\$7.50 per year of service, with a minimum of \$75 per month and with the same maximum as a regular retirement benefit. The benefit can increase for over 30 years of service if the system is funded in 20 years or less.
Death Benefit	\$7.50 per year of service (maximum of 40 months including any amounts retiree received).
Membership	1,935 active members 1,332 retirees and beneficiaries
Average age of active members	45.7 years old
Average years of service of active members	9.7 years
Average benefit for service retiree	\$145 per month
Contributions	5% of insurance premium taxes collected (See Section 19-17-301, MCA)
Actuarial Liabilities	\$38.0 million
Actuarial value of assets	\$31.3 million
Unfunded liability	\$6.7 million
Years to Amortize	5.1 years
Funded ratio	82.4%

Montana's Public Employees' Retirement Plans: Summary Tables  
 (Source: June 30, 2014, Investment Performance Evaluation, Buck Consultants)

**Table 8 – PERS DEFINED CONTRIBUTION (DC) RETIREMENT PLAN  
 June 30, 2014**

Membership	New members have 12 months to make a one-time, irrevocable choice between the DB and DC plans
Active membership	2,188 – 7% of total active members of PERS
Employee Contributions	7.9% of salary – all allocated to individual member accounts Reduced to 6.9% when PERS-DB plan amortization period is less than 25 years.
Employer and State GF Contributions	8.17% of salary Reduced when PERS-DB plan amortization period is less than 25 years.  Contributions allocated as follows: -- 4.19% to member accounts -- 2.37% to PERS DB plan as plan choice rate unfunded actuarial liability -- 0.04% to an educational fund -- 0.3% to disability trust fund -- 0.27% to the DB plan to reduce the plan choice rate unfunded actuarial liability; then to the long-term disability plan trust fund once the PCR UAL is retired -- 1% to PERS DB plan to reduce unfunded actuarial liability
Total contributions to member accounts	11.09% of salary (FY2013), 12.09% (FY2014) Reduced to 11.09% when PERS-DB plan amortization period is less than 25 years
Total Amount Invested	\$128 million
Investment Choices	28 funds (5 categories)
Total Allocation of Total Assets	52% - Target Date/Balanced Funds 29% - U.S. Equity Funds 9% - International Equity Funds 8% - Stable Value Fund 2% - Bond Funds
Vesting	5 years for employer contributions and investment earnings
Benefits	Contributions plus investment earnings, minus administrative expenses; payable at any time after termination, with a possible federal tax penalty for withdrawal before age 59½.
Disability Benefit	A defined disability benefit based on a 1/56 x HAC x years of service formula, same as provided in the PERS-DBRP.
Death/survivorship benefit	Member's account balance
Plan Administration	PERB is the plan's board of trustees Great-West Retirement Services is the plan's record keeper

Montana's Public Employees' Retirement Plans: Summary Tables  
 (Source: June 30, 2014, Performance Evaluation Report, Buck Consultants)

**Table 9 – DEFERRED COMPENSATION PLAN (457)**

Membership	Voluntary supplemental retirement savings plan available to all employees of the State, Montana University System, and contracting political subdivisions.
Number of Participants	8,519 members
Employee Contributions	Voluntary, pre-tax deferral or designated ROTH
Employer Contributions	None, unless a term in the employer contract
Total Amount Invested	\$432.4 million
Number of Investment Choices	30 funds (5 categories)
Total Allocation of Total Assets	54% - Stable Value Fund 26% - U.S. Equity Funds 9% - International Equity Funds 8% - Target Date/Balanced Funds 3% - Bond Funds
Vesting	Participants are fully vested in their accounts immediately
Benefit Eligibility	Not available to participant until separation from service, retirement, death, or upon an unforeseeable emergency, while still employed, provided IRS-specified criteria are met.
Benefit Amount	Lump sum or periodic benefit payment, at the option of the participant. Based on individual account balance and plan provisions. IRS permitted rollovers are also possible.
Death/survivorship Benefit	Member's account balance
Plan Administration	- PERB is the plan's board of trustees - Great-West Retirement Services is the plan's record keeper

Montana's Public Employees' Retirement Plans: Summary Tables

**Table 10 – MONTANA UNIVERSITY SYSTEM RETIREMENT PROGRAM  
as of June 30, 2014**

<p>Membership</p>	<p>All administrative, scientific, and instructional staff of the University System and classified staff that elected MUS-RP rather than the PERS-DC plan.</p> <p>Total participants: 8,656 Avg. age: 49 yrs Avg. yrs of membership: 10.5 yrs</p>
<p>Retirement eligibility</p>	<p>A plan member may "retire" (i.e., access the MUS-RP account) any time after service is terminated. There are federal tax penalties for withdrawal prior to age 59½.</p>
<p>Benefit</p>	<p>An MUS-RP member's benefit depends on total contributions to the member's individual account, plus investment earnings, minus administrative expenses. The MUS-RP is administered by TIAA-CREF (Teachers' Insurance and Annuity Association – College Retirement Equities Fund)</p> <p>Avg. account balance: \$59,172</p>
<p>Death and survivor benefits</p>	<p>The full account value in member's annuity account is payable to the beneficiary. The benefit can be paid in a single sum, as an annuity to the beneficiary for life, or as an annuity for a fixed period of years. The annuity may also be deferred as federal law permits.</p>
<p>Total Amount Invested</p>	<p>\$ 5.12 billion</p>
<p>Investment Choices</p>	<p>27 choices (6 asset classes)</p>
<p>Total Allocation of Total Assets By Asset Class</p>	<p>46% - Equities 23% - Guaranteed 19% - Multi-asset 5% - Real estate 5% - Fixed income 3% - Money market</p>
<p>Total MUS-RP payroll covered</p>	<p>\$173.8 million</p>
<p>Contributions to member accounts as a percentage of payroll</p>	<p>Employer: 5.956% <u>Employee: 7.044%</u> TOTAL: 13.0%</p>
<p>Supplemental employer contributions to TRS for unfunded liability.</p>	<p>4.72%</p> <p><u>Note:</u> The total unfunded liability in TRS will amortize in 28 years with this current rate (i.e., without the increase noted below).</p>
<p>Increase required in supplemental contribution rate to amortize unfunded liability by 2033</p>	<p>5.03%</p> <p><u>Note:</u> This increase is needed if the legislature wishes to continue to have the unfunded liability created in TRS when the MUS-RP was established paid by the U-System and not subsidized by the TRS pension fund.</p>



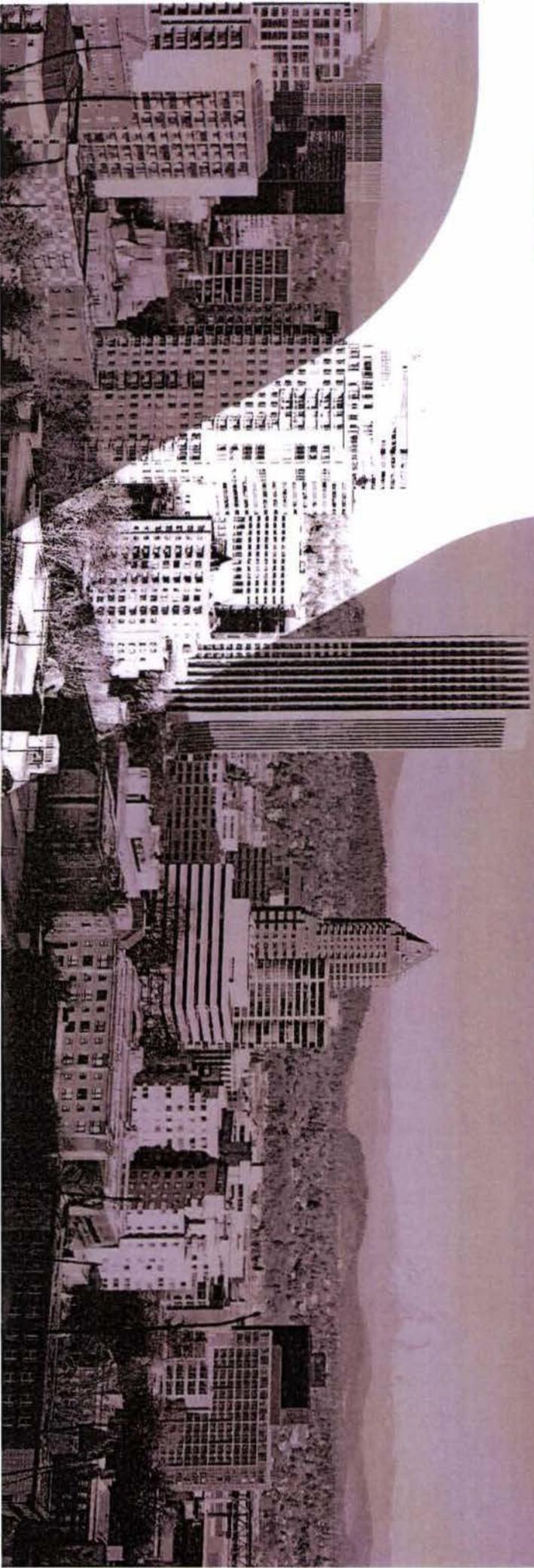


**RVK**

# Montana Board of Investments

## Investment Performance Analysis

Period Ended: September 30, 2014



**Montana Board of Investments**  
**Retirement Plans**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
<b>Public Employees' Retirement - Net</b>	-0.25	5.79	11.67	13.81	10.91	4.59	6.98	17.38	13.24	2.13	12.77	15.42
Public Employees' Benchmark	0.10	6.77	12.89	14.32	11.54	4.88	7.09	17.94	14.88	1.67	12.44	15.41
<i>Difference</i>	-0.35	-0.98	-1.22	-0.51	-0.63	-0.29	-0.11	-0.56	-1.64	0.46	0.33	0.01
<b>Public Employees' Retirement - Gross</b>	-0.13	6.22	12.24	14.40	11.51	5.15	7.45	17.96	13.83	2.68	13.44	16.08
All Public Plans > \$3B Total Fund Median	-1.20	5.26	10.58	12.91	10.40	4.78	7.60	15.18	13.36	0.89	12.73	18.21
<b>Public Employees' Retirement - Gross Rank</b>	16	23	5	12	8	42	61	10	35	25	40	74
<b>Teachers' Retirement - Net</b>	-0.24	5.81	11.71	13.83	10.93	4.59	6.98	17.38	13.24	2.14	12.80	15.42
Teachers' Benchmark	0.11	6.79	12.92	14.33	11.55	4.88	7.09	17.94	14.89	1.66	12.45	15.40
<i>Difference</i>	-0.35	-0.98	-1.21	-0.50	-0.62	-0.29	-0.11	-0.56	-1.65	0.48	0.35	0.02
<b>Teachers' Retirement - Gross</b>	-0.13	6.24	12.28	14.42	11.52	5.15	7.45	17.96	13.84	2.68	13.47	16.08
All Public Plans > \$3B Total Fund Median	-1.20	5.26	10.58	12.91	10.40	4.78	7.60	15.18	13.36	0.89	12.73	18.21
<b>Teachers' Retirement - Gross Rank</b>	16	23	5	12	8	41	61	10	35	25	40	74
<b>Police Retirement - Net</b>	-0.25	5.80	11.68	13.82	10.88	4.54	6.91	17.41	13.23	2.10	12.62	15.42
Police Benchmark	0.11	6.79	12.91	14.29	11.49	4.83	7.00	17.92	14.80	1.66	12.26	15.46
<i>Difference</i>	-0.36	-0.99	-1.23	-0.47	-0.61	-0.29	-0.09	-0.51	-1.57	0.44	0.36	-0.04
<b>Police Retirement - Gross</b>	-0.14	6.22	12.25	14.40	11.47	5.10	7.38	18.00	13.78	2.65	13.29	16.08
All Public Plans > \$3B Total Fund Median	-1.20	5.26	10.58	12.91	10.40	4.78	7.60	15.18	13.36	0.89	12.73	18.21
<b>Police Retirement - Gross Rank</b>	16	23	5	12	8	44	64	10	37	27	42	74

Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$3B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees.

**Montana Board of Investments**  
**Retirement Plans**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
<b>Firefighters' Retirement - Net</b>	-0.25	5.79	11.68	13.82	10.87	4.58	6.94	17.41	13.22	2.10	12.61	15.46
Firefighters' Benchmark	0.11	6.79	12.91	14.29	11.48	4.86	7.01	17.92	14.80	1.66	12.24	15.50
<i>Difference</i>	-0.36	-1.00	-1.23	-0.47	-0.61	-0.28	-0.07	-0.51	-1.58	0.44	0.37	-0.04
<b>Firefighters' Retirement - Gross</b>	-0.14	6.22	12.25	14.41	11.47	5.14	7.40	17.99	13.81	2.64	13.27	16.12
All Public Plans > \$3B Total Fund Median	-1.20	5.26	10.58	12.91	10.40	4.78	7.60	15.18	13.36	0.89	12.73	18.21
<b>Firefighters' Retirement - Gross Rank</b>	16	23	5	12	8	42	63	10	36	27	42	74
<b>Sheriffs' Retirement - Net</b>	-0.25	5.78	11.65	13.78	10.87	4.58	6.95	17.35	13.19	2.12	12.68	15.37
Sherriffs' Benchmark	0.10	6.76	12.86	14.28	11.50	4.90	7.05	17.91	14.84	1.65	12.33	15.47
<i>Difference</i>	-0.35	-0.98	-1.21	-0.50	-0.63	-0.32	-0.10	-0.56	-1.65	0.47	0.35	-0.10
<b>Sheriffs' Retirement - Gross</b>	-0.13	6.20	12.21	14.37	11.46	5.14	7.41	17.93	13.79	2.66	13.34	16.03
All Public Plans > \$3B Total Fund Median	-1.20	5.26	10.58	12.91	10.40	4.78	7.60	15.18	13.36	0.89	12.73	18.21
<b>Sheriffs' Retirement - Gross Rank</b>	16	23	6	13	8	42	62	10	37	26	41	74
<b>Highway Patrol Retirement - Net</b>	-0.24	5.80	11.67	13.81	10.92	4.58	6.98	17.38	13.24	2.12	12.81	15.52
Highway Patrol Benchmark	0.10	6.78	12.90	14.32	11.54	4.89	7.07	17.94	14.88	1.65	12.44	15.60
<i>Difference</i>	-0.34	-0.98	-1.23	-0.51	-0.62	-0.31	-0.09	-0.56	-1.64	0.47	0.37	-0.08
<b>Highway Patrol Retirement - Gross</b>	-0.13	6.22	12.24	14.41	11.51	5.15	7.45	17.96	13.84	2.66	13.47	16.19
All Public Plans > \$3B Total Fund Median	-1.20	5.26	10.58	12.91	10.40	4.78	7.60	15.18	13.36	0.89	12.73	18.21
<b>Highway Patrol Retirement - Gross Rank</b>	16	23	5	12	8	42	61	10	35	26	40	74

Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$3B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees.

**Montana Board of Investments  
Retirement Plans  
Comparative Performance  
As of September 30, 2014**

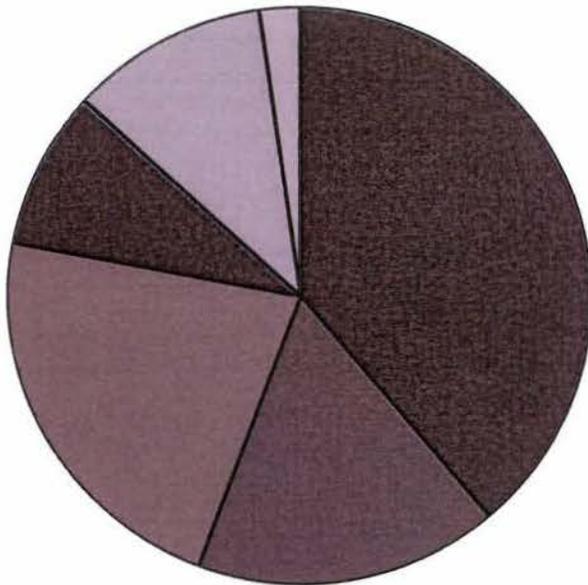
	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
<b>Game Wardens' Retirement - Net</b>	-0.24	5.76	11.62	13.77	10.87	4.58	6.89	17.34	13.20	2.09	12.72	15.23
Game Wardens' Benchmark	0.10	6.75	12.85	14.28	11.49	4.90	7.00	17.90	14.85	1.64	12.33	15.31
<i>Difference</i>	-0.34	-0.99	-1.23	-0.51	-0.62	-0.32	-0.11	-0.56	-1.65	0.45	0.39	-0.08
<b>Game Wardens' Retirement - Gross</b>	-0.13	6.18	12.19	14.35	11.46	5.13	7.35	17.92	13.79	2.63	13.38	15.88
All Public Plans > \$3B Total Fund Median	-1.20	5.26	10.58	12.91	10.40	4.78	7.60	15.18	13.36	0.89	12.73	18.21
<b>Game Wardens' Retirement - Gross Rank</b>	16	23	6	13	8	42	66	10	37	27	41	75
<b>Judges' Retirement - Net</b>	-0.25	5.78	11.66	13.79	10.89	4.60	6.96	17.36	13.20	2.12	12.76	15.43
Judges' Benchmark	0.10	6.77	12.87	14.29	11.51	4.90	7.06	17.92	14.84	1.64	12.39	15.50
<i>Difference</i>	-0.35	-0.99	-1.21	-0.50	-0.62	-0.30	-0.10	-0.56	-1.64	0.48	0.37	-0.07
<b>Judges' Retirement - Gross</b>	-0.13	6.21	12.23	14.38	11.48	5.16	7.43	17.94	13.79	2.66	13.42	16.09
All Public Plans > \$3B Total Fund Median	-1.20	5.26	10.58	12.91	10.40	4.78	7.60	15.18	13.36	0.89	12.73	18.21
<b>Judges' Retirement - Gross Rank</b>	16	23	5	13	8	41	62	10	37	26	41	74
<b>Volunteer Firefighters' Retirement - Net</b>	-0.23	5.80	11.70	13.81	10.95	4.57	6.94	17.42	13.18	2.09	12.99	15.11
Volunteer Firefighters' Benchmark	0.12	6.79	12.92	14.31	11.56	4.87	7.02	17.97	14.79	1.70	12.50	15.14
<i>Difference</i>	-0.35	-0.99	-1.22	-0.50	-0.61	-0.30	-0.08	-0.55	-1.61	0.39	0.49	-0.03
<b>Volunteer Firefighters' Retirement - Gross</b>	-0.12	6.22	12.27	14.40	11.54	5.12	7.40	18.00	13.77	2.63	13.66	15.76
All Public Plans > \$3B Total Fund Median	-1.20	5.26	10.58	12.91	10.40	4.78	7.60	15.18	13.36	0.89	12.73	18.21
<b>Volunteer Firefighters' Retirement - Gross Rank</b>	15	23	5	12	8	43	63	10	37	27	35	75

Net performance shown is net of all manager fees and expenses (Net-All). All Public Plans > \$3B Total Fund Median is reported gross of fees. Benchmark returns reflect unmanaged indices which are not impacted by management fees.

**Montana Board of Investments  
Retirement Plans  
Asset Allocation by Segment  
As of September 30, 2014**

	Domestic Equity		International Equity		Domestic Fixed Income		Real Estate		Private Equity		Cash Equivalent		Total Fund	
	(\$)	%	(\$)	%	(\$)	%	(\$)	%	(\$)	%	(\$)	%	(\$)	%
Public Employees' Retirement	1,902,481,629	38.86	824,560,568	16.84	1,092,370,302	22.31	431,802,488	8.82	536,443,579	10.96	108,377,231	2.21	4,896,035,797	49.99
Teachers' Retirement	1,407,774,531	39.09	610,335,540	16.95	808,834,534	22.46	319,620,107	8.87	397,579,486	11.04	57,297,389	1.59	3,601,441,587	36.77
Police Retirement	117,775,455	37.34	51,030,444	16.18	67,703,220	21.46	26,763,945	8.48	33,239,132	10.54	18,923,719	6.00	315,435,915	3.22
Firefighters' Retirement	118,813,082	37.33	51,488,423	16.18	68,309,772	21.46	27,000,819	8.48	33,540,047	10.54	19,099,175	6.00	318,251,318	3.25
Sheriffs' Retirement	109,823,885	38.77	47,604,653	16.81	63,091,137	22.27	24,934,174	8.80	30,986,939	10.94	6,814,796	2.41	283,255,584	2.89
Highway Patrol Retirement	48,483,958	38.85	21,012,005	16.84	27,866,093	22.33	11,013,096	8.82	13,692,054	10.97	2,743,029	2.20	124,810,235	1.27
Game Wardens' Retirement	53,662,817	38.63	23,297,290	16.77	30,862,596	22.22	12,227,686	8.80	15,207,180	10.95	3,662,870	2.64	138,920,439	1.42
Judges' Retirement	32,401,233	38.77	14,039,825	16.80	18,604,692	22.26	7,366,051	8.81	9,145,639	10.94	2,021,649	2.42	83,579,089	0.85
Volunteer Firefighters' Retirement	12,695,080	39.15	5,498,520	16.96	7,197,895	22.20	2,882,933	8.89	3,578,125	11.03	575,712	1.78	32,428,266	0.33
<b>Retirement Plans Total Fund Composite</b>	<b>3,803,911,670</b>	<b>38.84</b>	<b>1,648,867,268</b>	<b>16.84</b>	<b>2,184,840,242</b>	<b>22.31</b>	<b>863,611,297</b>	<b>8.82</b>	<b>1,073,412,182</b>	<b>10.96</b>	<b>219,515,570</b>	<b>2.24</b>	<b>9,794,158,230</b>	<b>100.00</b>

September 30, 2014 : \$9,794,158,230



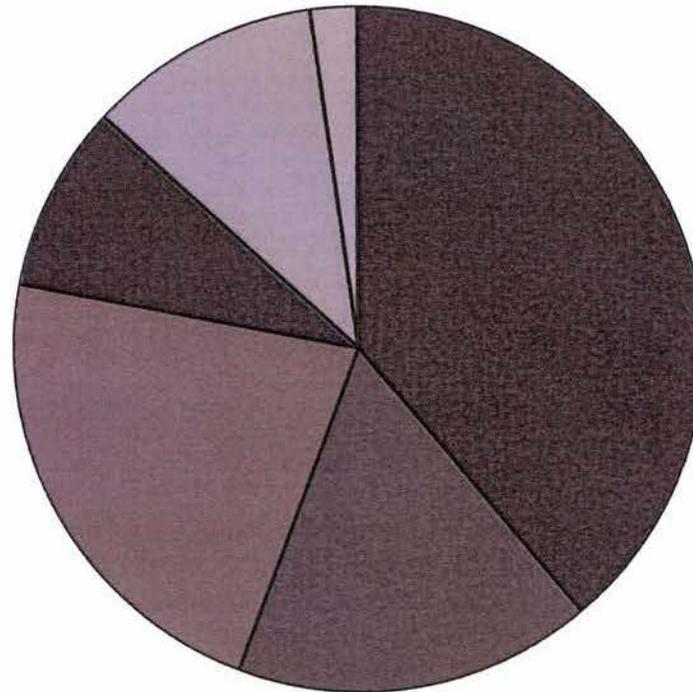
Segments	Market Value (\$)	Allocation (%)
Domestic Equity	3,803,911,670	38.84
International Equity	1,648,867,268	16.84
Domestic Fixed Income	2,184,840,242	22.31
Real Estate	863,611,297	8.82
Private Equity	1,073,412,182	10.96
Cash Equivalent	219,515,570	2.24

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



Montana Board of Investments  
 Public Employees' Retirement  
 Asset Allocation by Segment  
 As of September 30, 2014

September 30, 2014 : \$4,896,035,797

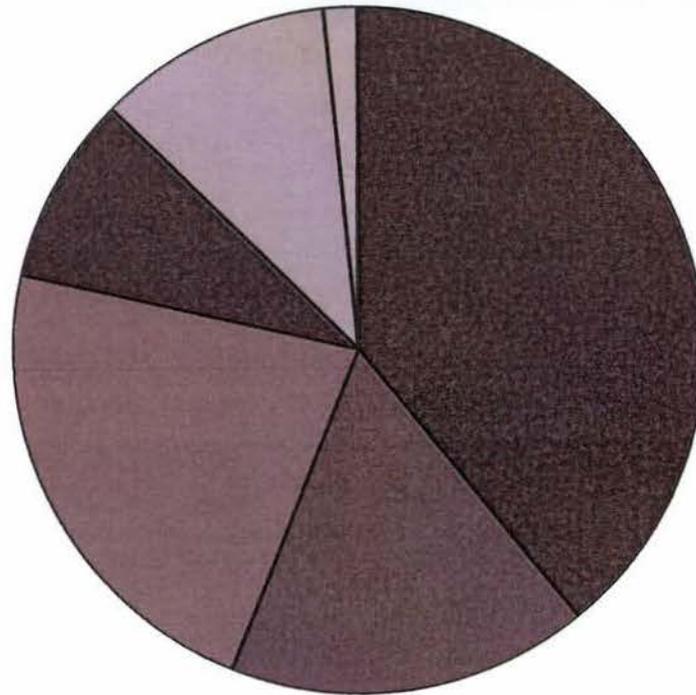


Segments	Market Value (\$)	Allocation (%)
Domestic Equity	1,902,481,629	38.86
International Equity	824,560,568	16.84
Domestic Fixed Income	1,092,370,302	22.31
Real Estate	431,802,488	8.82
Private Equity	536,443,579	10.96
Cash Equivalent	108,377,231	2.21

Allocations shown may not sum up to 100% exactly due to rounding.

Montana Board of Investments  
 Teachers' Retirement  
 Asset Allocation by Segment  
 As of September 30, 2014

September 30, 2014 : \$3,601,441,587

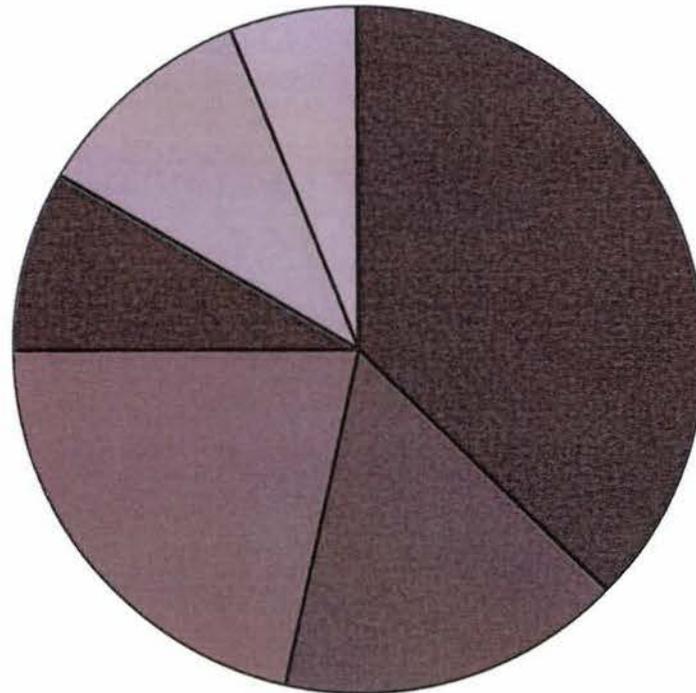


Segments	Market Value (\$)	Allocation (%)
■ Domestic Equity	1,407,774,531	39.09
■ International Equity	610,335,540	16.95
■ Domestic Fixed Income	808,834,534	22.46
■ Real Estate	319,620,107	8.87
■ Private Equity	397,579,486	11.04
■ Cash Equivalent	57,297,389	1.59

Allocations shown may not sum up to 100% exactly due to rounding.

Montana Board of Investments  
 Police Retirement  
 Asset Allocation by Segment  
 As of September 30, 2014

September 30, 2014 : \$315,435,915

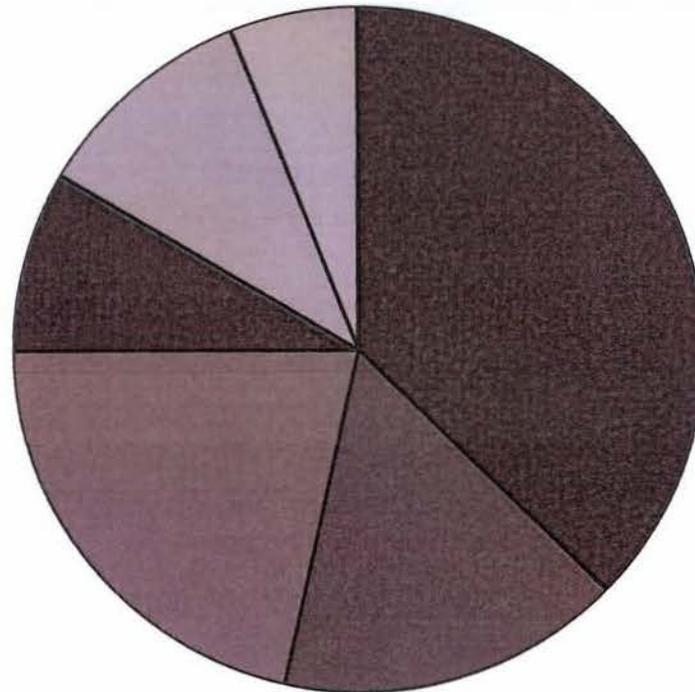


Segments	Market Value (\$)	Allocation (%)
Domestic Equity	117,775,455	37.34
International Equity	51,030,444	16.18
Domestic Fixed Income	67,703,220	21.46
Real Estate	26,763,945	8.48
Private Equity	33,239,132	10.54
Cash Equivalent	18,923,719	6.00

Allocations shown may not sum up to 100% exactly due to rounding.

Montana Board of Investments  
 Firefighters' Retirement  
 Asset Allocation by Segment  
 As of September 30, 2014

September 30, 2014 : \$318,251,318

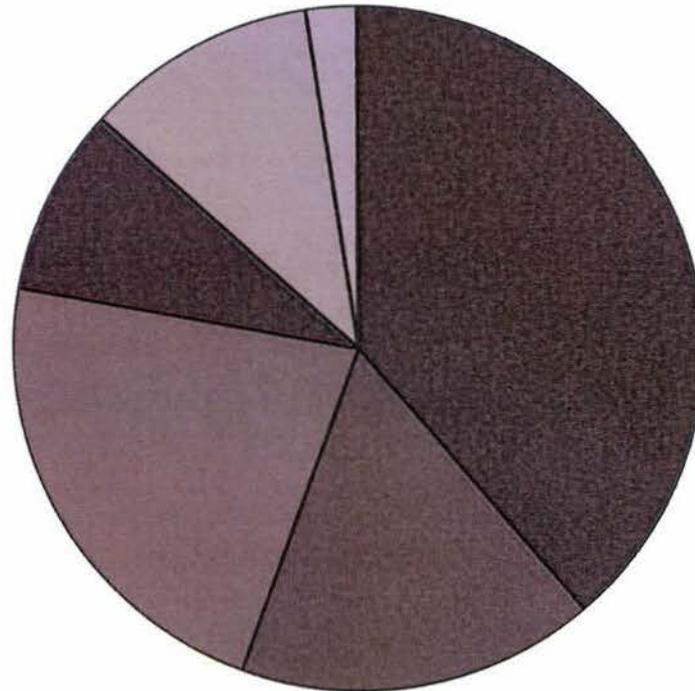


Segments	Market Value (\$)	Allocation (%)
■ Domestic Equity	118,813,082	37.33
■ International Equity	51,488,423	16.18
■ Domestic Fixed Income	68,309,772	21.46
■ Real Estate	27,000,819	8.48
■ Private Equity	33,540,047	10.54
■ Cash Equivalent	19,099,175	6.00

Allocations shown may not sum up to 100% exactly due to rounding.

Montana Board of Investments  
 Sheriffs' Retirement  
 Asset Allocation by Segment  
 As of September 30, 2014

September 30, 2014 : \$283,255,584

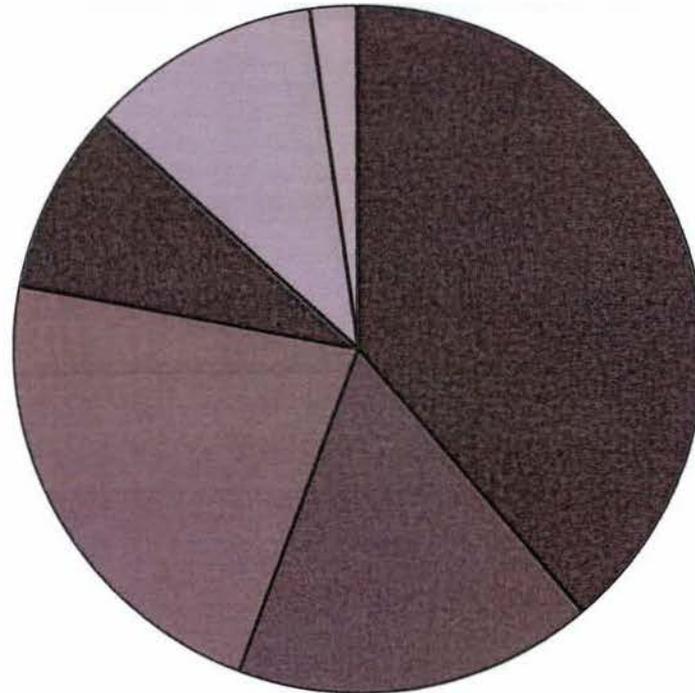


Segments	Market Value (\$)	Allocation (%)
Domestic Equity	109,823,885	38.77
International Equity	47,604,653	16.81
Domestic Fixed Income	63,091,137	22.27
Real Estate	24,934,174	8.80
Private Equity	30,986,939	10.94
Cash Equivalent	6,814,796	2.41

Allocations shown may not sum up to 100% exactly due to rounding.

Montana Board of Investments  
 Highway Patrol Retirement  
 Asset Allocation by Segment  
 As of September 30, 2014

September 30, 2014 : \$124,810,235

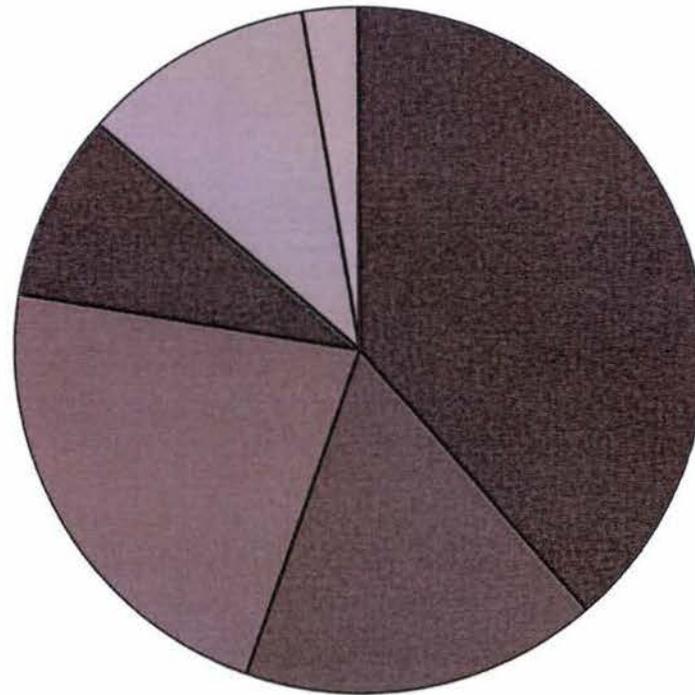


Segments	Market Value (\$)	Allocation (%)
Domestic Equity	48,483,958	38.85
International Equity	21,012,005	16.84
Domestic Fixed Income	27,866,093	22.33
Real Estate	11,013,096	8.82
Private Equity	13,692,054	10.97
Cash Equivalent	2,743,029	2.20

Allocations shown may not sum up to 100% exactly due to rounding.

Montana Board of Investments  
 Game Wardens' Retirement  
 Asset Allocation by Segment  
 As of September 30, 2014

September 30, 2014 : \$138,920,439

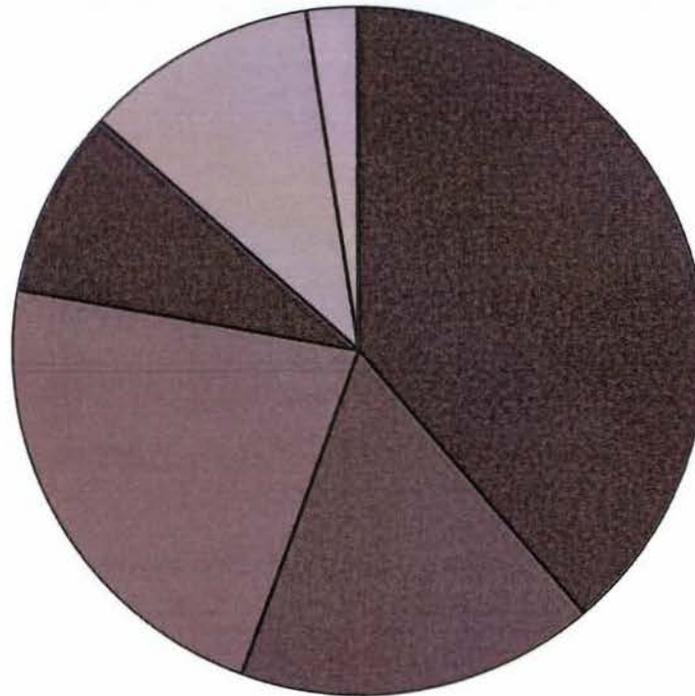


Segments	Market Value (\$)	Allocation (%)
Domestic Equity	53,662,817	38.63
International Equity	23,297,290	16.77
Domestic Fixed Income	30,862,596	22.22
Real Estate	12,227,686	8.80
Private Equity	15,207,180	10.95
Cash Equivalent	3,662,870	2.64

Allocations shown may not sum up to 100% exactly due to rounding.

Montana Board of Investments  
 Judges' Retirement  
 Asset Allocation by Segment  
 As of September 30, 2014

September 30, 2014 : \$83,579,089

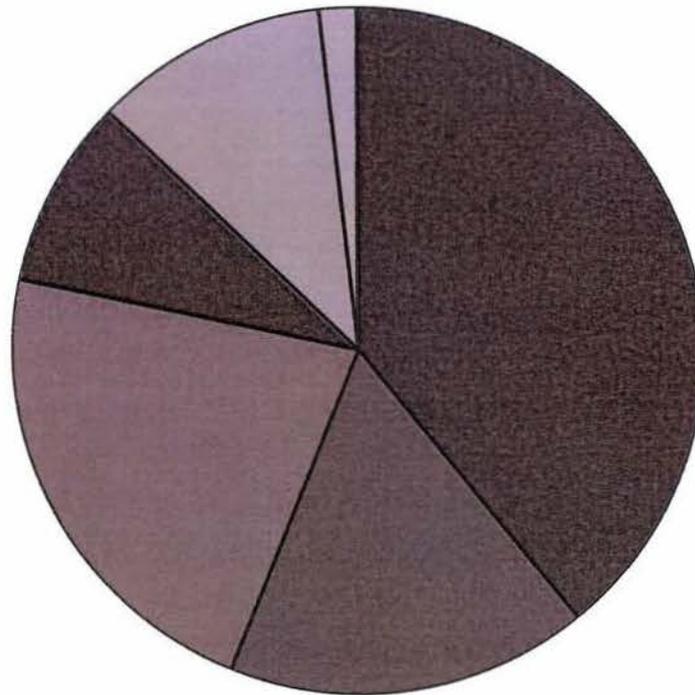


Segments	Market Value (\$)	Allocation (%)
■ Domestic Equity	32,401,233	38.77
■ International Equity	14,039,825	16.80
■ Domestic Fixed Income	18,604,692	22.26
■ Real Estate	7,366,051	8.81
■ Private Equity	9,145,639	10.94
■ Cash Equivalent	2,021,649	2.42

Allocations shown may not sum up to 100% exactly due to rounding.

**Montana Board of Investments  
 Volunteer Firefighters' Retirement  
 Asset Allocation by Segment  
 As of September 30, 2014**

September 30, 2014 : \$32,428,266



Segments	Market Value (\$)	Allocation (%)
■ Domestic Equity	12,695,080	39.15
■ International Equity	5,498,520	16.96
■ Domestic Fixed Income	7,197,895	22.20
■ Real Estate	2,882,933	8.89
■ Private Equity	3,578,125	11.03
■ Cash Equivalent	575,712	1.78

Allocations shown may not sum up to 100% exactly due to rounding.

**Montana Board of Investments**  
**Investment Pools**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
<b>Montana Domestic Equity Pool</b>	<b>0.09</b>	<b>6.87</b>	<b>18.07</b>	<b>23.83</b>	<b>15.71</b>	<b>5.97</b>	<b>7.90</b>	<b>24.19</b>	<b>16.44</b>	<b>0.44</b>	<b>16.37</b>	<b>29.05</b>
S&P 1500 Composite Index	0.44	7.49	18.57	22.96	15.78	6.24	8.34	32.80	16.17	1.75	16.38	27.25
<i>Difference</i>	<i>-0.35</i>	<i>-0.62</i>	<i>-0.50</i>	<i>0.87</i>	<i>-0.07</i>	<i>-0.27</i>	<i>-0.44</i>	<i>-8.61</i>	<i>-0.73</i>	<i>-1.31</i>	<i>0.01</i>	<i>1.80</i>
<b>Montana International Equity Pool</b>	<b>-5.62</b>	<b>-0.59</b>	<b>4.26</b>	<b>11.97</b>	<b>5.93</b>	<b>-1.43</b>	<b>5.86</b>	<b>16.39</b>	<b>17.11</b>	<b>-14.63</b>	<b>11.57</b>	<b>36.46</b>
International Custom Benchmark	-5.47	-0.16	4.59	11.79	6.17	0.00	6.90	15.62	16.96	-14.07	12.16	42.97
<i>Difference</i>	<i>-0.15</i>	<i>-0.43</i>	<i>-0.33</i>	<i>0.18</i>	<i>-0.24</i>	<i>-1.43</i>	<i>-1.04</i>	<i>0.77</i>	<i>0.15</i>	<i>-0.56</i>	<i>-0.59</i>	<i>-6.51</i>
<b>Retirement Funds Bond Pool</b>	<b>0.16</b>	<b>4.36</b>	<b>4.66</b>	<b>4.11</b>	<b>5.05</b>	<b>5.91</b>	<b>5.55</b>	<b>-0.95</b>	<b>7.31</b>	<b>7.69</b>	<b>10.32</b>	<b>12.11</b>
Barclays US Agg Bond Index	0.17	4.10	3.96	2.43	4.12	4.95	4.62	-2.02	4.21	7.84	6.54	5.93
<i>Difference</i>	<i>-0.01</i>	<i>0.26</i>	<i>0.70</i>	<i>1.68</i>	<i>0.93</i>	<i>0.96</i>	<i>0.93</i>	<i>1.07</i>	<i>3.10</i>	<i>-0.15</i>	<i>3.78</i>	<i>6.18</i>
<b>Trust Funds Investment Pool</b>	<b>0.42</b>	<b>4.94</b>	<b>5.49</b>	<b>4.44</b>	<b>5.89</b>	<b>6.14</b>	<b>5.72</b>	<b>-0.25</b>	<b>6.99</b>	<b>8.20</b>	<b>8.50</b>	<b>10.37</b>
Barclays US Agg Bond Index	0.17	4.10	3.96	2.43	4.12	4.95	4.62	-2.02	4.21	7.84	6.54	5.93
<i>Difference</i>	<i>0.25</i>	<i>0.84</i>	<i>1.53</i>	<i>2.01</i>	<i>1.77</i>	<i>1.19</i>	<i>1.10</i>	<i>1.77</i>	<i>2.78</i>	<i>0.36</i>	<i>1.96</i>	<i>4.44</i>
<b>Real Estate Pool*</b>	<b>3.03</b>	<b>9.12</b>	<b>12.11</b>	<b>10.51</b>	<b>7.15</b>	<b>-0.07</b>	<b>N/A</b>	<b>10.16</b>	<b>9.90</b>	<b>14.19</b>	<b>0.25</b>	<b>-33.65</b>
NCREIF ODCE Index (Net) (Qtr Lag)	2.69	8.12	11.74	11.38	8.97	1.80	6.15	11.97	10.47	17.18	6.01	-35.70
<i>Difference</i>	<i>0.34</i>	<i>1.00</i>	<i>0.37</i>	<i>-0.87</i>	<i>-1.82</i>	<i>-1.87</i>	<i>N/A</i>	<i>-1.81</i>	<i>-0.57</i>	<i>-2.99</i>	<i>-5.76</i>	<i>2.05</i>
<b>Short Term Investment Pool</b>	<b>0.02</b>	<b>0.08</b>	<b>0.12</b>	<b>0.22</b>	<b>0.25</b>	<b>0.83</b>	<b>1.88</b>	<b>0.19</b>	<b>0.30</b>	<b>0.28</b>	<b>0.30</b>	<b>0.70</b>
1 Month LIBOR Index	0.04	0.12	0.16	0.20	0.22	0.74	1.84	0.19	0.23	0.24	0.27	0.33
<i>Difference</i>	<i>-0.02</i>	<i>-0.04</i>	<i>-0.04</i>	<i>0.02</i>	<i>0.03</i>	<i>0.09</i>	<i>0.04</i>	<i>0.00</i>	<i>0.07</i>	<i>0.04</i>	<i>0.03</i>	<i>0.37</i>
<b>Short Term Investment Pool</b>	<b>0.02</b>	<b>0.08</b>	<b>0.12</b>	<b>0.22</b>	<b>0.25</b>	<b>0.83</b>	<b>1.88</b>	<b>0.19</b>	<b>0.30</b>	<b>0.28</b>	<b>0.30</b>	<b>0.70</b>
iMoneynet Money Fund (Gross) Median	0.04	0.12	0.17	0.24	0.27	0.88	1.92	0.22	0.30	0.27	0.34	0.69
<i>Difference</i>	<i>-0.02</i>	<i>-0.04</i>	<i>-0.05</i>	<i>-0.02</i>	<i>-0.02</i>	<i>-0.05</i>	<i>-0.04</i>	<i>-0.03</i>	<i>0.00</i>	<i>0.01</i>	<i>-0.04</i>	<i>0.01</i>

Performance shown is net of all manager fees and expenses (Net-All). The NCREIF ODCE Index (Net) performance is lagged by one quarter.  
\*Performance is based on prior quarter's fair market value adjusted for cash flows during the most recent quarterly period.  
Benchmark returns reflect unmanaged indices which are not impacted by management fees.

**Montana Board of Investments  
Investment Pools  
Comparative Performance  
As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
<b>Private Equity Pool*</b>	<b>4.14</b>	<b>14.03</b>	<b>18.78</b>	<b>13.51</b>	<b>16.00</b>	<b>7.89</b>	<b>11.84</b>	<b>14.52</b>	<b>14.28</b>	<b>16.11</b>	<b>14.21</b>	<b>-10.46</b>
S&P 1500 + 4% (Qtr Lag)	6.05	21.05	28.70	20.48	23.18	10.42	12.09	24.43	34.18	4.92	14.92	-2.76
<i>Difference</i>	-1.91	-7.02	-9.92	-6.97	-7.18	-2.53	-0.25	-9.91	-19.90	11.19	-0.71	-7.70

Performance shown is net of all manager fees and expenses (Net-All). The S&P 1500 + 4% performance is lagged by one quarter.

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

Benchmark returns reflect unmanaged indices which are not impacted by management fees.

**Montana Board of Investments**  
**Investment Pools**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
<b>Montana Domestic Equity Pool</b>	<b>0.15</b>	<b>7.09</b>	<b>18.39</b>	<b>23.40</b>	<b>16.12</b>	<b>6.35</b>	<b>8.20</b>	<b>34.61</b>	<b>16.77</b>	<b>0.85</b>	<b>16.88</b>	<b>29.58</b>
All Public Plans-US Equity Segment Median	-0.70	5.72	16.13	22.80	15.74	6.11	8.40	34.03	16.52	0.52	18.09	28.81
<b>Montana Domestic Equity Pool Rank</b>	<b>16</b>	<b>17</b>	<b>9</b>	<b>22</b>	<b>25</b>	<b>38</b>	<b>64</b>	<b>39</b>	<b>40</b>	<b>42</b>	<b>71</b>	<b>42</b>
Population	79	75	74	69	61	46	33	79	84	90	84	73
<b>Montana International Equity Pool</b>	<b>-5.56</b>	<b>-0.40</b>	<b>4.53</b>	<b>12.31</b>	<b>6.30</b>	<b>-1.04</b>	<b>6.24</b>	<b>16.80</b>	<b>17.45</b>	<b>-14.32</b>	<b>12.05</b>	<b>37.17</b>
All Public Plans-Intl. Equity Segment Median	-5.09	0.10	5.43	13.61	7.57	0.85	7.84	18.47	18.80	-12.65	12.33	37.84
<b>Montana International Equity Pool Rank</b>	<b>80</b>	<b>65</b>	<b>81</b>	<b>82</b>	<b>85</b>	<b>93</b>	<b>93</b>	<b>72</b>	<b>80</b>	<b>84</b>	<b>59</b>	<b>55</b>
Population	77	73	73	65	57	44	33	74	73	78	73	69
<b>Retirement Funds Bond Pool</b>	<b>0.19</b>	<b>4.45</b>	<b>4.78</b>	<b>4.24</b>	<b>6.07</b>	<b>6.01</b>	<b>5.63</b>	<b>-0.83</b>	<b>7.44</b>	<b>7.82</b>	<b>10.44</b>	<b>12.20</b>
All Public Plans-US Fixed Income Segment Median	-0.01	4.71	5.03	4.27	5.76	5.57	5.17	-1.35	7.23	7.74	8.05	13.76
<b>Retirement Funds Bond Pool Rank</b>	<b>34</b>	<b>58</b>	<b>58</b>	<b>52</b>	<b>43</b>	<b>35</b>	<b>28</b>	<b>39</b>	<b>48</b>	<b>47</b>	<b>17</b>	<b>55</b>
Population	74	71	71	68	55	44	32	76	83	87	80	76
<b>Trust Funds Investment Pool</b>	<b>0.45</b>	<b>5.02</b>	<b>5.60</b>	<b>4.55</b>	<b>5.99</b>	<b>6.22</b>	<b>5.78</b>	<b>-0.14</b>	<b>7.11</b>	<b>8.30</b>	<b>8.58</b>	<b>10.41</b>
All Public Plans-US Fixed Income Segment Median	-0.01	4.71	5.03	4.27	5.76	5.57	5.17	-1.35	7.23	7.74	8.05	13.76
<b>Trust Funds Investment Pool Rank</b>	<b>10</b>	<b>40</b>	<b>43</b>	<b>44</b>	<b>44</b>	<b>31</b>	<b>25</b>	<b>25</b>	<b>52</b>	<b>29</b>	<b>45</b>	<b>63</b>
Population	74	71	71	68	55	44	32	76	83	87	80	76
<b>Real Estate Pool</b>	<b>3.23</b>	<b>10.28</b>	<b>13.53</b>	<b>12.02</b>	<b>8.93</b>	<b>1.28</b>	<b>N/A</b>	<b>11.73</b>	<b>11.44</b>	<b>15.96</b>	<b>2.70</b>	<b>-33.14</b>
All Public Plans-Real Estate Segment Median	3.11	10.06	13.37	13.20	11.73	N/A	N/A	13.05	12.21	14.05	11.04	-25.46
<b>Real Estate Pool Rank</b>	<b>42</b>	<b>43</b>	<b>45</b>	<b>76</b>	<b>81</b>	<b>N/A</b>	<b>N/A</b>	<b>70</b>	<b>68</b>	<b>24</b>	<b>86</b>	<b>89</b>
Population	27	23	23	16	14	N/A	N/A	26	19	15	19	19

Performance shown is gross of fees.

**Montana Board of Investments**  
**Equity Composites**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
<b>Domestic Large Cap Equity - Net</b>	<b>1.10</b>	<b>8.26</b>	<b>19.86</b>	<b>23.00</b>	<b>15.70</b>	<b>5.76</b>	<b>N/A</b>	<b>33.14</b>	<b>16.14</b>	<b>0.54</b>	<b>15.67</b>	<b>28.13</b>
S&P 500 Index (Cap Wtd)	1.13	8.35	19.74	22.99	15.70	6.02	8.11	32.39	16.00	2.11	15.06	26.46
<i>Difference</i>	<i>-0.03</i>	<i>-0.09</i>	<i>-0.12</i>	<i>-0.01</i>	<i>-0.00</i>	<i>-0.27</i>	<i>N/A</i>	<i>0.75</i>	<i>0.14</i>	<i>-1.57</i>	<i>0.61</i>	<i>1.67</i>
<b>Domestic Large Cap Equity - Gross</b>	<b>1.14</b>	<b>8.38</b>	<b>20.03</b>	<b>23.23</b>	<b>15.99</b>	<b>6.01</b>	<b>N/A</b>	<b>33.34</b>	<b>16.39</b>	<b>0.87</b>	<b>16.07</b>	<b>28.52</b>
IM U.S. Large Cap Equity (SA+CF) Median	0.66	7.62	18.76	23.12	15.79	6.58	8.87	33.60	15.92	1.18	15.09	27.69
<b>Domestic Large Cap Equity - Gross Rank</b>	<b>36</b>	<b>33</b>	<b>33</b>	<b>45</b>	<b>44</b>	<b>69</b>	<b>N/A</b>	<b>54</b>	<b>43</b>	<b>54</b>	<b>37</b>	<b>47</b>
<b>Domestic Large Cap Active - Net</b>	<b>1.01</b>	<b>8.04</b>	<b>20.09</b>	<b>23.31</b>	<b>15.81</b>	<b>5.70</b>	<b>N/A</b>	<b>34.90</b>	<b>16.03</b>	<b>-0.10</b>	<b>15.70</b>	<b>28.69</b>
S&P 500 Index (Cap Wtd)	1.13	8.35	19.74	22.99	15.70	6.02	8.11	32.39	16.00	2.11	15.06	26.46
<i>Difference</i>	<i>-0.12</i>	<i>-0.31</i>	<i>-0.33</i>	<i>-0.32</i>	<i>-0.11</i>	<i>-0.32</i>	<i>N/A</i>	<i>2.51</i>	<i>0.03</i>	<i>-2.21</i>	<i>0.64</i>	<i>2.23</i>
<b>Domestic Large Cap Active - Gross</b>	<b>1.13</b>	<b>8.43</b>	<b>20.67</b>	<b>23.89</b>	<b>16.35</b>	<b>6.17</b>	<b>N/A</b>	<b>35.55</b>	<b>16.56</b>	<b>0.35</b>	<b>16.23</b>	<b>29.25</b>
IM U.S. Large Cap Equity (SA+CF) Median	0.66	7.62	18.76	23.12	15.79	6.58	8.87	33.60	15.92	1.18	15.09	27.69
<b>Domestic Large Cap Active - Gross Rank</b>	<b>37</b>	<b>32</b>	<b>35</b>	<b>36</b>	<b>35</b>	<b>64</b>	<b>N/A</b>	<b>34</b>	<b>40</b>	<b>59</b>	<b>36</b>	<b>44</b>
<b>Domestic Mid Cap Equity - Net</b>	<b>-3.21</b>	<b>3.08</b>	<b>13.07</b>	<b>23.29</b>	<b>16.02</b>	<b>7.78</b>	<b>N/A</b>	<b>38.18</b>	<b>16.27</b>	<b>1.28</b>	<b>18.15</b>	<b>37.88</b>
R Mid Cap Index	-1.66	6.87	15.83	23.79	17.19	7.46	10.34	34.76	17.28	-1.55	25.47	40.48
<i>Difference</i>	<i>-1.55</i>	<i>-3.79</i>	<i>-2.76</i>	<i>-0.50</i>	<i>-1.17</i>	<i>0.32</i>	<i>N/A</i>	<i>3.42</i>	<i>-1.01</i>	<i>2.83</i>	<i>-7.32</i>	<i>-2.60</i>
<b>Domestic Mid Cap Equity - Gross</b>	<b>-3.07</b>	<b>3.53</b>	<b>13.74</b>	<b>23.96</b>	<b>16.66</b>	<b>8.40</b>	<b>N/A</b>	<b>38.95</b>	<b>16.83</b>	<b>1.79</b>	<b>18.85</b>	<b>38.71</b>
IM U.S. Mid Cap Equity (SA+CF) Median	-2.00	4.15	13.28	22.63	16.59	7.93	10.70	36.06	16.36	-1.27	25.00	37.50
<b>Domestic Mid Cap Equity - Gross Rank</b>	<b>71</b>	<b>55</b>	<b>47</b>	<b>34</b>	<b>39</b>	<b>33</b>	<b>N/A</b>	<b>31</b>	<b>45</b>	<b>24</b>	<b>92</b>	<b>44</b>
<b>Domestic Small Cap Equity - Net</b>	<b>-5.62</b>	<b>-1.88</b>	<b>7.07</b>	<b>22.10</b>	<b>14.98</b>	<b>6.23</b>	<b>8.96</b>	<b>40.65</b>	<b>15.76</b>	<b>-2.50</b>	<b>24.56</b>	<b>32.04</b>
R 2000 Index	-7.36	-4.41	3.93	21.26	14.28	6.04	8.19	38.82	16.34	-4.18	26.86	27.18
<i>Difference</i>	<i>1.74</i>	<i>2.53</i>	<i>-3.14</i>	<i>-0.84</i>	<i>-0.70</i>	<i>-0.19</i>	<i>0.77</i>	<i>1.83</i>	<i>-0.58</i>	<i>1.68</i>	<i>-2.30</i>	<i>4.86</i>
<b>Domestic Small Cap Equity - Gross</b>	<b>-5.45</b>	<b>-1.37</b>	<b>7.80</b>	<b>22.86</b>	<b>15.75</b>	<b>6.94</b>	<b>9.55</b>	<b>41.54</b>	<b>16.40</b>	<b>-1.64</b>	<b>25.33</b>	<b>32.87</b>
IM U.S. Small Cap Equity (SA+CF) Median	-6.05	-3.20	5.97	23.11	16.25	7.47	9.94	41.90	16.63	-2.31	28.30	34.61
<b>Domestic Small Cap Equity - Gross Rank</b>	<b>87</b>	<b>52</b>	<b>37</b>	<b>53</b>	<b>69</b>	<b>63</b>	<b>58</b>	<b>52</b>	<b>62</b>	<b>45</b>	<b>73</b>	<b>56</b>

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all composites.

**Montana Board of Investments**  
**Equity Composites**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
<b>International Large Cap Passive - Net</b>	<b>-5.22</b>	<b>6.19</b>	<b>4.98</b>	<b>11.79</b>	<b>5.98</b>	<b>N/A</b>	<b>N/A</b>	<b>14.95</b>	<b>16.92</b>	<b>-13.55</b>	<b>10.84</b>	<b>N/A</b>
MSCI ACW Ex US Index (Net)	-5.27	0.00	4.77	11.79	6.03	-0.16	7.06	15.29	16.83	-13.71	11.15	41.46
<i>Difference</i>	<i>0.05</i>	<i>6.19</i>	<i>0.21</i>	<i>0.00</i>	<i>-0.05</i>	<i>0.02</i>	<i>-0.02</i>	<i>-0.34</i>	<i>-0.91</i>	<i>0.16</i>	<i>-0.31</i>	<i>N/A</i>
<b>International Large Cap Passive - Gross</b>	<b>-5.20</b>	<b>0.25</b>	<b>4.98</b>	<b>11.83</b>	<b>6.07</b>	<b>N/A</b>	<b>N/A</b>	<b>15.95</b>	<b>17.02</b>	<b>-13.48</b>	<b>10.92</b>	<b>N/A</b>
<b>International Equity Active - Net</b>	<b>-6.18</b>	<b>-1.68</b>	<b>3.50</b>	<b>12.66</b>	<b>6.21</b>	<b>-1.30</b>	<b>5.36</b>	<b>19.23</b>	<b>17.87</b>	<b>-15.39</b>	<b>11.99</b>	<b>36.81</b>
MSCI ACW Ex US Index (Net)	-5.27	0.00	4.77	11.79	6.03	-0.16	7.06	15.29	16.83	-13.71	11.15	41.46
<i>Difference</i>	<i>-0.91</i>	<i>-1.68</i>	<i>-1.27</i>	<i>0.87</i>	<i>0.18</i>	<i>-1.14</i>	<i>-1.70</i>	<i>3.94</i>	<i>1.04</i>	<i>-1.68</i>	<i>0.84</i>	<i>-4.65</i>
<b>International Equity Active - Gross</b>	<b>-6.08</b>	<b>-1.37</b>	<b>3.95</b>	<b>13.15</b>	<b>6.71</b>	<b>-0.83</b>	<b>5.83</b>	<b>19.75</b>	<b>18.36</b>	<b>-14.98</b>	<b>12.59</b>	<b>37.55</b>
IM International Large Cap Core Equity (MF) Median	-5.62	-1.70	3.82	13.46	5.97	-0.46	5.96	20.45	18.04	-12.94	7.50	28.92
<b>International Equity Active - Gross Rank</b>	<b>62</b>	<b>37</b>	<b>44</b>	<b>61</b>	<b>24</b>	<b>69</b>	<b>56</b>	<b>64</b>	<b>45</b>	<b>80</b>	<b>10</b>	<b>16</b>
<b>International Value - Net</b>	<b>-5.53</b>	<b>1.89</b>	<b>7.70</b>	<b>12.59</b>	<b>5.59</b>	<b>-2.48</b>	<b>N/A</b>	<b>17.15</b>	<b>15.88</b>	<b>-15.46</b>	<b>9.91</b>	<b>41.79</b>
MSCI ACW Ex US Value Index (Net)	-5.65	0.36	5.25	11.75	5.27	-0.36	6.93	15.04	16.97	-13.20	7.84	44.29
<i>Difference</i>	<i>0.12</i>	<i>1.53</i>	<i>2.45</i>	<i>0.75</i>	<i>0.32</i>	<i>-2.12</i>	<i>N/A</i>	<i>2.11</i>	<i>-1.09</i>	<i>-2.26</i>	<i>2.07</i>	<i>-2.50</i>
<b>International Value - Gross</b>	<b>-5.40</b>	<b>2.31</b>	<b>8.30</b>	<b>13.14</b>	<b>6.22</b>	<b>-1.90</b>	<b>N/A</b>	<b>17.82</b>	<b>16.55</b>	<b>-14.96</b>	<b>10.60</b>	<b>42.68</b>
IM International Large Cap Value Equity (SA+CF) Median	-5.68	-0.74	5.76	13.60	7.70	1.20	7.54	23.19	17.87	-10.65	10.64	33.99
<b>International Value - Gross Rank</b>	<b>42</b>	<b>19</b>	<b>20</b>	<b>61</b>	<b>76</b>	<b>95</b>	<b>N/A</b>	<b>76</b>	<b>65</b>	<b>75</b>	<b>51</b>	<b>19</b>
<b>International Growth - Net</b>	<b>-5.99</b>	<b>-4.73</b>	<b>-0.51</b>	<b>11.94</b>	<b>5.35</b>	<b>-1.56</b>	<b>N/A</b>	<b>18.55</b>	<b>18.37</b>	<b>-14.99</b>	<b>10.86</b>	<b>42.53</b>
MSCI ACW Ex US Growth Index (Net)	-4.89	-0.35	4.29	11.81	6.78	0.00	7.15	15.49	16.67	-14.21	14.45	38.67
<i>Difference</i>	<i>-1.10</i>	<i>-4.38</i>	<i>-4.80</i>	<i>0.13</i>	<i>-0.93</i>	<i>-1.56</i>	<i>N/A</i>	<i>3.06</i>	<i>1.70</i>	<i>-0.78</i>	<i>-3.59</i>	<i>3.86</i>
<b>International Growth - Gross</b>	<b>-5.88</b>	<b>-4.41</b>	<b>-0.06</b>	<b>12.44</b>	<b>6.39</b>	<b>-1.05</b>	<b>N/A</b>	<b>19.09</b>	<b>18.89</b>	<b>-14.56</b>	<b>11.56</b>	<b>43.35</b>
IM International Large Cap Growth Equity (SA+CF) Median	-5.06	-1.33	4.64	14.64	8.69	1.73	8.07	20.98	19.61	-11.20	13.16	36.59
<b>International Growth - Gross Rank</b>	<b>72</b>	<b>83</b>	<b>26</b>	<b>85</b>	<b>91</b>	<b>87</b>	<b>N/A</b>	<b>69</b>	<b>60</b>	<b>80</b>	<b>64</b>	<b>75</b>

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all composites.

**Montana Board of Investments**  
**Equity Composites**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
<b>International Small Cap - Net</b>	-7.55	-1.53	4.42	18.96	8.94	8.95	N/A	25.30	18.64	-15.36	24.34	36.86
MSCI ACWI Ex US Sm Cap Index IMI (Net)	-6.80	-0.06	4.56	12.50	8.33	1.68	8.98	19.73	18.52	-18.50	25.21	62.91
<i>Difference</i>	-0.75	-1.47	-0.14	6.46	0.61	-0.73	N/A	5.57	0.12	3.14	-0.87	-26.05
<b>International Small Cap - Gross</b>	-7.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
IM International Small Cap Equity (SA+CF) Median	-7.04	-1.16	6.25	17.44	11.82	3.38	10.37	31.15	23.58	-13.67	23.58	45.05
<b>International Small Cap - Gross Rank</b>	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all composites.

**Montana Board of Investments**  
**Equity Sub Composites**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
<b>Domestic Large Cap Passive - Net</b>	<b>1.13</b>	<b>8.35</b>	<b>19.75</b>	<b>23.83</b>	<b>15.78</b>	<b>6.04</b>	<b>8.14</b>	<b>32.41</b>	<b>16.06</b>	<b>2.20</b>	<b>15.22</b>	<b>26.88</b>
S&P 500 Index (Cap Wtd)	1.13	8.35	19.74	22.99	15.70	6.02	8.11	32.39	16.00	2.11	15.06	26.46
<i>Difference</i>									<i>0.06</i>	<i>0.09</i>	<i>0.16</i>	<i>0.42</i>
<b>Domestic Large Cap Passive - Gross</b>	<b>1.13</b>	<b>8.36</b>	<b>19.76</b>	<b>23.84</b>	<b>15.79</b>	<b>6.13</b>	<b>8.20</b>	<b>32.42</b>	<b>16.07</b>	<b>2.21</b>	<b>15.23</b>	<b>26.78</b>
IM U.S. Large Cap Index Equity (SA+CF) Median	0.74	8.03	19.13	23.01	15.69	6.11	8.20	32.47	16.23	1.61	15.53	26.75
<b>Domestic Large Cap Passive - Gross Rank</b>	<b>26</b>	<b>16</b>	<b>16</b>	<b>45</b>	<b>41</b>	<b>43</b>	<b>51</b>	<b>60</b>	<b>56</b>	<b>22</b>	<b>58</b>	<b>50</b>
<b>Domestic Large Cap Enhanced - Net</b>	<b>0.74</b>	<b>7.56</b>	<b>19.21</b>	<b>23.13</b>	<b>16.36</b>	<b>5.36</b>	<b>N/A</b>	<b>32.89</b>	<b>16.87</b>	<b>1.94</b>	<b>17.19</b>	<b>30.65</b>
S&P 500 Index (Cap Wtd)	1.13	8.35	19.74	22.99	15.70	6.02	8.11	32.39	16.00	2.11	15.06	26.46
<i>Difference</i>	<i>-0.39</i>	<i>-0.79</i>	<i>-0.53</i>	<i>-0.14</i>	<i>0.66</i>	<i>-0.66</i>	<i>N/A</i>	<i>0.50</i>	<i>0.87</i>	<i>-0.17</i>	<i>2.13</i>	<i>4.19</i>
<b>Domestic Large Cap Enhanced - Gross</b>	<b>0.82</b>	<b>7.81</b>	<b>19.53</b>	<b>23.51</b>	<b>16.72</b>	<b>5.68</b>	<b>N/A</b>	<b>33.31</b>	<b>17.21</b>	<b>2.25</b>	<b>17.55</b>	<b>31.04</b>
IM U.S. Large Cap Core Equity (SA+CF) Median	0.91	7.99	19.25	23.27	15.83	6.74	8.97	33.39	15.73	1.93	14.82	26.57
<b>Domestic Large Cap Enhanced - Gross Rank</b>	<b>51</b>	<b>53</b>	<b>47</b>	<b>45</b>	<b>27</b>	<b>83</b>	<b>N/A</b>	<b>51</b>	<b>31</b>	<b>46</b>	<b>19</b>	<b>29</b>
<b>Domestic Large Cap 130/30 - Net</b>	<b>1.27</b>	<b>8.51</b>	<b>20.98</b>	<b>24.49</b>	<b>15.96</b>	<b>N/A</b>	<b>N/A</b>	<b>36.94</b>	<b>18.42</b>	<b>-1.74</b>	<b>13.68</b>	<b>30.08</b>
S&P 500 Index (Cap Wtd)	1.13	8.35	19.74	22.99	15.70	6.02	8.11	32.39	16.00	2.11	15.06	26.46
<i>Difference</i>	<i>0.14</i>	<i>0.16</i>	<i>1.24</i>	<i>1.50</i>	<i>0.26</i>	<i>N/A</i>	<i>N/A</i>	<i>4.55</i>	<i>2.42</i>	<i>-3.85</i>	<i>-1.38</i>	<i>3.62</i>
<b>Domestic Large Cap 130/30 - Gross</b>	<b>1.43</b>	<b>9.05</b>	<b>21.77</b>	<b>25.31</b>	<b>16.73</b>	<b>N/A</b>	<b>N/A</b>	<b>37.83</b>	<b>19.18</b>	<b>-1.05</b>	<b>14.44</b>	<b>30.90</b>
IM U.S. Large Cap Core Equity (SA+CF) Median	0.91	7.99	19.25	23.27	15.83	6.74	8.97	33.39	15.73	1.93	14.82	26.57
<b>Domestic Large Cap 130/30 - Gross Rank</b>	<b>38</b>	<b>28</b>	<b>28</b>	<b>14</b>	<b>16</b>	<b>N/A</b>	<b>N/A</b>	<b>12</b>	<b>14</b>	<b>76</b>	<b>57</b>	<b>29</b>

Net performance shown is net of all manager fees and expenses (Net-All). Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all composites.

**Montana Board of Investments**  
**Domestic Equity Managers**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009	Since Incep.	Inception Date
<b>Domestic Large Cap Equity</b>														
Analytic Investors 130/30 (SA) - Net	0.70	7.14	19.67	22.33	15.76	N/A	N/A	35.22	17.38	3.13	10.59	23.03	7.42	03/01/2008
S&P 500 Index (Cap Wtd)	1.13	8.35	19.74	22.99	15.70	6.02	8.11	32.39	16.00	2.11	15.06	26.46	8.52	
<i>Difference</i>	<i>-0.43</i>	<i>-1.21</i>	<i>-0.07</i>	<i>-0.66</i>	<i>0.06</i>	<i>N/A</i>	<i>N/A</i>	<i>2.83</i>	<i>1.38</i>	<i>1.02</i>	<i>-4.47</i>	<i>-3.43</i>	<i>-1.10</i>	
Analytic Investors 130/30 (SA) - Gross	0.82	7.53	20.24	22.93	16.36	N/A	N/A	35.86	17.94	3.70	11.21	23.71	7.99	03/01/2008
IM U.S. Large Cap Core Equity (SA+CF) Median	0.91	7.99	19.25	23.27	15.83	6.74	8.97	33.39	15.73	1.93	14.82	26.57	8.95	
Analytic Investors 130/30 (SA) - Gross Rank	52	59	36	59	37	N/A	N/A	24	24	31	86	68	82	
<b>BlackRock Equity Idx Fund A (CF) - Net</b>	<b>1.13</b>	<b>8.35</b>	<b>19.75</b>	<b>23.03</b>	<b>15.77</b>	<b>6.12</b>	<b>8.19</b>	<b>32.41</b>	<b>16.05</b>	<b>2.19</b>	<b>15.19</b>	<b>26.80</b>	<b>4.20</b>	<b>05/01/2000</b>
S&P 500 Index (Cap Wtd)	1.13	8.35	19.74	22.99	15.70	6.02	8.11	32.39	16.00	2.11	15.06	26.46	4.13	
<i>Difference</i>	<i>0.00</i>	<i>0.00</i>	<i>0.01</i>	<i>0.04</i>	<i>0.07</i>	<i>0.10</i>	<i>0.08</i>	<i>0.02</i>	<i>0.05</i>	<i>0.08</i>	<i>0.13</i>	<i>0.34</i>	<i>0.07</i>	
<b>BlackRock Equity Idx Fund A (CF) - Gross</b>	<b>1.13</b>	<b>8.36</b>	<b>19.76</b>	<b>23.04</b>	<b>15.78</b>	<b>6.14</b>	<b>8.21</b>	<b>32.42</b>	<b>16.06</b>	<b>2.22</b>	<b>15.20</b>	<b>26.80</b>	<b>4.21</b>	<b>05/01/2000</b>
IM U.S. Large Cap Index Equity (SA+CF) Median	0.74	8.03	19.13	23.01	15.69	6.11	8.20	32.47	16.23	1.61	15.53	26.75	4.21	
BlackRock Equity Idx Fund A (CF) - Gross Rank	26	16	16	45	42	47	46	60	56	22	60	47	53	
<b>Domestic Equity Pool SPIF - Net</b>	<b>1.09</b>	<b>7.98</b>	<b>19.14</b>	<b>23.11</b>	<b>15.73</b>	<b>5.77</b>	<b>7.81</b>	<b>31.85</b>	<b>17.26</b>	<b>1.81</b>	<b>15.35</b>	<b>25.52</b>	<b>8.37</b>	<b>07/01/2003</b>
S&P 500 Index (Cap Wtd)	1.13	8.35	19.74	22.99	15.70	6.02	8.11	32.39	16.00	2.11	15.06	26.46	8.67	
<i>Difference</i>	<i>-0.04</i>	<i>-0.37</i>	<i>-0.60</i>	<i>0.12</i>	<i>0.03</i>	<i>-0.25</i>	<i>-0.30</i>	<i>-0.54</i>	<i>1.26</i>	<i>-0.30</i>	<i>0.29</i>	<i>-0.94</i>	<i>-0.30</i>	
<b>Domestic Equity Pool SPIF - Gross</b>	<b>N/A</b>	<b>07/01/2003</b>												
IM U.S. Large Cap Index Equity (SA+CF) Median	0.74	8.03	19.13	23.01	15.69	6.11	8.20	32.47	16.23	1.61	15.53	26.75	8.91	
Domestic Equity Pool SPIF - Gross Rank	N/A													
<b>INTECH Enhanced Plus (SA) - Net</b>	<b>1.18</b>	<b>8.14</b>	<b>20.30</b>	<b>22.81</b>	<b>16.08</b>	<b>6.50</b>	<b>N/A</b>	<b>32.46</b>	<b>14.89</b>	<b>4.33</b>	<b>15.44</b>	<b>25.18</b>	<b>7.79</b>	<b>06/01/2006</b>
S&P 500 Index (Cap Wtd)	1.13	8.35	19.74	22.99	15.70	6.02	8.11	32.39	16.00	2.11	15.06	26.46	7.70	
<i>Difference</i>	<i>0.05</i>	<i>-0.21</i>	<i>0.56</i>	<i>-0.18</i>	<i>0.38</i>	<i>0.48</i>	<i>N/A</i>	<i>0.07</i>	<i>-1.11</i>	<i>2.22</i>	<i>0.38</i>	<i>-1.28</i>	<i>0.09</i>	
<b>INTECH Enhanced Plus (SA) - Gross</b>	<b>1.26</b>	<b>8.42</b>	<b>20.72</b>	<b>23.23</b>	<b>16.47</b>	<b>6.86</b>	<b>N/A</b>	<b>32.92</b>	<b>15.28</b>	<b>4.68</b>	<b>15.82</b>	<b>25.60</b>	<b>8.16</b>	<b>06/01/2006</b>
IM U.S. Large Cap Core Equity (SA+CF) Median	0.91	7.99	19.25	23.27	15.83	6.74	8.97	33.39	15.73	1.93	14.82	26.57	8.27	
INTECH Enhanced Plus (SA) - Gross Rank	37	40	29	52	33	43	N/A	54	59	20	33	56	55	

Net performance shown is net of all manager fees and expenses (Net-All).

Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds.

**Montana Board of Investments**  
**Domestic Equity Managers**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009	Since Incep.	Inception Date
<b>T. Rowe U.S. Research (SA) - Net</b>	<b>0.59</b>	<b>7.36</b>	<b>18.83</b>	<b>22.98</b>	<b>15.38</b>	<b>6.36</b>	<b>N/A</b>	<b>33.23</b>	<b>16.42</b>	<b>1.67</b>	<b>13.90</b>	<b>30.02</b>	<b>8.10</b>	<b>06/01/2006</b>
S&P 500 Index (Cap Wtd)	1.13	8.35	19.74	22.99	15.70	6.02	8.11	32.39	16.00	2.11	15.06	26.46	7.70	
<i>Difference</i>	<i>-0.54</i>	<i>-0.99</i>	<i>-0.91</i>	<i>-0.01</i>	<i>-0.32</i>	<i>0.34</i>	<i>N/A</i>	<i>0.84</i>	<i>0.42</i>	<i>-0.44</i>	<i>-1.16</i>	<i>3.56</i>	<i>0.40</i>	
<b>T. Rowe U.S. Research (SA) - Gross</b>	<b>0.66</b>	<b>7.60</b>	<b>19.19</b>	<b>23.35</b>	<b>15.72</b>	<b>6.69</b>	<b>N/A</b>	<b>33.63</b>	<b>16.77</b>	<b>1.98</b>	<b>14.25</b>	<b>30.45</b>	<b>8.44</b>	<b>06/01/2006</b>
IM U.S. Large Cap Core Equity (SA+CF) Median	0.91	7.99	19.25	23.27	15.83	6.74	8.97	33.39	15.73	1.93	14.82	26.57	8.27	
<b>T. Rowe U.S. Research (SA) - Gross Rank</b>	<b>57</b>	<b>58</b>	<b>52</b>	<b>49</b>	<b>53</b>	<b>52</b>	<b>N/A</b>	<b>47</b>	<b>36</b>	<b>50</b>	<b>59</b>	<b>31</b>	<b>42</b>	
<b>J.P. Morgan 130/30 (SA) - Net</b>	<b>1.47</b>	<b>9.02</b>	<b>21.46</b>	<b>25.22</b>	<b>16.15</b>	<b>N/A</b>	<b>N/A</b>	<b>37.55</b>	<b>18.64</b>	<b>-3.38</b>	<b>14.73</b>	<b>37.37</b>	<b>10.54</b>	<b>03/01/2008</b>
S&P 500 Index (Cap Wtd)	1.13	8.35	19.74	22.99	15.70	6.02	8.11	32.39	16.00	2.11	15.06	26.46	8.52	
<i>Difference</i>	<i>0.34</i>	<i>0.67</i>	<i>1.72</i>	<i>2.23</i>	<i>0.45</i>	<i>N/A</i>	<i>N/A</i>	<i>5.16</i>	<i>2.64</i>	<i>-5.49</i>	<i>-0.33</i>	<i>10.91</i>	<i>2.02</i>	
<b>J.P. Morgan 130/30 (SA) - Gross</b>	<b>1.65</b>	<b>9.60</b>	<b>22.32</b>	<b>26.12</b>	<b>16.99</b>	<b>N/A</b>	<b>N/A</b>	<b>38.53</b>	<b>19.48</b>	<b>-2.65</b>	<b>15.55</b>	<b>38.30</b>	<b>11.34</b>	<b>03/01/2008</b>
IM U.S. Large Cap Core Equity (SA+CF) Median	0.91	7.99	19.25	23.27	15.83	6.74	8.97	33.39	15.73	1.93	14.82	26.57	8.95	
<b>J.P. Morgan 130/30 (SA) - Gross Rank</b>	<b>22</b>	<b>19</b>	<b>16</b>	<b>6</b>	<b>20</b>	<b>N/A</b>	<b>N/A</b>	<b>10</b>	<b>12</b>	<b>85</b>	<b>37</b>	<b>9</b>	<b>5</b>	
<b>Domestic Mid Cap Equity</b>														
<b>Artisan Partners (SA) - Net</b>	<b>-4.44</b>	<b>0.45</b>	<b>8.16</b>	<b>20.52</b>	<b>15.30</b>	<b>8.96</b>	<b>N/A</b>	<b>37.20</b>	<b>12.02</b>	<b>6.93</b>	<b>14.99</b>	<b>40.63</b>	<b>8.68</b>	<b>03/01/2007</b>
R Mid Cap Value Index	-2.65	8.20	17.46	24.72	17.24	7.28	10.17	33.46	18.51	-1.38	24.75	34.21	6.86	
<i>Difference</i>	<i>-1.79</i>	<i>-7.75</i>	<i>-9.30</i>	<i>-4.20</i>	<i>-1.94</i>	<i>1.68</i>	<i>N/A</i>	<i>3.74</i>	<i>-6.49</i>	<i>8.31</i>	<i>-9.76</i>	<i>6.42</i>	<i>1.82</i>	
<b>Artisan Partners (SA) - Gross</b>	<b>-4.29</b>	<b>0.95</b>	<b>8.86</b>	<b>21.33</b>	<b>16.09</b>	<b>9.73</b>	<b>N/A</b>	<b>38.11</b>	<b>12.79</b>	<b>7.69</b>	<b>15.82</b>	<b>41.66</b>	<b>9.47</b>	<b>03/01/2007</b>
IM U.S. Mid Cap Value Equity (SA+CF) Median	-2.63	5.79	15.83	23.87	16.86	8.02	10.77	35.46	17.08	-0.84	22.30	34.91	8.13	
<b>Artisan Partners (SA) - Gross Rank</b>	<b>85</b>	<b>93</b>	<b>95</b>	<b>92</b>	<b>69</b>	<b>22</b>	<b>N/A</b>	<b>36</b>	<b>86</b>	<b>1</b>	<b>93</b>	<b>22</b>	<b>26</b>	
<b>BlackRock Mid Cap Eq Idx A (CF) - Net</b>	<b>-3.99</b>	<b>3.19</b>	<b>11.79</b>	<b>22.42</b>	<b>16.37</b>	<b>8.12</b>	<b>N/A</b>	<b>33.51</b>	<b>17.90</b>	<b>-1.72</b>	<b>26.65</b>	<b>37.51</b>	<b>9.34</b>	<b>01/01/2005</b>
S&P MidCap 400 Index (Cap Wtd)	-3.98	3.22	11.82	22.43	16.37	8.08	10.29	33.50	17.88	-1.73	26.64	37.38	9.27	
<i>Difference</i>	<i>-0.01</i>	<i>-0.03</i>	<i>-0.03</i>	<i>-0.01</i>	<i>0.00</i>	<i>0.04</i>	<i>N/A</i>	<i>0.01</i>	<i>0.02</i>	<i>0.01</i>	<i>0.01</i>	<i>0.13</i>	<i>0.07</i>	
<b>BlackRock Mid Cap Eq Idx A (CF) - Gross</b>	<b>-3.96</b>	<b>3.26</b>	<b>11.89</b>	<b>22.53</b>	<b>16.46</b>	<b>8.20</b>	<b>N/A</b>	<b>33.62</b>	<b>18.00</b>	<b>-1.65</b>	<b>26.72</b>	<b>37.53</b>	<b>9.40</b>	<b>01/01/2005</b>

Net performance shown is net of all manager fees and expenses (Net-All).

Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds.

**Montana Board of Investments**  
**Domestic Equity Managers**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009	Since Incep.	Inception Date
<b>Iridian Asset Management (SA) - Net</b>	-2.75	8.39	22.11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	25.22	05/01/2013
R Mid Cap Value Index	-2.65	8.20	17.46	24.72	17.24	7.28	10.17	33.46	18.51	-1.38	24.75	34.21	17.08	
<i>Difference</i>	-0.10	0.19	4.65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.14	
<b>Iridian Asset Management (SA) - Gross</b>	-2.56	9.03	23.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	26.21	05/01/2013
IM U.S. Mid Cap Value Equity (SA+CF) Median	-2.63	5.79	15.83	23.87	16.86	8.02	10.77	35.46	17.08	-0.84	22.30	34.91	18.22	
<b>Iridian Asset Management (SA) - Gross Rank</b>	45	42	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	
<b>Nicholas Investment Partners (SA) - Net</b>	-2.62	7.19	16.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.98	05/01/2013
R Mid Cap Growth Index	-0.73	5.73	14.43	22.74	17.12	7.45	10.24	35.74	15.81	-1.65	26.38	46.29	18.27	
<i>Difference</i>	-1.89	1.46	2.26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.71	
<b>Nicholas Investment Partners (SA) - Gross</b>	-2.44	7.79	17.57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.89	05/01/2013
IM U.S. Mid Cap Growth Equity (SA+CF) Median	-1.73	2.80	11.79	21.27	16.43	7.36	10.61	36.35	15.09	-1.45	26.75	41.64	17.42	
<b>Nicholas Investment Partners (SA) - Gross Rank</b>	74	5	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5	
<b>TimesSquare Capital Mgmt. (SA) - Net</b>	-1.96	2.01	14.03	23.77	15.88	8.39	N/A	37.79	19.19	-1.37	18.48	37.60	9.03	03/01/2007
R Mid Cap Growth Index	-0.73	5.73	14.43	22.74	17.12	7.45	10.24	35.74	15.81	-1.65	26.38	46.29	8.16	
<i>Difference</i>	-1.23	-3.72	-0.40	1.03	-1.24	0.94	N/A	2.05	3.38	0.28	-7.90	-8.69	0.87	
<b>TimesSquare Capital Mgmt. (SA) - Gross</b>	-1.79	2.54	14.82	24.64	16.70	9.18	N/A	38.75	20.03	-0.64	19.33	38.59	9.82	03/01/2007
IM U.S. Mid Cap Growth Equity (SA+CF) Median	-1.73	2.80	11.79	21.27	16.43	7.36	10.61	36.35	15.09	-1.45	26.75	41.64	8.85	
<b>TimesSquare Capital Mgmt. (SA) - Gross Rank</b>	54	54	22	17	37	16	N/A	34	14	44	96	59	26	

Net performance shown is net of all manager fees and expenses (Net-All).

Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds.

**Montana Board of Investments**  
**Domestic Equity Managers**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009	Since Incep.	Inception Date
<b>Domestic Small Cap Equity</b>														
<b>Alliance Bernstein (SA) - Net</b>	-6.17	-4.47	3.79	N/A	N/A	N/A	N/A	45.22	N/A	N/A	N/A	N/A	12.87	04/01/2012
R 2000 Growth Index	-6.13	-4.05	3.79	21.91	15.51	6.92	9.03	43.30	14.59	-2.91	29.09	34.47	14.11	
<i>Difference</i>	-0.04	-0.42	0.00	N/A	N/A	N/A	N/A	1.92	N/A	N/A	N/A	N/A	-1.24	
<b>Alliance Bernstein (SA) - Gross</b>	-5.96	-3.82	4.73	N/A	N/A	N/A	N/A	46.52	N/A	N/A	N/A	N/A	13.88	04/01/2012
IM U.S. Small Cap Growth Equity (SA+CF) Median	-5.48	-4.48	4.18	22.39	16.82	7.24	10.18	46.69	14.70	-1.68	28.95	37.61	14.51	
<b>Alliance Bernstein (SA) - Gross Rank</b>	64	42	45	N/A	N/A	N/A	N/A	51	N/A	N/A	N/A	N/A	60	
<b>DFA US Small Cap Trust (CF) - Net</b>	-6.61	-4.28	5.68	22.86	16.25	7.34	9.34	42.42	18.20	-2.07	29.73	30.13	12.92	03/01/2003
R 2000 Index	-7.36	-4.41	3.93	21.26	14.28	6.04	8.19	38.82	16.34	-4.18	26.86	27.18	11.58	
<i>Difference</i>	0.75	0.13	1.75	1.60	1.97	1.30	1.15	3.60	1.86	2.11	2.87	2.95	1.34	
<b>DFA US Small Cap Trust (CF) - Gross</b>	-6.53	-4.02	6.05	23.28	16.66	7.72	9.67	42.90	18.59	-1.70	30.17	30.55	13.22	03/01/2003
IM U.S. Small Cap Core Equity (SA+CF) Median	-5.85	-2.68	6.38	23.43	16.54	7.44	9.87	41.46	17.02	-1.75	28.34	29.50	13.14	
<b>DFA US Small Cap Trust (CF) - Gross Rank</b>	68	64	55	54	47	43	58	44	36	50	37	45	47	
<b>iShares S&amp;P SC 600 Index ETF (IJR) - Net</b>	-6.67	-3.67	5.79	22.89	N/A	N/A	N/A	41.21	16.49	0.74	N/A	N/A	16.76	10/01/2010
S&P SmallCap 600 Index (Cap Wtd)	-6.73	-3.72	5.74	22.86	16.24	7.28	9.33	41.31	16.33	1.02	26.31	25.57	16.76	
<i>Difference</i>	0.06	0.05	0.05	0.03	N/A	N/A	N/A	-0.10	0.16	-0.28	N/A	N/A	0.00	
<b>Voya Investment Management (SA) - Net</b>	-4.85	-2.59	4.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.64	05/01/2013
R 2000 Growth Index	-6.13	-4.05	3.79	21.91	15.51	6.92	9.03	43.30	14.59	-2.91	29.09	34.47	15.24	
<i>Difference</i>	1.28	1.46	0.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.60	
<b>Voya Investment Management (SA) - Gross</b>	-4.64	-1.94	4.94	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15.66	05/01/2013
IM U.S. Small Cap Growth Equity (SA+CF) Median	-5.48	-4.48	4.18	22.39	16.82	7.24	10.18	46.69	14.70	-1.68	28.95	37.61	16.79	
<b>Voya Investment Management (SA) - Gross Rank</b>	35	26	44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	63	

Net performance shown is net of all manager fees and expenses (Net-All).

Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds.

**Montana Board of Investments**  
**Domestic Equity Managers**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009	Since Incep.	Inception Date
<b>Metropolitan West Capital Mgmt (SA) - Net</b>	<b>-6.07</b>	<b>-0.18</b>	<b>7.51</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>14.08</b>	<b>05/01/2013</b>
R 2000 Value Index	-8.58	-4.74	4.13	20.61	13.03	5.08	7.25	34.52	18.05	-5.50	24.50	20.58	10.31	
<i>Difference</i>	<i>2.51</i>	<i>4.56</i>	<i>3.38</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>3.77</i>	
<b>Metropolitan West Capital Mgmt (SA) - Gross</b>	<b>-5.86</b>	<b>0.50</b>	<b>8.49</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>15.11</b>	<b>05/01/2013</b>
IM U.S. Small Cap Value Equity (SA+CF) Median	-6.82	-2.23	6.94	23.33	15.59	7.80	9.91	38.29	17.56	-3.26	27.72	34.66	14.64	
<b>Metropolitan West Capital Mgmt (SA) - Gross Rank</b>	<b>33</b>	<b>21</b>	<b>38</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>45</b>
<b>Vaughan Nelson Mgmt. (SA) - Net</b>	<b>-4.40</b>	<b>1.95</b>	<b>11.36</b>	<b>22.49</b>	<b>15.61</b>	<b>9.55</b>	<b>N/A</b>	<b>39.30</b>	<b>15.36</b>	<b>-3.61</b>	<b>24.21</b>	<b>28.91</b>	<b>9.96</b>	<b>03/01/2007</b>
R 2000 Value Index	-8.58	-4.74	4.13	20.61	13.03	5.08	7.25	34.52	18.05	-5.50	24.50	20.58	4.27	
<i>Difference</i>	<i>4.18</i>	<i>6.69</i>	<i>7.23</i>	<i>1.88</i>	<i>2.58</i>	<i>4.47</i>	<i>N/A</i>	<i>4.78</i>	<i>-2.69</i>	<i>1.89</i>	<i>-0.29</i>	<i>8.33</i>	<i>5.69</i>	
<b>Vaughan Nelson Mgmt. (SA) - Gross</b>	<b>-4.19</b>	<b>2.60</b>	<b>12.30</b>	<b>23.52</b>	<b>16.58</b>	<b>10.50</b>	<b>N/A</b>	<b>40.47</b>	<b>16.32</b>	<b>-2.77</b>	<b>25.27</b>	<b>30.05</b>	<b>10.91</b>	<b>03/01/2007</b>
IM U.S. Small Cap Value Equity (SA+CF) Median	-6.82	-2.23	6.94	23.33	15.59	7.80	9.91	38.29	17.56	-3.26	27.72	34.66	7.59	
<b>Vaughan Nelson Mgmt. (SA) - Gross Rank</b>	<b>9</b>	<b>6</b>	<b>11</b>	<b>46</b>	<b>36</b>	<b>12</b>	<b>N/A</b>	<b>38</b>	<b>61</b>	<b>47</b>	<b>65</b>	<b>65</b>	<b>6</b>	

Gross of fees performance is not available (N/A) for the following funds: Domestic Equity Pool SPIF and iShares S&P SC 600 Index ETF (IJR).

The current annual expense ratios for the Domestic Equity Pool SPIF and the iShares S&P SC 600 Index ETF (IJR) are 0.15% and 0.14%, respectively.

Net performance shown is net of all manager fees and expenses (Net-All).

Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds.

**Montana Board of Investments  
International Equity Managers  
Comparative Performance  
As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009	Since Incep.	Inception Date
<b>International Developed Large Cap Equity</b>														
Acadian Asset Non-US Equity (SA) - Net	-5.67	3.29	9.67	14.32	8.19	-1.85	N/A	17.60	18.66	-10.60	13.90	33.86	1.55	11/01/2006
MSCI ACW Ex US Value Index (Net)	-5.65	0.36	5.25	11.75	5.27	-0.36	6.93	15.04	16.97	-13.20	7.84	44.29	2.29	
<i>Difference</i>	-0.02	2.93	4.42	2.57	2.92	-1.49	N/A	2.56	1.69	2.60	6.06	-10.43	-0.74	
Acadian Asset Non-US Equity (SA) - Gross	-5.54	3.69	10.25	14.95	8.80	-1.28	N/A	18.22	19.37	-10.10	14.57	34.65	2.14	11/01/2006
IM International Large Cap Value Equity (SA+CF) Median	-5.68	-0.74	5.76	13.60	7.70	1.20	7.54	23.19	17.87	-10.65	10.64	33.99	3.41	
Acadian Asset Non-US Equity (SA) - Gross Rank	47	11	8	36	33	93	N/A	76	32	39	31	49	84	
AllianceBernstein Int'l Value (SA) - Net	-5.39	0.59	5.88	10.86	3.40	-2.89	N/A	16.73	13.41	-19.37	6.87	49.45	0.36	11/01/2006
MSCI ACW Ex US Value Index (Net)	-5.65	0.36	5.25	11.75	5.27	-0.36	6.93	15.04	16.97	-13.20	7.84	44.29	2.29	
<i>Difference</i>	0.26	0.23	0.63	-0.89	-1.87	-2.53	N/A	1.69	-3.56	-6.17	-0.97	5.16	-1.93	
AllianceBernstein Int'l Value (SA) - Gross	-5.26	1.03	6.50	11.51	4.03	-2.30	N/A	17.45	14.04	-18.88	7.56	50.45	0.98	11/01/2006
IM International Large Cap Value Equity (SA+CF) Median	-5.68	-0.74	5.76	13.60	7.70	1.20	7.54	23.19	17.87	-10.65	10.64	33.99	3.41	
AllianceBernstein Int'l Value (SA) - Gross Rank	39	26	34	92	95	96	N/A	77	84	97	63	9	95	
BlackRock ACWI Ex-US SuperFund A (CF) - Net	-5.27	0.14	4.93	11.99	6.23	N/A	N/A	15.51	17.07	-13.54	11.36	N/A	9.24	06/01/2009
MSCI ACW Ex US Index (Net)	-5.27	0.00	4.77	11.79	6.03	-0.16	7.06	15.29	16.83	-13.71	11.15	41.46	9.04	
<i>Difference</i>	0.00	0.14	0.16	0.20	0.20	N/A	N/A	0.22	0.24	0.17	0.21	N/A	0.20	
BlackRock ACWI Ex-US SuperFund A (CF) - Gross	-5.25	0.20	5.01	12.08	6.31	N/A	N/A	15.61	17.17	-13.46	11.44	N/A	9.33	06/01/2009
Hansberger Global Investors (SA) - Net	-6.39	-5.31	0.22	11.60	5.34	-0.74	N/A	20.64	16.21	-18.12	11.85	56.95	2.36	11/01/2006
MSCI ACW Ex US Growth Index (Net)	-4.89	-0.35	4.29	11.81	6.78	0.00	7.15	15.49	16.67	-14.21	14.45	38.67	3.19	
<i>Difference</i>	-1.50	-4.96	-4.07	-0.21	-1.44	-0.74	N/A	5.15	-0.46	-3.91	-2.60	18.28	-0.83	
Hansberger Global Investors (SA) - Gross	-6.28	-4.99	0.67	12.10	5.85	-0.24	N/A	21.19	16.72	-17.70	12.47	57.81	2.89	11/01/2006
IM International Large Cap Growth Equity (SA+CF) Median	-5.06	-1.33	4.64	14.64	8.69	1.73	8.07	20.98	19.61	-11.20	13.16	36.59	4.41	
Hansberger Global Investors (SA) - Gross Rank	84	91	92	87	93	77	N/A	48	74	92	53	5	78	
International Equity Pool SPIF - Net	-6.27	-2.33	3.46	13.50	5.46	-0.85	N/A	20.79	17.97	-13.22	5.93	29.68	3.82	12/01/2005
MSCI EAFE Index (Net)	-5.88	-1.38	4.25	13.65	6.56	-0.20	6.32	22.78	17.32	-12.14	7.75	31.78	4.50	
<i>Difference</i>	-0.39	-0.95	-0.79	-0.15	-1.10	-0.65	N/A	-1.99	0.65	-1.08	-1.82	-2.10	-0.68	

Net performance shown is net of all manager fees and expenses (Net-All).

Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds.

**Montana Board of Investments  
International Equity Managers  
Comparative Performance  
As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009	Since Incep.	Inception Date
<b>Martin Currie (SA) - Net</b>	-5.59	-4.14	-1.22	<b>12.28</b>	<b>6.38</b>	-1.72	N/A	<b>16.51</b>	<b>20.53</b>	-11.57	<b>9.83</b>	<b>35.63</b>	<b>1.82</b>	<b>11/01/2006</b>
MSCI ACW Ex US Growth Index (Net)	-4.89	-0.35	4.29	11.81	6.78	0.00	7.15	15.49	16.67	-14.21	14.45	38.67	3.19	
<i>Difference</i>	-0.70	-3.79	-5.51	0.47	-0.40	-1.72	N/A	1.02	3.86	2.64	-4.62	-3.04	-1.37	
<b>Martin Currie (SA) - Gross</b>	-5.48	-3.81	-0.78	<b>12.77</b>	<b>6.96</b>	-1.22	N/A	<b>17.05</b>	<b>21.06</b>	-11.10	<b>10.60</b>	<b>36.39</b>	<b>2.31</b>	<b>11/01/2006</b>
IM International Large Cap Growth Equity (SA+CF) Median	-5.06	-1.33	4.64	14.64	8.69	1.73	8.07	20.98	19.61	-11.20	13.16	36.59	4.41	
<b>Martin Currie (SA) - Gross Rank</b>	<b>65</b>	<b>86</b>	<b>98</b>	<b>83</b>	<b>85</b>	<b>91</b>	N/A	<b>81</b>	<b>32</b>	<b>50</b>	<b>69</b>	<b>51</b>	<b>85</b>	
<b>International Developed Small Cap Equity</b>														
<b>American Century Investment Mgmt (SA) - Net</b>	-7.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-7.40	<b>03/01/2014</b>
MSCI ACW Ex US Sm Cap Grth Index (Net)	-6.39	-0.05	4.37	11.77	8.74	0.97	8.40	18.52	16.87	-17.86	27.30	61.23	-3.47	
<i>Difference</i>	-1.11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-3.93	
<b>American Century Investment Mgmt (SA) - Gross</b>	-7.30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-6.94	<b>03/01/2014</b>
IM International Small Cap Growth Equity (SA+CF) Median	-6.51	-1.65	5.45	16.94	12.22	3.41	10.17	31.09	23.40	-14.81	23.68	48.28	-5.27	
<b>American Century Investment Mgmt (SA) - Gross Rank</b>	<b>66</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<b>69</b>	
<b>BlackRock ACWI Ex-US Small Cap (CF) - Net</b>	-6.84	-0.07	<b>4.54</b>	N/A	N/A	N/A	N/A	<b>19.87</b>	N/A	N/A	N/A	N/A	<b>10.52</b>	<b>02/01/2012</b>
MSCI ACWI Ex US Sm Cap Index IMI (Net)	-6.80	-0.06	4.56	12.50	8.33	1.68	8.98	19.73	18.52	-18.50	25.21	62.91	10.45	
<i>Difference</i>	-0.04	-0.01	-0.02	N/A	N/A	N/A	N/A	0.14	N/A	N/A	N/A	N/A	0.07	
<b>BlackRock ACWI Ex-US Small Cap (CF) - Gross</b>	-6.80	<b>0.06</b>	<b>4.72</b>	N/A	N/A	N/A	N/A	<b>20.08</b>	N/A	N/A	N/A	N/A	<b>10.71</b>	<b>02/01/2012</b>
<b>DFA Intl Sm Co;I (DFISX) - Net</b>	-8.46	-2.15	<b>4.43</b>	<b>14.44</b>	<b>9.32</b>	<b>2.26</b>	N/A	<b>27.49</b>	<b>18.75</b>	-15.36	<b>23.91</b>	<b>41.96</b>	<b>8.46</b>	<b>11/01/2004</b>
MSCI Wrld Ex US Sm Cap Index (Net)	-8.27	-2.04	3.37	13.31	8.76	1.75	7.94	25.55	17.48	-15.81	24.51	50.82	7.61	
<i>Difference</i>	-0.19	-0.11	1.06	1.13	0.56	0.51	N/A	1.94	1.27	0.45	-0.60	-8.86	0.85	
<b>DFA Intl Sm Co;I (DFISX) - Gross</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<b>11/01/2004</b>
IM International Small Cap Equity (SA+CF) Median	-7.04	-1.16	6.25	17.44	11.82	3.38	10.37	31.15	23.58	-13.67	23.58	45.05	10.32	
<b>DFA Intl Sm Co;I (DFISX) - Gross Rank</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Net performance shown is net of all manager fees and expenses (Net-All).

Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds.

**Montana Board of Investments  
International Equity Managers  
Comparative Performance  
As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009	Since Incep.	Inception Date
<b>Templeton Investment Counsel (SA) - Net</b>	-6.18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-2.45	03/01/2014
MSCI ACW Ex US Sm Cap Val Index (Net)	-7.22	-0.08	4.75	13.21	7.92	2.36	9.54	20.92	20.15	-19.12	23.15	64.53	-3.11	
<i>Difference</i>	<i>1.04</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>0.66</i>	
<b>Templeton Investment Counsel (SA) - Gross</b>	-5.97	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-1.94	03/01/2014
IM International Small Cap Value Equity (SA+CF) Median	-7.72	-0.75	5.43	17.47	11.88	4.13	10.30	30.48	23.58	-13.61	23.58	49.45	-4.65	
<b>Templeton Investment Counsel (SA) - Gross Rank</b>	<b>6</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<b>27</b>	
<b>International Emerging Equity</b>														
<b>BlackRock Emerging Mkts (CF) - Net</b>	-3.57	<b>2.14</b>	<b>4.07</b>	N/A	N/A	N/A	N/A	-2.79	N/A	N/A	N/A	N/A	1.93	02/01/2012
MSCI Emg Mkts Index (Net)	-3.50	2.43	4.30	7.19	4.42	-0.18	10.68	-2.60	18.23	-18.42	18.88	78.51	2.19	
<i>Difference</i>	<i>-0.07</i>	<i>-0.29</i>	<i>-0.23</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>-0.19</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>-0.26</i>	
<b>BlackRock Emerging Mkts (CF) - Gross</b>	-3.52	<b>2.29</b>	<b>4.28</b>	N/A	N/A	N/A	N/A	-2.57	N/A	N/A	N/A	N/A	2.14	02/01/2012

Gross of fees performance is not available (N/A) for the following funds: International Equity Pool SPIF and DFA Intl Sm Co;I (DFISX).

The current annual expense ratios for the International Equity Pool SPIF and the DFA Intl Sm Co;I (DFISX) are 0.18% and 0.54%, respectively.

Net performance shown is net of all manager fees and expenses (Net-All).

Gross returns are compared to median performance of similar managers. A peer group of similar managers may not exist for all funds.

**Montana Board of Investments  
Fixed Income Managers  
Comparative Performance  
As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009	Since Incep.	Inception Date
<b>Aberdeen Total Return Bond (SA) - Net</b>	-0.03	4.58	4.59	3.71	5.27	N/A	N/A	-2.62	7.98	7.97	7.97	N/A	5.51	09/01/2009
Barclays US Agg Bond Index + .50%	0.29	4.49	4.48	2.95	4.64	5.47	5.15	-1.53	4.74	8.38	7.07	6.46	4.79	
<b>Difference</b>	-0.32	0.09	0.11	0.76	0.63	N/A	N/A	-1.09	3.24	-0.41	0.90	N/A	0.72	
<b>Aberdeen Total Return Bond (SA) - Gross</b>	0.04	4.78	4.85	3.97	5.53	N/A	N/A	-2.38	8.26	8.23	8.24	N/A	5.78	09/01/2009
IM U.S. Broad Market Core+ FI (SA+CF)	0.07	4.77	5.49	4.65	6.11	6.15	5.65	-0.65	7.99	7.51	8.95	14.88	6.43	
<b>Aberdeen Total Return Bond (SA) - Gross Rank</b>	58	49	72	71	68	N/A	N/A	99	46	17	67	N/A	66	
<b>Core Internal Bond Portfolio</b>	0.37	4.67	4.60	3.28	5.54	5.62	5.36	-2.02	6.07	8.20	9.97	10.94	6.87	04/01/1995
Barclays US Agg Bond Index	0.17	4.10	3.96	2.43	4.12	4.95	4.62	-2.02	4.21	7.84	6.54	5.93	6.00	
<b>Difference</b>	0.20	0.57	0.64	0.85	1.42	0.67	0.74	0.00	1.86	0.36	3.43	5.01	0.87	
<b>Core Internal Bond Portfolio</b>	0.37	4.67	4.60	3.28	5.54	5.62	5.36	-2.02	6.07	8.20	9.97	10.94	6.87	04/01/1995
IM U.S. Broad Market Core FI (SA+CF)	0.21	4.40	4.50	3.23	4.81	5.46	5.02	-1.56	5.83	7.84	7.22	9.82	6.34	
<b>Core Internal Bond Portfolio Rank</b>	14	34	45	40	20	39	23	74	46	25	7	39	7	
<b>Neuberger Berman High Yield (SA) - Net</b>	-2.25	2.64	6.53	11.16	N/A	N/A	N/A	7.78	15.90	4.07	16.27	N/A	9.69	01/01/2010
Barclays US Hi Yld - 2% Issuer Cap Index	-1.86	3.49	7.19	11.08	10.52	8.83	8.32	7.44	15.78	4.96	14.94	58.76	9.71	
<b>Difference</b>	-0.39	-0.85	-0.66	0.08	N/A	N/A	N/A	0.34	0.12	-0.89	1.33	N/A	-0.02	
<b>Neuberger Berman High Yield (SA) - Gross</b>	-2.14	2.99	7.00	11.66	N/A	N/A	N/A	8.26	16.42	4.54	16.83	N/A	10.19	01/01/2010
IM U.S. High Yield Bonds (SA+CF) Median	-1.70	3.70	7.36	11.04	10.63	8.46	8.22	7.59	15.43	5.39	15.07	44.92	9.85	
<b>Neuberger Berman High Yield (SA) - Gross Rank</b>	66	78	61	32	N/A	N/A	N/A	32	29	65	23	N/A	37	

Net performance shown is net of all manager fees and expenses (Net-All).  
Gross returns are compared to median performance of similar managers.

**Montana Board of Investments**  
**Fixed Income Managers**  
**Comparative Performance**  
**As of September 30, 2014**

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009	Since Incep.	Inception Date
<b>Reams Asset Core Plus (SA) - Net</b>	<b>-0.12</b>	<b>3.03</b>	<b>3.29</b>	<b>4.22</b>	<b>5.74</b>	<b>N/A</b>	<b>N/A</b>	<b>-0.85</b>	<b>8.64</b>	<b>7.54</b>	<b>9.27</b>	<b>24.34</b>	<b>7.36</b>	<b>10/01/2008</b>
Barclays US Unv Bond Index	-0.03	4.16	4.39	3.23	4.65	5.19	4.91	-1.35	5.53	7.40	7.16	8.60	5.67	
<b>Difference</b>	<b>-0.09</b>	<b>-1.13</b>	<b>-1.10</b>	<b>1.00</b>	<b>1.09</b>	<b>N/A</b>	<b>N/A</b>	<b>0.50</b>	<b>3.10</b>	<b>0.14</b>	<b>2.11</b>	<b>15.74</b>	<b>1.69</b>	
<b>Reams Asset Core Plus (SA) - Gross</b>	<b>0.16</b>	<b>3.16</b>	<b>3.38</b>	<b>4.40</b>	<b>5.92</b>	<b>N/A</b>	<b>N/A</b>	<b>-0.68</b>	<b>8.83</b>	<b>7.72</b>	<b>9.47</b>	<b>24.56</b>	<b>7.55</b>	<b>10/01/2008</b>
IM U.S. Broad Market Core+ FI (SA+CF)	0.07	4.77	5.49	4.65	6.11	6.15	5.65	-0.65	7.99	7.51	8.95	14.88	7.28	
<b>Reams Asset Core Plus (SA) - Gross Rank</b>	<b>41</b>	<b>96</b>	<b>97</b>	<b>60</b>	<b>56</b>	<b>N/A</b>	<b>N/A</b>	<b>53</b>	<b>40</b>	<b>39</b>	<b>39</b>	<b>16</b>	<b>39</b>	
<b>Post High Yield Plus (SA) - Net</b>	<b>-0.94</b>	<b>5.06</b>	<b>8.40</b>	<b>12.22</b>	<b>10.80</b>	<b>N/A</b>	<b>N/A</b>	<b>10.19</b>	<b>16.97</b>	<b>2.60</b>	<b>14.96</b>	<b>N/A</b>	<b>12.28</b>	<b>06/01/2009</b>
Barclays US Hi Yld - 2% Issuer Cap Index	-1.86	3.49	7.19	11.08	10.52	8.83	8.32	7.44	15.78	4.96	14.94	58.76	13.21	
<b>Difference</b>	<b>0.92</b>	<b>1.57</b>	<b>1.21</b>	<b>1.14</b>	<b>0.28</b>	<b>N/A</b>	<b>N/A</b>	<b>2.75</b>	<b>1.19</b>	<b>-2.36</b>	<b>0.02</b>	<b>N/A</b>	<b>-0.93</b>	
<b>Post High Yield Plus (SA) - Gross</b>	<b>-0.79</b>	<b>5.54</b>	<b>9.05</b>	<b>12.90</b>	<b>11.47</b>	<b>N/A</b>	<b>N/A</b>	<b>10.85</b>	<b>17.67</b>	<b>3.22</b>	<b>15.65</b>	<b>N/A</b>	<b>12.97</b>	<b>06/01/2009</b>
IM U.S. High Yield Bonds (SA+CF) Median	-1.70	3.70	7.36	11.04	10.63	8.46	8.22	7.59	15.43	5.39	15.07	44.92	12.93	
<b>Post High Yield Plus (SA) - Gross Rank</b>	<b>12</b>	<b>7</b>	<b>9</b>	<b>12</b>	<b>21</b>	<b>N/A</b>	<b>N/A</b>	<b>11</b>	<b>14</b>	<b>82</b>	<b>38</b>	<b>N/A</b>	<b>50</b>	
<b>Post Trad'l High Yield LP (CF) - Gross</b>	<b>-0.62</b>	<b>5.21</b>	<b>8.45</b>	<b>12.82</b>	<b>11.10</b>	<b>N/A</b>	<b>N/A</b>	<b>9.98</b>	<b>18.62</b>	<b>3.08</b>	<b>14.48</b>	<b>N/A</b>	<b>11.81</b>	<b>09/01/2009</b>
IM U.S. High Yield Bonds (SA+CF) Median	-1.70	3.70	7.36	11.04	10.63	8.46	8.22	7.59	15.43	5.39	15.07	44.92	11.42	
<b>Post Trad'l High Yield LP (CF) - Gross Rank</b>	<b>11</b>	<b>9</b>	<b>13</b>	<b>13</b>	<b>30</b>	<b>N/A</b>	<b>N/A</b>	<b>13</b>	<b>10</b>	<b>83</b>	<b>68</b>	<b>N/A</b>	<b>35</b>	

Post Trad'l High Yield LP (CF) is part of the Trust Fund Investment Pool.

Net performance shown is net of all manager fees and expenses (Net-All).  
Gross returns are compared to median performance of similar managers.

Montana Board of Investments  
Trust Accounts  
Comparative Performance  
As of September 30, 2014

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
Abandoned Mine Trust	0.02	1.01	1.23	1.62	2.08	2.84	3.16	0.63	2.82	1.49	3.31	11.04
Big Sky Economic Development Fund	0.40	4.78	5.31	4.28	5.79	5.98	N/A	-0.22	6.72	8.13	8.48	10.40
Butte Area One Restoration	0.21	2.50	2.79	2.33	3.30	N/A	N/A	-0.08	3.68	4.61	5.13	6.09
Clark Fork River Restoration	0.25	2.98	3.32	2.74	3.82	N/A	N/A	-0.12	4.36	5.33	5.78	7.06
Coal Tax Cultural Trust Fund	0.40	4.80	5.33	4.28	5.79	5.99	5.69	-0.23	6.76	8.09	8.42	10.44
Coal Tax Park Acquisition	0.40	4.70	5.21	4.25	5.77	5.97	5.66	-0.25	6.78	8.10	8.43	10.44
East Helena Compensation Fund	0.19	2.15	2.40	N/A	N/A	N/A	N/A	-0.13	N/A	N/A	N/A	N/A
Endowment for Children	0.40	4.71	5.22	4.22	5.69	5.84	N/A	-0.28	6.69	8.00	8.26	10.09
FWP License Account	0.03	0.42	0.53	0.91	1.16	2.03	2.64	0.42	1.64	1.08	2.01	2.14
FWP Mitigation Trust Fund	0.02	0.91	1.15	1.60	2.02	2.66	3.01	0.61	2.85	1.46	3.21	10.58
FWP Real Property Trust	0.39	4.57	5.04	4.10	5.54	5.76	5.37	-0.24	6.51	7.76	8.06	10.01
Group Benefits	0.01	0.77	0.95	1.20	1.73	2.65	3.10	0.32	2.22	1.43	3.13	5.81
Montana Pole	0.33	3.84	4.26	3.48	4.77	5.09	4.91	-0.17	5.50	6.61	7.07	8.96
Montana Tech-UM Agency Funds	0.04	0.26	0.31	0.38	0.51	1.12	2.11	0.17	0.57	0.66	0.75	1.37
Montana State University	0.08	0.61	0.69	0.69	0.93	1.51	2.37	0.12	1.07	1.23	1.40	2.07
MT BOI - Clark Fork Site	0.33	3.77	4.19	3.36	4.54	N/A	N/A	-0.09	5.23	6.23	6.68	7.95
MT BOI UOFM Other	0.33	2.02	2.25	1.67	1.96	2.44	3.02	-0.12	2.54	2.21	2.79	3.38
MUS Group Insurance	-0.08	0.77	0.92	0.88	N/A	N/A	N/A	0.17	1.56	N/A	N/A	N/A
Older Montanans Trust	0.39	4.65	5.16	3.88	5.17	5.49	N/A	-0.23	6.01	5.85	8.45	10.41
Permanent Coal Trust Excl Crp	0.53	4.42	5.08	4.39	5.43	5.55	5.48	0.99	6.29	7.16	7.09	8.22
Resource Indemnity Trust	0.41	4.91	5.44	4.35	5.78	6.00	5.68	-0.27	6.86	8.18	8.12	10.52
Smelter Hill Up Restorative	0.14	1.79	2.01	1.61	2.06	N/A	N/A	0.01	2.47	2.83	2.80	3.29
State Fund Insurance	0.26	3.49	4.92	5.29	5.80	5.36	5.27	3.11	7.25	5.26	8.63	11.36
Streamside Tailings Operable Unit	0.36	4.33	4.82	3.89	5.15	5.40	5.26	-0.21	6.14	7.20	7.35	8.95
Tobacco Trust Fund	0.41	4.87	5.40	4.30	5.81	6.01	5.69	-0.27	6.77	8.12	8.45	10.48
Treasurers	0.04	0.13	0.17	0.25	0.28	0.91	1.83	0.23	0.31	0.31	0.34	0.72
Treasure State Endowment	0.40	4.83	5.37	4.31	5.82	6.02	5.73	-0.21	6.76	8.14	8.48	10.43
Treasure State Reg. Water System	0.40	4.80	5.33	4.29	5.80	5.99	5.67	-0.22	6.73	8.13	8.48	10.41
Trust and Legacy Account	0.41	4.90	5.43	4.31	5.80	5.99	5.67	-0.26	6.78	8.04	8.42	10.40
UCFRB Assess/Litig Cost Rec	0.38	4.56	5.06	4.01	5.23	5.77	5.52	-0.24	6.45	6.87	7.47	9.54
UCFRB Restoration Fund	0.38	4.42	4.91	4.03	5.51	5.70	5.44	-0.20	6.43	7.66	8.22	9.87
Upper Blackfoot Response	0.11	1.07	1.23	1.06	N/A	N/A	N/A	0.13	1.60	2.30	N/A	N/A

Performance shown is gross of fees.

Montana Board of Investments  
Trust Accounts  
Comparative Performance  
As of September 30, 2014

	QTD	CYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2013	2012	2011	2010	2009
Weed Control Trust	0.41	4.91	5.44	4.30	5.53	5.60	5.07	-0.23	6.69	7.42	7.71	11.44
Wildlife Habitat Trust	0.37	4.65	5.15	4.12	5.55	5.76	5.42	-0.24	6.46	7.74	8.07	9.98
Zortman/Landusky LT H20	-0.50	0.97	1.07	2.38	5.50	6.94	6.42	-0.51	5.47	11.21	12.62	-3.80
Z/L Long Term H20 Trust Fund	-0.26	1.08	1.01	1.76	4.89	5.99	N/A	-0.96	3.91	11.64	10.79	-4.14

Performance shown is gross of fees.

**Montana Board of Investments**  
**Addendum**  
**As of September 30, 2014**

**Performance Notes:**

All gross and net performance data is provided by State Street Analytics (SSA). Reported gross returns for the retirement plans prior to July 1, 2002 are net of all fees.

Gross performance for the retirement plans is calculated with fee accruals provided by Montana's Accounting department.

Retirement Plan Custom Benchmarks are provided by State Street Bank and are calculated daily using actual allocations.

Effective May 2014, ING rebranded to Voya. The ING Investment Management (SA) has been updated to Voya Investment Management (SA) to reflect the change.

**Index Notes:**

The Montana International Custom Benchmark consists of 100% MSCI EAFE Index (Net) through 10/31/2006, 100% MSCI ACW Ex US Index (Net) through 6/30/2007, 92.5% MSCI ACW Ex US Index (Net) and 7.5% MSCI ACW Ex US SC IM Index (Net) through 2/28/2014, and 100% MSCI ACWI ex-US IMI thereafter.

Gross of fees performance is not available (N/A) for the following funds: Domestic Equity Pool SPIF, iShares S&P SC 600 Index ETF (IJR), International Equity Pool SPIF, and DFA Intl Sm Co;I (DFISX). The current annual expense ratios are 0.15%, 0.17%, 0.18%, and 0.56%, respectively.

PORTLAND

CHICAGO

NEW YORK

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**RVK**

# Montana Board of Investments

## CEM Benchmarking Results

August 18 - 19, 2014

Mike Heale  
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## This benchmarking report compares your cost and return performance to CEM's extensive pension database.

- 149 U.S. pension funds participate. The median U.S. fund had assets of \$6.2 billion and the average U.S. fund had assets of \$14.3 billion. Total participating U.S. assets were \$2.1 trillion.

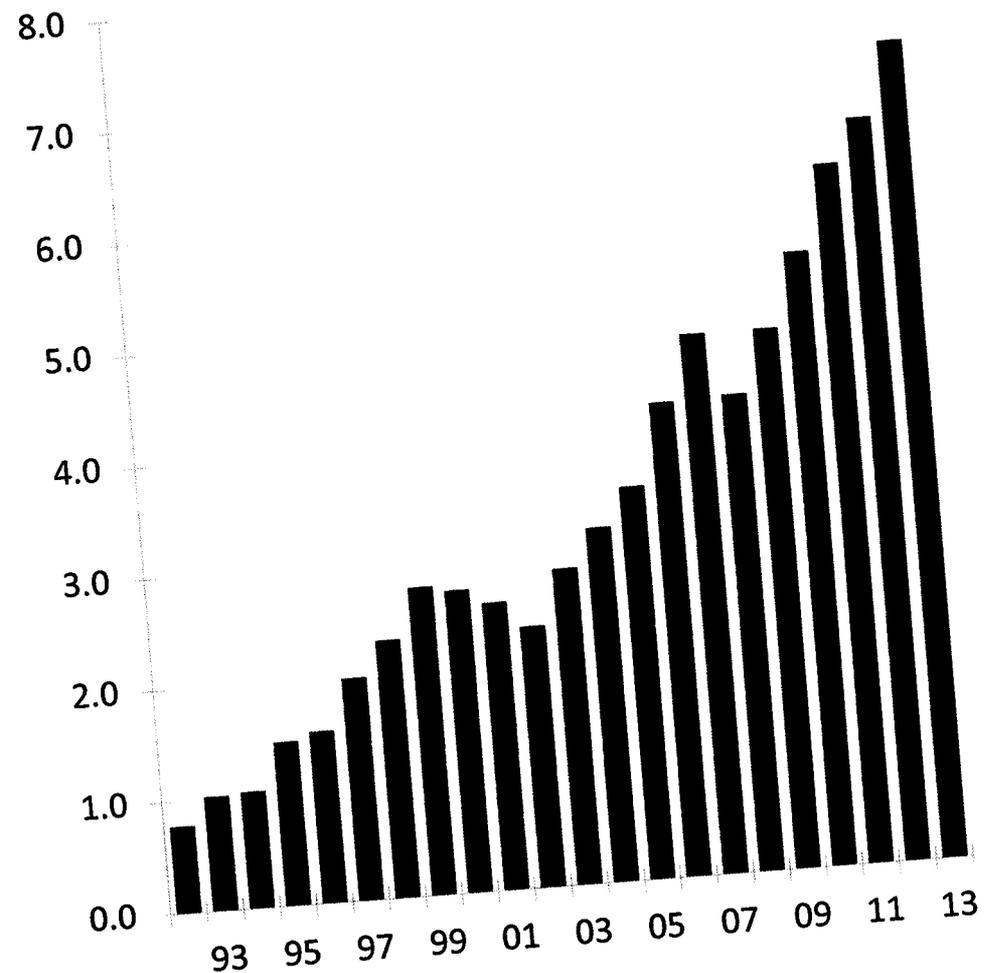
- 75 Canadian funds participate with assets totaling \$339 billion.

- 37 European funds participate with aggregate assets of \$1.4 trillion. Included are funds from the Netherlands, Norway, Sweden, Finland, Ireland, Denmark and the U.K.

- 1 Asia-Pacific funds participate with aggregate assets of \$770 billion. Included are funds from Australia, New Zealand, China and South Korea.

The most meaningful comparisons for your returns and implementation impact are to the U.S. Public universe which consists of 46 funds.

Participating assets (\$trillions)

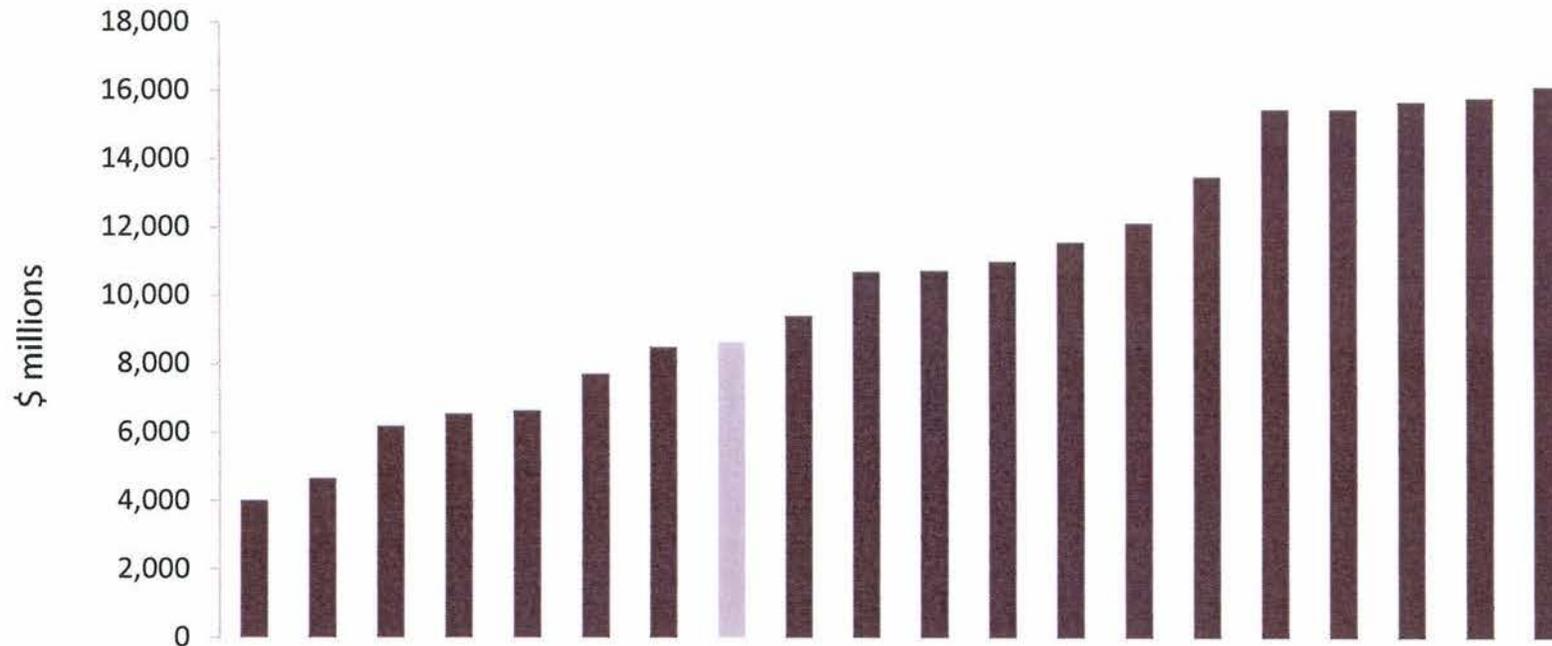


\* The graph for 2013 reflects both received and expected data.

# The most valuable comparisons for cost performance are to your custom peer group because size impacts costs.

## Peer group for Montana Board of Investments

- 20 U.S. public sponsors from \$4.0 billion to \$16.1 billion
- Median size of \$10.7 billion versus your \$8.7 billion



To preserve client confidentiality, given potential access to documents as permitted by the Freedom of Information Act, we do not disclose your peers' names in this document.

## What gets measured gets managed, so it is critical that you measure and compare the right things:

### 1. Returns

Why do total returns differ from other funds? Asset mix is the most important driver of total returns. What was the impact of your policy asset mix decisions?

### 2. Implementation impacts

How does your implementation impact your total returns?

### 3. Costs

Are your costs reasonable? Costs matter and can be managed.

### 4. Cost effectiveness

Implementation impact versus excess cost. Does paying more get you more?

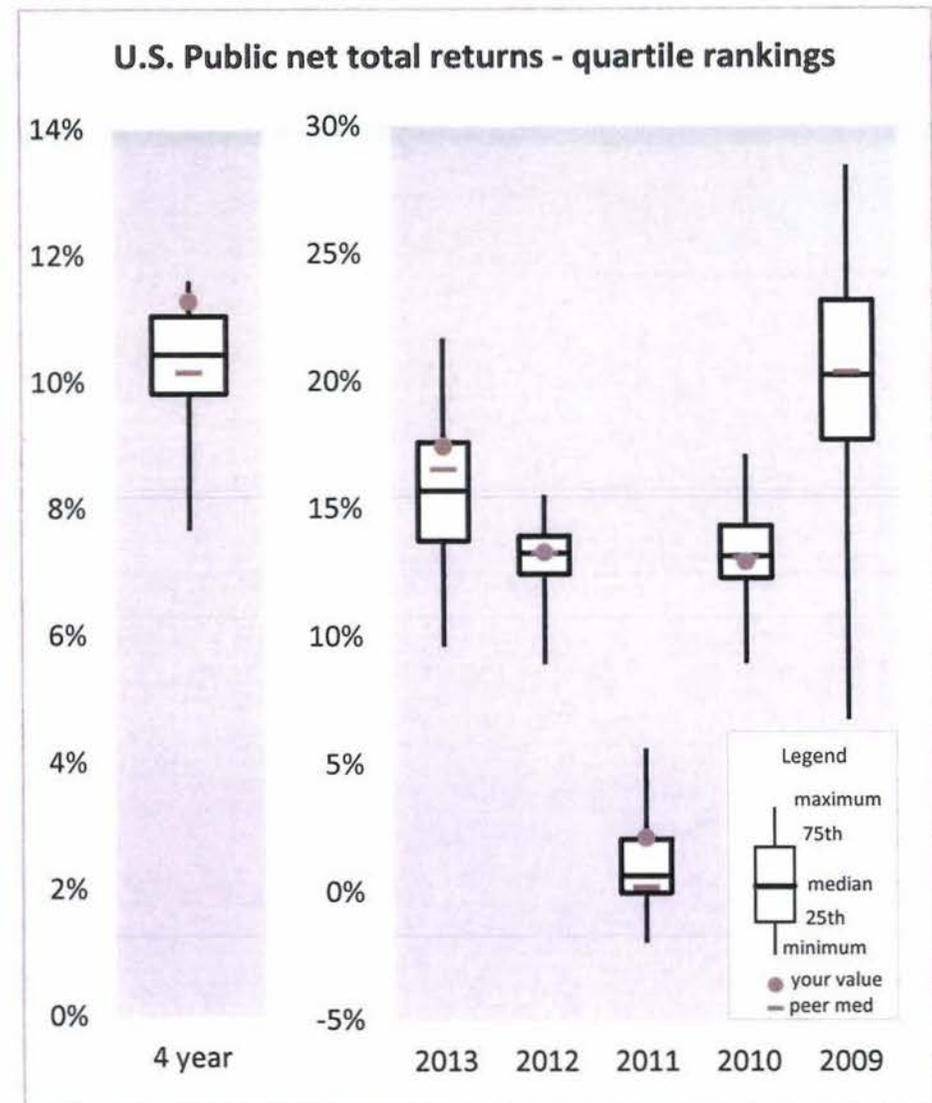
## Your 4-year net return of 11.3% was above the U.S. Public median of 10.4% and above the peer median of 10.2%.

Total returns, by themselves, provide little insight into the reasons behind relative performance. Therefore, we separate total return into two components: policy return and implementation impacts.

	Your 4-year
Net total fund return	11.3%
- Policy return	11.5%
= Implementation impacts	-0.2%

This approach enables you to understand the contribution from both policy mix decisions (by far the most important driver of total return) and implementation impacts.

*To enable fairer comparisons, the policy returns of all participants including your fund were adjusted to reflect private equity benchmarks based on lagged, investable, public-market indices.*



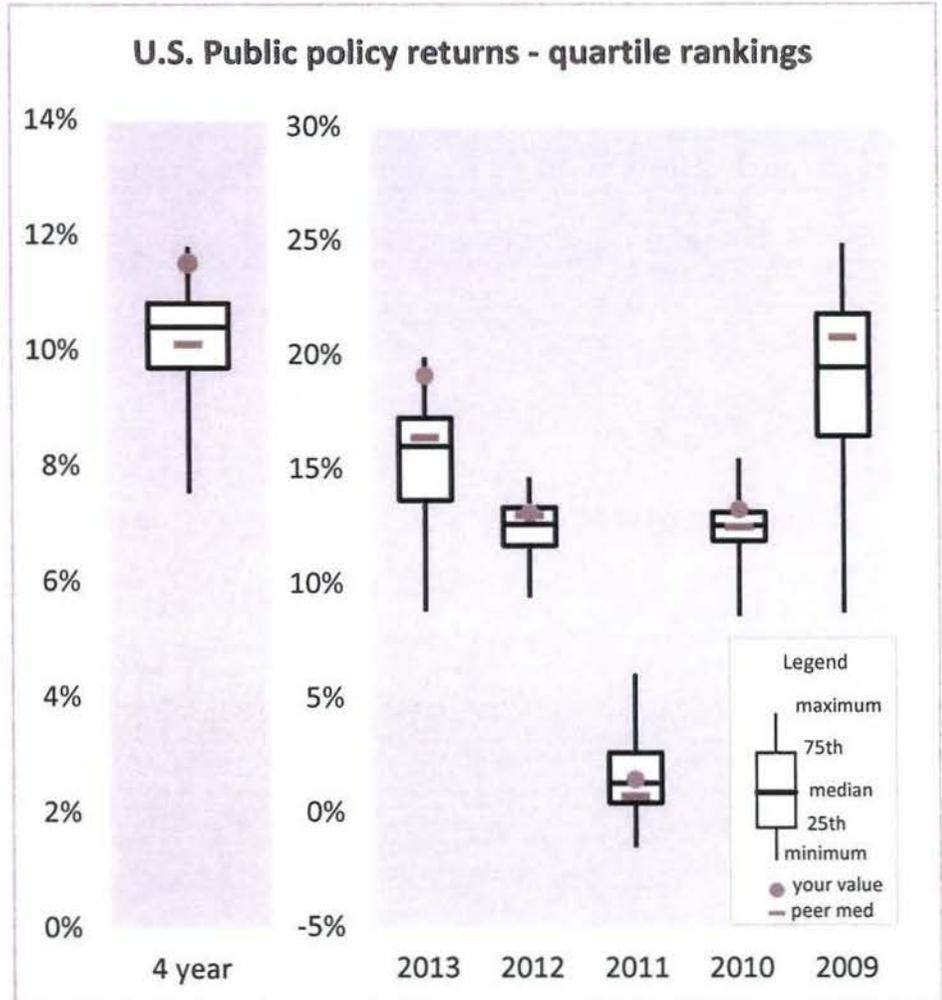
## Your 4-year policy return of 11.5% was above the U.S. Public median of 10.4% and above the peer median of 10.1%.

Your policy return is the return you could have earned passively by indexing your investments according to your policy mix.

Having a higher or lower relative policy return is not necessarily good or bad. Your policy return reflects your investment policy, which should reflect your:

- Long term capital market expectations
- Liabilities
- Appetite for risk

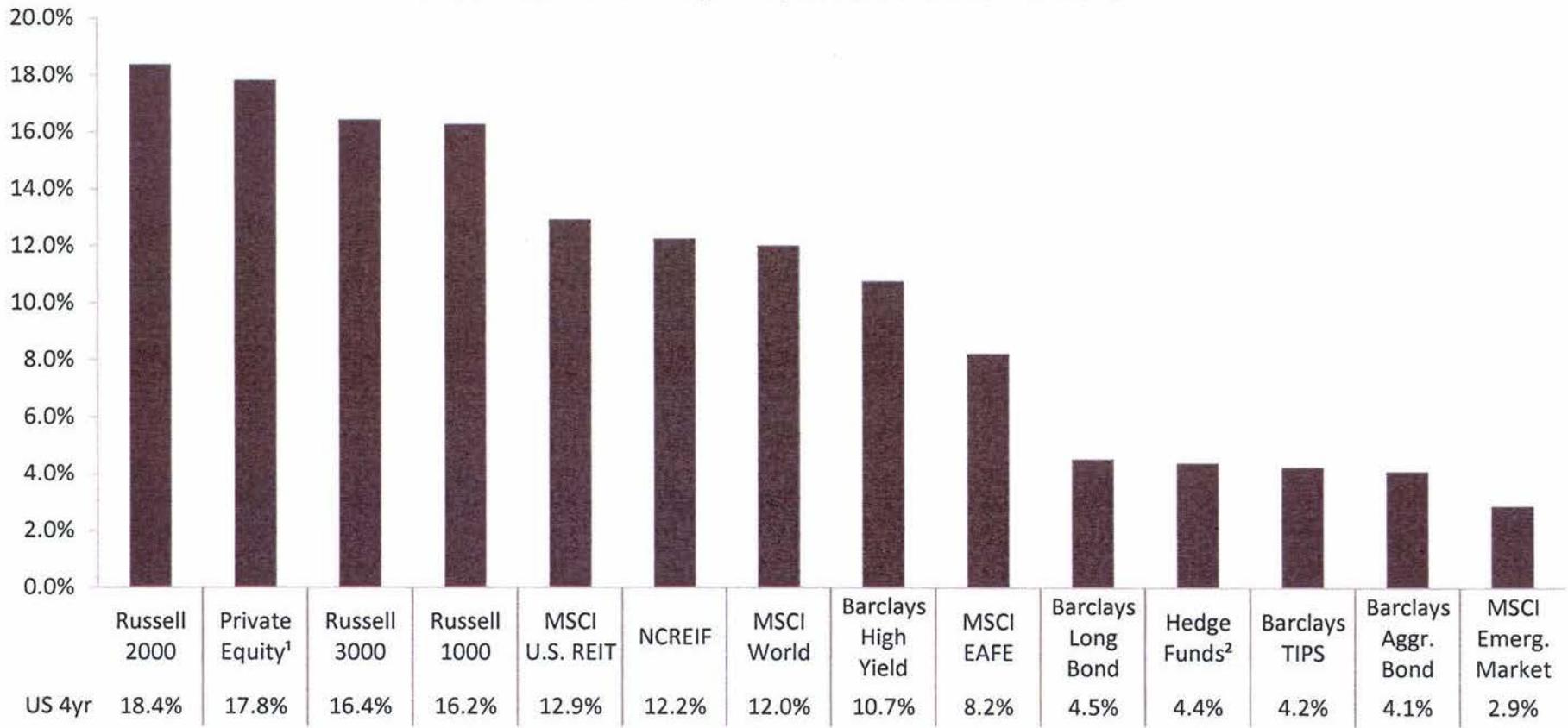
Each of these three factors is different across funds. Therefore, it is not surprising that policy returns often vary widely between funds.



To enable fairer comparisons, the policy returns of all participants including your fund were adjusted to reflect private equity benchmarks based on lagged, investable, public-market indices. Prior to this adjustment, your 4-year policy return was 11.90%, 0.4% higher than your adjusted 4-year policy return of 11.50%. Mirroring this, without adjustment your 4-year total fund implementation impact would be 0.4% lower. Refer to the Research section page 6 for details.

**Differences in policy returns and implementation impacts are caused by differences in benchmarks and policy mix.**

**4-Year returns for frequently used benchmark indices**



1. Private equity benchmark returns of all participants were adjusted to reflect investable private equity benchmarks based on lagged, small-cap stock.  
 2. The hedge fund benchmark return reflect the average benchmark of all U.S. participants.

## Your 4-year policy return was above the U.S. Public median.

Your 4-year policy return was above the U.S. Public median primarily because of the positive impact of your higher policy weight in:

- Private Equity, one of the better performing asset classes of the past 4 years. Your 4-year average policy weight of 12% compares to a U.S. Public average of 8%.
- U.S. Stock, one of the better performing asset classes of the past 4 years. Your 4-year average policy weight of 36% compares to a U.S. Public average of 26%.

The fact that you had no policy allocation to hedge funds versus a 4-year average policy weight of 4% for U.S. Public funds also had a positive impact.

### 4-Year average policy mix

	Your Fund	Peer Avg.	U.S. Public Avg.
U.S. Stock	36%	25%	26%
EAFE/Global/Emerging	18%	27%	25%
<b>Total Stock</b>	<b>54%</b>	<b>53%</b>	<b>52%</b>
U.S. Bonds	22%	19%	20%
High Yield Bonds	3%	2%	2%
Other Fixed Income	1%	6%	6%
<b>Total Fixed Income</b>	<b>26%</b>	<b>27%</b>	<b>28%</b>
Hedge Funds	0%	4%	4%
Real Estate incl. REITS	8%	6%	7%
Other Real Assets <sup>1</sup>	0%	2%	2%
Private Equity	12%	8%	8%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

1. Other real assets includes commodities, natural resources and infrastructure.

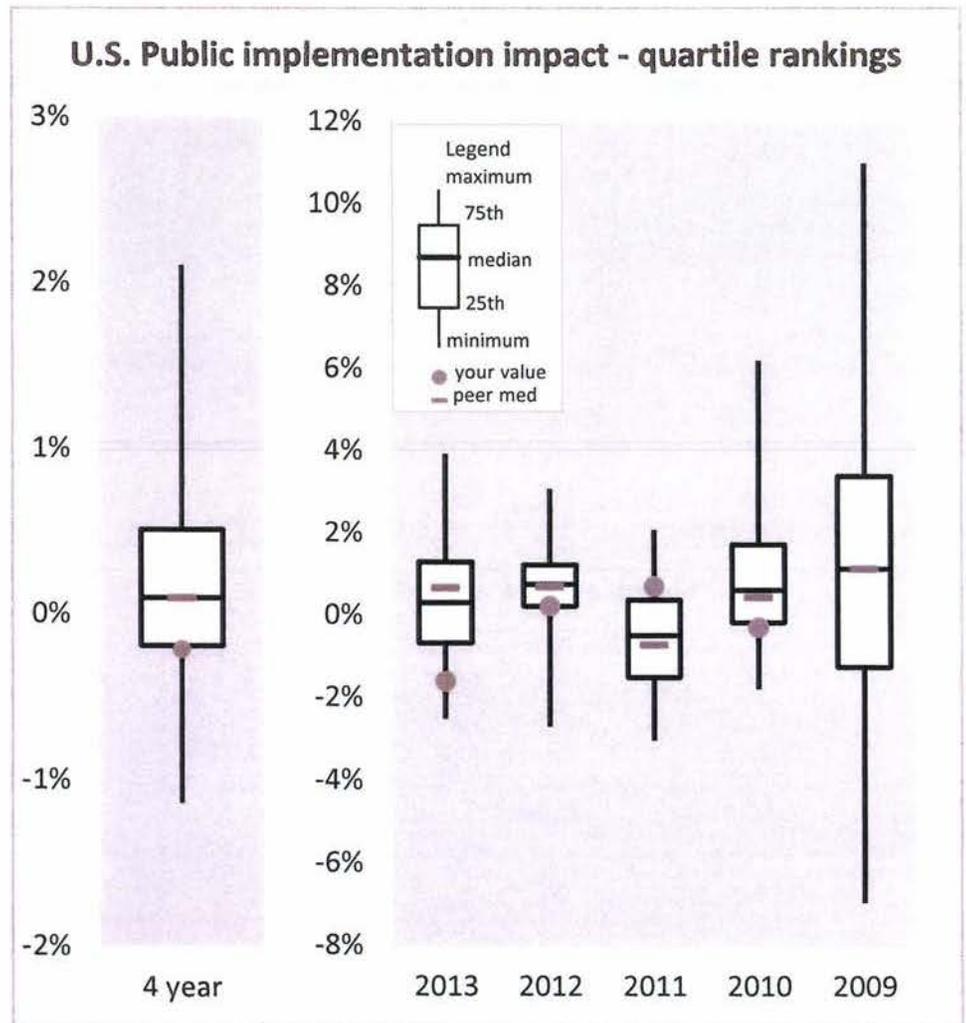
**Implementation impact is the difference between total net return and policy return.  
Your 4-year implementation impact was -0.2%.**

**Implementation impact for Montana  
Board of Investments**

Year	Net Return	Policy Return	Impl. Impact
2013	17.4%	19.1%	(1.6%)
2012	13.3%	13.1%	0.2%
2011	2.1%	1.4%	0.7%
2010	12.9%	13.2%	(0.3%)
4-year	11.3%	11.5%	(0.2%)

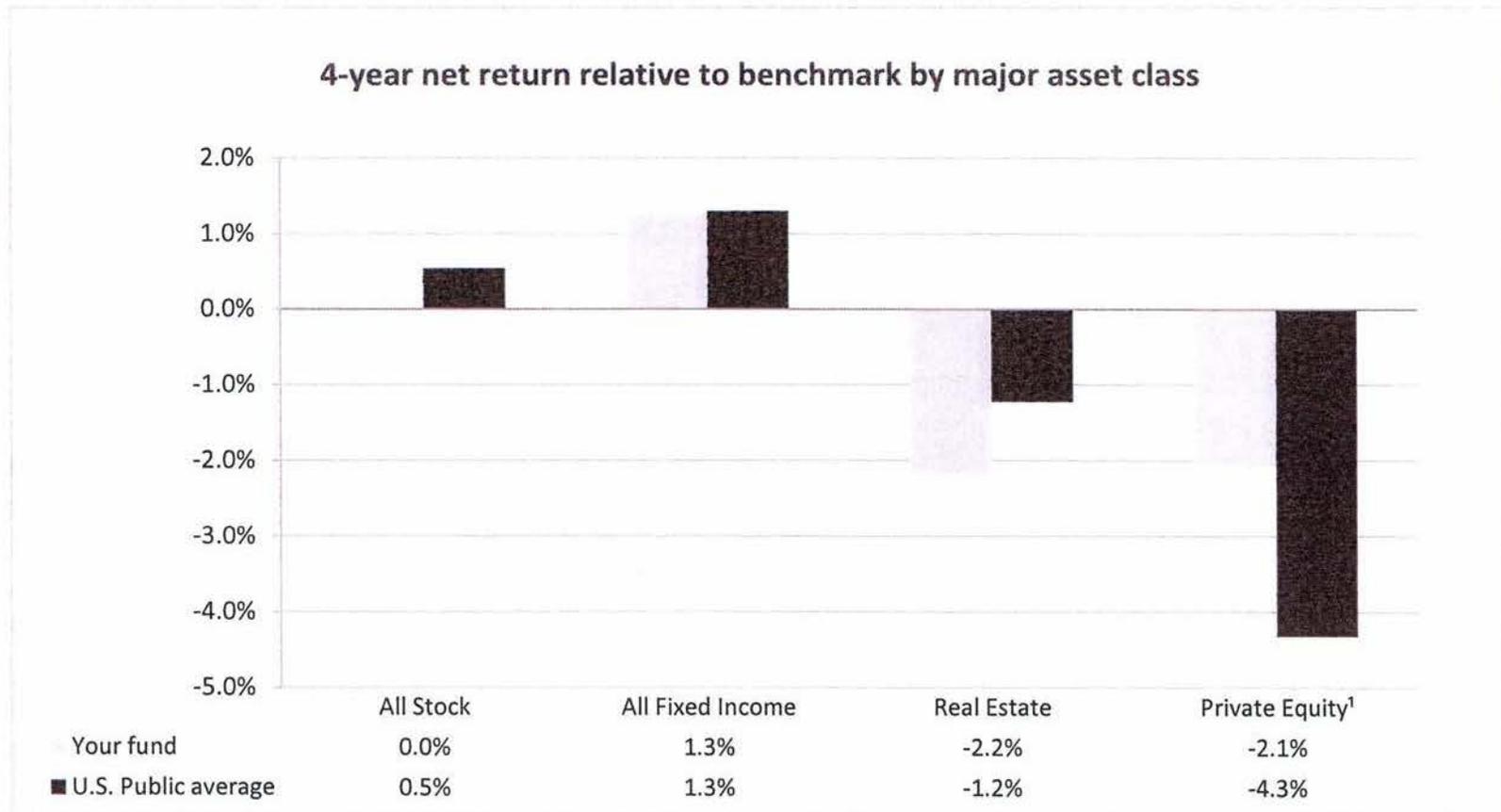
Implementation typically has a modest impact on total fund returns. Implementation impacts are mainly due to:

- Differences in asset class benchmarks across funds.
- Differences between actual holdings and policy weights for asset classes. These differences may be due to tactical asset allocation or rebalancing policies.
- Net return relative to benchmark returns within asset classes.



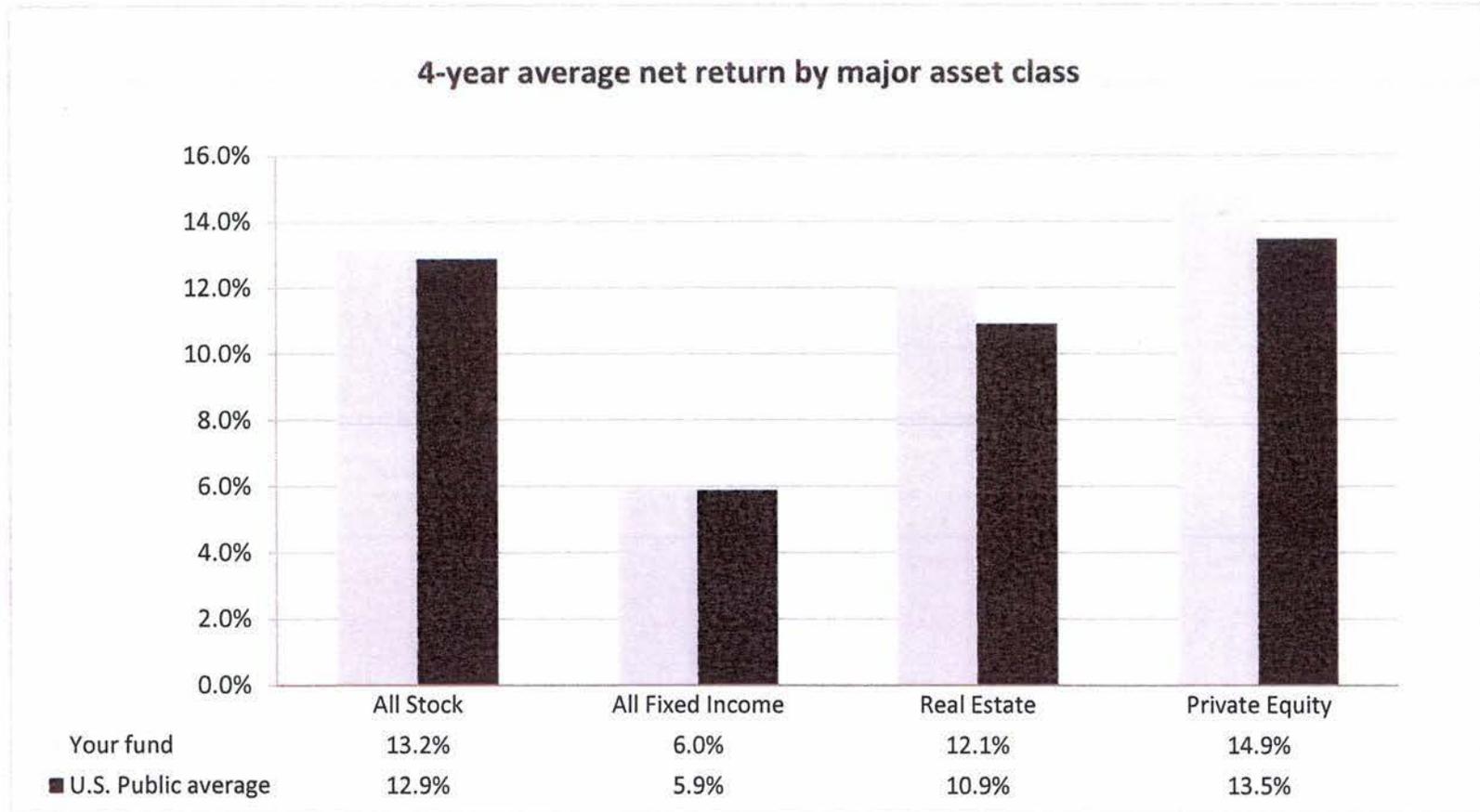
*To enable fairer comparisons, the implementation impact for each participant including your fund was adjusted to reflect private equity benchmarks based on investable public market indices. Prior to this adjustment, your fund's 4-year total fund implementation impact was -0.6%.*

Your 4-year total net returns by major asset class compare to your benchmark returns as follows. For the U.S. Public universe, the difference shown is between their average net return and their average benchmark return.



1. To enable fairer comparisons, the private equity benchmarks of all participants, including your fund were adjusted to reflect lagged, investable, public-market indices. Prior to this adjustment, your fund's 4-year private equity return relative to benchmark was -5.4%.

# You had better 4-year net returns relative to the U.S. Public average in Stock, Fixed Income, Real Estate and Private Equity.



## Your investment costs were \$49.1 million or 56.7 basis points in 2013.

### Asset management costs by asset class and style (\$000s)

	Internal Mgmt		External Mgmt		Total
	Active	Overseeing of external	Active base fees	Perform. fees <sup>1</sup>	
U.S. Stock - Large Cap		301	3,802		4,271
U.S. Stock - Small/Mid Cap		70	3,598		3,740
Stock - ACWixU.S.		315	2,174		3,378
Fixed Income - U.S.	339	84	672		1,094
Fixed Income - High Yield		42	865		907
Cash	17				17
Real Estate		142	2,738	excluded <sup>1</sup>	2,880
Real Estate - LPs		221	7,128	excluded <sup>1</sup>	7,350
Diversified Private Equity		520	16,060	excluded <sup>1</sup>	16,580
Diversified Priv. Eq.- Fund of Funds		145	6,783	excluded <sup>1</sup>	6,929
<b>Total asset management costs</b>					<b>47,145 54.5bp</b>
<b>Oversight, custodial and other costs<sup>2</sup></b>					
Oversight of the fund					645
Trustee & custodial					1,023
Consulting and performance measurement					242
Audit					41
<b>Total oversight, custodial &amp; other costs</b>					<b>1,950 2.3bp</b>
<b>Total investment costs</b>					<b>49,096 56.7bp</b>

<sup>1</sup> Total cost excludes carry/performance fees for real estate, infrastructure, hedge funds and private equity. Performance fees are included for the public market asset classes.

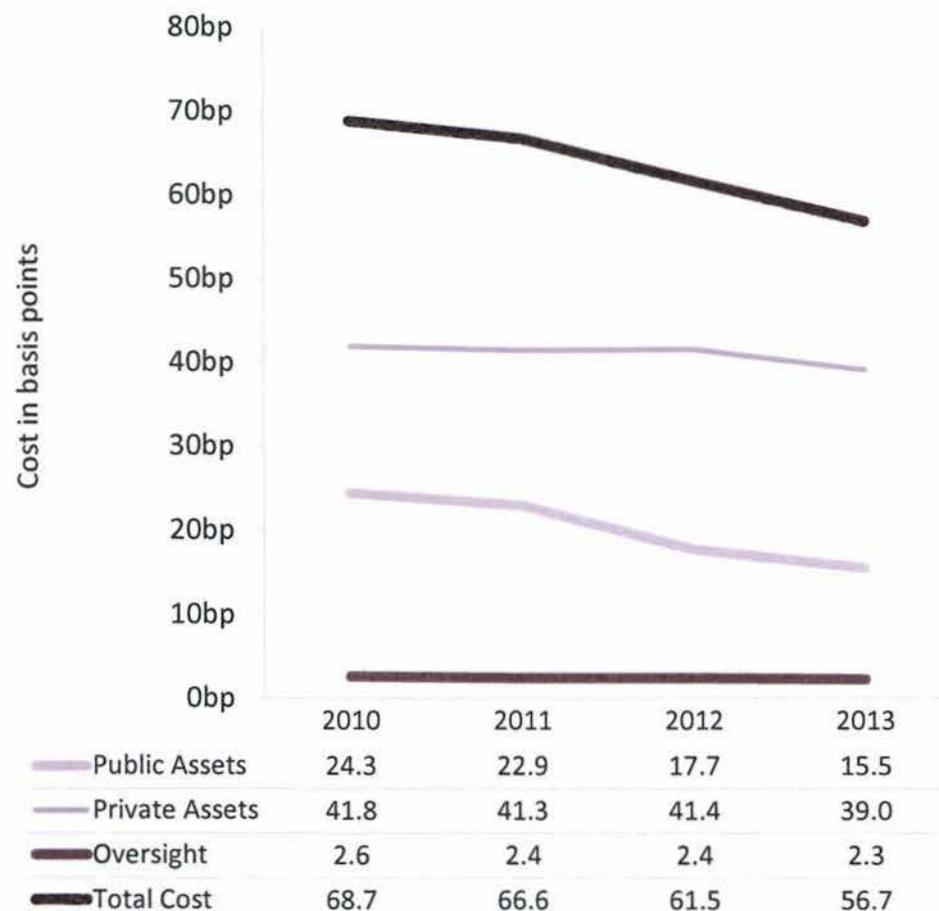
<sup>2</sup> Excludes non-investment costs, such as PBGC premiums and preparing checks for retirees.

## Your costs decreased between 2010 and 2013.

Your costs decreased primarily because:

- You increased your use of lower cost passive management from 14% of assets in 2010 to 34% in 2013. Specifically, you moved some U.S. Stock and ACWIxUS Stock from active to passive management.

Trend in your investment costs



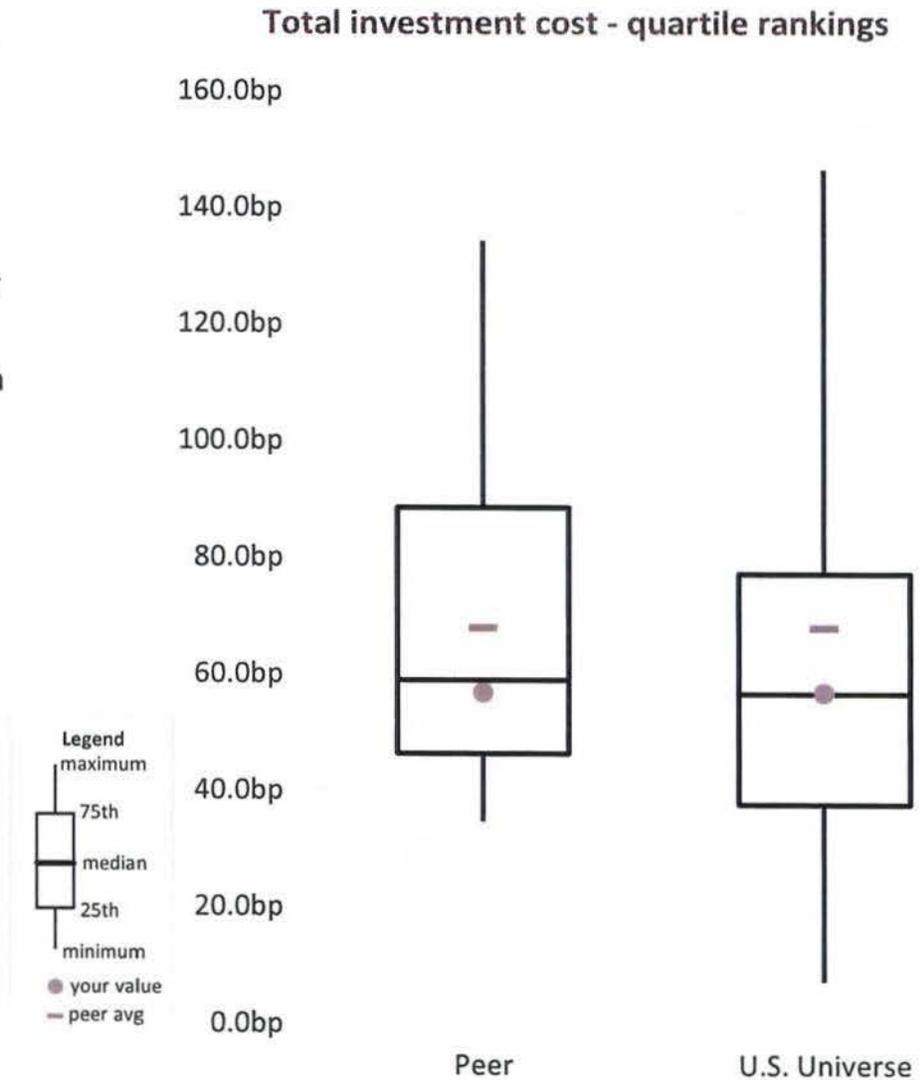
\* 2011 Total cost has changed from 64.9 bps in your 2011 report to 66.6 bps as reported here due to a change in Private Equity holdings for 2011.

## Your total investment cost of 56.7 bps was below the peer average of 67.9 bps.

Differences in total investment cost are often caused by two factors that are often outside of management's control:

- asset mix and
- fund size.

Therefore, to assess whether your costs are high or low given your unique asset mix and size, CEM calculates a benchmark cost for your fund. This analysis is shown on the following page.



**Benchmark cost analysis suggests that, after adjusting for fund size and asset mix, your fund was slightly low cost by 6.5 basis points in 2013.**

Your benchmark cost is an estimate of what your cost would be given your actual asset mix and the median costs that your peers pay for similar services. It represents the cost your peers would incur if they had your actual asset mix.

Your total cost of 56.7 bp was below your benchmark cost of 63.2 bp. Thus, your cost savings was 6.5 bp.

**Your cost versus benchmark**

	\$000s	basis points
Your total investment cost	49,096	56.7 bp
Your benchmark cost	<u>54,718</u>	<u>63.2 bp</u>
Your excess cost	(5,622)	(6.5) bp

**Your fund was slightly low cost because you had a lower cost implementation style and you paid less than peers for similar mandates.**

**Reasons for your low cost status**

	Excess Cost/ (Savings)	
	\$000s	bps
<b>1. Lower cost implementation style</b>		
• Less fund of funds	(272)	(0.3)
• Less external active management (vs. lower cost passive and internal)	(3,274)	(3.8)
• Less overlays	(652)	(0.8)
• Other style differences	39	0.0
	<u>(4,159)</u>	<u>(4.8)</u>
<b>2. Paying less than peers for similar mandates</b>		
• External investment management costs	(512)	(0.6)
• Internal investment management costs	(33)	(0.0)
• Oversight, custodial & other costs	(919)	(1.1)
	<u>(1,463)</u>	<u>(1.7)</u>
<b>Total savings</b>	<u>(5,622)</u>	<u>(6.5)</u>

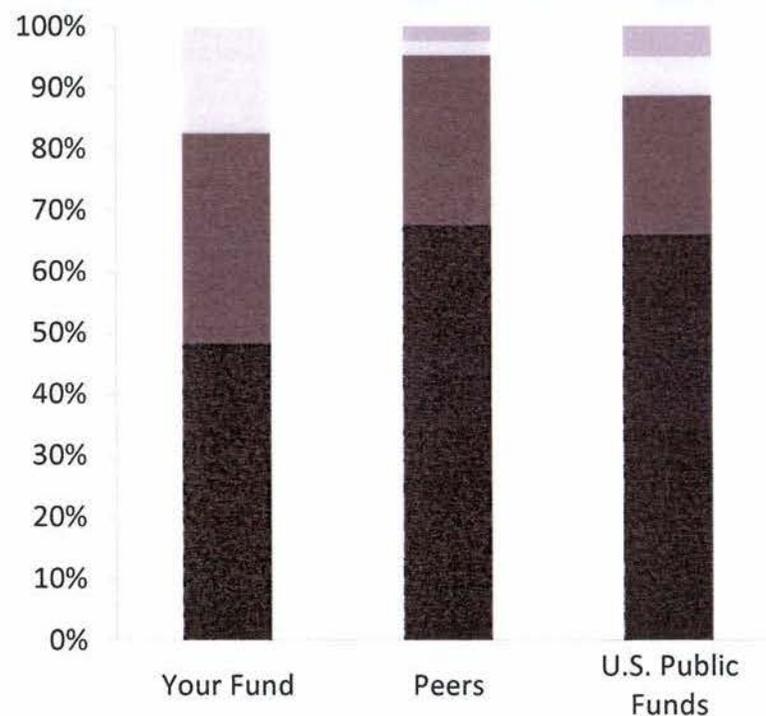
## Differences in cost performance are often caused by differences in implementation style.

Implementation style is defined as the way in which your fund implements asset allocation. It includes internal, external, active, passive and fund of funds styles.

The greatest cost impact is usually caused by differences in the use of:

- External active management because it tends to be much more expensive than internal or passive management. You used less external active management than your peers (your 48% versus 68% for your peers).
- Within external active holdings, fund of funds usage because it is more expensive than direct fund investment. You had similar amounts in fund of funds. Your 17% of hedge funds, real estate and private equity in fund of funds compared to 18% for your peers.

Implementation style<sup>1</sup>



Internal passive	0%	3%	5%
Internal active	17%	2%	6%
External passive	34%	28%	23%
External active	48%	68%	66%

1. The graph above does not take into consideration the impact of derivatives.

# Differences in implementation style saved you 4.8 bp relative to your peers.

## Calculation of the cost impact of differences in implementation style

Asset class	Your avg holdings in \$mils (A)	<u>% External active</u>			<u>Premium</u> vs passive & internal <sup>1</sup> (C)	<u>Cost/</u> (savings) \$000s (A X B X C)	bps
		You	Peer average	More/ (less) (B)			
U.S. Stock - Large Cap	2,650	29.4%	34.9%	(5.4%)	36.9 bp	(531)	
U.S. Stock - Small/Mid Cap	615	84.4%	96.6%	(12.1%)	55.6 bp	(415)	
Stock - ACWIxU.S.	1,494	33.1%	54.5%	(21.4%)	46.3 bp	(1,479)	
Fixed Income - U.S.	1,731	19.8%	72.6%	(52.8%)	15.5 bp	(1,415)	
Fixed Income - High Yield	173	100.0%	100.0%	0.0%		0	
Real Estate ex-REITs	961	100.0%	100.0%	0.0%		0	
of which Ltd Partnerships represent:		67.9%	37.4%	30.5%	19.3 bp	567	
Diversified Private Equity	1,631	100.0%	100.0%	0.0%		0	
Impact of less/more external active vs. lower cost styles						(3,274)	(3.8) bp
					<u>Premium</u> vs. direct LP <sup>1</sup>		
Real Estate ex-REITs - LPs	652	<u>Fund of funds</u>	<u>% of LPs</u>	(2.2%)	Insufficient <sup>2</sup>	0	
Diversified Private Equity - LPs	1,631	0.0%	2.2%	(2.7%)	60.9 bp	(272)	
Impact of less/more fund of funds vs. direct LPs						(272)	(0.3) bp
<u>Overlays and other</u>							
Impact of lower use of portfolio level overlays						(652)	(0.8) bp
Impact of mix of internal passive, internal active, and external passive <sup>3</sup>						39	0.0 bp
Total impact of differences in implementation style						(4,159)	(4.8) bp

1. The cost premium is the additional cost of external active management relative to the average of other lower cost implementation styles - internal passive, internal active and external passive.

2. A cost premium listed as 'Insufficient' indicates that there was not enough peer data to calculate the premium.

3. The 'Impact of mix of internal passive, internal active and external passive' quantifies the net cost impact of differences in cost between, and your relative use of, these 'low-cost' styles.

## The net impact of paying more/less for external asset management costs saved you 0.6 bps.

### Cost impact of paying more/(less) for external asset management

	Your avg holdings in \$mils (A)	Cost in bps			Cost/ (savings) in \$000s (A X B)
		Your Fund	Peer median	More/ (less) (B)	
U.S. Stock - Large Cap - Passive	1,870	0.9	1.2	(0.3)	(62)
U.S. Stock - Large Cap - Active	780	52.6	38.2	14.4	1,126
U.S. Stock - Small/Mid Cap - Passive	96	7.6	4.2*	3.4	33
U.S. Stock - Small/Mid Cap - Active	519	70.6	59.8	10.8	563
Stock - ACWIxU.S. - Passive	999	8.9	3.8	5.1	507
Stock - ACWIxU.S. - Active	495	50.3	50.1	0.2	9
Fixed Income - U.S. - Active	343	22.0	17.9	4.1	142
Fixed Income - High Yield - Active	173	52.5	40.9	11.6	201
Real Estate ex-REITs - Active	309	93.3	93.3	0.0	0
Real Estate ex-REITs - Limited Partnership	652	112.7	112.7	0.0	0
Diversified Private Equity - Active	1,177	140.8	165.0	(24.2)	(2,848)
Diversified Private Equity - Fund of Fund <sup>1</sup>	453	56.9	60.9	(4.0)	(183)
<b>Total impact of paying more/less for external management</b>					<b>(512)</b>
<b>Total in bps</b>					<b>(0.6) bp</b>

\*Universe median used as peer data was insufficient.

1. The cost comparison for fund of fund private equity is only based on the top layer fees. The underlying fees were excluded because we could not confirm they were gross partnership costs.

**The net impact of paying more/less for internal asset management costs was 0.0 bps.**

**Cost impact of paying more/(less) for internal asset management**

	Your avg holdings in \$mils (A)	Cost in bps			Cost/ (savings) in \$000s (A X B)
		Your Fund	Peer median	More/ (less) (B)	
Fixed Income - U.S. - Active	1,388	2.4	2.7*	(0.2)	(33)
<b>Total impact of paying more/less for internal management</b>					<b>(33)</b>
<b>Total in bps</b>					<b>(0.0) bp</b>

\*Universe median used as peer data was insufficient.

## The net impact of differences in oversight, custodial & other costs saved 1.1 bps.

### Cost impact of differences in oversight, custodial & other costs

	Your avg holdings in \$mils (A)	Cost in bps			Cost/ (savings) in \$000s (A X B)
		Your fund	Peer median	More/ (less) (B)	
Oversight	8,657	0.7	1.3	(0.6)	(491)
Custodial*	8,657	1.2	0.5	0.7	597
Consulting	8,657	0.3	1.0	(0.7)	(582)
Audit	8,657	0.0	0.1	(0.0)	(38)
Other	8,657	0.0	0.5	(0.5)	(405)
<b>Total</b>					<b>(919)</b>
<b>Total in bps</b>					<b>(1.1) bp</b>

\* Important additional information about your custodial cost relative to peers:

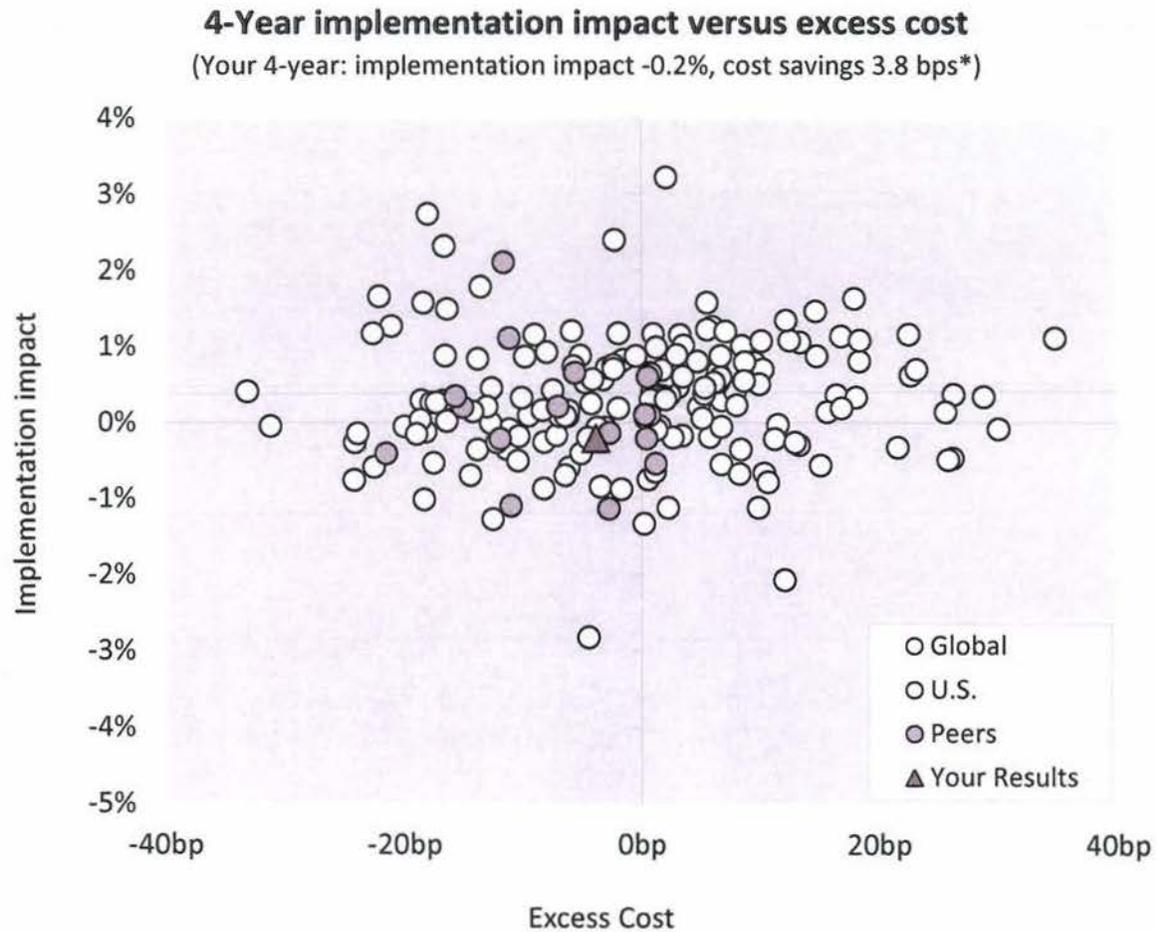
1. The peer median cost of 0.5 bps is unusually low. The U.S. Universe median custodial cost was 1.1 bps (See page 36 of Section 6).
2. You have a more complex structure than your peers. (You have 9 plans on your platform, 10 peers have only 1 plan, and the peer average is 2.5 plans.)
3. Specific services provided by custodians for funds vary somewhat. CEM does not collect detailed data related to specific custodial arrangements.

**In summary, your fund was slightly low cost because you had a lower cost implementation style and you paid less than peers for similar mandates.**

**Reasons for your low cost status**

	Excess Cost/ (Savings)	
	\$000s	bps
1. Lower cost implementation style		
• Less fund of funds	(272)	(0.3)
• Less external active management (vs. lower cost passive and internal)	(3,274)	(3.8)
• Less overlays	(652)	(0.8)
• Other style differences	39	0.0
	<u>(4,159)</u>	<u>(4.8)</u>
2. Paying less than peers for similar mandates		
• External investment management costs	(512)	(0.6)
• Internal investment management costs	(33)	(0.0)
• Oversight, custodial & other costs	(919)	(1.1)
	<u>(1,463)</u>	<u>(1.7)</u>
<b>Total savings</b>	<b>(5,622)</b>	<b>(6.5)</b>

**Your fund had a 4-year implementation impact of -0.2% and cost savings of 3.8 bps on the cost effectiveness chart.**



# Summary of key takeaways

## Returns

- Your 4-year net total return was 11.3%. This was above the U.S. Public median of 10.4% and above the peer median of 10.2%.
- Your 4-year policy return was 11.5%. This was above the U.S. Public median of 10.4% and above the peer median of 10.1%.

## Implementation impact

- Your 4-year implementation impact was -0.2%. This was below the U.S. Public median of 0.1% and below the peer median of 0.1%.

## Cost and cost effectiveness

- Your investment cost of 56.7 bps was below your benchmark cost of 63.2 bps. This suggests that your fund was slightly low cost compared to your peers.
- Your fund was slightly low cost because you had a lower cost implementation style and you paid less than peers for similar mandates..
- Your fund had a 4-year implementation impact of -0.2% and cost savings of 3.8 bps on the cost effectiveness chart.