

# FOURTH FISCAL QUARTER 2018 EXECUTIVE IPA

## VERMONT PENSION INVESTMENT COMMITTEE

September 25, 2018

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BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO













# MARKET ENVIRONMENT

NEPC, LLC

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# PERFORMANCE OVERVIEW

## Q2 Market Summary

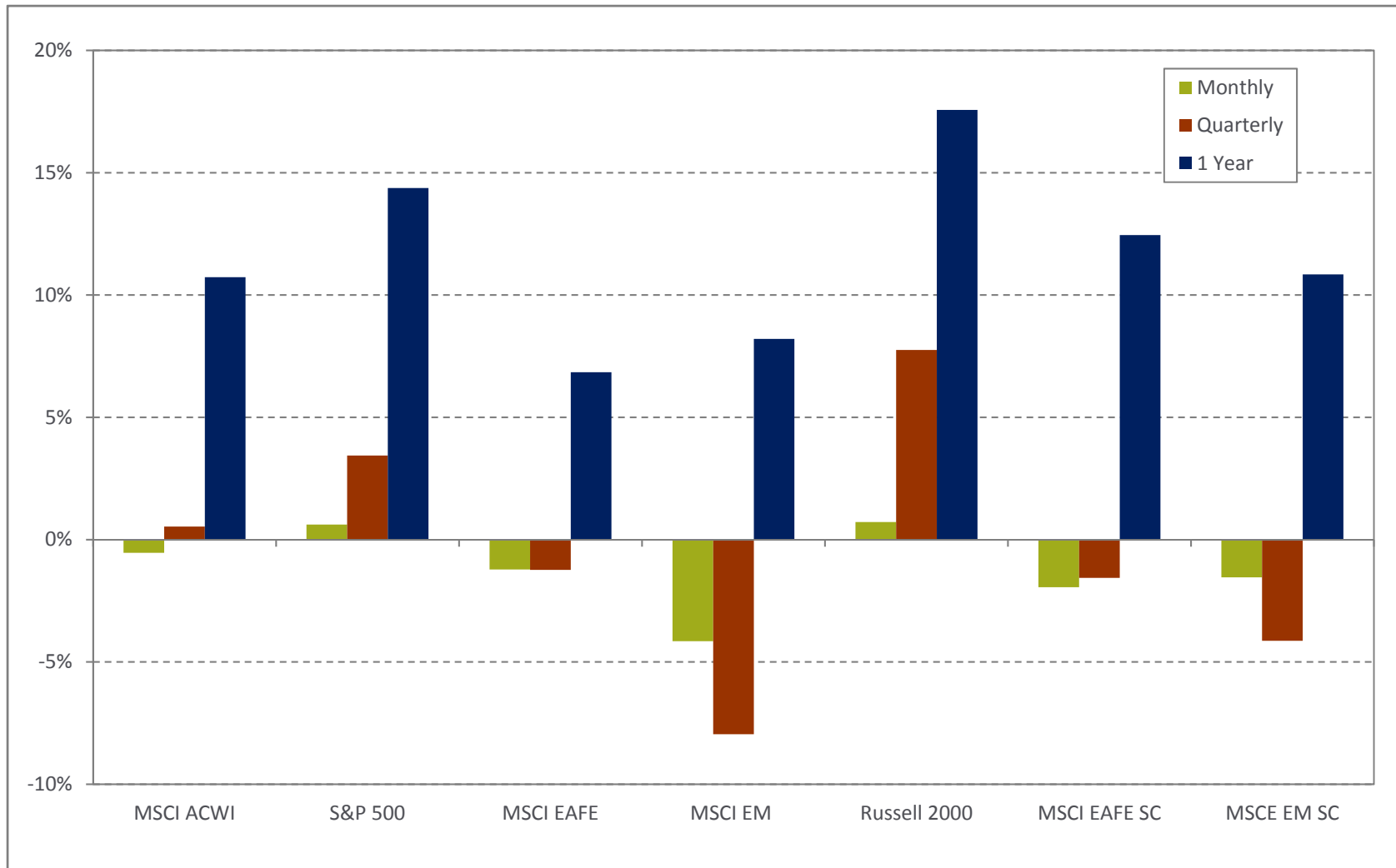
Macro			Equity			Credit			Real Assets		
US Dollar	VIX	US 10-Yr	S&P 500	MSCI EAFE	MSCI EM	US Agg.	High Yield	Dollar EMD	Oil	Gold	REITS
											
5.0%	-3.9	12 bps	3.4%	-1.2%	-8.0%	-0.2%	1.0%	-3.5%	14.2%	-5.4%	8.3%

- **US stocks increased on the quarter, supported by strong earnings growth**
- **Emerging market equities and currencies weakened this quarter as trade concerns and Federal Reserve interest rate increases weighed on markets**
  - The US dollar reversed its first quarter decline and increased relative to a basket of major developed market currencies
- **The US yield curve continued to flatten as the second Fed rate hike of 2018 pushed short-term interest rates higher**

Market segment (index representation) as follows: US Dollar (DXY Index), VIX (CBOE Volatility Index), US 10-Year (US 10-Year Treasury Yield), S&P 500 (US Equity), MSCI EAFE Index (International Developed Equity), MSCI Emerging Markets (Emerging Markets Equity), US Agg (Barclays US Aggregate Bond Index), High Yield (Barclays US High Yield Index), Dollar EMD (JPM Emerging Market Bond Index), Crude Oil (WTI Crude Oil Spot), Gold (Gold Price Spot), and REITs (NAREIT Composite Index).



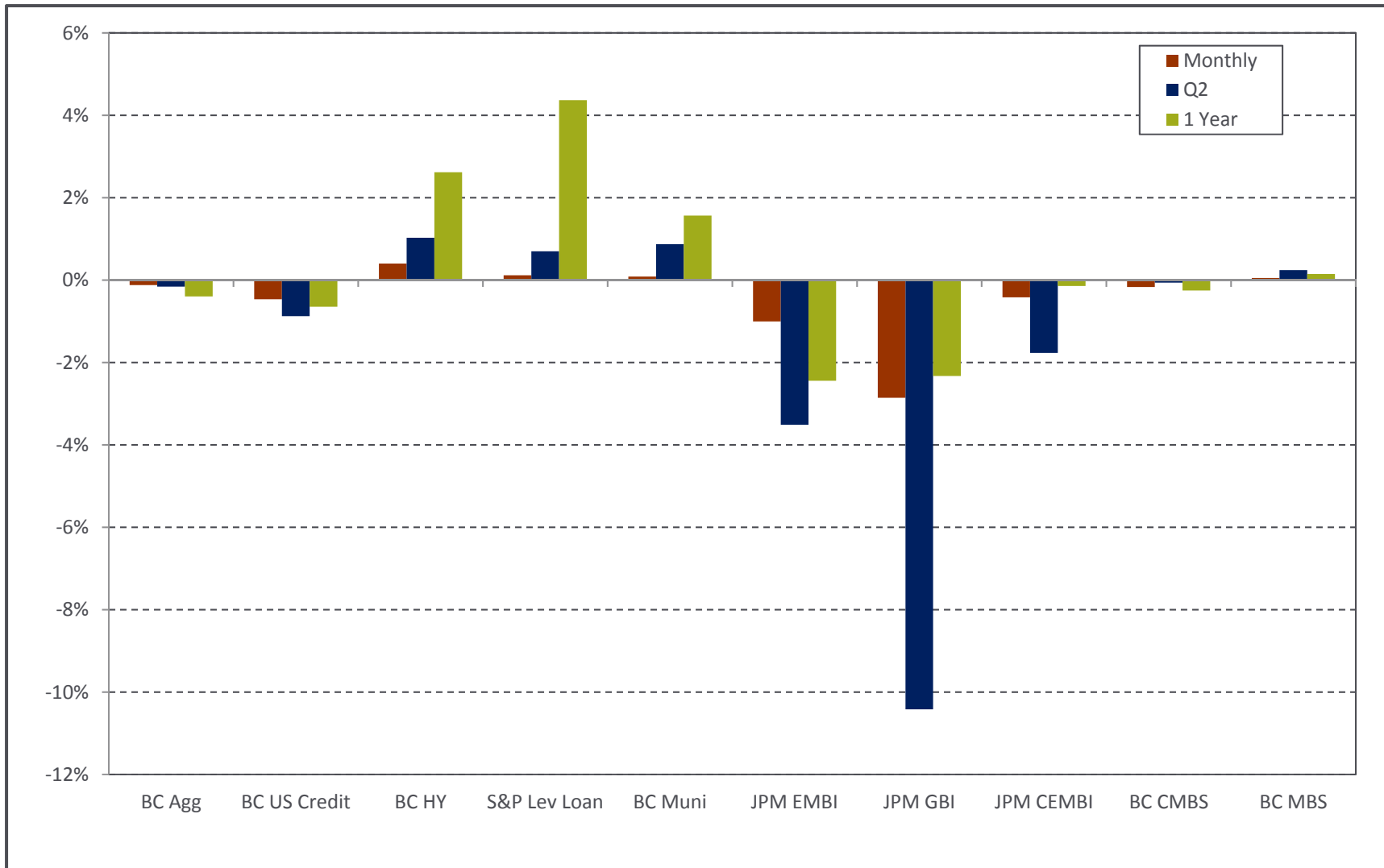
# Q2 EQUITY INDEX RETURNS



Source: Bloomberg



# INDEX RETURNS



Source: Barclays, S&P, JPM, Bloomberg



# STATE EMPLOYEES' RETIREMENT SYSTEM

NEPC, LLC

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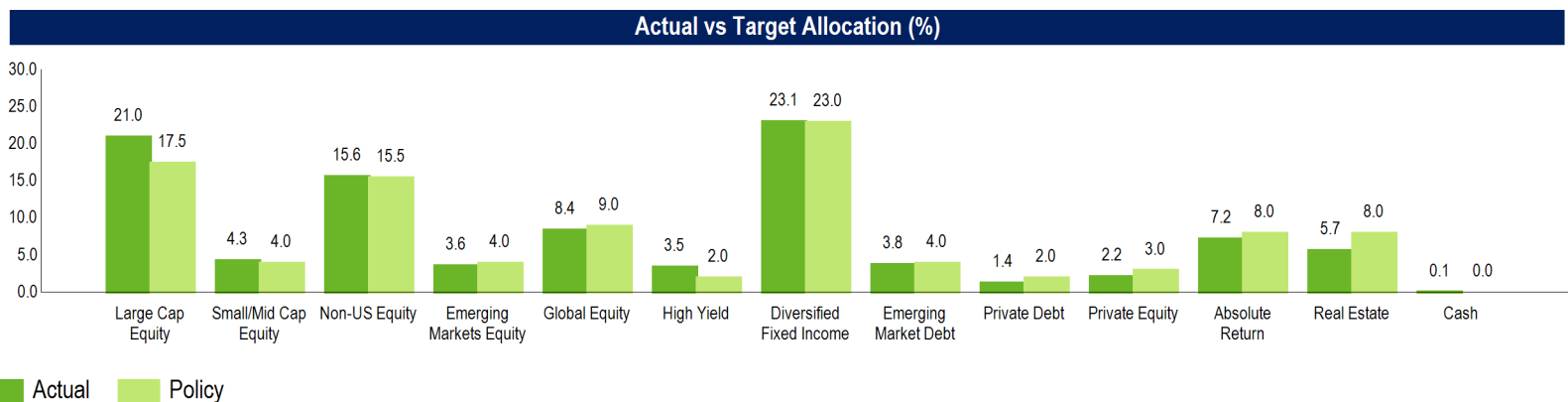
## Vermont State Employees

# TOTAL FUND PERFORMANCE SUMMARY - NET

	Market Value	3 Mo Rank	YTD Rank	Fiscal YTD Rank	1 Yr Rank	3 Yrs Rank	5 Yrs Rank	7 Yrs Rank	10 Yrs Rank								
<b>Total Employees Composite</b>	<b>\$1,829,644,831</b>	<b>0.5%</b>	<b>70</b>	<b>0.1%</b>	<b>73</b>	<b>6.7%</b>	<b>76</b>	<b>6.7%</b>	<b>76</b>	<b>6.1%</b>	<b>64</b>	<b>6.3%</b>	<b>88</b>	<b>5.9%</b>	<b>86</b>	<b>5.5%</b>	<b>79</b>
Allocation Index		0.6%	64	0.0%	75	7.2%	60	7.2%	60	6.1%	64	6.3%	88	5.7%	92	5.4%	83
Policy Index		0.6%	63	0.2%	65	6.8%	75	6.8%	75	6.1%	69	6.3%	88	5.7%	92	5.3%	86
InvestorForce Public DB < \$5 Billion Net Median		0.8%		0.5%		7.5%		7.5%		6.4%		7.4%		6.9%		6.2%	

3 Years Ending June 30, 2018								
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
Total Employees Composite	6.11%	64	5.52%	26	0.98	40	1.44	22
Allocation Index	6.15%	64	5.48%	25	0.99	35	1.47	19
Policy Index	6.05%	69	5.13%	10	1.04	26	1.55	10

5 Years Ending June 30, 2018								
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
Total Employees Composite	6.33%	88	5.46%	31	1.08	76	1.82	59
Allocation Index	6.30%	88	5.30%	22	1.11	72	1.82	60
Policy Index	6.32%	88	5.02%	8	1.17	57	1.99	31

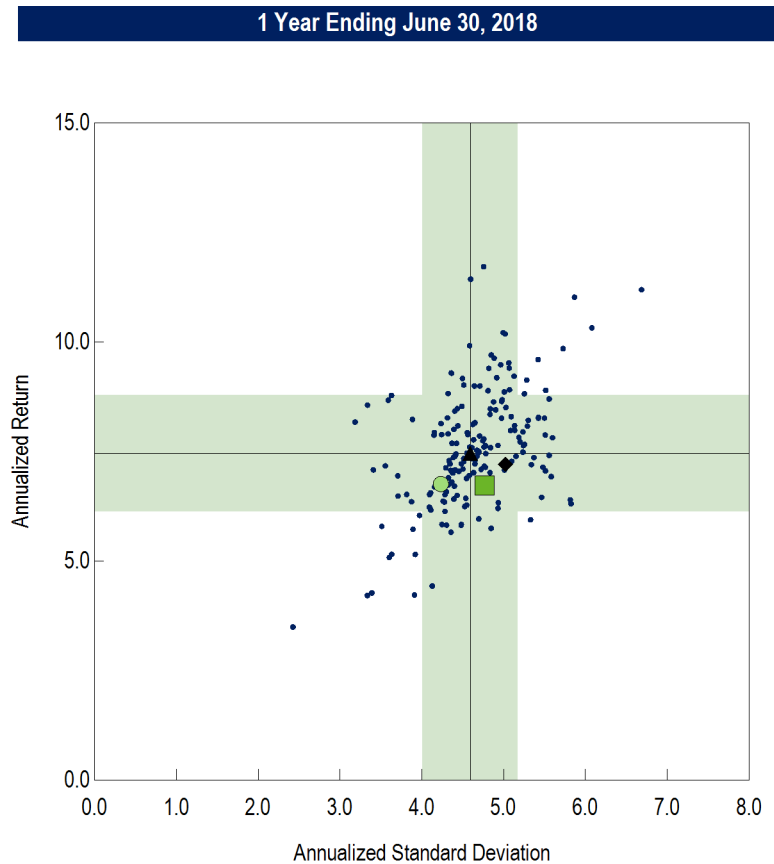


Asset class weights may not add up to 100% due to rounding.



# Vermont State Employees

## TOTAL FUND RISK/RETURN - NET



- Total Employees Composite
- ◆ Allocation Index
- Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB < \$5 Billion Net

1 Year Ending June 30, 2018

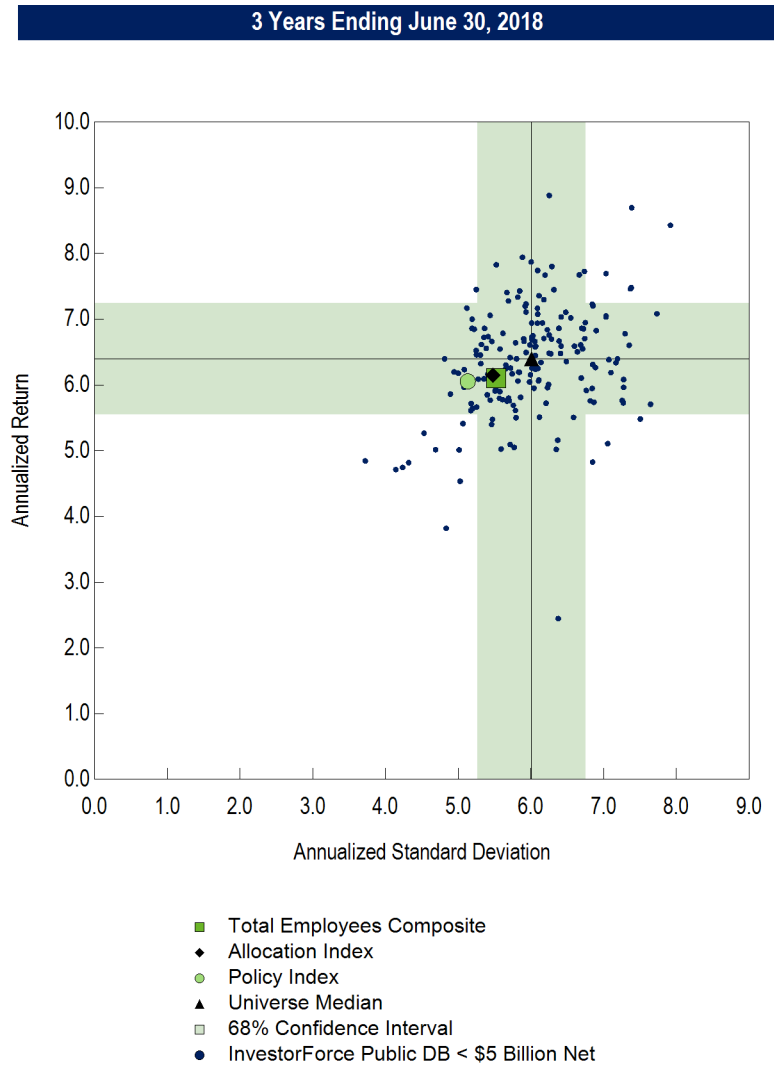
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Employees Composite	6.72%	76	4.77%	64	1.12	83
Allocation Index	7.21%	60	5.02%	78	1.16	80
S&P 500	14.37%	1	8.60%	99	1.51	21
FTSE WGBI TR	1.90%	99	4.54%	46	0.11	99
MSCI ACWI	10.73%	2	8.63%	99	1.08	87
MSCI ACWI ex USA	7.28%	58	9.89%	99	0.59	99
InvestorForce Public DB < \$5 Billion Net Median	7.46%	--	4.59%	--	1.29	--





# Vermont State Employees

## TOTAL FUND RISK/RETURN - NET



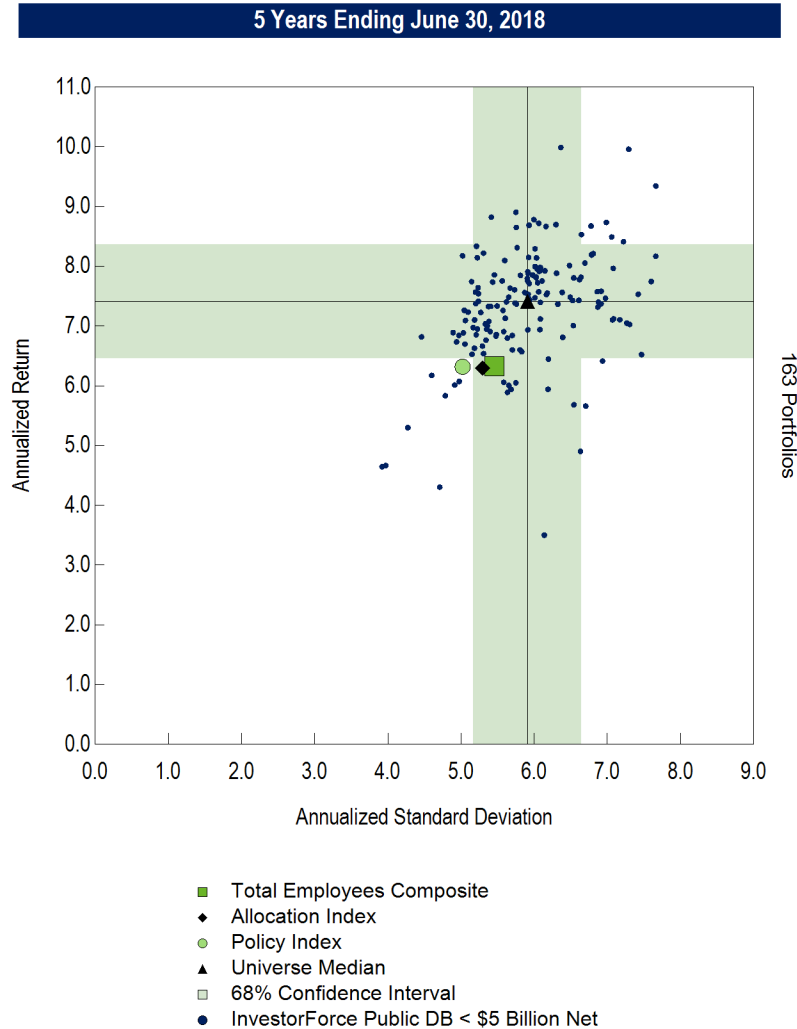
3 Years Ending June 30, 2018

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Employees Composite	6.11%	64	5.52%	26	0.98	40
Allocation Index	6.15%	64	5.48%	25	0.99	35
S&P 500	11.93%	1	10.16%	99	1.11	14
FTSE WGBI TR	2.81%	99	5.83%	42	0.36	99
MSCI ACWI	8.19%	2	10.67%	99	0.70	95
MSCI ACWI ex USA	5.07%	94	12.17%	99	0.36	99
InvestorForce Public DB < \$5 Billion Net Median	6.40%	--	6.01%	--	0.95	--



# Vermont State Employees

## TOTAL FUND RISK/RETURN - NET



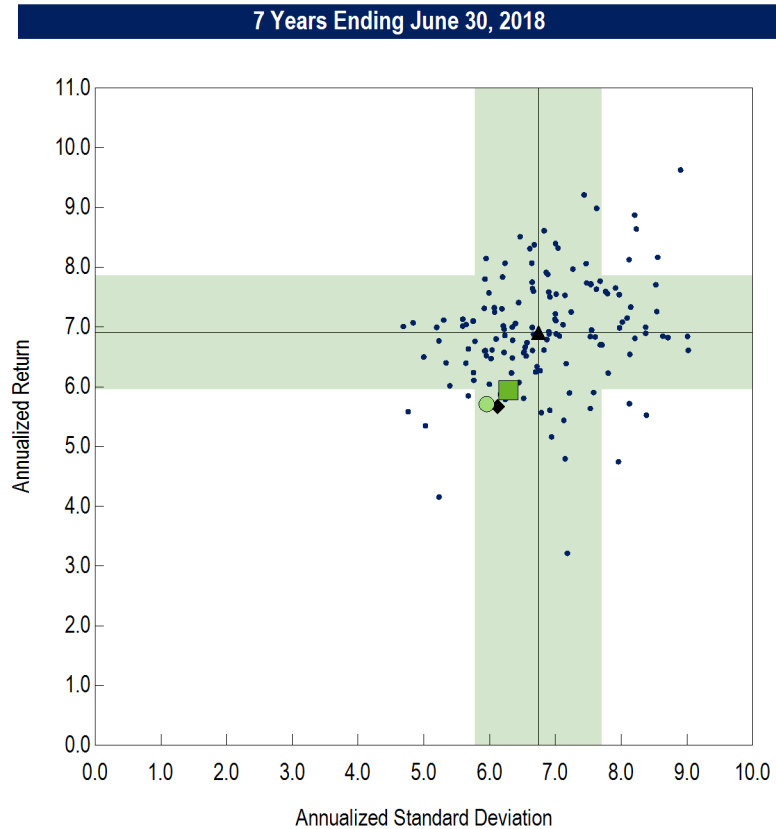
5 Years Ending June 30, 2018

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Employees Composite	6.33%	88	5.46%	31	1.08	76
Allocation Index	6.30%	88	5.30%	22	1.11	72
S&P 500	13.42%	1	9.81%	99	1.32	16
FTSE WGBI TR	1.11%	99	5.29%	21	0.13	99
MSCI ACWI	9.41%	2	10.18%	99	0.88	96
MSCI ACWI ex USA	5.99%	93	11.65%	99	0.48	99
InvestorForce Public DB < \$5 Billion Net Median	7.41%	--	5.91%	--	1.20	--



# Vermont State Employees

## TOTAL FUND RISK/RETURN - NET



- Total Employees Composite
- ◆ Allocation Index
- Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB < \$5 Billion Net

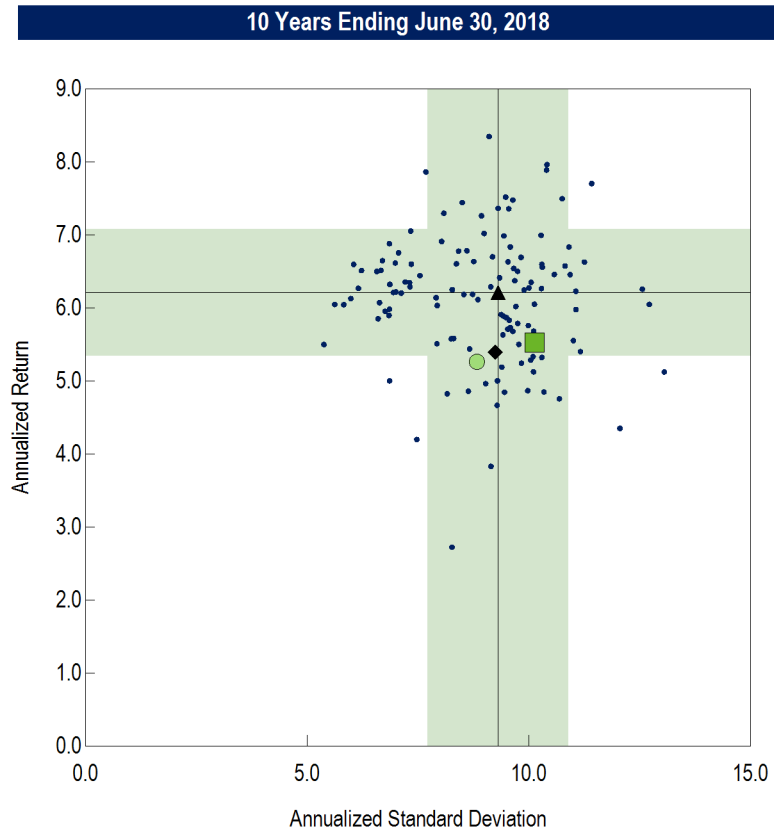
7 Years Ending June 30, 2018

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Employees Composite	5.94%	86	6.29%	33	0.89	73
Allocation Index	5.67%	92	6.12%	25	0.87	77
S&P 500	13.23%	1	10.91%	99	1.18	14
FTSE WGBI TR	0.51%	99	5.13%	4	0.04	99
MSCI ACWI	7.96%	13	12.06%	99	0.63	98
MSCI ACWI ex USA	3.81%	99	13.95%	99	0.25	99
InvestorForce Public DB < \$5 Billion Net Median	6.91%	--	6.74%	--	0.98	--



## Vermont State Employees

# TOTAL FUND RISK/RETURN - NET



- Total Employees Composite
- ◆ Allocation Index
- Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB < \$5 Billion Net

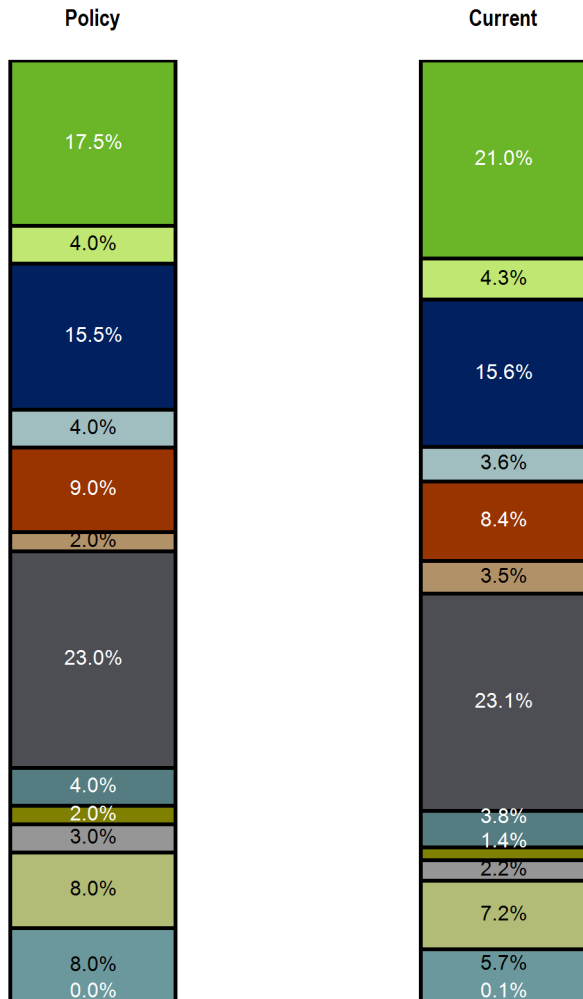
10 Years Ending June 30, 2018

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Employees Composite	5.53%	79	10.12%	81	0.52	84
Allocation Index	5.40%	83	9.23%	48	0.55	76
S&P 500	10.17%	1	14.71%	99	0.67	45
FTSE WGBI TR	2.07%	99	6.46%	6	0.27	99
MSCI ACWI	5.80%	70	16.41%	99	0.34	99
MSCI ACWI ex USA	2.54%	99	18.53%	99	0.12	99
InvestorForce Public DB < \$5 Billion Net Median	6.22%	--	9.30%	--	0.65	--



Vermont State Employees

# TOTAL FUND ASSET ALLOCATION VS. POLICY TARGETS



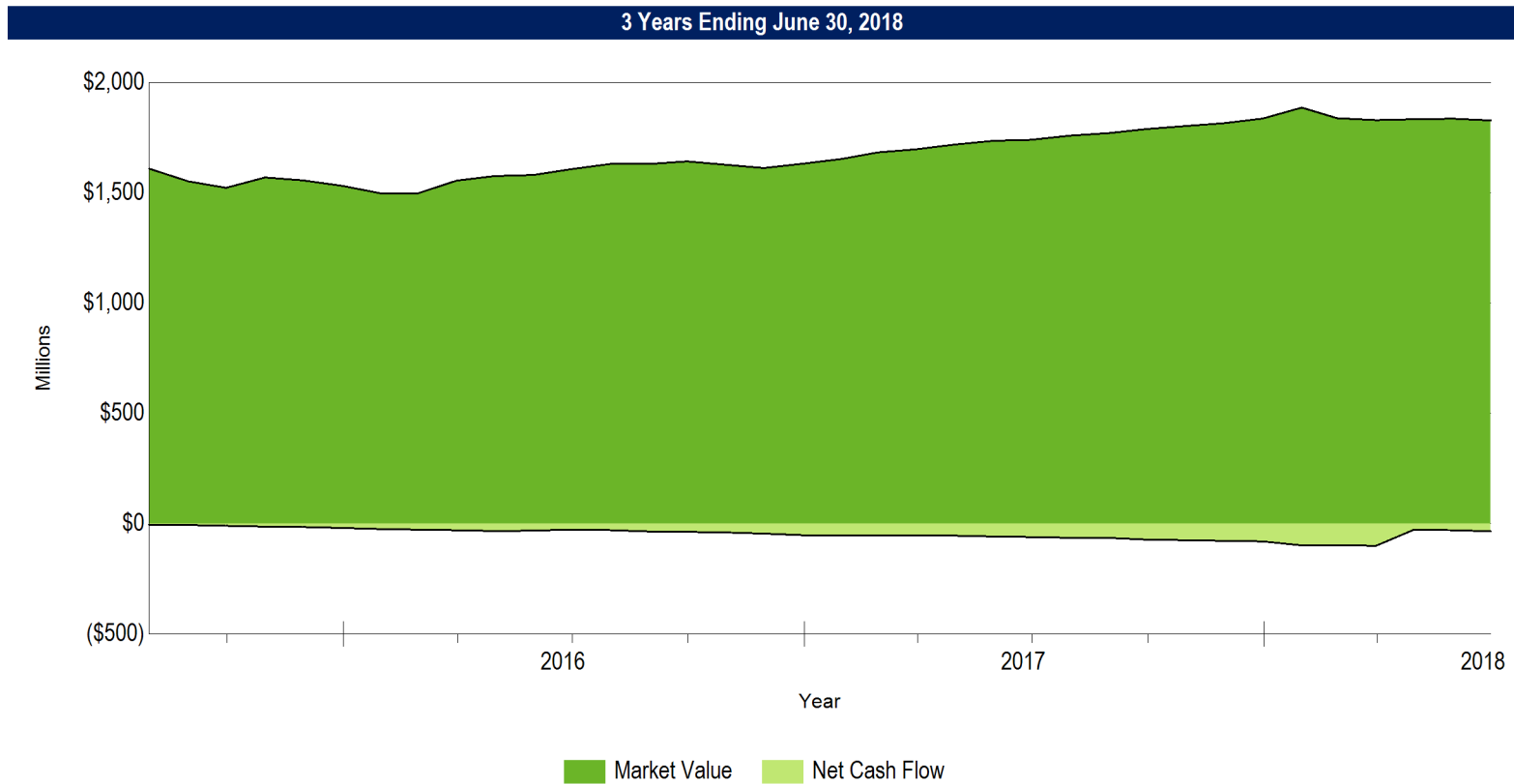
Asset Allocation vs. Target		
	Policy	Current
Large Cap Equity	17.5%	21.0%
Small/Mid Cap Equity	4.0%	4.3%
Non-US Equity	15.5%	15.6%
Emerging Markets Equity	4.0%	3.6%
Global Equity	9.0%	8.4%
High Yield	2.0%	3.5%
Diversified Fixed Income	23.0%	23.1%
Emerging Market Debt	4.0%	3.8%
Private Debt	2.0%	1.4%
Private Equity	3.0%	2.2%
Absolute Return	8.0%	7.2%
Real Estate	8.0%	5.7%
Cash	0.0%	0.1%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>

Absolute Return includes Grosvenor, Pinnacle Natural Resources, L.P., and Allianz Structured Alpha.



## Vermont State Employees

# TOTAL FUND ASSET GROWTH SUMMARY



	Last Three Months	Year-To-Date	Fiscal Year-To-Date	One Year	Three Years
Beginning Market Value	\$1,754,157,293	\$1,838,198,458	\$1,741,704,933	\$1,741,704,933	\$1,619,392,908
Net Cash Flow	\$65,521,275	\$45,891,963	\$26,138,462	\$26,138,462	-\$34,020,395
Net Investment Change	\$9,966,264	-\$54,445,591	\$61,801,436	\$61,801,436	\$244,272,317
Ending Market Value	\$1,829,644,831	\$1,829,644,831	\$1,829,644,831	\$1,829,644,831	\$1,829,644,831



## Vermont State Employees

# TOTAL FUND ASSET GROWTH SUMMARY BY MANAGER

	Quarter Ending June 30, 2018					Ending Market Value
	Beginning Market Value	Contributions	Withdrawals	Net Cash Flow	Net Investment Change	
Aberdeen	\$82,344,337	\$138,140	-\$8,238,140	-\$8,100,000	-\$7,917,989	\$66,326,348
Acadian	\$63,004,758	\$78,807	-\$78,807	\$0	-\$693,136	\$62,311,622
Allianz Structured Alpha	\$31,692,023	\$0	-\$52,131	-\$52,131	\$1,137,060	\$32,776,952
Artisan Global Opportunities	--	\$82,365,441	\$0	\$82,365,441	-\$1,101,633	\$81,263,808
Benefit Street Partners	\$19,665,738	\$3,775,995	-\$395,340	\$3,380,654	\$383,884	\$23,430,276
BlackRock TIPS	\$94,853,364	\$16,318,796	-\$18,796	\$16,300,000	\$859,765	\$112,013,129
BlueBay Direct Lending Fund III	--	\$1,311,951	-\$821	\$1,311,130	-\$16,200	\$1,294,930
Brookfield Strategic Real Estate Partners III	--	\$0	\$0	\$0	\$0	\$0
Champlain	\$55,978,118	\$18,245,255	-\$145,255	\$18,100,000	\$5,495,447	\$79,573,565
GAM	\$28,988	\$0	-\$28,988	-\$28,988	\$0	--
GAM Unconstrained Bond	\$35,825,366	\$0	-\$51,710	-\$51,710	-\$16,128	\$35,757,528
Grosvenor	\$52,170,672	\$0	\$0	\$0	\$783,334	\$52,954,006
Guggenheim	\$51,066,514	\$34,695,472	-\$24,026,341	\$10,669,132	\$731,506	\$62,467,152
Harbourvest Dover IX Fund	\$4,780,488	\$799,953	\$0	\$799,953	\$567,806	\$6,148,247
Harbourvest Dover VIII Fund	\$4,624,267	\$0	\$0	\$0	\$399,791	\$5,024,058
Harbourvest Partners IX Buyout Fund	\$7,196,923	\$91,726	-\$501,449	-\$409,723	\$442,376	\$7,229,576
Harbourvest Partners IX Credit Opportunities	\$1,006,812	\$2,175	\$0	\$2,175	\$33,000	\$1,041,987
Harbourvest Partners IX Venture Fund	\$5,231,205	\$19,603	\$0	\$19,603	\$345,769	\$5,596,577
Harbourvest Partners X Buyout Fund	\$4,394,393	\$0	\$0	\$0	\$296,325	\$4,690,718
Harbourvest Partners X Venture Fund	\$3,075,645	\$618,129	\$0	\$618,129	\$156,905	\$3,850,679
HIPEP VII	\$3,464,094	\$294,459	\$0	\$294,459	\$173,142	\$3,931,695
HIPEP VIII	\$2,490,766	\$0	\$0	\$0	\$334,891	\$2,825,658
Hosking Global Equity	\$75,212,642	\$72,722	-\$72,722	\$0	-\$2,093,539	\$73,119,102



## Vermont State Employees

# TOTAL FUND ASSET GROWTH SUMMARY BY MANAGER

	Quarter Ending June 30, 2018					Ending Market Value
	Beginning Market Value	Contributions	Withdrawals	Net Cash Flow	Net Investment Change	
KDP	\$17,655,581	\$0	-\$16,435,410	-\$16,435,410	\$84,423	\$1,304,594
Mondrian	\$65,641,495	\$61,728	-\$61,728	\$0	-\$1,415,434	\$64,226,061
PIMCO Core Plus	\$137,916,597	\$96,297	-\$96,297	\$0	\$125,275	\$138,041,871
PIMCO Unconstrained	\$35,482,736	\$51,563	-\$3,551,563	-\$3,500,000	\$219,658	\$32,202,395
Pinnacle Natural Resources, L.P.	\$44,497,723	\$0	\$0	\$0	\$2,036,343	\$46,534,067
Siguler Guff DREOF II	\$15,236,377	\$0	-\$1,264,747	-\$1,264,747	-\$851,892	\$13,119,738
Siguler Guff DREOF II Co-Investment	\$5,847,376	\$0	\$0	\$0	\$24,006	\$5,871,382
SSgA ACWI Ex US	\$241,611,016	\$34,886	-\$78,917,607	-\$78,882,721	-\$3,114,635	\$159,613,661
SSgA Barclays Aggregate Index	\$17,637,312	\$52,970,424	-\$4,419	\$52,966,005	\$59,412	\$70,662,730
SSgA S&P 500 Cap-Wgt	\$300,974,315	\$44,325,608	-\$47,708,328	-\$3,382,721	\$11,552,200	\$309,143,794
SSgA S&P 500 Equal-Wgt	\$79,793,282	\$7,713	-\$7,107,713	-\$7,100,000	\$2,139,818	\$74,833,099
State Street Long U.S. Treasury Index	\$34,088,653	\$3,415	-\$1,003,415	-\$1,000,000	\$109,409	\$33,198,062
T. Rowe	\$1,737	\$0	\$0	\$0	\$0	\$1,737
Transwestern / Aslan III	\$102,653	\$0	\$0	\$0	\$0	\$102,653
UBS Trumbull	\$84,222,190	\$156,389	-\$156,389	\$0	\$1,493,410	\$85,715,599
Vermont Cash	\$2,150,627	\$3,211,572	-\$4,306,404	-\$1,094,832	\$0	\$1,055,795
Wellington	\$2,425	\$0	-\$2,425	-\$2,425	\$0	--
Wellington Opportunistic EMD	\$73,188,084	\$0	\$0	\$0	-\$2,798,106	\$70,389,979
<b>Total</b>	<b>\$1,754,157,293</b>	<b>\$259,748,221</b>	<b>-\$194,226,946</b>	<b>\$65,521,275</b>	<b>\$9,966,264</b>	<b>\$1,829,644,831</b>





## Vermont State Employees

# TOTAL FUND PERFORMANCE DETAIL - NET

	Market Value (\$)	% of Portfolio	Policy %	Ending June 30, 2018														Inception Date
				3 Mo (%)	Rank	YTD (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	
<b>Total Employees Composite</b>	<b>1,829,644,831</b>	<b>100.0</b>	<b>100.0</b>	<b>0.5</b>	<b>70</b>	<b>0.1</b>	<b>73</b>	<b>6.7</b>	<b>76</b>	<b>6.7</b>	<b>76</b>	<b>6.1</b>	<b>64</b>	<b>6.3</b>	<b>88</b>	<b>5.5</b>	<b>79</b>	<b>Jan-92</b>
<i>Allocation Index</i>				0.6	64	0.0	75	7.2	60	7.2	60	6.1	64	6.3	88	5.4	83	Jan-92
<i>Policy Index</i>				0.6	63	0.2	65	6.8	75	6.8	75	6.1	69	6.3	88	5.3	86	Jan-92
<i>InvestorForce Public DB &lt; \$5 Billion Net Median</i>				0.8		0.5		7.5		7.5		6.4		7.4		6.2		Jan-92
<b>Total Domestic Equity</b>	<b>463,552,196</b>	<b>25.3</b>	<b>21.5</b>	<b>3.9</b>	<b>48</b>	<b>3.7</b>	<b>45</b>	<b>13.9</b>	<b>49</b>	<b>13.9</b>	<b>49</b>	<b>11.1</b>	<b>35</b>	<b>13.1</b>	<b>33</b>	<b>--</b>	<b>--</b>	<b>Jul-13</b>
<i>Russell 3000</i>				3.9	49	3.2	49	14.8	44	14.8	44	11.6	29	13.3	31	10.2	46	Jul-13
<i>eV All US Equity Net Median</i>				3.7		3.1		13.7		13.7		9.9		12.0		10.0		Jul-13
<b>Total Large Cap Equities</b>	<b>383,978,631</b>	<b>21.0</b>	<b>17.5</b>	<b>3.3</b>	<b>37</b>	<b>2.5</b>	<b>40</b>	<b>13.9</b>	<b>42</b>	<b>13.9</b>	<b>42</b>	<b>11.6</b>	<b>28</b>	<b>13.3</b>	<b>34</b>	<b>10.7</b>	<b>26</b>	<b>Apr-01</b>
<i>Custom Large Cap Index</i>				3.3	38	2.4	41	13.8	42	13.8	42	11.6	28	13.2	35	10.1	39	Apr-01
<i>eV US Large Cap Equity Net Median</i>				2.6		1.4		12.6		12.6		9.9		12.1		9.6		Apr-01
SSgA S&P 500 Cap-Wgt	309,143,794	16.9	13.5	3.4	35	2.6	39	14.4	40	14.4	40	12.0	25	13.4	31	--	--	Aug-10
SSgA S&P 500 Equal-Wgt	74,833,099	4.1	4.0	2.9	44	1.9	46	12.3	53	12.3	53	10.5	42	12.7	42	11.5	14	Dec-05
<b>Total Small/Mid Cap Equities</b>	<b>79,573,565</b>	<b>4.3</b>	<b>4.0</b>	<b>7.5</b>	<b>16</b>	<b>11.1</b>	<b>14</b>	<b>16.5</b>	<b>42</b>	<b>16.5</b>	<b>42</b>	<b>11.1</b>	<b>29</b>	<b>13.3</b>	<b>19</b>	<b>11.5</b>	<b>25</b>	<b>Apr-01</b>
<i>Custom SMID Cap Equity Index</i>				6.7	25	6.6	35	16.9	38	16.9	38	11.4	25	12.6	28	10.9	37	Apr-01
<i>eV US Small-Mid Cap Equity Net Median</i>				4.3		4.5		15.1		15.1		9.4		11.6		10.4		Apr-01
Champlain	79,573,565	4.3	4.0	7.5	16	11.1	14	17.9	32	17.9	32	14.1	6	15.2	5	--	--	Oct-09
<i>Custom SMID Cap Equity Index</i>				6.7	25	6.6	35	16.9	38	16.9	38	11.4	25	12.6	28	10.9	37	Oct-09

Fiscal Year End is 6/30.

Custom Large Cap Index is 80% S&P 500 and 20% S&P 500 Equal Weighted starting 05/1/2014, and 100% S&P 500 prior, corresponding to the change in strategy.

Custom SMID Cap Equity Index is 50% Russell 2500 and 50% Russell 2000 starting 10/1/2017, and 100% Russell 2500 prior, corresponding to the change in strategy.



## Vermont State Employees

# TOTAL FUND PERFORMANCE DETAIL - NET

	Ending June 30, 2018																	
	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	YTD (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception Date
<b>Total Non US Equity</b>	<b>506,860,602</b>	<b>27.7</b>	<b>28.5</b>	<b>-3.6</b>	<b>75</b>	<b>-4.5</b>	<b>79</b>	<b>5.6</b>	<b>79</b>	<b>5.6</b>	<b>79</b>	<b>6.6</b>	<b>45</b>	<b>6.4</b>	<b>71</b>	<b>--</b>	<b>--</b>	<b>Apr-01</b>
MSCI ACWI ex USA				-2.6	56	-3.8	70	7.3	65	7.3	65	5.1	69	6.0	76	2.5	85	Apr-01
eV All ACWI ex-US Equity Net Median				-2.3		-2.5		9.0		9.0		6.0		7.6		4.1		Apr-01
<b>Total Core Non US Equity</b>	<b>286,151,343</b>	<b>15.6</b>	<b>15.5</b>	<b>-2.2</b>	<b>68</b>	<b>-3.5</b>	<b>65</b>	<b>7.3</b>	<b>56</b>	<b>7.3</b>	<b>56</b>	<b>7.2</b>	<b>35</b>	<b>8.2</b>	<b>35</b>	<b>3.3</b>	<b>67</b>	<b>Apr-01</b>
MSCI EAFE				-1.2	45	-2.7	54	6.8	59	6.8	59	4.9	64	6.4	72	2.8	83	Apr-01
eV All EAFE Equity Net Median				-1.5		-2.6		7.9		7.9		5.8		7.2		4.1		Apr-01
SSgA ACWI Ex US	159,613,661	8.7	8.5	-2.5	56	-3.6	72	7.5	65	7.5	65	5.3	64	6.2	72	--	--	Aug-10
MSCI ACWI ex USA				-2.6	56	-3.8	75	7.3	66	7.3	66	5.1	65	6.0	73	2.5	77	Aug-10
eV ACWI ex-US All Cap Equity Net Median				-2.3		-2.7		9.2		9.2		5.8		7.9		4.1		Aug-10
Acadian	62,311,622	3.4	3.5	-1.2	45	-2.7	52	9.3	37	9.3	37	11.7	7	11.1	12	4.1	52	Nov-05
Mondrian	64,226,061	3.5	3.5	-2.3	68	-4.0	74	4.6	84	4.6	84	4.0	83	6.2	77	3.2	72	Oct-05
MSCI EAFE				-1.2	45	-2.7	54	6.8	59	6.8	59	4.9	64	6.4	72	2.8	83	Oct-05
<b>Total Global Equity</b>	<b>154,382,910</b>	<b>8.4</b>	<b>9.0</b>	<b>-2.8</b>	<b>94</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>Feb-18</b>
MSCI ACWI				0.5	62	-0.4	59	10.7	48	10.7	48	8.2	42	9.4	51	5.8	65	Feb-18
eV All Global Equity Net Median				1.3		0.1		10.4		10.4		7.6		9.4		6.8		Feb-18
Artisan Global Opportunities	81,263,808	4.4	4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Jul-18
Hosking Global Equity	73,119,102	4.0	4.5	-2.9	94	--	--	--	--	--	--	--	--	--	--	--	--	Feb-18
MSCI ACWI				0.5	62	-0.4	59	10.7	48	10.7	48	8.2	42	9.4	51	5.8	65	Feb-18
<b>Total Emerging Market Equity</b>	<b>66,326,348</b>	<b>3.6</b>	<b>4.0</b>	<b>-10.2</b>	<b>87</b>	<b>-10.9</b>	<b>94</b>	<b>-2.3</b>	<b>96</b>	<b>-2.3</b>	<b>96</b>	<b>3.8</b>	<b>78</b>	<b>2.4</b>	<b>92</b>	<b>--</b>	<b>--</b>	<b>May-12</b>
MSCI Emerging Markets				-8.0	42	-6.7	44	8.2	37	8.2	37	5.6	50	5.0	52	2.3	65	May-12
eV Emg Mkts Equity Net Median				-8.5		-7.0		7.2		7.2		5.6		5.1		2.7		May-12
Aberdeen	66,326,348	3.6	4.0	-10.2	87	-10.9	94	-2.3	96	-2.3	96	3.8	78	2.3	92	5.1	18	Feb-08
MSCI Emerging Markets				-8.0	42	-6.7	44	8.2	37	8.2	37	5.6	50	5.0	52	2.3	65	Feb-08



## Vermont State Employees

# TOTAL FUND PERFORMANCE DETAIL - NET

	Ending June 30, 2018																	
	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	YTD (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception Date
<b>Total Fixed Income</b>	<b>556,037,439</b>	<b>30.4</b>	<b>29.0</b>	<b>-0.2</b>	<b>75</b>	<b>-1.3</b>	<b>67</b>	<b>0.8</b>	<b>41</b>	<b>0.8</b>	<b>41</b>	<b>3.5</b>	<b>31</b>	<b>3.4</b>	<b>37</b>	<b>--</b>	<b>--</b>	<b>Jul-13</b>
BBgBarc US Aggregate TR				-0.2	73	-1.6	75	-0.4	76	-0.4	76	1.7	60	2.3	58	3.7	58	Jul-13
eV All US Fixed Inc Net Median				0.2		-0.6		0.3		0.3		2.1		2.6		4.1		Jul-13
<b>Total Diversified Fixed Income</b>	<b>421,875,715</b>	<b>23.1</b>	<b>23.0</b>	<b>0.3</b>	<b>48</b>	<b>-0.8</b>	<b>55</b>	<b>0.9</b>	<b>39</b>	<b>0.9</b>	<b>39</b>	<b>2.6</b>	<b>43</b>	<b>2.8</b>	<b>45</b>	<b>3.9</b>	<b>54</b>	<b>Jul-03</b>
BBgBarc US Aggregate TR				-0.2	73	-1.6	75	-0.4	76	-0.4	76	1.7	60	2.3	58	3.7	58	Jul-03
eV All US Fixed Inc Net Median				0.2		-0.6		0.3		0.3		2.1		2.6		4.1		Jul-03
SSgA Barclays Aggregate Index	70,662,730	3.9	4.5	-0.2	45	-1.7	55	-0.4	61	-0.4	61	1.7	69	--	--	--	--	Feb-15
PIMCO Core Plus	138,041,871	7.5	6.5	0.0	20	-1.5	41	0.0	53	0.0	53	1.9	78	2.3	89	--	--	Oct-09
BBgBarc US Aggregate TR				-0.2	39	-1.6	54	-0.4	79	-0.4	79	1.7	83	2.3	88	3.7	97	Oct-09
eV US Core Plus Fixed Inc Net Median				-0.3		-1.6		0.0		0.0		2.4		2.9		4.8		Oct-09
GAM Unconstrained Bond	35,757,528	2.0	2.0	-0.2	36	0.5	33	1.2	48	1.2	48	3.3	32	--	--	--	--	Jun-15
PIMCO Unconstrained	32,202,395	1.8	2.0	0.5	13	0.7	32	2.3	37	2.3	37	2.6	66	2.0	78	--	--	Jul-11
PIMCO Unconstrained Custom Index				-0.7	44	-2.1	66	-0.2	65	-0.2	65	--	--	--	--	--	--	Jul-11
3-Month Libor Total Return USD				0.6	12	1.1	17	1.8	45	1.8	45	1.1	95	0.8	93	0.7	99	Jul-11
eV Global Unconstrained Fixed Inc Net Median				-1.2		-0.7		1.0		1.0		2.8		2.6		3.8		Jul-11
State Street Long U.S. Treasury Index	33,198,062	1.8	2.0	0.3	5	-3.0	4	-0.2	13	-0.2	13	--	--	--	--	--	--	Jun-17
BBgBarc US Treasury Long TR				0.3	5	-3.0	4	-0.1	13	-0.1	13	3.4	92	4.5	90	6.1	99	Jun-17
BlackRock TIPS	112,013,129	6.1	6.0	0.8	30	0.0	45	2.1	46	2.1	46	1.9	42	1.6	38	--	--	Dec-09
BBgBarc US TIPS TR				0.8	24	0.0	42	2.1	41	2.1	41	1.9	32	1.7	26	3.0	56	Dec-09
<b>Total High Yield Bonds</b>	<b>63,771,746</b>	<b>3.5</b>	<b>2.0</b>	<b>0.8</b>	<b>33</b>	<b>0.0</b>	<b>42</b>	<b>2.5</b>	<b>39</b>	<b>2.5</b>	<b>39</b>	<b>4.8</b>	<b>44</b>	<b>5.1</b>	<b>37</b>	<b>7.3</b>	<b>52</b>	<b>Jan-05</b>
BBgBarc US High Yield TR				1.0	21	0.2	37	2.6	35	2.6	35	5.5	21	5.5	21	8.2	12	Jan-05
eV US High Yield Fixed Inc Net Median				0.6		-0.1		2.2		2.2		4.6		4.8		7.3		Jan-05
KDP	1,304,594	0.1	0.0	0.7	45	0.1	41	1.6	75	1.6	75	3.1	97	3.6	95	--	--	Oct-09
Guggenheim	62,467,152	3.4	2.0	0.8	32	0.0	47	2.7	33	2.7	33	5.1	31	--	--	--	--	Dec-13
BBgBarc US High Yield TR				1.0	21	0.2	37	2.6	35	2.6	35	5.5	21	5.5	21	8.2	12	Dec-13

PIMCO Unconstrained Custom Index is 25% HY, 25% EMD, 50% BC Agg.

State Street Long U.S Treasury Index Universe - eV US Long Duration Fixed Inc Net.

BlackRock TIPS Universe - eV US TIPS / Inflation Fixed Inc Net.



## Vermont State Employees

# TOTAL FUND PERFORMANCE DETAIL - NET

Ending June 30, 2018																		
	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	YTD (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception Date
<b>Total Emerging Market Debt</b>	<b>70,389,979</b>	<b>3.8</b>	<b>4.0</b>	<b>-3.8</b>	<b>28</b>	<b>-5.3</b>	<b>34</b>	<b>-1.9</b>	<b>49</b>	<b>-1.9</b>	<b>49</b>	<b>5.1</b>	<b>16</b>	<b>4.8</b>	<b>17</b>	<b>--</b>	<b>--</b>	<b>Nov-09</b>
JP Morgan EMBI Global Index				-3.5	23	-5.2	33	-2.4	61	-2.4	61	4.3	33	4.4	25	6.5	30	Nov-09
eV All Emg Mkts Fixed Inc Net Median				-6.2		-6.0		-2.0		-2.0		3.6		3.1		5.7		Nov-09
Wellington Opportunistic EMD	70,389,979	3.8	4.0	-3.8	28	-5.3	34	-1.9	49	-1.9	49	5.1	16	4.8	17	--	--	Jan-10
JP Morgan EMBI Global Index				-3.5	23	-5.2	33	-2.4	61	-2.4	61	4.3	33	4.4	25	6.5	30	Jan-10
<b>Total Private Debt</b>	<b>24,725,207</b>	<b>1.4</b>	<b>2.0</b>	<b>1.6</b>	<b>--</b>	<b>4.1</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>Jan-18</b>
S&P/LSTA Leveraged Loan TR				0.7	--	2.2	--	4.4	--	4.4	--	4.2	--	4.0	--	5.2	--	Jan-18
BlueBay Direct Lending Fund III	1,294,930	0.1	1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Jul-18
Benefit Street Partners	23,430,276	1.3	1.0	1.7	--	4.2	--	--	--	--	--	--	--	--	--	--	--	Jan-18
S&P/LSTA Leveraged Loan TR				0.7	--	2.2	--	4.4	--	4.4	--	4.2	--	4.0	--	5.2	--	Jan-18
<b>Total Real Estate</b>	<b>104,809,372</b>	<b>5.7</b>	<b>8.0</b>	<b>1.5</b>	<b>--</b>	<b>4.0</b>	<b>--</b>	<b>8.7</b>	<b>--</b>	<b>8.7</b>	<b>--</b>	<b>8.2</b>	<b>--</b>	<b>10.6</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>May-12</b>
NCREIF Property Index				1.8	--	3.5	--	7.2	--	7.2	--	8.3	--	9.8	--	6.2	--	May-12
<b>Total Real Estate Core</b>	<b>85,818,252</b>	<b>4.7</b>	<b>4.5</b>	<b>1.6</b>	<b>--</b>	<b>3.3</b>	<b>--</b>	<b>6.9</b>	<b>--</b>	<b>6.9</b>	<b>--</b>	<b>7.4</b>	<b>--</b>	<b>10.1</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>May-12</b>
UBS Trumbull	85,715,599	4.7	4.5	1.6	--	3.3	--	6.9	--	6.9	--	7.0	--	8.5	--	4.7	--	Oct-96
Transwestern / Aslan III	102,653	0.0		--	--	--	--	--	--	--	--	--	--	--	--	--	--	
<b>Total Real Estate Non-Core</b>	<b>18,991,120</b>	<b>1.0</b>	<b>3.5</b>	<b>1.1</b>	<b>--</b>	<b>6.6</b>	<b>--</b>	<b>17.5</b>	<b>--</b>	<b>17.5</b>	<b>--</b>	<b>12.1</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>May-12</b>
Siguler Guff DREOF II	13,119,738	0.7	1.0	1.3	--	8.4	--	22.2	--	22.2	--	13.5	--	--	--	--	--	Jun-14
Siguler Guff DREOF II Co-Investment	5,871,382	0.3	0.5	0.4	--	2.2	--	4.6	--	4.6	--	--	--	--	--	--	--	Nov-16
Brookfield Strategic Real Estate Partners III	0	0.0	2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Jun-18
NCREIF Property Index				1.8		3.5		7.2		7.2		8.3		9.8		6.2		Jun-18

Market values are final as of Q2 2018 capital statements for Benefit Street Partners, BlueBay Direct Lending Fund III, Siguler Guff DREOF II, and Siguler Guff DREOF II Co-Investment.



## Vermont State Employees

# TOTAL FUND PERFORMANCE DETAIL - NET

	Ending June 30, 2018															
	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%) Rank	YTD (%) Rank	Fiscal YTD (%) Rank	1 Yr (%) Rank	3 Yrs (%) Rank	5 Yrs (%) Rank	10 Yrs (%) Rank	Inception Date					
<b>Total Absolute Return</b>	<b>132,265,025</b>	<b>7.2</b>	<b>8.0</b>	<b>3.0</b> 11	<b>4.2</b> 18	<b>8.5</b> 22	<b>8.5</b> 22	<b>2.4</b> 56	<b>3.7</b> 62	<b>--</b> --	<b>Dec-10</b>					
<i>HFRI Fund of Funds Composite Index</i>				0.5 68	0.7 67	5.2 57	5.2 57	1.9 64	3.5 68	1.4 88	Dec-10					
<i>eV Alt Fund of Funds - Multi-Strategy Median</i>				1.0	1.8	5.6	5.6	2.6	4.3	3.2	Dec-10					
Pinnacle Natural Resources, L.P.	46,534,067	2.5	3.0	4.6 35	7.5 1	13.1 14	13.1 14	-- --	-- --	-- --	Jul-16					
<i>Bloomberg Commodity Index</i>				0.4 82	0.0 67	7.3 57	7.3 57	-4.5 74	-6.4 73	-9.0 99	Jul-16					
Grosvenor	52,954,006	2.9	3.0	1.5 40	3.2 28	7.4 32	7.4 32	3.2 40	4.7 39	-- --	Dec-10					
Allianz Structured Alpha	32,776,952	1.8	2.0	3.4 6	1.2 60	4.0 75	4.0 75	6.3 10	7.2 15	7.0 9	Apr-08					
<i>91 Day T-Bills</i>				0.5 68	0.8 66	1.4 94	1.4 94	0.7 84	0.4 99	0.3 97	Apr-08					
<i>eV Alt Fund of Funds - Multi-Strategy Median</i>				1.0	1.8	5.6	5.6	2.6	4.3	3.2	Apr-08					
<b>Total Private Equity</b>	<b>40,339,195</b>	<b>2.2</b>	<b>3.0</b>	<b>7.4</b> --	<b>15.8</b> --	<b>24.3</b> --	<b>24.3</b> --	<b>15.2</b> --	<b>19.3</b> --	<b>--</b> --	<b>Dec-12</b>					
<i>Cambridge Associates US All PE</i>				5.8 --	8.7 --	18.7 --	18.7 --	12.7 --	13.8 --	10.8 --	Dec-12					
<b>Total Cash</b>	<b>1,055,795</b>	<b>0.1</b>	<b>0.0</b>													
Vermont Cash	1,055,795	0.1	0.0													

Absolute Return composite formerly shown as Hedge Funds composite. As of 04/01/2016, Absolute Return includes Allianz Structured Alpha.

Allianz Structured Alpha was included Diversified Fixed income composite prior to 04/01/2016.

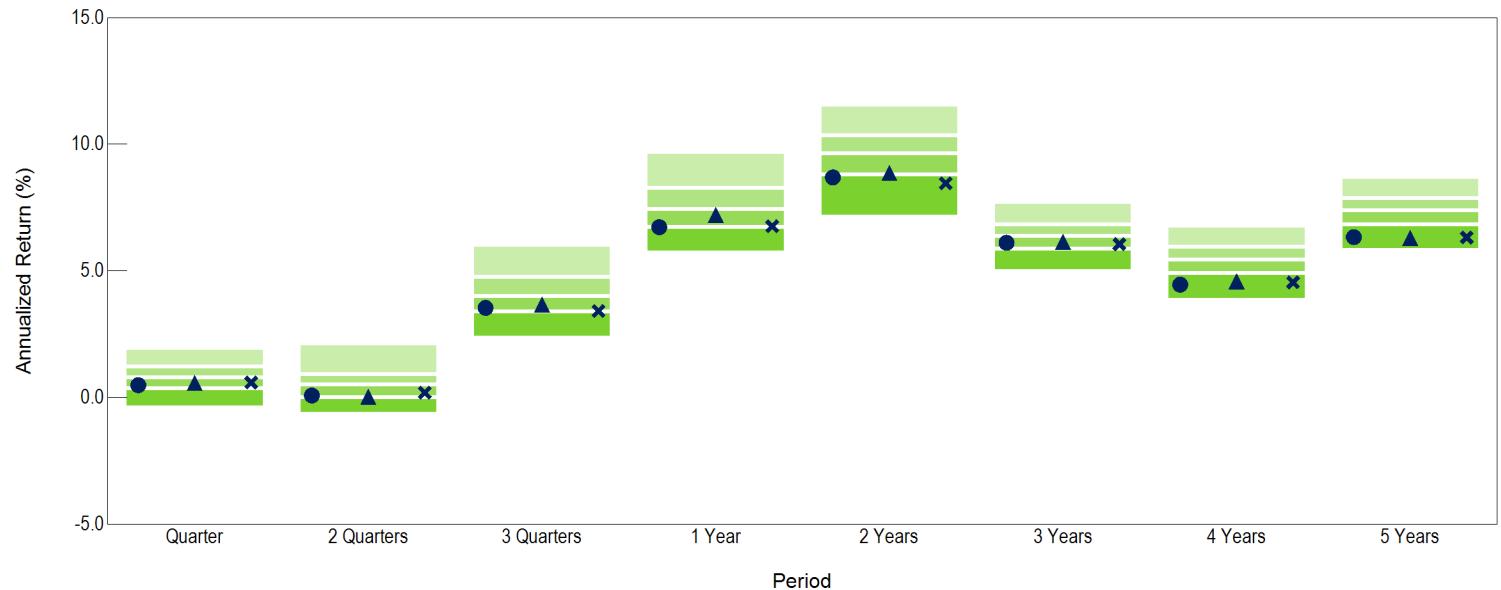
Harbourvest values based on final Capital Account Statements for Q2 2018.



## Vermont State Employees

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE - NET

Total Employees Composite vs. InvestorForce Public DB < \$5 Billion Net



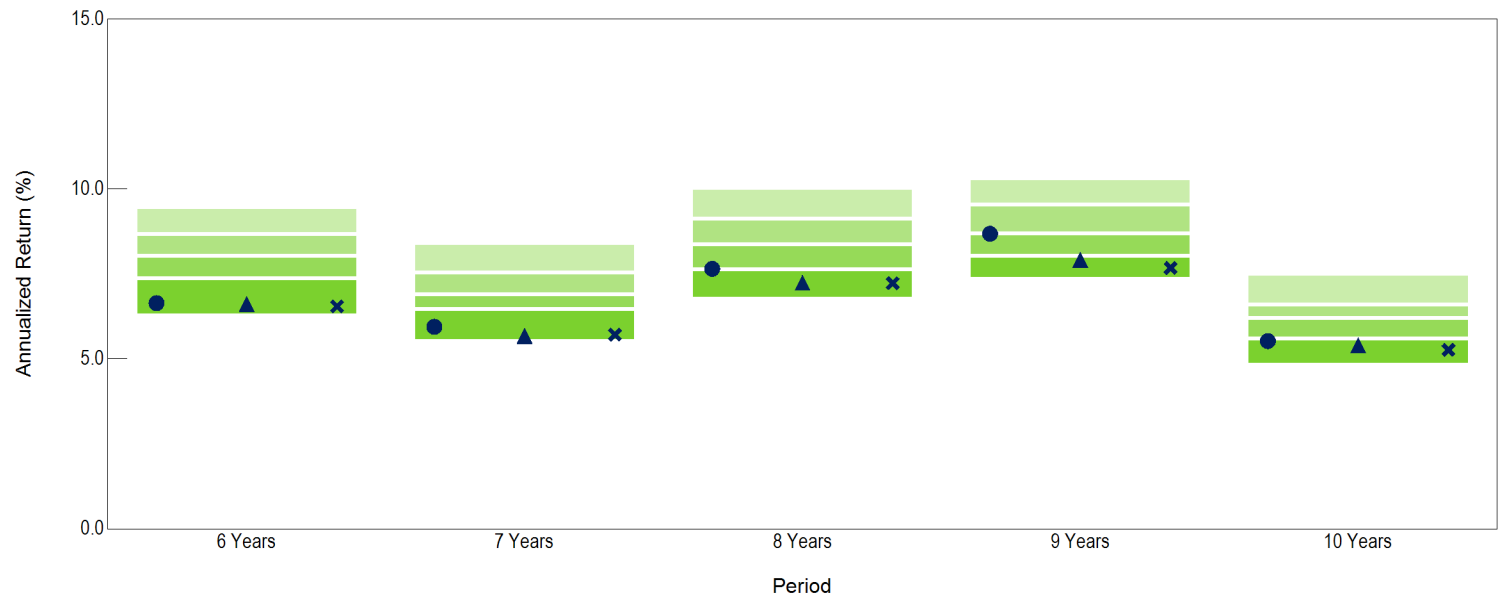
	Return (Rank)							
	Quarter	2 Quarters	3 Quarters	1 Year	2 Years	3 Years	4 Years	5 Years
5th Percentile	1.9	2.1	6.0	9.7	11.5	7.7	6.8	8.7
25th Percentile	1.2	0.9	4.8	8.3	10.4	6.9	6.0	7.9
Median	0.8	0.5	4.0	7.5	9.7	6.4	5.4	7.4
75th Percentile	0.4	0.0	3.4	6.7	8.8	5.9	4.9	6.9
95th Percentile	-0.4	-0.6	2.4	5.7	7.1	5.0	3.9	5.8
# of Portfolios	188	188	187	186	182	179	172	163
● Total Employees Composite	0.5 (70)	0.1 (73)	3.5 (71)	6.7 (76)	8.7 (79)	6.1 (64)	4.5 (87)	6.3 (88)
▲ Allocation Index	0.6 (64)	0.0 (75)	3.7 (68)	7.2 (60)	8.9 (73)	6.1 (64)	4.6 (85)	6.3 (88)
× Policy Index	0.6 (63)	0.2 (65)	3.4 (75)	6.8 (75)	8.5 (86)	6.1 (69)	4.5 (85)	6.3 (88)



## Vermont State Employees

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE - NET

Total Employees Composite vs. InvestorForce Public DB < \$5 Billion Net



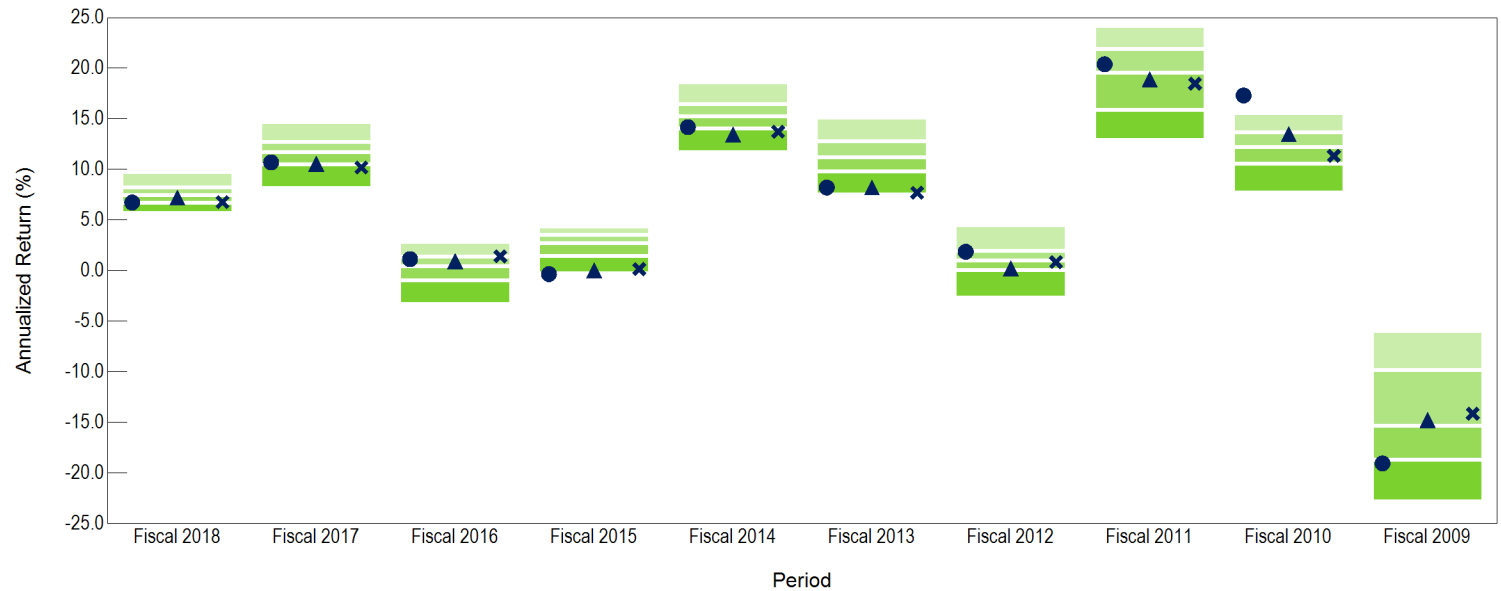
	Return (Rank)									
5th Percentile	9.5		8.4		10.0		10.3		7.5	
25th Percentile	8.7		7.6		9.1		9.6		6.6	
Median	8.0		6.9		8.4		8.7		6.2	
75th Percentile	7.4		6.5		7.7		8.0		5.6	
95th Percentile	6.3		5.5		6.8		7.4		4.8	
# of Portfolios	156		144		135		129		123	
● Total Employees Composite	6.6	(90)	5.9	(86)	7.7	(76)	8.7	(52)	5.5	(79)
▲ Allocation Index	6.6	(91)	5.7	(92)	7.2	(90)	7.9	(81)	5.4	(83)
× Policy Index	6.5	(94)	5.7	(92)	7.2	(90)	7.7	(87)	5.3	(86)



## Vermont State Employees

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE - NET

Total Employees Composite vs. InvestorForce Public DB < \$5 Billion Net



	Return (Rank)									
	Fiscal 2018	Fiscal 2017	Fiscal 2016	Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010	Fiscal 2009
5th Percentile	9.7	14.7	2.8	4.4	18.6	15.1	4.5	24.2	15.5	-6.0
25th Percentile	8.3	12.8	1.4	3.6	16.5	12.8	2.0	21.9	13.7	-9.8
Median	7.5	11.7	0.5	2.7	15.3	11.2	1.0	19.6	12.3	-15.3
75th Percentile	6.7	10.6	-0.9	1.5	14.1	9.9	0.1	15.9	10.6	-18.7
95th Percentile	5.7	8.2	-3.3	-0.2	11.7	7.5	-2.6	13.0	7.7	-22.8
# of Portfolios	186	259	239	212	156	139	132	124	116	113
● Total Employees Composite	6.7 (76)	10.7 (71)	1.1 (32)	-0.3 (96)	14.2 (72)	8.2 (95)	1.9 (29)	20.4 (39)	17.3 (1)	-19.1 (78)
▲ Allocation Index	7.2 (60)	10.5 (76)	0.9 (37)	0.0 (95)	13.4 (89)	8.2 (95)	0.2 (72)	18.9 (57)	13.5 (29)	-14.8 (47)
× Policy Index	6.8 (75)	10.2 (81)	1.4 (25)	0.1 (94)	13.7 (83)	7.7 (95)	0.8 (55)	18.5 (60)	11.3 (65)	-14.1 (43)

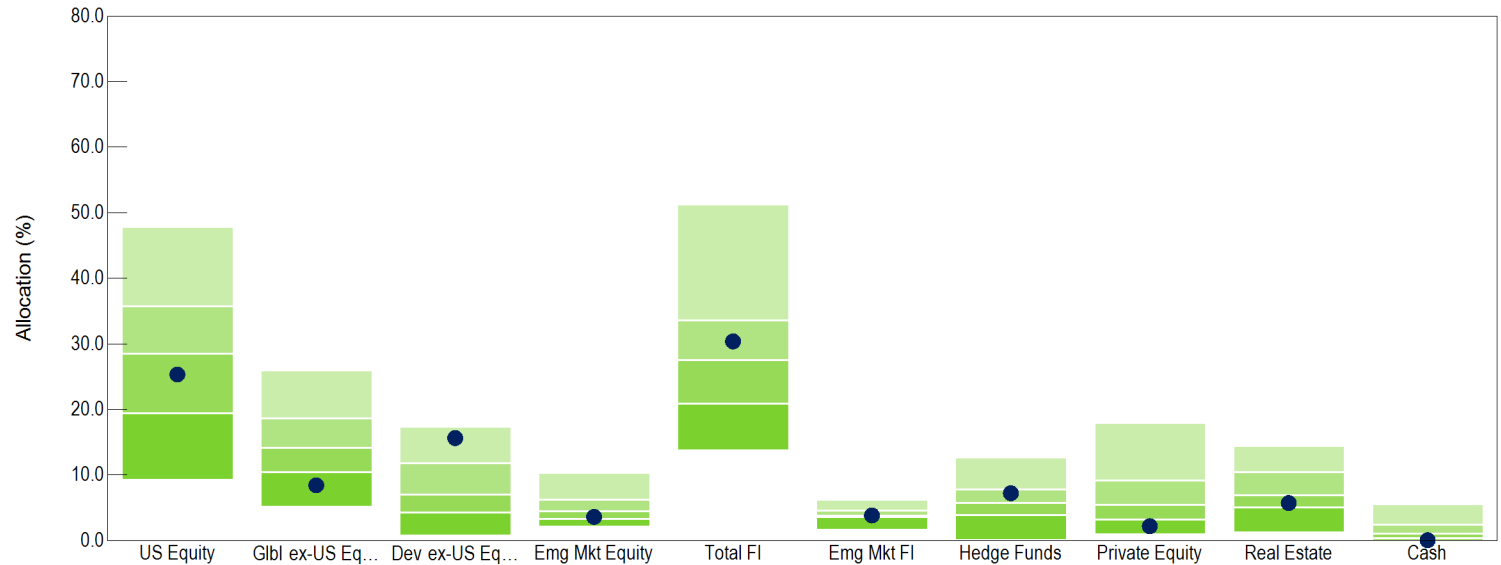




## Vermont State Employees

# TOTAL FUND ALLOCATION VS. PEER UNIVERSE - NET

Total Plan Allocation vs. InvestorForce Public DB < \$5 Billion Net  
As of June 30, 2018



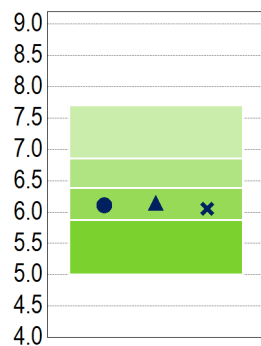
	Allocation (Rank)																			
5th Percentile	47.8	26.0	17.4	10.4	51.2	6.2	12.7	18.0	14.5	5.6	-	-	-	-	-	-	-	-	-	-
25th Percentile	35.9	18.7	11.9	6.3	33.7	4.7	7.9	9.2	10.5	2.5	-	-	-	-	-	-	-	-	-	-
Median	28.6	14.3	7.1	4.6	27.6	3.9	5.9	5.6	7.0	1.2	-	-	-	-	-	-	-	-	-	-
75th Percentile	19.5	10.5	4.4	3.4	21.0	3.7	4.0	3.3	5.1	0.5	-	-	-	-	-	-	-	-	-	-
95th Percentile	9.4	5.3	0.9	2.2	13.8	1.7	0.1	1.1	1.4	0.0	-	-	-	-	-	-	-	-	-	-
# of Portfolios	115	142	73	86	175	20	55	73	99	166	-	-	-	-	-	-	-	-	-	-
• Total Employees Composite	25.3	(57)	8.4	(85)	15.6	(11)	3.6	(70)	30.4	(39)	3.8	(54)	7.2	(33)	2.2	(81)	5.7	(64)	0.1	(95)



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE - NET

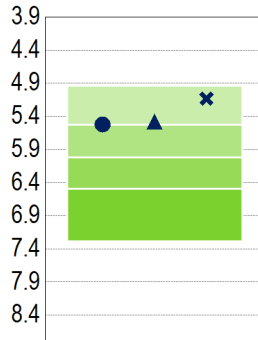
## Employees Composite vs. InvestorForce Public DB < \$5 Billion Net 3 Years

Anlzd Return      Anlzd Standard Deviation      Anlzd Alpha      Sharpe Ratio



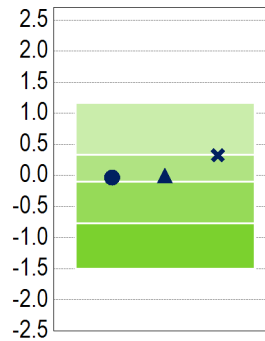
● Total Employees Composite	
Value	6.11
Rank	64
▲ Allocation Index	
Value	6.15
Rank	64
× Policy Index	
Value	6.05
Rank	69

Universe	
5th %tile	7.70
25th %tile	6.86
Median	6.40
75th %tile	5.88
95th %tile	5.02



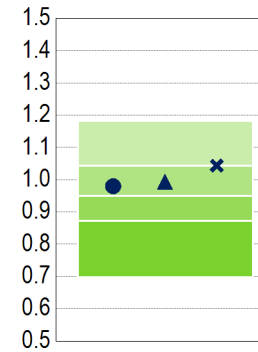
● Total Employees Composite	
Value	5.52
Rank	26
▲ Allocation Index	
Value	5.48
Rank	25
× Policy Index	
Value	5.13
Rank	10

Universe	
5th %tile	4.94
25th %tile	5.51
Median	6.01
75th %tile	6.48
95th %tile	7.28



● Total Employees Composite	
Value	-0.03
Rank	48
▲ Allocation Index	
Value	0.00
Rank	48
× Policy Index	
Value	0.32
Rank	27

Universe	
5th %tile	1.17
25th %tile	0.34
Median	-0.09
75th %tile	-0.76
95th %tile	-1.50



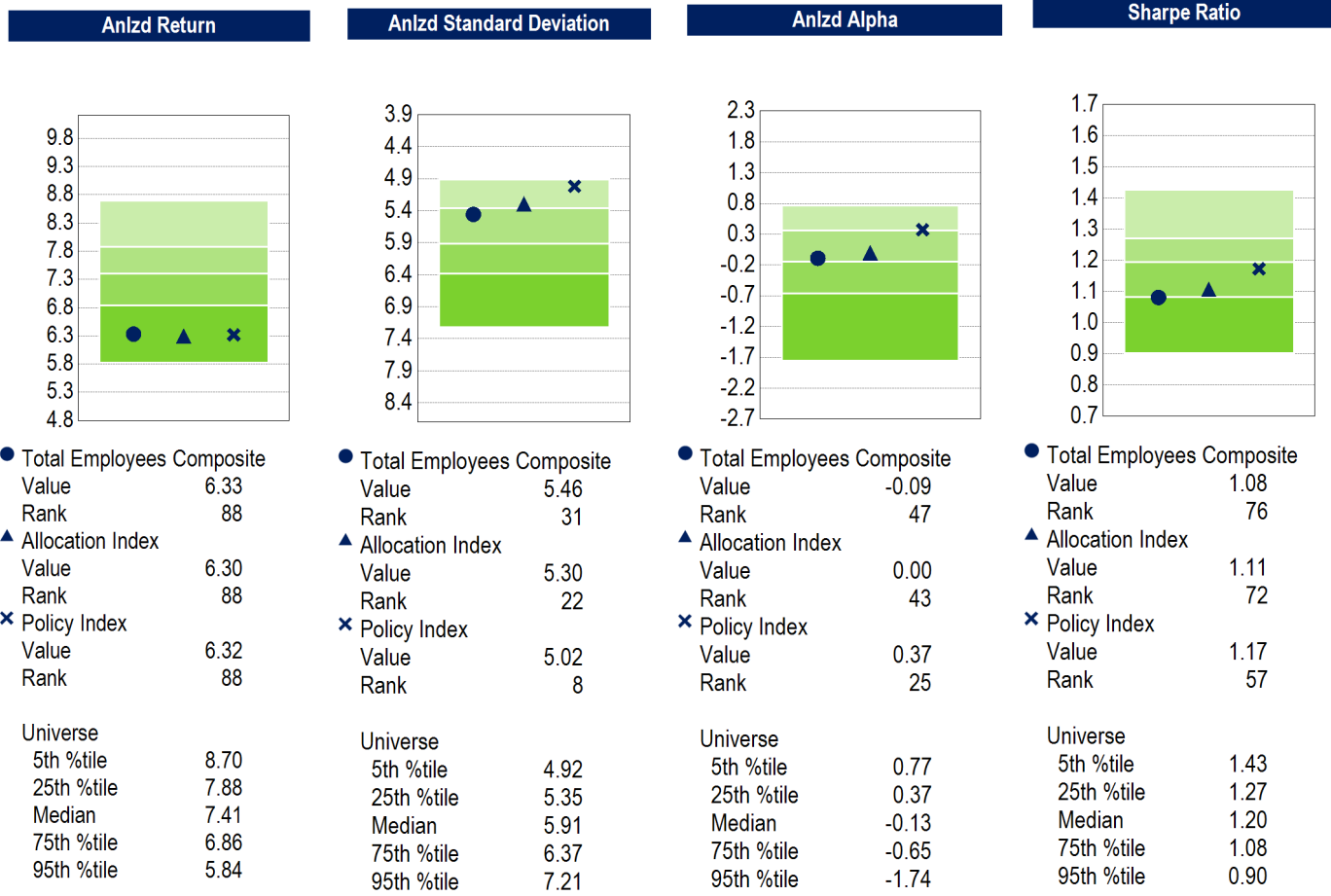
● Total Employees Composite	
Value	0.98
Rank	40
▲ Allocation Index	
Value	0.99
Rank	35
× Policy Index	
Value	1.04
Rank	26

Universe	
5th %tile	1.18
25th %tile	1.04
Median	0.95
75th %tile	0.87
95th %tile	0.70



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE - NET

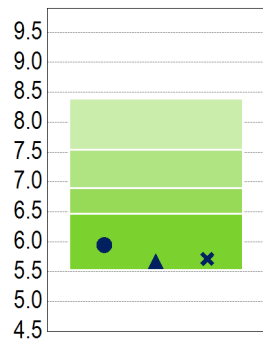
**Employees Composite vs. InvestorForce Public DB < \$5 Billion Net  
5 Years**



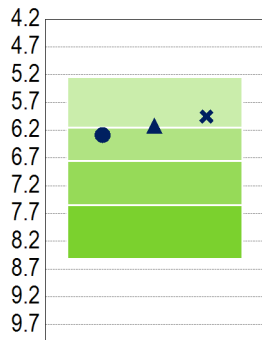
# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE - NET

## Employees Composite vs. InvestorForce Public DB < \$5 Billion Net 7 Years

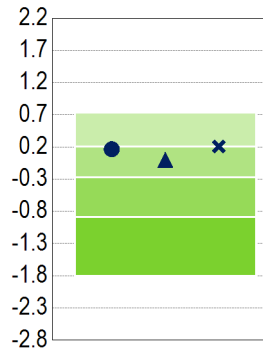
**Anlzd Return**      **Anlzd Standard Deviation**      **Anlzd Alpha**      **Sharpe Ratio**



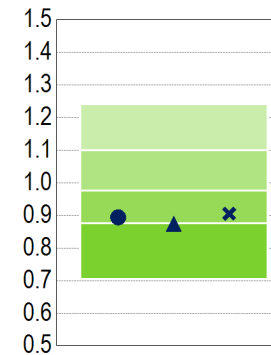
● Total Employees Composite	
Value	5.94
Rank	86
▲ Allocation Index	
Value	5.67
Rank	92
× Policy Index	
Value	5.71
Rank	92
Universe	
5th %tile	8.40
25th %tile	7.55
Median	6.91
75th %tile	6.48
95th %tile	5.53



● Total Employees Composite	
Value	6.29
Rank	33
▲ Allocation Index	
Value	6.12
Rank	25
× Policy Index	
Value	5.95
Rank	19
Universe	
5th %tile	5.24
25th %tile	6.15
Median	6.74
75th %tile	7.54
95th %tile	8.51



● Total Employees Composite	
Value	0.16
Rank	30
▲ Allocation Index	
Value	0.00
Rank	38
× Policy Index	
Value	0.21
Rank	28
Universe	
5th %tile	0.73
25th %tile	0.22
Median	-0.27
75th %tile	-0.87
95th %tile	-1.80

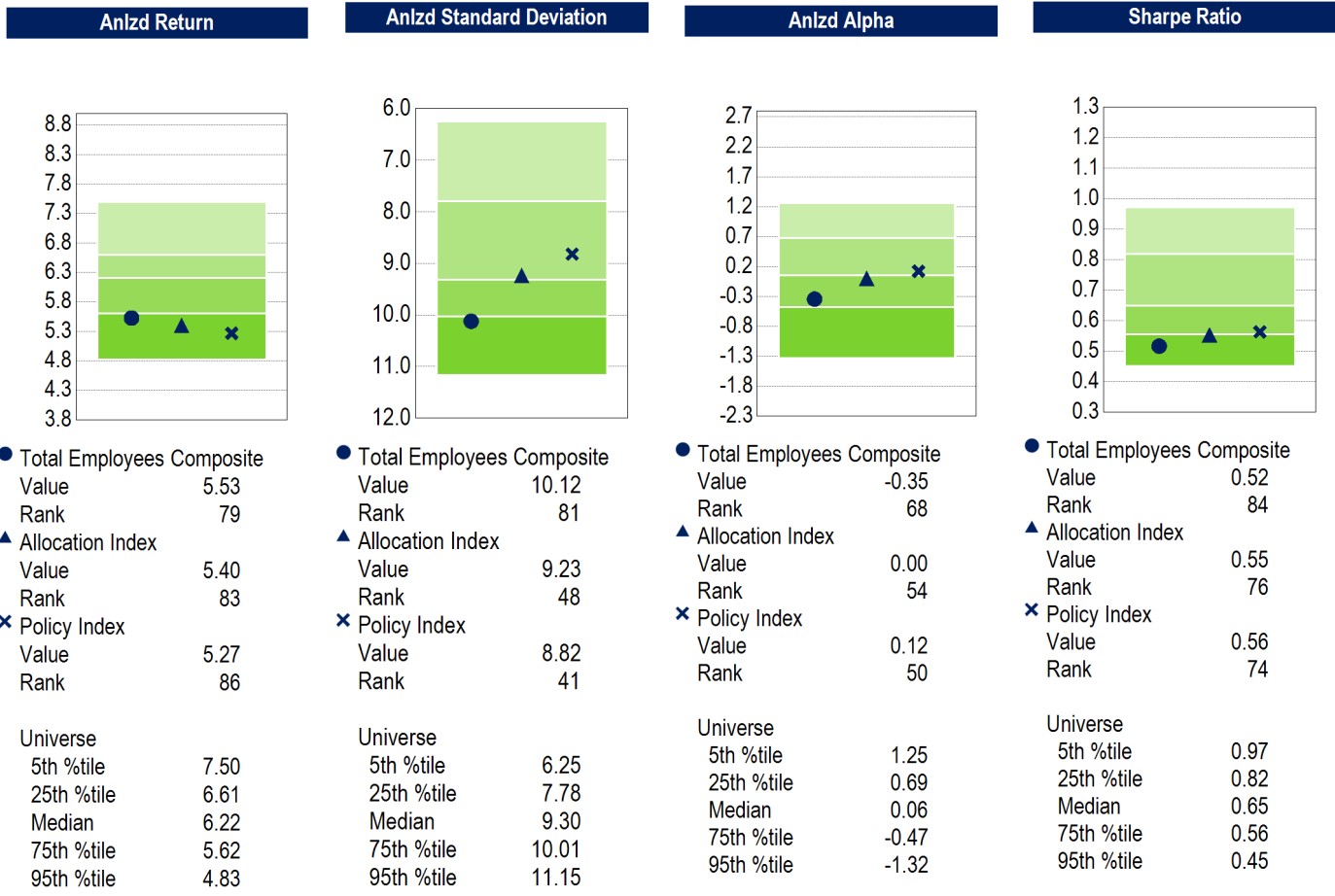


● Total Employees Composite	
Value	0.89
Rank	73
▲ Allocation Index	
Value	0.87
Rank	77
× Policy Index	
Value	0.91
Rank	70
Universe	
5th %tile	1.24
25th %tile	1.10
Median	0.98
75th %tile	0.88
95th %tile	0.71



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE - NET

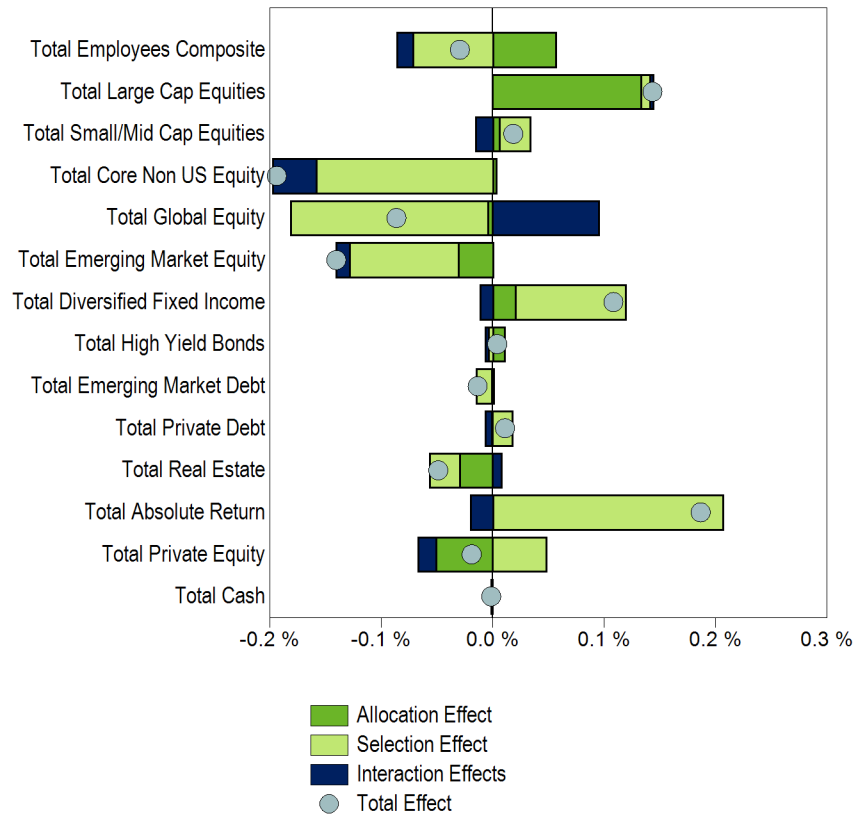
## Employees Composite vs. InvestorForce Public DB < \$5 Billion Net 10 Years



## Vermont State Employees

# TOTAL FUND ATTRIBUTION ANALYSIS - NET

Attribution Effects Relative to Allocation Index  
3 Months Ending June 30, 2018



Attribution Summary  
3 Months Ending June 30, 2018

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Large Cap Equities	3.3%	3.3%	0.0%	0.0%	0.1%	0.0%	0.1%
Total Small/Mid Cap Equities	7.5%	6.7%	0.8%	0.0%	0.0%	0.0%	0.0%
Total Core Non US Equity	-2.2%	-1.2%	-1.0%	-0.2%	0.0%	0.0%	-0.2%
Total Global Equity	-2.8%	0.5%	-3.4%	-0.2%	0.0%	0.1%	-0.1%
Total Emerging Market Equity	-10.2%	-8.0%	-2.3%	-0.1%	0.0%	0.0%	-0.1%
Total Diversified Fixed Income	0.3%	-0.2%	0.4%	0.1%	0.0%	0.0%	0.1%
Total High Yield Bonds	0.8%	1.0%	-0.2%	0.0%	0.0%	0.0%	0.0%
Total Emerging Market Debt	-3.8%	-3.5%	-0.3%	0.0%	0.0%	0.0%	0.0%
Total Private Debt	1.6%	0.7%	0.9%	0.0%	0.0%	0.0%	0.0%
Total Real Estate	1.5%	1.8%	-0.3%	0.0%	0.0%	0.0%	0.0%
Total Absolute Return	3.0%	0.5%	2.6%	0.2%	0.0%	0.0%	0.2%
Total Private Equity	7.4%	5.8%	1.6%	0.0%	-0.1%	0.0%	0.0%
Total Cash	0.0%	0.5%	-0.5%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>0.5%</b>	<b>0.6%</b>	<b>-0.1%</b>	<b>-0.1%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.0%</b>

Note: Plan attribution calculations are returns based and the results shown reflect the composites shown. As a result, the total returns shown may vary from the calculated returns shown on the performance report.

The target return shown for each composite is a custom index, based on aggregated policy indices. This policy index asset weights the underlying policy indices of each option in the plan and the respective benchmark.

The allocation, selection, and interaction effects are calculated using the custom index described above along with the policy or target weight of each composite.

May not add up due to rounding.

Absolute Return's Wtd. index Return is calculated using a weighting of the respective benchmarks for each underlying strategy part of the composite.



# **ANALYTICS DEFINITIONS**

Asset Allocation Effect - Measures VPIC's ability to effectively allocate their portfolio's assets to various asset classes. The allocation effect determines whether the overweighting or underweighting of asset classes relative to a benchmark contributes positively or negatively to the overall portfolio return. Positive allocation occurs when the portfolio is overweighted in an asset class that outperforms the benchmark. Negative allocation occurs when the portfolio is overweighted in an asset class that underperforms the benchmark and underweighted in an asset class that outperforms the benchmark.

Selection Effect - Measures VPIC's ability to select managers within a given asset class relative to a benchmark. The over or underperformance of the portfolio is weighted by the benchmark weight, therefore, selection is not affected by VPIC's allocation to the asset class. The weight of the manager in the portfolio determines the size of the effect -- the larger the manager, the larger the effect is, positive or negative.

Interaction Effect - The interaction effect measures the combined impact of VPIC's manager selection and manager allocation decisions within an asset class. For example, if VPIC had superior manager selection and overweighted that particular asset class, the interaction effect is positive. If VPIC had superior manager selection, but underweighted that asset class, the interaction effect is negative. In this case, VPIC did not take advantage of the superior manager selection by allocating more assets to that asset class.



## Vermont State Employees

# RISK STATISTICS - 3 YEARS

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank	Tracking Error	Rank
Total Large Cap Equities	20.99%	11.60%	28	10.18%	34	-0.03%	36	1.07	26	1.66	24	0.13%	1
Custom Large Cap Index	--	11.57%	28	10.13%	33	0.00%	35	1.07	25	1.65	25	0.00%	1
Total Small/Mid Cap Equities	4.35%	11.07%	29	11.40%	28	1.24%	31	0.91	25	1.46	16	3.75%	16
Custom SMID Cap Equity Index	--	11.44%	25	12.86%	71	0.00%	42	0.84	32	1.29	27	0.00%	1
Total Core Non US Equity	15.64%	7.18%	35	11.44%	41	2.56%	38	0.57	35	0.91	33	2.03%	7
MSCI EAFE	--	4.90%	64	12.09%	69	0.00%	69	0.35	67	0.54	66	0.00%	1
Total Global Equity	8.44%	--	--	--	--	--	--	--	--	--	--	--	--
MSCI ACWI	--	8.19%	42	10.67%	46	0.00%	58	0.70	47	0.96	52	0.00%	1
Total Emerging Market Equity	3.63%	3.77%	78	15.62%	69	-1.50%	81	0.20	80	0.41	72	4.67%	47
MSCI Emerging Markets	--	5.60%	50	16.05%	82	0.00%	61	0.31	58	0.57	50	0.00%	1
Total Diversified Fixed Income	23.06%	2.59%	43	2.67%	58	0.95%	43	0.71	37	0.86	44	1.08%	24
BBgBarc US Aggregate TR	--	1.72%	60	2.65%	57	0.00%	75	0.39	71	0.47	73	0.00%	1
Total High Yield Bonds	3.49%	4.75%	44	4.53%	46	0.14%	50	0.89	51	1.40	52	1.40%	28
BBgBarc US High Yield TR	--	5.53%	21	5.47%	86	0.00%	56	0.88	52	1.52	39	0.00%	1
Total Emerging Market Debt	3.85%	5.14%	16	5.85%	33	0.75%	15	0.76	14	1.23	17	1.13%	3
JP Morgan EMBI Global Index	--	4.33%	33	5.65%	28	0.00%	35	0.64	29	1.00	29	0.00%	1
Total Private Debt	1.35%	--	--	--	--	--	--	--	--	--	--	--	--
S&P/LSTA Leveraged Loan TR	--	4.21%	--	2.64%	--	0.00%	--	1.33	--	2.68	--	0.00%	--
Total Real Estate	5.73%	8.23%	--	3.50%	--	0.23%	--	2.15	--	46.19	--	1.07%	--
NCREIF Property Index	--	8.26%	--	3.46%	--	0.00%	--	2.19	--	46.38	--	0.00%	--
Total Absolute Return	7.23%	2.37%	56	3.64%	36	0.62%	60	0.46	59	0.60	59	2.19%	21
HFRI Fund of Funds Composite Index	--	1.95%	64	3.51%	34	0.00%	74	0.36	67	0.43	70	0.00%	1
Total Private Equity	2.20%	15.16%	--	8.29%	--	2.40%	--	1.74	--	16.20	--	5.02%	--
Cambridge Associates US All PE	--	12.73%	--	6.58%	--	0.00%	--	1.83	--	13.10	--	0.00%	--
Total Cash	0.06%	0.04%	--	0.07%	--	-0.66%	--	-8.89	--	-4.03	--	0.16%	--
91 Day T-Bills	--	0.70%	--	0.17%	--	0.00%	--	0.00	--	--	--	0.00%	--





## Vermont State Employees

# RISK STATISTICS - 5 YEARS

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank	Tracking Error	Rank
Total Large Cap Equities	20.99%	13.27%	34	9.86%	28	0.05%	40	1.30	26	2.37	22	0.31%	1
Custom Large Cap Index	--	13.18%	35	9.82%	26	0.00%	40	1.30	27	2.34	24	0.00%	1
Total Small/Mid Cap Equities	4.35%	13.28%	19	11.53%	30	2.07%	23	1.11	15	2.13	7	3.22%	4
Custom SMID Cap Equity Index	--	12.63%	28	12.64%	72	0.00%	59	0.97	43	1.64	38	0.00%	1
Total Core Non US Equity	15.64%	8.20%	35	11.22%	41	2.05%	39	0.69	35	1.29	24	2.02%	7
MSCI EAFE	--	6.44%	72	11.62%	66	0.00%	79	0.52	76	0.90	72	0.00%	1
Total Global Equity	8.44%	--	--	--	--	--	--	--	--	--	--	--	--
MSCI ACWI	--	9.41%	51	10.18%	36	0.00%	65	0.88	53	1.41	52	0.00%	1
Total Emerging Market Equity	3.63%	2.35%	92	14.85%	75	-2.41%	94	0.13	94	0.25	91	4.94%	54
MSCI Emerging Markets	--	5.01%	52	14.85%	75	0.00%	62	0.31	57	0.56	52	0.00%	1
Total Diversified Fixed Income	23.06%	2.84%	45	2.91%	64	0.55%	50	0.83	53	1.29	50	1.02%	22
BBgBarc US Aggregate TR	--	2.27%	58	2.70%	58	0.00%	79	0.68	72	1.03	71	0.00%	1
Total High Yield Bonds	3.49%	5.07%	37	4.17%	33	0.53%	36	1.11	35	1.77	51	1.35%	40
BBgBarc US High Yield TR	--	5.51%	21	5.02%	77	0.00%	62	1.01	57	1.84	45	0.00%	1
Total Emerging Market Debt	3.85%	4.79%	17	5.90%	31	0.42%	23	0.74	21	1.22	20	1.10%	3
JP Morgan EMBI Global Index	--	4.42%	25	5.88%	30	0.00%	29	0.68	26	1.10	26	0.00%	1
Total Private Debt	1.35%	--	--	--	--	--	--	--	--	--	--	--	--
S&P/LSTA Leveraged Loan TR	--	4.00%	--	2.35%	--	0.00%	--	1.52	--	2.56	--	0.00%	--
Total Real Estate	5.73%	10.56%	--	4.58%	--	0.08%	--	2.21	--	65.18	--	1.36%	--
NCREIF Property Index	--	9.77%	--	4.07%	--	0.00%	--	2.29	--	60.12	--	0.00%	--
Total Absolute Return	7.23%	3.69%	62	3.45%	33	0.57%	64	0.94	51	1.39	51	1.85%	11
HFRI Fund of Funds Composite Index	--	3.46%	68	3.31%	30	0.00%	76	0.92	54	1.25	61	0.00%	1
Total Private Equity	2.20%	19.27%	--	9.95%	--	4.58%	--	1.89	--	26.38	--	6.79%	--
Cambridge Associates US All PE	--	13.77%	--	6.82%	--	0.00%	--	1.96	--	18.17	--	0.00%	--
Total Cash	0.06%	0.03%	--	0.06%	--	-0.40%	--	-7.04	--	-2.59	--	0.16%	--



# PRIVATE DEBT PERFORMANCE ANALYSIS (AS OF 6/30/2018)

Investment Name	Vintage Year	Commitment Amount	QTD	YTD	1 Year	3 Year	5 Year	Inception
Benefit Street Partners Senior Secured Opportunites Fund, LP	2017	70,000,000	0.81	2.66				4.47
BlueBay Direct Lending Fund III	2017	70,000,000	-12.37					-1.30
<b>Total: State of Vermont</b>		<b>140,000,000</b>	<b>0.73</b>	<b>2.55</b>				<b>4.35</b>



# PRIVATE DEBT PERFORMANCE ANALYSIS (AS OF 6/30/2018)

Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR
1 Benefit Street Partners Senior Secured Opportunites Fund, LP	2017	70,000,000	54,533,364	15,466,636	1,333,567	2,185,992	55,451,835	57,637,827	1,770,896	78%	0.04	1.03	4.47%
2 BlueBay Direct Lending Fund III	2017	70,000,000	3,063,645	66,936,355	0	0	3,023,898	3,023,898	-39,747	4%	0.00	0.99	-1.30%
<b>Total: State of Vermont</b>		<b>140,000,000</b>	<b>57,597,009</b>	<b>82,402,991</b>	<b>1,333,567</b>	<b>2,185,992</b>	<b>58,475,733</b>	<b>60,661,725</b>	<b>1,731,149</b>	<b>41%</b>	<b>0.04</b>	<b>1.03</b>	<b>4.35%</b>



# PRIVATE EQUITY PERFORMANCE ANALYSIS (AS OF 3/31/2018)

Investment	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR
<b>State of Vermont</b>													
HarbourVest HIPEP VII	2014	15,000,000	7,012,500	7,987,500	0	727,169	8,159,505	8,886,674	1,874,174	47%	0.10	1.27	16.42%
HarbourVest HIPEP VIII	2017	60,000,000	5,100,000	54,900,000	0	0	5,866,878	5,866,878	766,878	9%	0.00	1.15	15.04%
HarbourVest Partners Dover Street IX	2016	40,000,000	10,400,000	29,600,000	0	2,719,447	11,339,936	14,059,383	3,659,383	26%	0.26	1.35	69.66%
HarbourVest Partners Dover Street VIII	2012	25,000,000	21,875,000	3,125,000	0	22,127,702	11,037,302	33,165,004	11,290,004	88%	1.01	1.52	21.65%
HarbourVest Partners IX-Buyout	2012	24,000,000	17,100,000	6,900,000	47,188	8,565,725	17,190,616	25,756,341	8,609,153	71%	0.50	1.50	17.08%
HarbourVest Partners IX-Credit Opportunities	2012	4,000,000	2,620,000	1,380,000	10,265	1,322,100	2,404,849	3,726,949	1,096,684	66%	0.50	1.42	15.03%
HarbourVest Partners IX-Venture	2012	12,000,000	11,040,000	960,000	37,671	4,317,724	12,473,983	16,791,707	5,714,036	92%	0.39	1.52	15.72%
HarbourVest Partners X Buyout Fund	2015	45,500,000	8,190,000	37,310,000	2,787	850,805	10,397,177	11,247,982	3,055,195	18%	0.10	1.37	32.92%
HarbourVest Partners X Venture Fund	2015	19,500,000	5,996,250	13,503,750	1,672	369,019	7,277,007	7,646,026	1,648,104	31%	0.06	1.27	29.94%
HarbourVest Partners XI Buyout Fund	2018	75,000,000	0	75,000,000	0	0	0	0	0	0%	0.00	0.00	N/A
HarbourVest Partners XI Micro Buyout	2018	12,500,000	0	12,500,000	0	0	0	0	0	0%	0.00	0.00	N/A
HarbourVest Partners XI Venture Fund	2018	37,500,000	0	37,500,000	0	0	0	0	0	0%	0.00	0.00	N/A
<b>Subtotal: State of Vermont</b>		<b>370,000,000</b>	<b>89,333,750</b>	<b>280,666,250</b>	<b>99,583</b>	<b>40,999,691</b>	<b>86,147,253</b>	<b>127,146,944</b>	<b>37,713,611</b>	<b>24%</b>	<b>0.46</b>	<b>1.42</b>	<b>20.56%</b>
<b>Total : State of Vermont</b>		<b>370,000,000</b>	<b>89,333,750</b>	<b>280,666,250</b>	<b>99,583</b>	<b>40,999,691</b>	<b>86,147,253</b>	<b>127,146,944</b>	<b>37,713,611</b>	<b>24%</b>	<b>0.46</b>	<b>1.42</b>	<b>20.56%</b>



# PRIVATE EQUITY PERFORMANCE ANALYSIS (AS OF 3/31/2018)

Investment Name	Vintage Year	Commitment Amount	QTD	YTD	1 Year	3 Year	5 Year	Inception
HarbourVest HIPEP VII	2014	15,000,000	5.36	5.36	26.34	16.28		16.42
HarbourVest HIPEP VIII	2017	60,000,000	-153	-153				15.04
HarbourVest Partners Dover Street IX	2016	40,000,000	7.48	7.48	49.86			69.66
HarbourVest Partners Dover Street VIII	2012	25,000,000	143	143	18.68	14.68	16.46	2165
HarbourVest Partners IX-Buyout	2012	24,000,000	3.54	3.54	2151	17.89	17.21	17.08
HarbourVest Partners IX-Credit Opportunities	2012	4,000,000	2.59	2.59	2132	13.86	13.20	15.03
HarbourVest Partners IX-Venture	2012	12,000,000	4.79	4.79	15.87	11.74	15.93	15.72
HarbourVest Partners X Buyout Fund	2015	45,500,000	5.23	5.23	33.18			32.92
HarbourVest Partners X Venture Fund	2015	19,500,000	6.21	6.21	35.77			29.94
HarbourVest Partners XI Buyout Fund	2018	75,000,000						
HarbourVest Partners XI Micro Buyout	2018	12,500,000						
HarbourVest Partners XI Venture Fund	2018	37,500,000						
<b>Total: State of Vermont</b>		<b>370,000,000</b>	<b>4.38</b>	<b>4.38</b>	<b>25.91</b>	<b>18.56</b>	<b>18.98</b>	<b>20.56</b>



# REAL ESTATE PERFORMANCE ANALYSIS (AS OF 3/31/2018)

Investment	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR
<b>State of Vermont</b>													
Brookfield Strategic Real Estate Partners III, L.P.	2017	100,000,000	0	100,000,000	0	0	0	0	0	0%	0.00	0.00	N/A
Siguler Guff Distressed Real Estate Opportunities II	2014	40,000,000	32,620,000	7,380,000	0	8,223,416	35,983,152	44,206,568	11,586,568	82%	0.25	1.36	12.04%
Siguler Guff DREOF II Co-Investment	2016	15,000,000	11,910,217	3,089,783	0	0	13,932,275	13,932,275	2,022,058	79%	0.00	1.17	15.76%
Transwestern Aslan Realty Partnership III	2005	5,000,000	5,000,000	0	0	1,446,198	0	1,446,198	-3,553,802	100%	0.29	0.29	-15.27%
<b>Subtotal: State of Vermont</b>		<b>160,000,000</b>	<b>49,530,217</b>	<b>110,469,783</b>	<b>0</b>	<b>9,669,614</b>	<b>49,915,427</b>	<b>59,585,041</b>	<b>10,054,824</b>	<b>52%</b>	<b>0.42</b>	<b>0.84</b>	<b>-3.02%</b>



# REAL ESTATE PERFORMANCE ANALYSIS (AS OF 3/31/2018)

Investment Name	Vintage Year	Commitment Amount	QTD	1 Year	3 Year	5 Year	Inception
Brookfield Strategic Real Estate Partners III, L.P.	2017	100,000,000					
Siguler Guff Distressed Real Estate Opportunities II	2014	40,000,000	4.13	21.53	14.08		12.04
Siguler Guff DREOF II Co-Investment	2016	15,000,000	0.58	16.84			15.76
Transwestern Aslan Realty Partnership III	2005	5,000,000		-4.33	12.13	8.07	-15.27
<b>Total: State of Vermont</b>		<b>160,000,000</b>	<b>3.20</b>	<b>20.12</b>	<b>13.21</b>	<b>14.74</b>	<b>-3.02</b>



# APPENDIX

NEPC, LLC

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# INFORMATION DISCLAIMER

- **Past performance is no guarantee of future results.**
- **The goal of this report is to provide a basis for monitoring financial markets. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.**
- **Information on market indices was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.**
- **All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.**
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