

# **2019 Q2 INVESTMENT SUMMARY: BOARD REPORT**

## **MODOT & PATROL EMPLOYEES' RETIREMENT SYSTEM**

**September, 2019**

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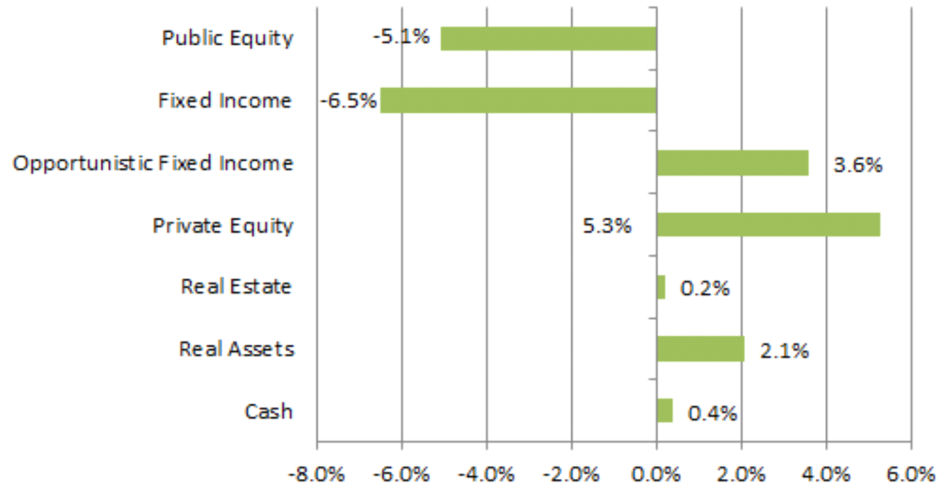
**Kiley Fischer, Analyst**



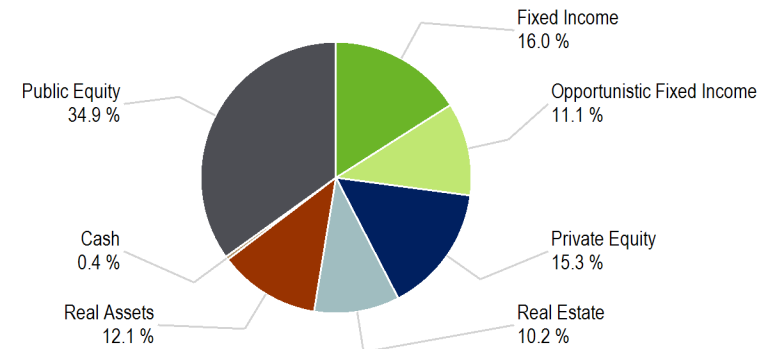
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# ASSET ALLOCATION VS. CURRENT ALLOCATION

## Current Allocation vs. Policy Allocation



## Current Asset Allocation



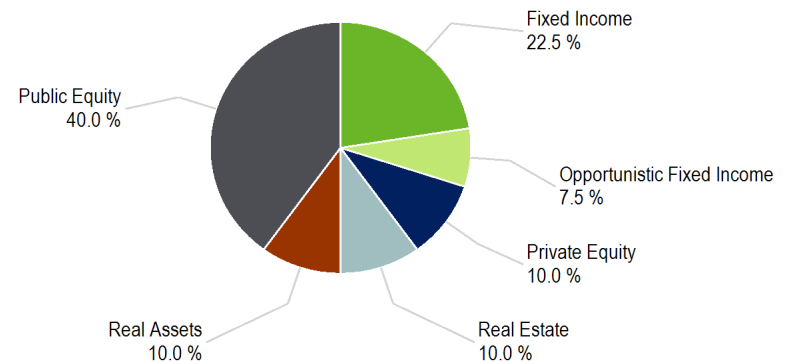
## Current Asset Allocation vs. Policy Asset Allocation

	Current	Policy	Current Difference*
Public Equity	\$846,527,910	40.0%	34.9%
Fixed Income	\$386,493,767	22.5%	16.0%
Opportunistic Fixed Income	\$268,568,816	7.5%	11.1%
Private Equity	\$371,305,159	10.0%	15.3%
Real Estate	\$246,330,290	10.0%	10.2%
Real Assets	\$294,214,930	10.0%	12.1%
Cash	\$9,584,801	--	0.4%
<b>Total</b>	<b>\$2,423,025,673</b>	<b>100.0%</b>	<b>100.0%</b>

\*Difference between Policy and Current Allocation

Allocations may not add to 100% due to rounding.

## Policy Asset Allocation

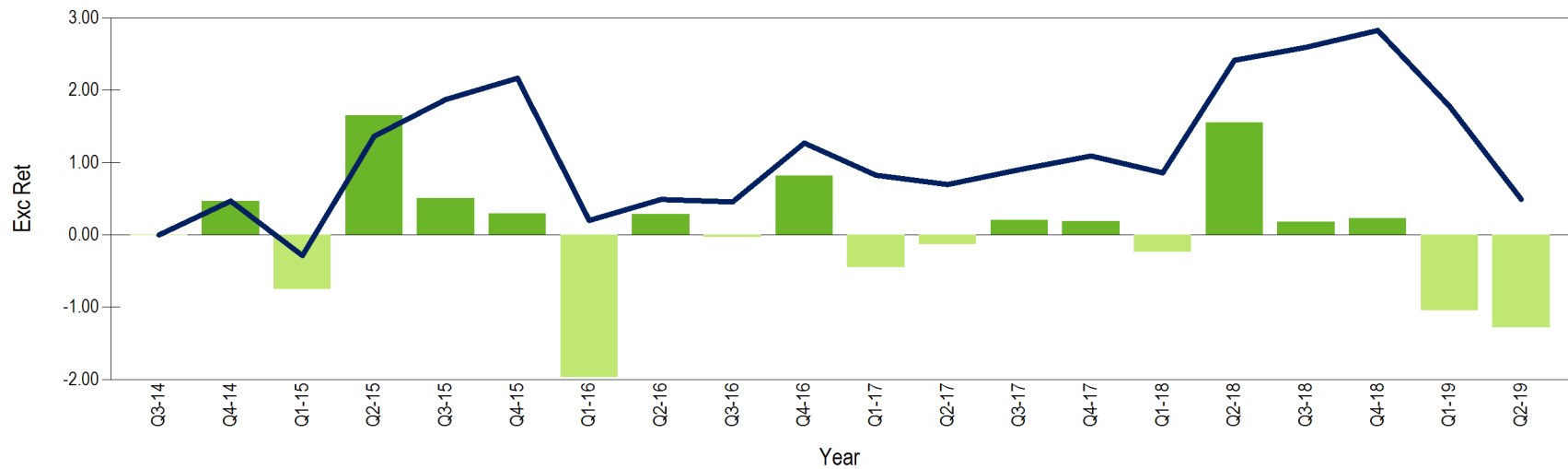


**MPERS**

# TOTAL FUND PERFORMANCE SUMMARY

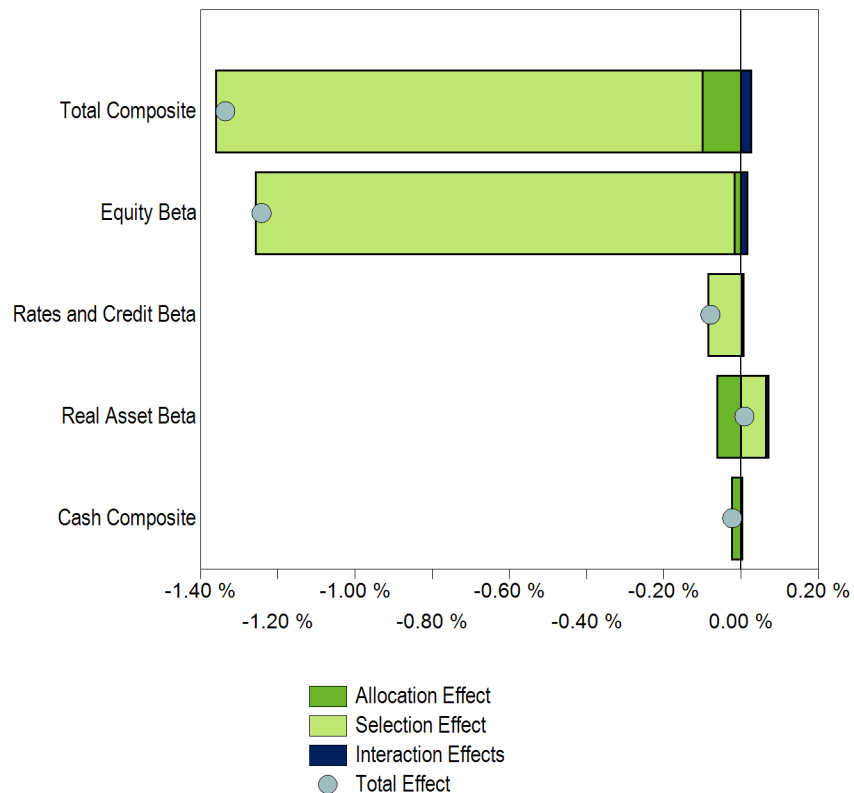
	Market Value	3 Mo	YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
<b>Total Composite</b>	<b>\$2,423,025,673</b>	<b>2.95%</b>	<b>7.14%</b>	<b>6.84%</b>	<b>9.15%</b>	<b>6.97%</b>	<b>10.18%</b>
<i>Policy Index</i>		4.24%	9.57%	8.81%	9.13%	6.85%	9.22%
<i>InvMetrics Public DB Net Median</i>		3.23%	12.29%	6.24%	8.73%	5.84%	8.97%

Quarterly and Cumulative Excess Performance



# TOTAL FUND ATTRIBUTION ANALYSIS

**Attribution Effects**  
3 Months Ending June 30, 2019



**Attribution Summary**  
3 Months Ending June 30, 2019

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Equity Beta	3.4%	5.8%	-2.4%	-1.2%	0.0%	0.0%	-1.2%
Rates and Credit Beta	3.1%	3.4%	-0.3%	-0.1%	0.0%	0.0%	-0.1%
Real Asset Beta	1.8%	1.4%	0.3%	0.1%	-0.1%	0.0%	0.0%
Cash Composite	0.6%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>2.9%</b>	<b>4.3%</b>	<b>-1.3%</b>	<b>-1.3%</b>	<b>-0.1%</b>	<b>0.0%</b>	<b>-1.3%</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 return shown on the performance summary.

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 return.

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 due to rounding

Allocation Effect - The return attributable to the asset allocation of the portfolio

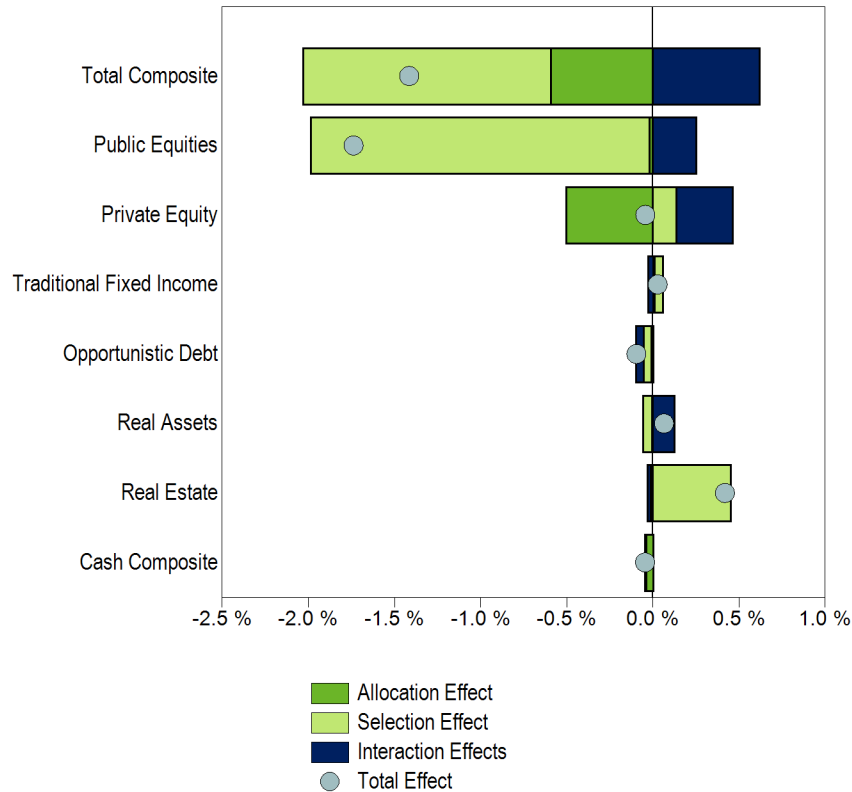
Selection Effect - The return attributable to the managers' security selection

Interaction Effect - The return attributable to the interaction between the Allocation and Selection Effects



# TOTAL FUND ATTRIBUTION ANALYSIS

**Attribution Effects Relative to Policy Index  
1 Year Ending June 30, 2019**



	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Public Equities	1.2%	5.7%	-4.5%	-2.0%	0.0%	0.2%	-1.7%
Private Equity	16.2%	12.8%	3.5%	0.1%	-0.5%	0.3%	0.0%
Traditional Fixed Income	8.6%	8.5%	0.1%	0.0%	0.0%	0.0%	0.0%
Opportunistic Debt	7.5%	8.1%	-0.6%	0.0%	0.0%	0.0%	-0.1%
Real Assets	6.5%	5.7%	0.8%	0.0%	0.0%	0.1%	0.1%
Real Estate	10.5%	6.0%	4.5%	0.4%	0.0%	0.0%	0.4%
Cash Composite	2.2%	2.3%	-0.1%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>6.9%</b>	<b>8.4%</b>	<b>-1.4%</b>	<b>-1.4%</b>	<b>-0.6%</b>	<b>0.6%</b>	<b>-1.4%</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 return shown on the performance summary.

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 return.

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 due to rounding

Allocation Effect - The return attributable to the asset allocation of the portfolio

Selection Effect - The return attributable to the managers' security selection

Interaction Effect - The return attributable to the interaction between the Allocation and Selection Effects



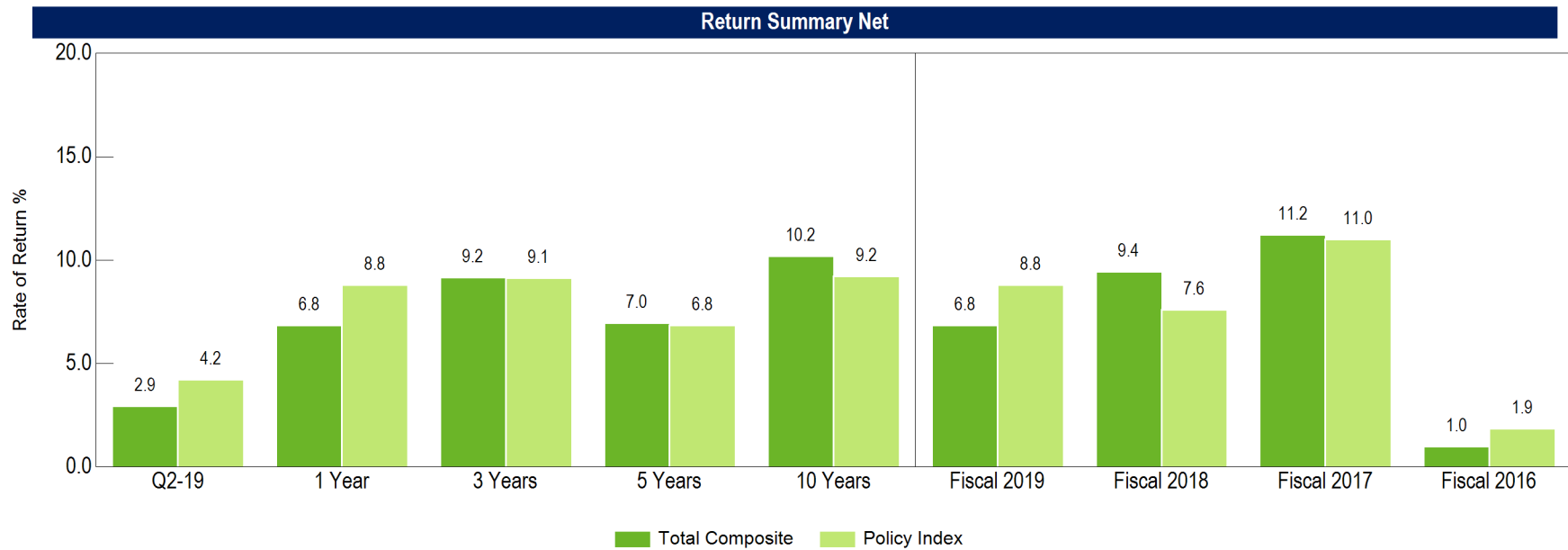
# MPERS TOTAL COMPOSITE

	Policy %	% of Portfolio	Market Value (\$)	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
<b>Total Composite</b>	<b>100.00</b>	<b>100.00</b>	<b>2,423,025,673</b>	<b>2.95</b>	<b>73</b>	<b>7.14</b>	<b>99</b>	<b>6.84</b>	<b>32</b>	<b>9.15</b>	<b>32</b>	<b>6.97</b>	<b>9</b>	<b>10.18</b>	<b>7</b>
<i>Policy Index</i>				4.24	4	9.57	92	8.81	5	9.13	33	6.85	12	9.22	35
<b>Equity Beta</b>	<b>50.00</b>	<b>50.26</b>	<b>1,217,833,069</b>	<b>3.42</b>		<b>10.57</b>									
<b>Public Equities</b>	<b>40.00</b>	<b>34.94</b>	<b>846,527,910</b>	<b>2.91</b>	<b>64</b>	<b>13.43</b>	<b>69</b>	<b>1.23</b>	<b>71</b>	<b>9.76</b>	<b>55</b>	<b>5.23</b>	<b>54</b>	<b>10.72</b>	<b>42</b>
<i>MSCI ACWI</i>				3.61	52	16.23	44	5.74	37	11.62	38	6.16	40	10.15	52
<b>Private Equity</b>	<b>10.00</b>	<b>15.32</b>	<b>371,305,159</b>	<b>4.44</b>		<b>4.99</b>		<b>16.22</b>		<b>14.38</b>		<b>12.42</b>		<b>13.03</b>	
<i>MO Hwy Priv. Equ. Index - Lagged</i>				14.46		-0.25		12.76		16.88		14.21		19.47	
<b>Rates and Credit Beta</b>	<b>30.00</b>	<b>27.03</b>	<b>655,062,583</b>	<b>3.13</b>		<b>5.66</b>									
<b>Traditional Fixed Income</b>	<b>22.50</b>	<b>15.95</b>	<b>386,493,767</b>	<b>3.71</b>	<b>25</b>	<b>7.16</b>	<b>45</b>	<b>8.61</b>	<b>13</b>	<b>4.73</b>	<b>44</b>	<b>5.55</b>	<b>1</b>	<b>8.14</b>	<b>9</b>
<i>Fixed Income Custom Benchmark</i>				3.53	29	6.90	50	8.52	14	2.87	67	3.20	42	4.38	58
<b>Opportunistic Debt</b>	<b>7.50</b>	<b>11.08</b>	<b>268,568,816</b>	<b>2.32</b>	<b>61</b>	<b>3.53</b>	<b>99</b>	<b>7.46</b>	<b>35</b>						
<i>BBgBarc US High Yield TR</i>				2.50	47	9.94	37	7.48	35	7.52	22	4.70	24	9.24	19
<b>Real Assets Beta</b>	<b>20.00</b>	<b>22.31</b>	<b>540,545,220</b>	<b>1.75</b>		<b>1.61</b>									
<b>Real Assets</b>	<b>10.00</b>	<b>12.14</b>	<b>294,214,930</b>	<b>2.19</b>		<b>0.67</b>		<b>6.48</b>		<b>8.61</b>		<b>3.94</b>			
<i>CPI + 4% (Unadjusted)</i>				1.75		3.97		5.71		6.12		5.50		5.80	
<b>Real Estate</b>	<b>10.00</b>	<b>10.17</b>	<b>246,330,290</b>	<b>1.25</b>		<b>4.71</b>		<b>10.49</b>		<b>9.25</b>		<b>10.16</b>		<b>10.04</b>	
<i>NFI-ODCE Eq Wtd Net Non Lag</i>				1.12		2.62		6.00		6.97		9.12		8.80	
<b>Cash Composite</b>	<b>--</b>	<b>0.40</b>	<b>9,584,801</b>	<b>0.58</b>		<b>1.16</b>		<b>2.21</b>		<b>1.25</b>		<b>0.78</b>		<b>0.42</b>	
<i>91 Day T-Bills</i>				0.57		1.17		2.27		1.40		0.87		0.47	

Total Composite is ranked in the IFx Public DB (peer) Net+ Universe  
 Global Equity Composite is ranked in the eV Global All Cap Equity Net Universe  
 Fixed Income Composite is ranked in the eV All Global Fixed Inc Net Universe  
 Opportunistic Debt Composite is ranked in the eV US High Yield Fixed Inc Net Universe

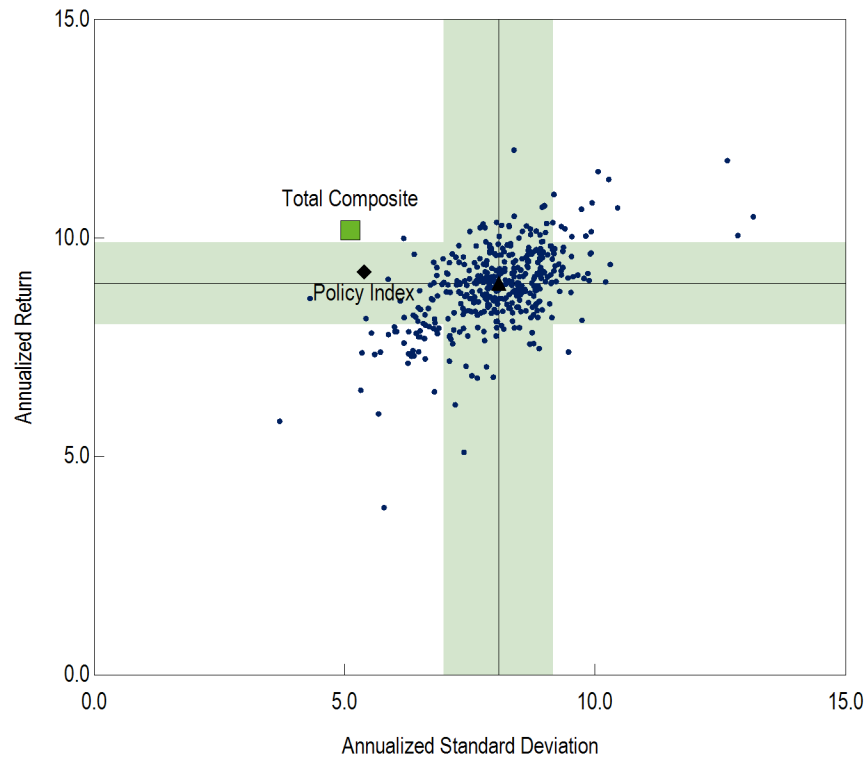


# TOTAL FUND RETURN SUMMARY



# TOTAL FUND RISK/RETURN - 10 YEARS

10 Years Ending June 30, 2019



- Total Composite
- ◆ Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvMetrics Public DB Net

396 Portfolios

## Statistics Summary 10 Years Ending June 30, 2019

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Total Composite	10.18%	7	5.11%	1
Policy Index	9.22%	35	5.38%	1

## Statistics Summary 10 Years Ending June 30, 2019

	Sharpe Ratio	Rank
Total Composite	1.90	1
Policy Index	1.63	1





## Information Disclaimer

- Past performance is no guarantee of future results.
- All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.
- NEPC's source for portfolio pricing, calculation of accruals, and transaction information is the plan's custodian bank. Information on market indices and security characteristics is received from other 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.
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## Reporting Methodology

- The client's custodian bank is NEPC's preferred data source unless otherwise directed. NEPC generally reconciles custodian data to manager data. If the custodian cannot provide accurate data, manager data may be used.
- Trailing time period returns are determined by geometrically linking the holding period returns, from the first full month after inception to the report date. Rates of return are annualized when the time period is longer than a year. Performance is presented gross and/or net of manager fees as indicated on each page.
- For managers funded in the middle of a month, the "since inception" return will start with the first full month, although actual inception dates and cash flows are taken into account in all Composite calculations.
- This report may contain forward-looking statements that are based on NEPC's estimates, opinions and beliefs, but NEPC cannot guarantee that any plan will achieve its targeted return or meet other goals.

