



# **MoDOT & Patrol Employees Retirement System**

Investment Summary

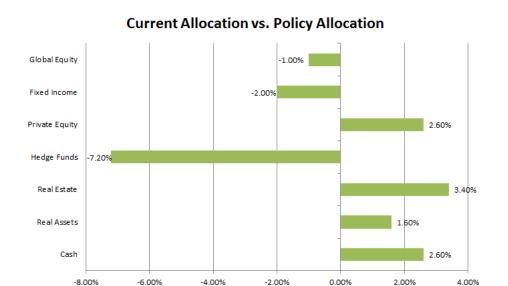
Quarter Ending June 30, 2016

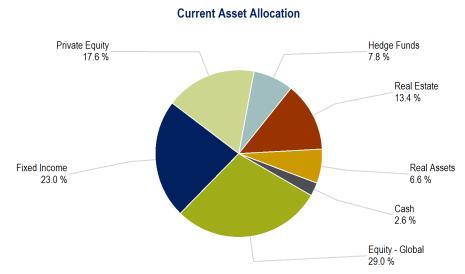
Board Report

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## Total Fund Asset Allocation vs. Current Allocation

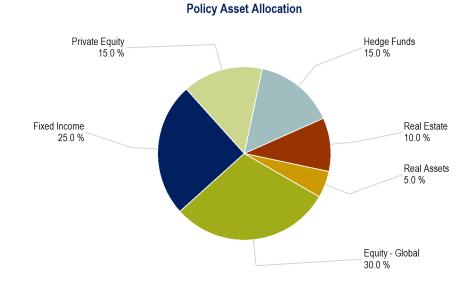




#### **Current Asset Allocation vs. Policy Asset Allocation**

	Current	Policy	Current Di	fference*
Equity - Global	\$575,532,020	30.0%	29.0%	-1.0%
Fixed Income	\$456,656,836	25.0%	23.0%	-2.0%
Private Equity	\$348,785,990	15.0%	17.6%	2.6%
Hedge Funds	\$155,481,103	15.0%	7.8%	-7.2%
Real Estate	\$265,921,632	10.0%	13.4%	3.4%
Real Assets	\$131,524,178	5.0%	6.6%	1.6%
Cash	\$51,087,298		2.6%	2.6%
Total	\$1,984,989,058	100.0%	100.0%	

<sup>\*</sup>Difference between Policy and Current Allocation



Allocations may not add to 100% due to rounding.



# Total Fund Performance Summary

	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs
Total Composite	\$1,984,989,058	1.98%	1.00%	8.19%	8.09%	5.82%
Policy Index		1.68%	1.85%	7.05%	6.83%	5.86%
InvestorForce Public DB Net Median		1.80%	0.43%	5.98%	6.01%	5.32%

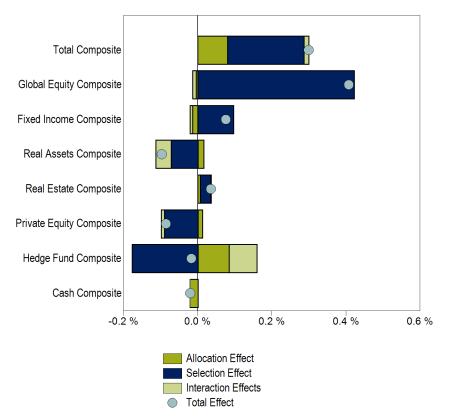
#### **Quarterly and Cumulative Excess Performance**





## **Total Fund Attribution Analysis**

Attribution Effects Relative to Policy Index 3 Months Ending June 30, 2016



Attribution Summary 3 Months Ending June 30, 2016

	Wtd. <sub>\</sub> Actual Return	Ntd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Global Equity Composite	2.4%	1.0%	1.4%	0.4%	0.0%	0.0%	0.4%
Fixed Income Composite	2.9%	2.5%	0.4%	0.1%	0.0%	0.0%	0.1%
Real Assets Composite	0.8%	2.2%	-1.5%	-0.1%	0.0%	0.0%	-0.1%
Real Estate Composite	2.3%	2.0%	0.3%	0.0%	0.0%	0.0%	0.0%
Private Equity Composite	1.8%	2.1%	-0.3%	-0.1%	0.0%	0.0%	-0.1%
Hedge Fund Composite	-0.7%	0.5%	-1.2%	-0.2%	0.1%	0.1%	0.0%
Cash Composite	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	2.0%	1.7%	0.3%	0.2%	0.1%	0.0%	0.3%

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 indexdescribed above along with the policy or target weight of each composite.

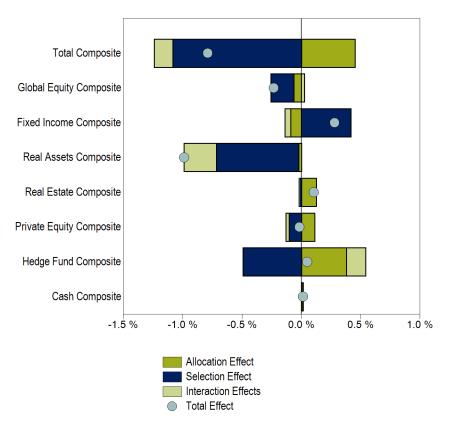
May not add due to rounding

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, 2016



# Attribution Summary 1 Year Ending June 30, 2016

	Wtd. <sub>\</sub> Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Global Equity Composite	-4.3%	-3.7%	-0.6%	-0.2%	-0.1%	0.0%	-0.2%
Fixed Income Composite	7.6%	5.8%	1.7%	0.4%	-0.1%	0.0%	0.3%
Real Assets Composite	-8.7%	5.0%	-13.7%	-0.7%	0.0%	-0.3%	-1.0%
Real Estate Composite	11.1%	11.2%	-0.1%	0.0%	0.1%	0.0%	0.1%
Private Equity Composite	4.9%	4.8%	0.0%	-0.1%	0.1%	0.0%	0.0%
Hedge Fund Composite	-8.5%	-5.4%	-3.0%	-0.5%	0.4%	0.2%	0.0%
Cash Composite	0.2%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%
Total	1.1%	1.9%	-0.8%	-1.1%	0.5%	-0.2%	-0.8%

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 indexdescribed above along with the policy or target weight of each composite.

May not add due to rounding

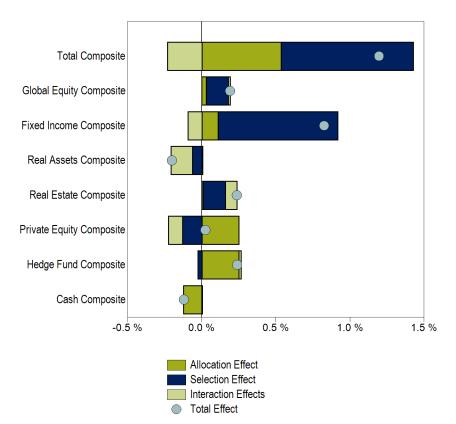
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Interaction Effect - The return attributable to the interaction between the Allocation and Selection Effects



## Total Fund Attribution Analysis

Attribution Effects Relative to Policy Index 3 Years Ending June 30, 2016



Attribution Summary 3 Years Ending June 30, 2016

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Global Equity Composite	6.6%	6.0%	0.5%	0.1%	0.0%	0.0%	0.2%
Fixed Income Composite	7.4%	4.2%	3.2%	0.8%	0.1%	-0.1%	0.8%
Real Assets Composite	3.5%	5.1%	-1.6%	-0.1%	0.0%	-0.1%	-0.2%
Real Estate Composite	13.7%	12.1%	1.7%	0.2%	0.0%	0.1%	0.2%
Private Equity Composite	14.6%	15.1%	-0.6%	-0.1%	0.2%	-0.1%	0.0%
Hedge Fund Composite	1.7%	1.9%	-0.2%	0.0%	0.3%	0.0%	0.2%
Cash Composite	0.1%	0.1%	0.1%	0.0%	-0.1%	0.0%	-0.1%
Total	8.2%	7.0%	1.2%	0.9%	0.5%	-0.2%	1.2%

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 indexdescribed 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

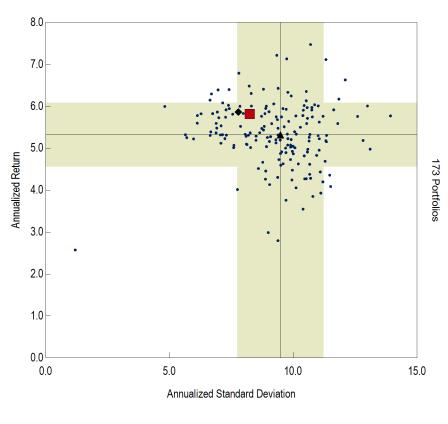
	Policy %	% of Portfolio	Market Value (\$)	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Total Composite	100.00	100.00	1,984,989,058	1.98	38	1.98	85	1.00	34	8.19	1	8.09	2	5.82	27
Policy Index				1.68	64	3.68	21	1.85	15	7.05	14	6.83	23	5.86	24
Global Equity Composite	30.00	28.99	575,532,020	2.38	18	1.40	37	-4.34	49	6.58	47	7.06	32	4.99	44
MSCI ACWI				0.99	36	1.23	38	-3.73	45	6.03	57	5.38	66	4.26	68
Fixed Income Composite	25.00	23.01	456,656,836	2.93	34	5.59	58	7.56	14	7.37	1	7.37	1	6.49	20
Barclays U.S. Universal				2.53	44	5.68	58	5.82	29	4.20	23	4.01	37	5.30	43
Real Assets Composite	5.00	7.48	148,461,085	0.76		-5.44	-	-8.65		3.51	-			-	
CPI + 4% (Unadjusted)				2.21		3.92		5.04		5.10		5.37		5.80	
Real Estate Composite	10.00	12.54	248,984,725	2.25		5.77		11.10		13.74		12.75		5.74	
NFI-ODCE Eq Wtd Net Non Lag				1.97		4.23		11.24		12.08		11.70		4.97	
Private Equity Composite	15.00	17.57	348,785,990	1.81		2.12		4.88		14.57		12.29		6.98	
MO Hwy Priv. Equ. Index - Lagged				2.10		10.08		4.83		15.15		14.90		10.63	
Hedge Fund Composite	15.00	7.83	155,481,103	-0.67		-3.88	-	-8.50		1.71	-	2.87		-	
HFRI Fund of Funds Composite Index				0.51		-2.63		-5.45		1.90		1.62		1.58	
Cash Composite	0.00	2.57	51,087,298	0.06		0.20	-	0.24		0.14	-	0.10		1.08	
91 Day T-Bills				0.06		0.13		0.16		0.07		0.06		0.89	

Total Composite is ranked in the IFx Public DB (peer) Net + Universe Global Equity Composite is ranked in the eA Global All Cap Equity Net Universe Fixed Income Composite is ranked in the eA All Global Fixed Inc Net Universe



# Total Fund Risk/Return - 10 Years

#### 10 Years Ending June 30, 2016



# Statistics Summary 10 Years Ending June 30, 2016

	Anlzd Ret	Rank	Anlzd Std Dev	Rank
Total Composite	5.82%	27	8.25%	26
Policy Index	5.86%	24	7.79%	21

# Statistics Summary 10 Years Ending June 30, 2016

	Sharpe Ratio	Rank	Sortino Ratio RF	Rank		
Total Composite	0.60	24	0.59	49		
Policy Index	0.64	19	0.69	30		

Total Composite

Policy Index

▲ Universe Median

68% Confidence Interval

• InvestorForce Public DB Net



## Information Disclaimer

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