



NEPC, LLC

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## MoDOT & Patrol Employees Retirement System

**Investment Summary**  
**Quarter Ending June 30, 2014**

### **Staff Report**

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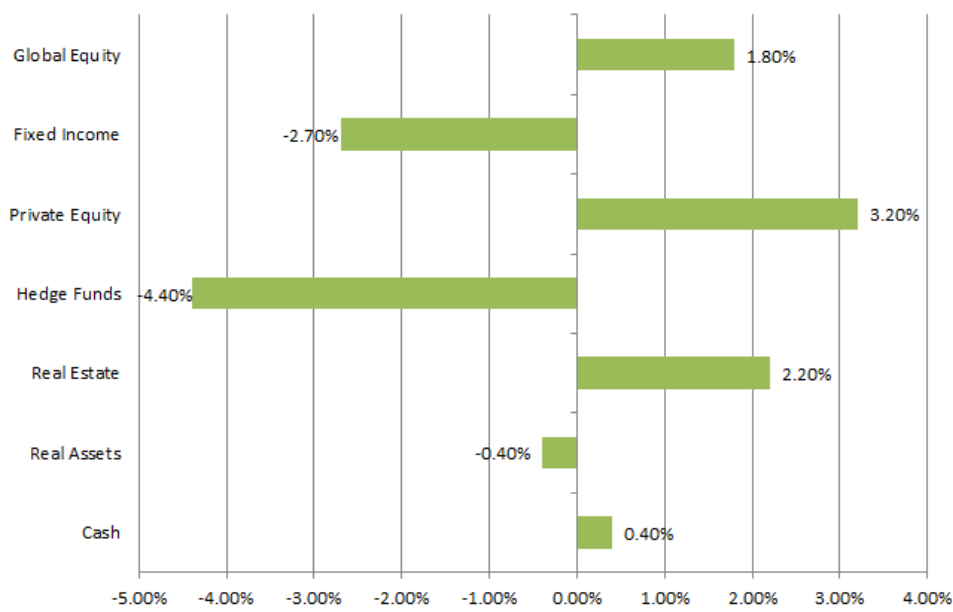


# Total Fund Performance

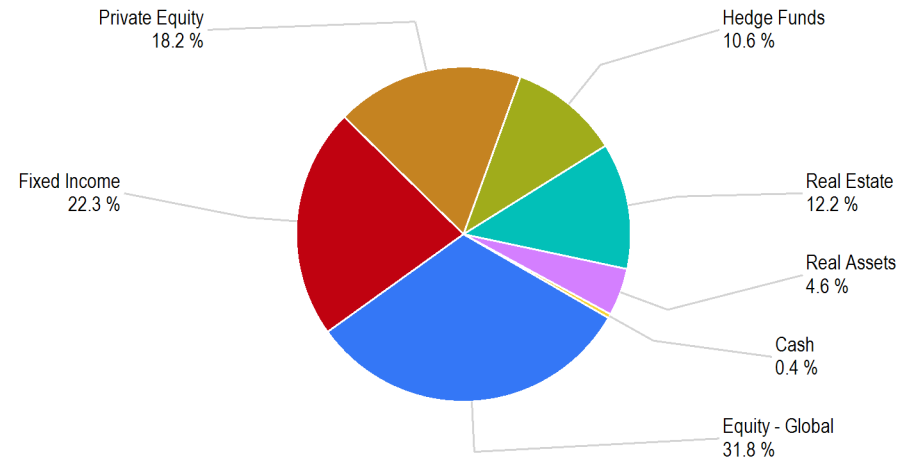


# Total Fund Asset Allocation vs. Current Allocation

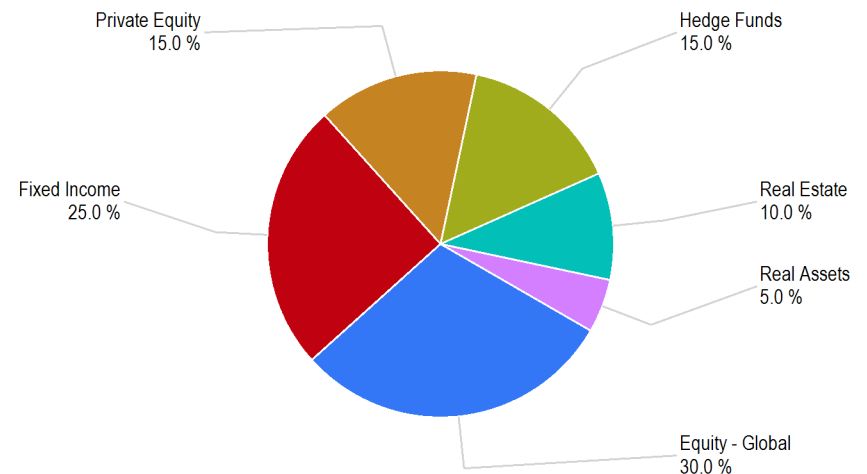
**Current Allocation vs. Policy Allocation**



**Current Asset Allocation**



**Policy Asset Allocation**



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

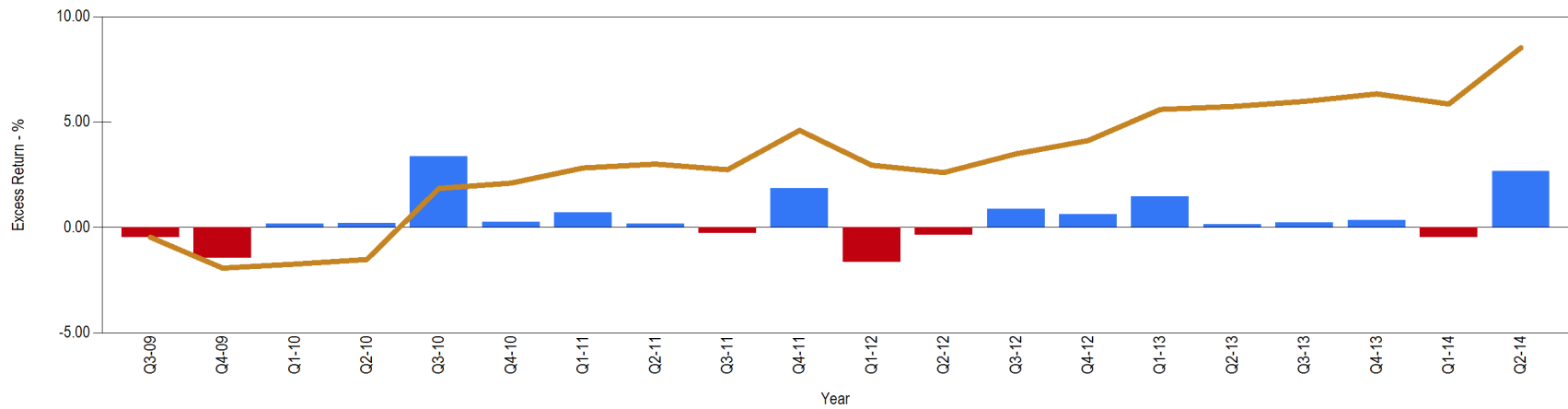
	Current	Policy	Current Difference*
Equity - Global	\$609,018,734	30.0%	31.8% 1.8%
Fixed Income	\$427,312,959	25.0%	22.3% -2.7%
Private Equity	\$348,350,472	15.0%	18.2% 3.2%
Hedge Funds	\$203,461,299	15.0%	10.6% -4.4%
Real Estate	\$234,048,972	10.0%	12.2% 2.2%
Real Assets	\$88,034,700	5.0%	4.6% -0.4%
Cash	\$7,749,416	--	0.4% 0.4%
<b>Total</b>	<b>\$1,917,976,552</b>	<b>100.0%</b>	<b>100.0%</b>

Allocations may not add to 100% due to rounding.

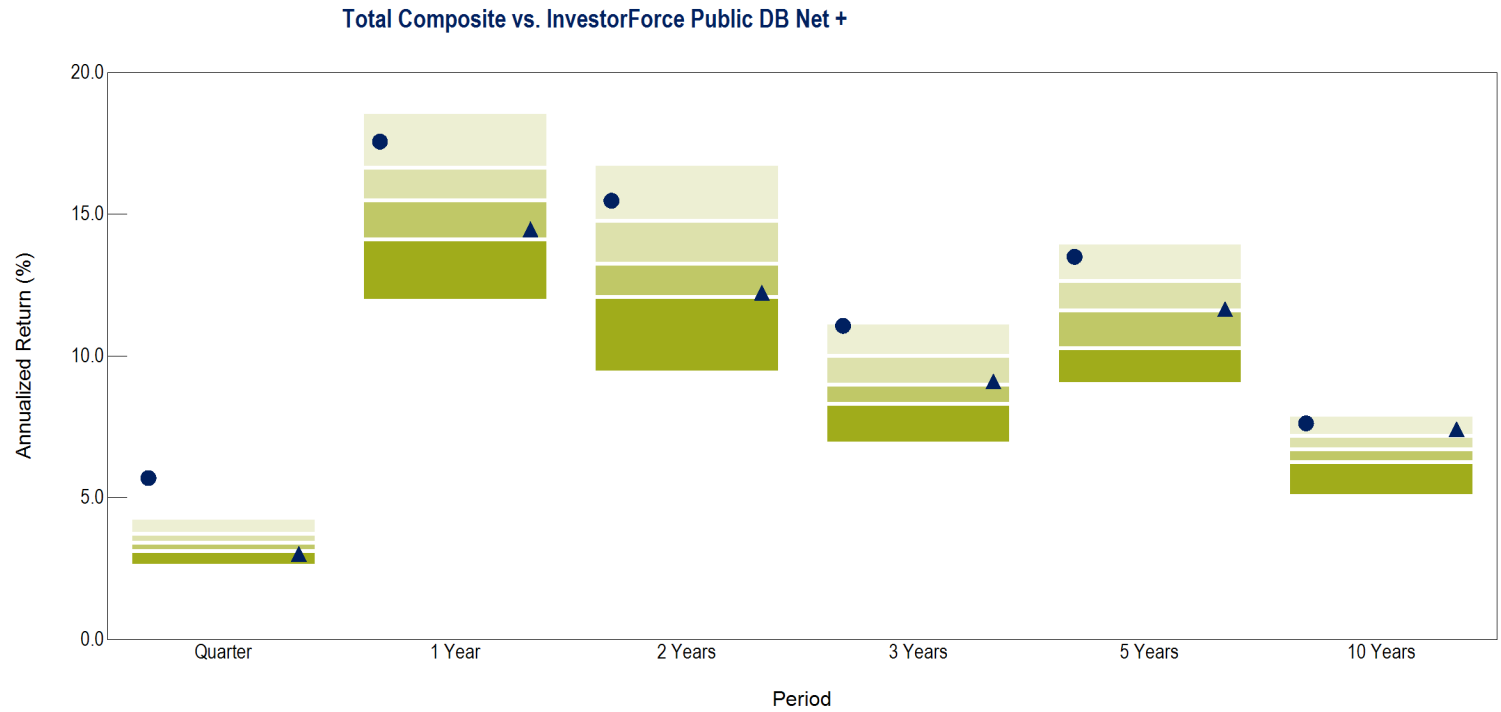
# Total Fund Performance Summary

	Market Value	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs
<b>Total Composite</b>	<b>\$1,917,976,552</b>	<b>5.69%</b>	<b>17.56%</b>	<b>11.06%</b>	<b>13.50%</b>	<b>7.62%</b>
<i>Policy Index</i>		3.03%	14.47%	9.10%	11.65%	7.41%
<i>InvestorForce Public DB Net + Median</i>		3.43%	15.51%	9.01%	11.62%	6.72%

Quarterly and Cumulative Excess Performance



# Total Fund Return Summary vs. Peer Universe



	Return (Rank)		1 Year		2 Years		3 Years		5 Years		10 Years	
5th Percentile	4.3		18.6		16.8		11.2		14.0		7.9	
25th Percentile	3.7		16.7		14.8		10.0		12.6		7.2	
Median	3.4		15.5		13.3		9.0		11.6		6.7	
75th Percentile	3.1		14.1		12.1		8.3		10.3		6.3	
95th Percentile	2.6		11.9		9.4		6.9		9.0		5.1	
# of Portfolios	182		173		166		154		134		110	
● Total Composite	5.7	(1)	17.6	(15)	15.5	(16)	11.1	(6)	13.5	(11)	7.6	(10)
▲ Policy Index	3.0	(83)	14.5	(66)	12.2	(72)	9.1	(46)	11.7	(49)	7.4	(16)

MPERS

Total Composite

	Policy %	% of Portfolio	Market Value (\$)	3 Mo (%)	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>1,917,976,552</b>	<b>5.69</b>	<b>1</b>	<b>17.56</b>	<b>15</b>	<b>11.06</b>	<b>6</b>	<b>13.50</b>	<b>11</b>	<b>7.62</b>	<b>10</b>
<i>Policy Index</i>				3.03	83	14.47	66	9.10	46	11.65	49	7.41	16
<b>Global Equity Composite</b>	<b>30.00</b>	<b>31.75</b>	<b>609,018,734</b>	<b>5.44</b>	<b>11</b>	<b>23.78</b>	<b>45</b>	<b>12.87</b>	<b>33</b>	<b>17.10</b>	<b>22</b>	<b>8.58</b>	<b>38</b>
<i>MSCI ACWI</i>				5.04	22	22.95	53	10.25	67	14.28	70	7.46	82
<b>Fixed Income Composite</b>	<b>25.00</b>	<b>22.28</b>	<b>427,312,959</b>	<b>3.26</b>	<b>25</b>	<b>8.51</b>	<b>51</b>	<b>7.76</b>	<b>18</b>	<b>10.79</b>	<b>21</b>	<b>6.08</b>	<b>40</b>
<i>Barclays U.S. Universal</i>				2.20	77	5.20	88	4.22	57	5.58	66	5.27	74
<b>Cash Composite</b>	<b>0.00</b>	<b>0.40</b>	<b>7,749,416</b>	<b>0.00</b>	<b>--</b>	<b>0.17</b>	<b>--</b>	<b>0.08</b>	<b>--</b>	<b>0.05</b>	<b>--</b>	<b>1.67</b>	<b>--</b>
<i>91 Day T-Bills</i>				0.01	--	0.03	--	0.05	--	0.07	--	1.51	--
<b>Real Assets Composite</b>	<b>5.00</b>	<b>4.59</b>	<b>88,034,700</b>	<b>-1.64</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>CPI + 4% (Unadjusted)</i>				1.86	--	6.15	--	5.90	--	6.09	--	6.39	--
<b>Real Estate Composite</b>	<b>10.00</b>	<b>12.20</b>	<b>234,048,972</b>	<b>6.35</b>	<b>--</b>	<b>17.78</b>	<b>--</b>	<b>13.41</b>	<b>--</b>	<b>10.11</b>	<b>--</b>	<b>6.55</b>	<b>--</b>
<i>NFI-ODCE Eq Wtd Net Non Lag</i>				2.54	--	11.37	--	11.21	--	8.48	--	5.76	--
<b>Private Equity Composite</b>	<b>15.00</b>	<b>18.16</b>	<b>348,350,472</b>	<b>13.64</b>	<b>--</b>	<b>25.28</b>	<b>--</b>	<b>14.15</b>	<b>--</b>	<b>13.49</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>MO Hwy Priv. Equ. Index - Lagged</i>				2.56	--	25.45	--	18.06	--	24.97	--	11.27	--
<b>Hedge Fund Composite</b>	<b>15.00</b>	<b>10.61</b>	<b>203,461,299</b>	<b>2.19</b>	<b>--</b>	<b>9.14</b>	<b>--</b>	<b>6.11</b>	<b>--</b>	<b>7.81</b>	<b>--</b>	<b>--</b>	<b>--</b>
<i>HFRI Fund of Funds Composite Index</i>				1.47	--	7.55	--	3.28	--	4.23	--	3.42	--

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

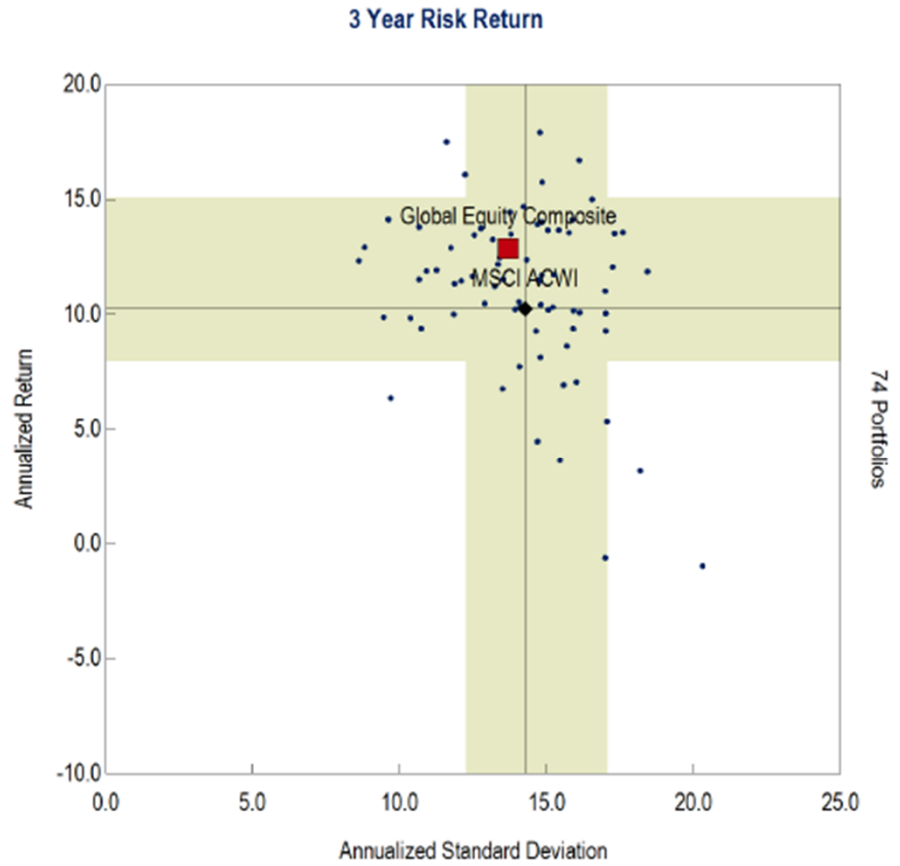
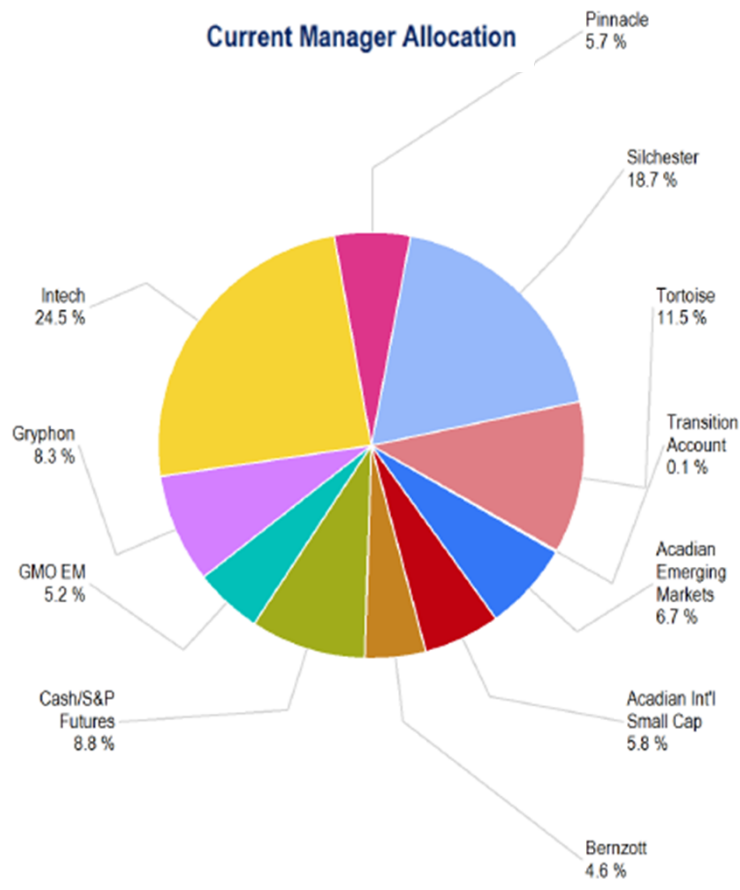
Fixed Income Composite is ranked in the eA All Global Fixed Inc Net Universe

# Global Equity Analysis



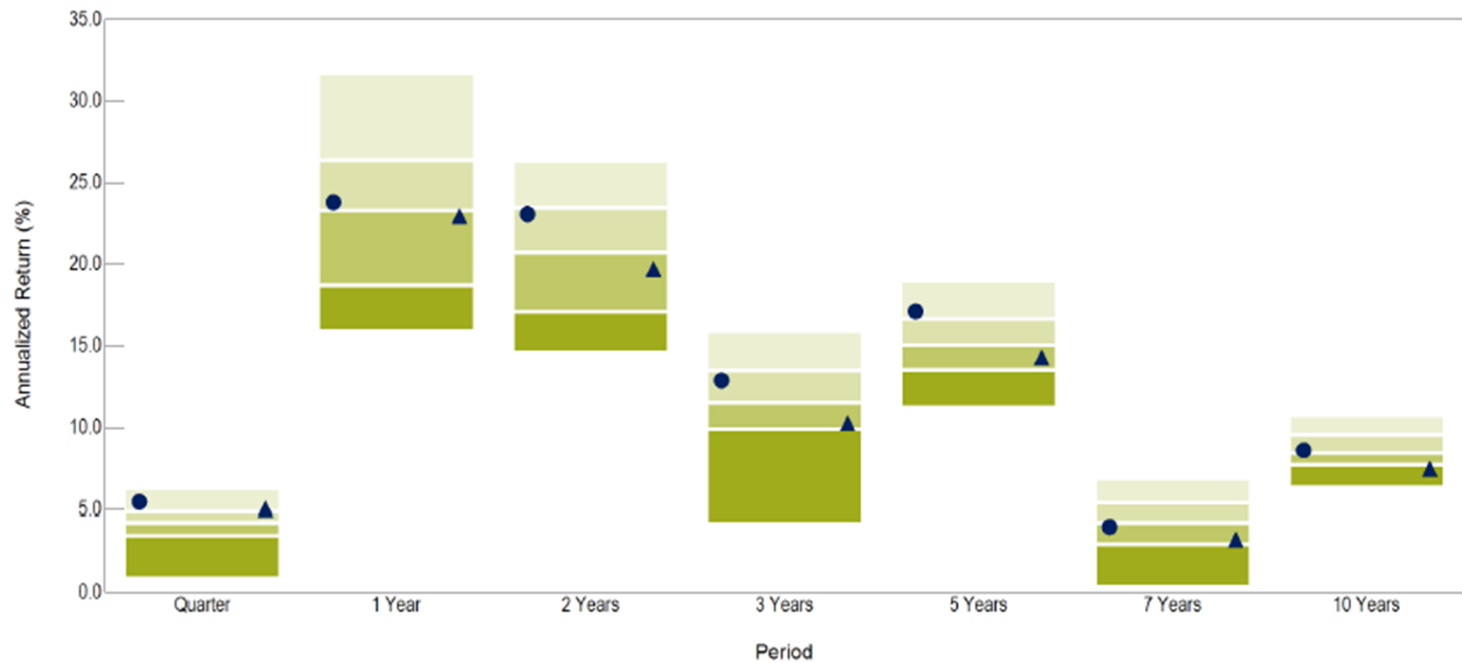


# Global Equity – Portfolio Review



# Global Equity – Portfolio Review

Global Equity Composite vs. eA Global All Cap Equity Net



	Return (Rank)													
5th Percentile	6.3		31.7		26.3		15.9		19.0		6.8	10.7		
25th Percentile	4.9		26.4		23.5		13.5		16.7		5.4	9.5		
Median	4.3		23.3		20.7		11.5		15.1		4.3	8.4		
75th Percentile	3.5		18.7		17.1		9.9		13.5		3.0	7.7		
95th Percentile	0.9		15.9		14.6		4.2		11.2		0.3	6.4		
# of Portfolios	92		90		89		74		63		49	29		
● Global Equity Composite	5.4	(11)	23.8	(45)	23.1	(29)	12.9	(33)	17.1	(22)	4.0	(58)	8.6	(38)
▲ MSCI ACWI	5.0	(22)	22.9	(53)	19.7	(59)	10.3	(67)	14.3	(70)	3.2	(67)	7.5	(82)

- **As a reminder, the Global Equity portfolio consists of MPERS's domestic and international equity managers as well as Tortoise**
- **Tortoise, MPERS's MLP manager, has had strong absolute and relative performance**
  - Tortoise's inclusion within the Global Equity portfolio has not only boosted returns but has helped to further diversify the portfolio
    - Despite possessing the liquidity of common stock , MLP managers earn most of their income through activities relating to natural resources, commodities, or real estate.
    - As a result, Tortoise's performance, in theory, is less correlated to the equity markets than any of the other equity managers within the Global Equity portfolio
- **One of the main goals from the Global Equity restructuring, conducted in September, was to get the Global Equity portfolio's allocation in line with that of the MSCI ACWI index**
  - Staff and NEPC continue to work towards this goal while implementing over/under weights when beneficial

# Domestic Equity Analysis



# Domestic Equity – Portfolio Review

Current Manager Allocation

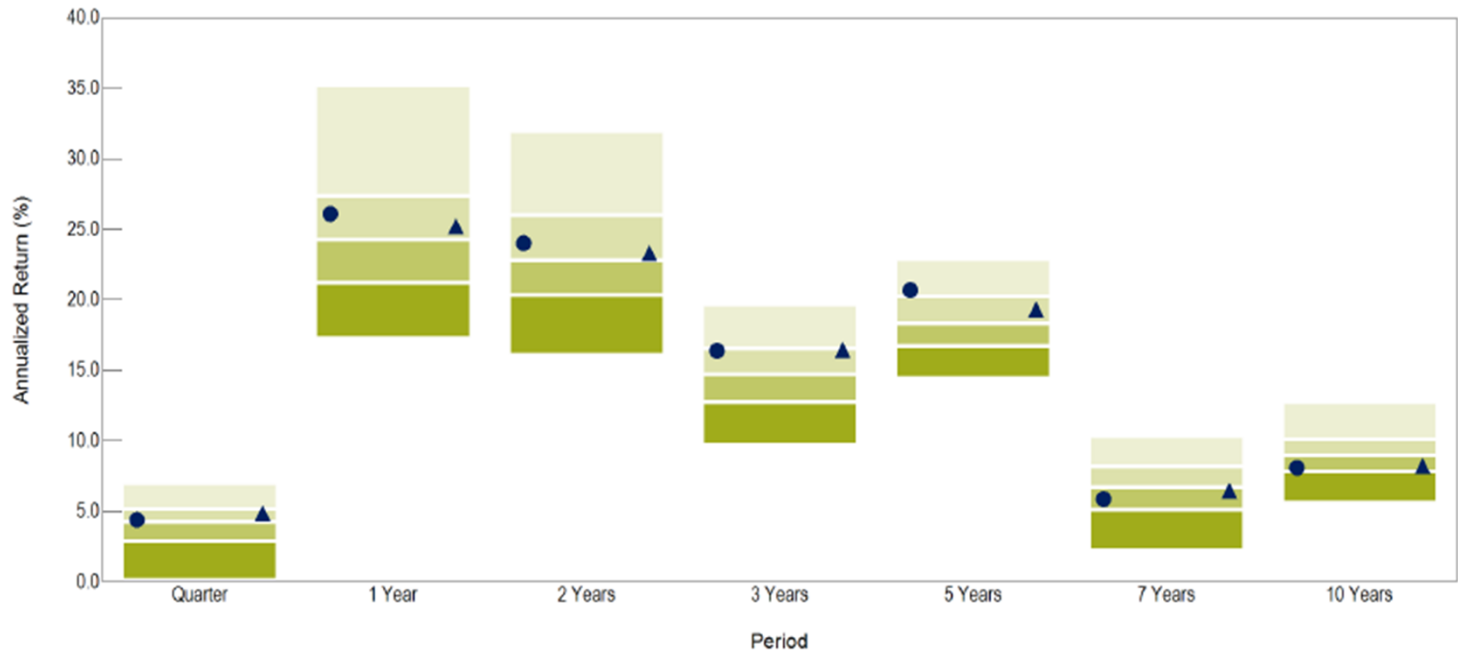


3 Year Risk Return



# Domestic Equity – Portfolio Review

Domestic Equity Composite vs. eA US All Cap Equity Net



	Return (Rank)		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
5th Percentile	7.0		35.2		32.0		19.6		22.9		10.3		12.7	
25th Percentile	5.2		27.4		26.0		16.6		20.3		8.2		10.1	
Median	4.3		24.3		22.9		14.8		18.4		6.8		9.0	
75th Percentile	2.9		21.3		20.4		12.8		16.8		5.1		7.9	
95th Percentile	0.2		17.3		16.1		9.8		14.5		2.3		5.7	
# of Portfolios	162		162		159		153		136		119		94	
● Domestic Equity Composite	4.4	(48)	26.1	(34)	24.0	(42)	16.4	(27)	20.7	(22)	5.9	(66)	8.1	(74)
▲ Russell 3000	4.9	(33)	25.2	(41)	23.3	(48)	16.5	(27)	19.3	(38)	6.5	(58)	8.2	(71)

- **Staff, in collaboration with NEPC, conducted a review of the Global Equity portfolio in September of 2013**
  - As part of that review, it was determined that MPERS had a significant overweight to small cap equities, relative to the MSCI ACWI
  - As a result, the small cap portfolio has since be resized and the U.S. large and small cap allocations are closer in line with that of the MSCI ACWI
  - In addition, Rothschild’s U.S. SMID cap strategy was terminated due to poor performance
- **The Board approved the recent hiring of both Bernzott and Kennedy Capital to manage mandates within the Domestic Equity portfolio**
  - Bernzott manages a small cap equity mandate at roughly \$28 million (1.47%)
  - Kennedy Capital manages a micro-cap mandate at roughly \$10 million (0.52%)
- **There are several benefits from the inclusion of Bernzott within the domestic equity portfolio**
  - Bernzott, as a fundamental value strategy, compliments MPERS’s existing small cap manager, Pinnacle, whose investment process has more of a growth bias

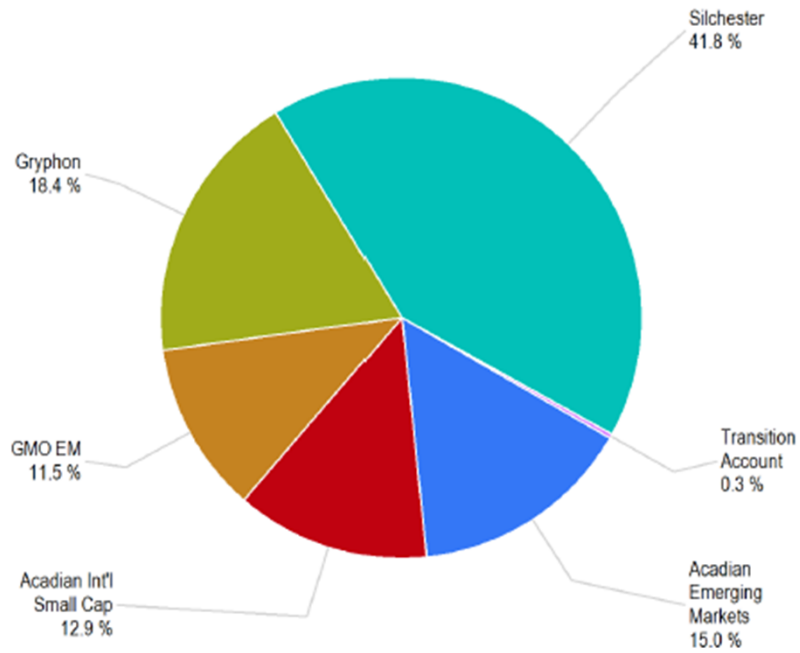
- **Kennedy Capital’s micro cap strategy plays a unique role within the broad context of the MPERS portfolio**
  - A micro-cap manager will help further diversify the MPERS portfolio as MPERS currently has no micro-cap exposure
  - The inclusion of another active manager within the domestic equity portfolio focusing on a less efficient asset class has the potential for strong returns
    - The sizing of the Kennedy Capital allocation, relative to the portfolio’s existing domestic equity managers, may help with the short term volatility consistent with micro-cap strategies.
  - Kennedy Capital’s micro-cap strategy can be seen as a private equity replacement without the higher fees and liquidity risk
  
- **Key Themes Moving Forward**
  - Analysis of active versus passive management in the domestic large cap space
    - More details can be found in the portfolio considerations section



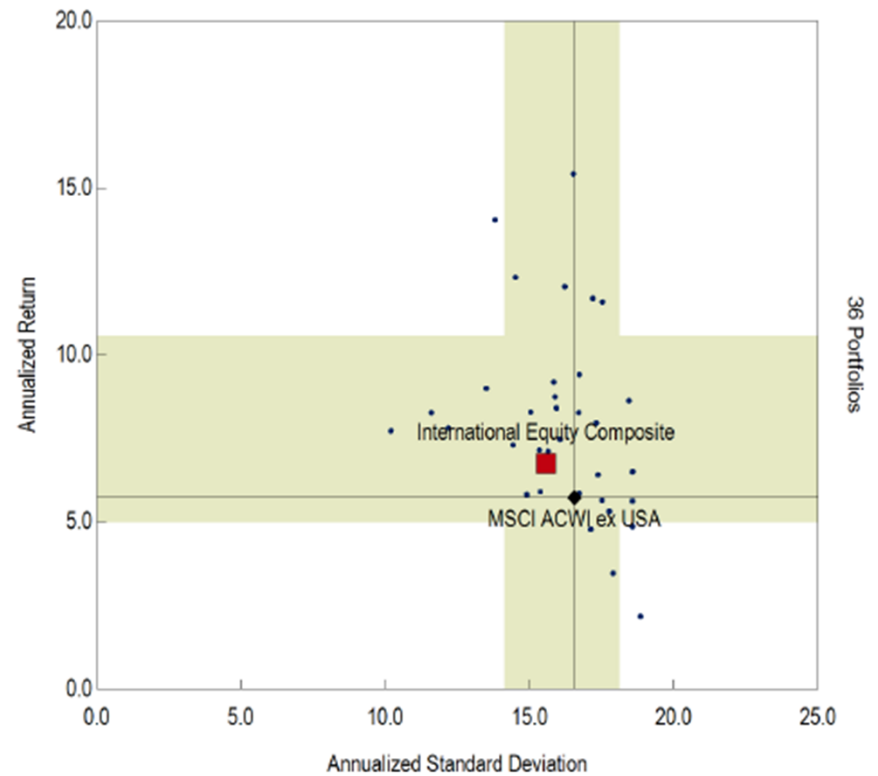
# International Equity Analysis



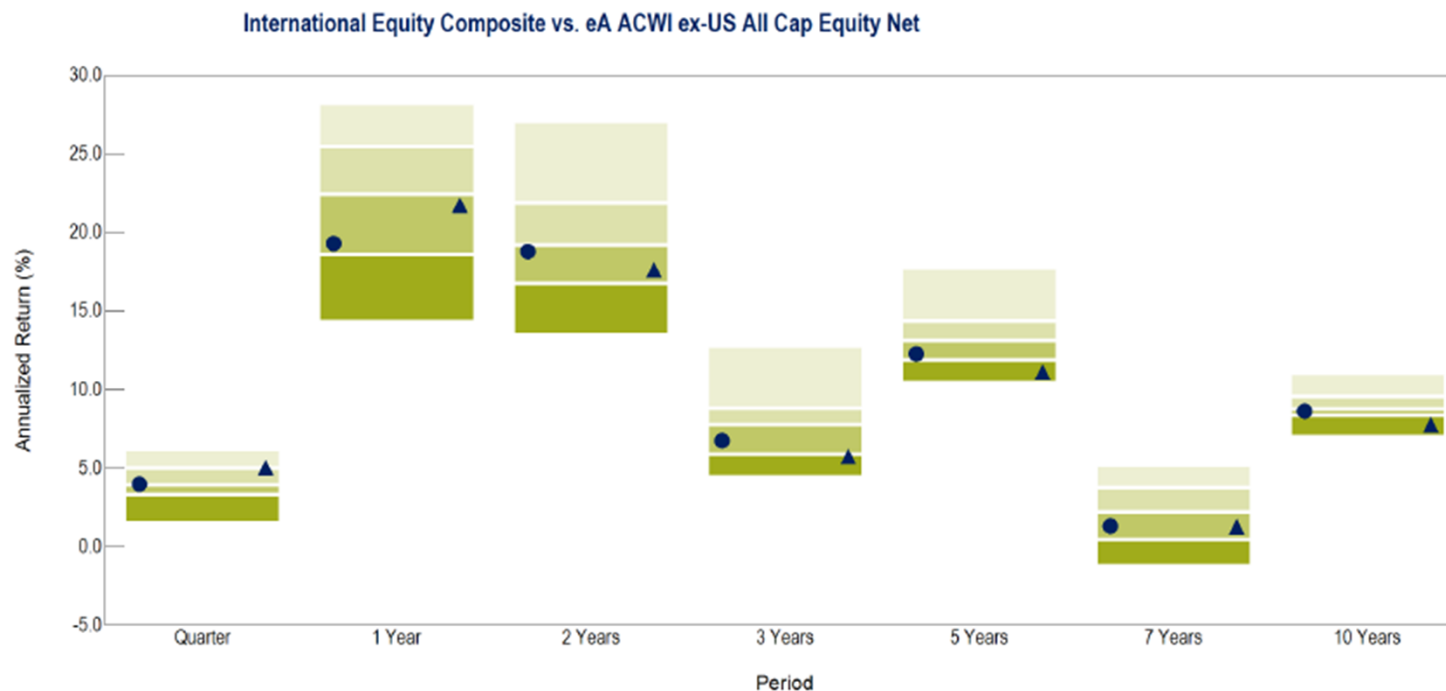
Current Manager Allocation



3 Year Risk Return



# International Equity – Portfolio Review



	Return (Rank)													
5th Percentile	6.2	28.2	27.0		12.8		17.7		5.2		11.0			
25th Percentile	5.0	25.5	21.9		8.8		14.4		3.8		9.6			
Median	3.9	22.5	19.2		7.8		13.2		2.2		8.8			
75th Percentile	3.3	18.6	16.8		5.9		11.9		0.5		8.4			
95th Percentile	1.6	14.4	13.5		4.5		10.5		-1.2		7.0			
# of Portfolios	44	43	42		36		32		27		20			
● International Equity Composite	4.0	(49)	19.3	(72)	18.8	(57)	6.7	(68)	12.3	(71)	1.3	(66)	8.6	(62)
▲ MSCI ACWI ex USA	5.0	(26)	21.8	(52)	17.6	(62)	5.7	(82)	11.1	(89)	1.3	(70)	7.7	(84)

## International Equity – Recent Enhancements/Changes

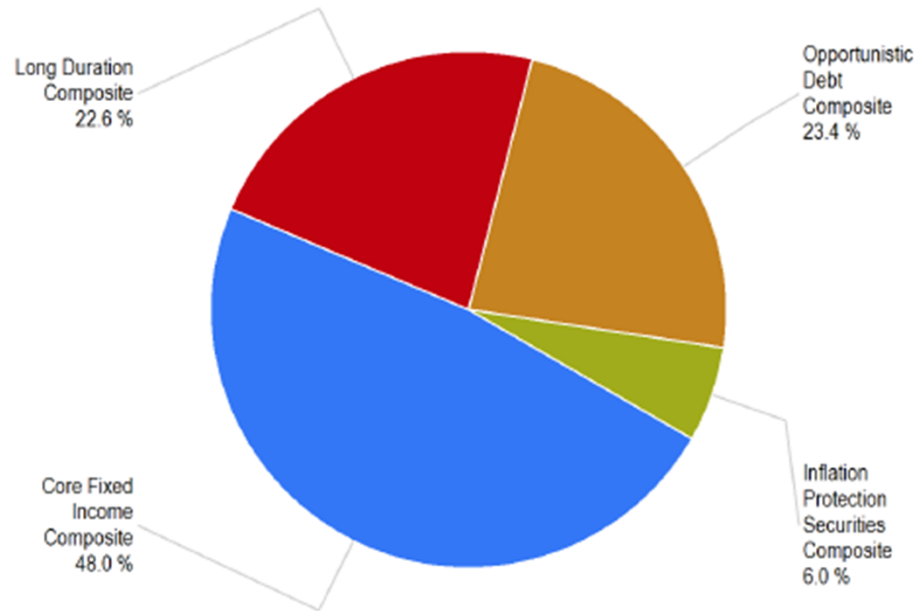
- **As part of the Global Equity portfolio review in September 2013, it was recommended that MPERS:**
  - Revisit the underperformance of the Acadian 130/30 strategy
  - Increase the portfolio’s allocation to developed non U.S. equities
  - Increase the portfolio’s allocation to emerging market equities
  
- **As a result of the above recommendation, the following steps were taken to enhance the International Equity portfolio**
  - The termination of the Acadian 130/30 strategy due to its underperformance
  - The hiring of Gryphon and Acadian’s International Small Cap strategy
    - The Gryphon allocation helped increase the portfolio’s developed non U.S. exposure
    - The Acadian allocation is consistent with one of NEPC’s best ideas, an active international small cap mandate
  - The hiring of GMO’s Emerging Market Equity strategy which helped increase the portfolio’s emerging market equity exposure
  
- **Key Themes Moving Forward**
  - Analysis of the Emerging Market Consumer play and its role within the Non U.S. portfolio
    - More details can be found in the portfolio considerations section

# Fixed Income Analysis

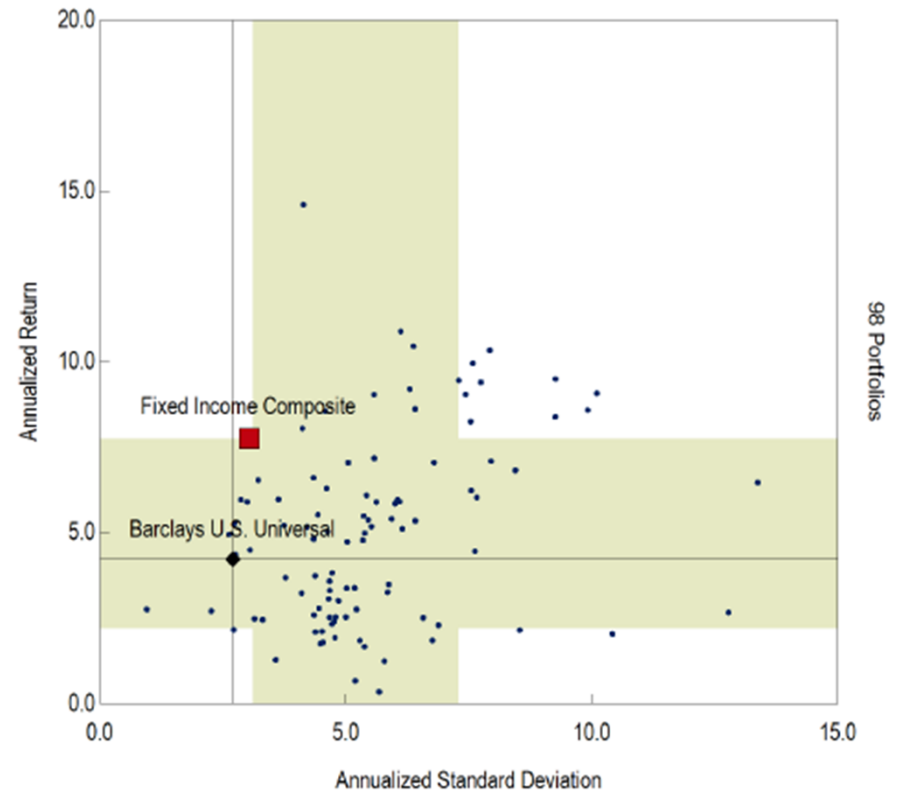


# Fixed Income – Portfolio Review

Current Manager Allocation

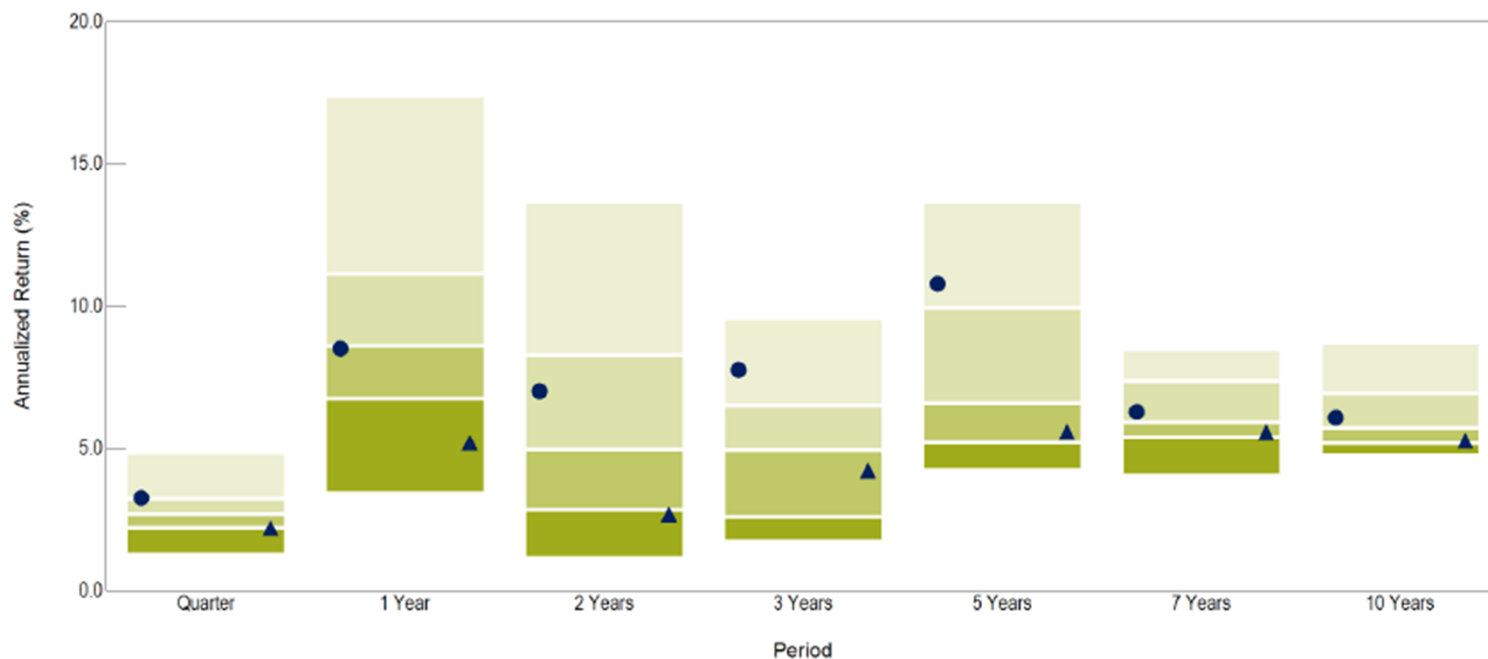


3 Year Risk Return



# Fixed Income – Portfolio Review

Fixed Income Composite vs. eA All Global Fixed Inc Net



	Return (Rank)													
5th Percentile	4.9		17.4		13.6		9.6		13.6		8.5		8.7	
25th Percentile	3.3		11.1		8.3		6.5		10.0		7.4		7.0	
Median	2.7		8.6		5.0		5.0		6.6		5.9		5.7	
75th Percentile	2.2		6.8		2.9		2.6		5.2		5.4		5.2	
95th Percentile	1.3		3.4		1.2		1.7		4.3		4.1		4.8	
# of Portfolios	119		117		115		98		76		59		45	
● Fixed Income Composite	3.3	(25)	8.5	(51)	7.0	(32)	7.8	(18)	10.8	(21)	6.3	(44)	6.1	(40)
▲ Barclays U.S. Universal	2.2	(77)	5.2	(88)	2.7	(77)	4.2	(57)	5.6	(66)	5.6	(68)	5.3	(74)

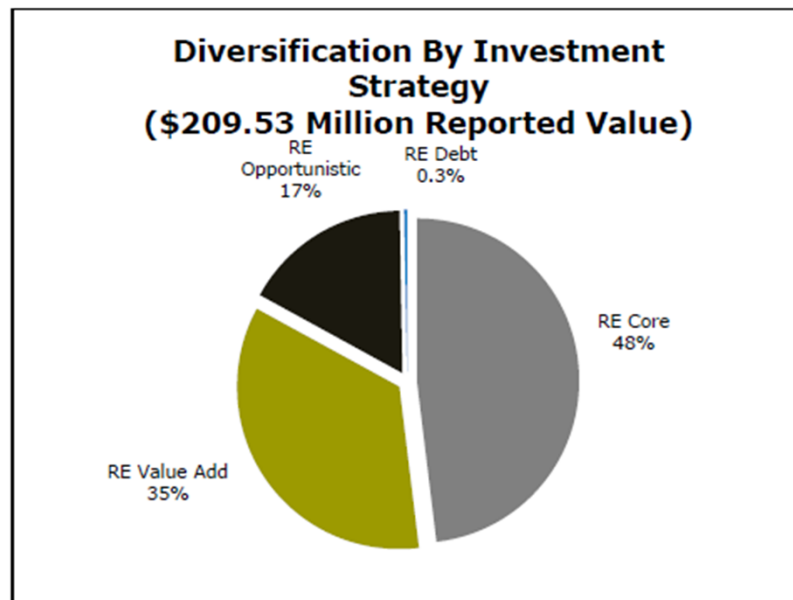
- **Both relative and absolute performance within the Fixed Income portfolio has been strong and as a result, there have been no major changes to the structure of the portfolio**
  - Despite the strong performance, Staff and NEPC continue to monitor the fixed income portfolio
  - As rates continue to rise and we enter into a low return environment, it is important to have on-going discussions about the role of fixed income and the portfolio's current structure
- **MPERS's internal fixed income portfolio has performed very well and Staff is reviewing ways to further utilize MPERS's in-house capabilities**
- **2014 has been another active vintage year for opportunistic debt strategies**
  - Recent commitments include a direct lending strategy focused on the shipping sector (Northern Shipping)
  - Staff is currently evaluating a number of additional strategies and as a result, it is expected that the opportunistic debt allocation will drift towards the 7.0% to 7.5% range, over the next 12 to 24 months



# Alternatives



Real Estate – Portfolio Review



The following table presents the status of the real estate portfolio as of March 31, 2014:

Commitments	Terminated Commitments	Amount Funded	Amount Distributed	Reported Value	Call Ratio	Distribution Ratio
\$527,188,368	\$0	\$452,761,025	\$364,575,757	\$209,526,932	85.88%	80.52%

Unfunded Commitments	Market Exposure (Reported Value + Unfunded Commitments)	Total Fund Composite as of 3/31/2014	Real Estate Target	Reported Value % of Total Fund	Market Exposure as a % of Total Fund
\$74,427,343	\$283,954,275	\$1,824,813,273	10%	11.48%	15.56%

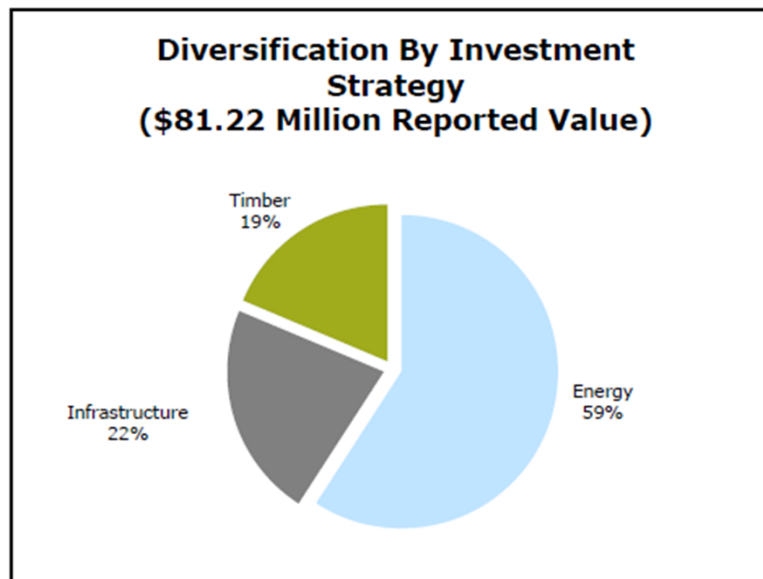
Total Value (Reported Value + Distributions)	Total Value To Paid In Capital	Internal Rate of Return IRR, Since Inception (October, 2005)
\$574,102,689	1.25	6.07%

- **What has worked thus far?**
  - The existing structure of the Real Estate portfolio includes a mix of public and private debt and has been a benefit to MPERS overall portfolio
    - Both absolute and relative performance has been strong across all trailing periods (1-10 years)
  - As a result of the above, there are no major changes planned for the structure of the Real Estate portfolio
  
- **What are the major concerns within the portfolio?**
  - MPERS's now has a 10 year track record for its Real Estate program. This offers an excellent opportunity to evaluate performance and concerns moving forward
    - MPERS has had mixed results with closed-end, blind pool investments in the value added and opportunistic Real Estate sectors. The "private equity" model of committing capital across each vintage year has not worked well over the trailing 10 year period
    - MPERS success within the Real Estate portfolio is attributable primarily to well-timed moves and the tactical positioning of the portfolio throughout the financial crisis
      - Namely, the decision to pull from private equity core real estate and allocate to public REITs and CMBS has served MPERS well
  
- **MPERS Plan Going Forward**
  - Using a "feed the winner" approach, Staff and NEPC are focused on building deeper relationships with managers and strategies that have worked the best over the past 10 years
  - Staff is focusing on partnerships and managers that provide excellent transparency of their underlying investments and structures that charge fees only on invested capital (versus committed capital)
    - This allows Staff to fully evaluate the underlying investment and mitigate the blind pool risk of the typical closed-end fund structure
    - Exceptions will be made for managers who have shown discipline in their allocation of capital and generated strong performance throughout all market cycles. The recent commitment to Och-Ziff serves as an example of the above

- **MPERS Plan Going Forward**

- Monitor the pricing of private equity core real estate
  - Pricing in major metropolitan areas has rebounded to all time highs, suggesting a lower return profile going forward
- Monitor the pricing and continued role of publicly traded debt within the portfolio (CMBS)
  - While CMBS has served MPERS well over the past five years, it has a higher correlation to public equities and adds volatility to the overall portfolio structure

Real Assets – Portfolio Review



The following table presents the status of the real assets portfolio as of March 31, 2014:

Commitments	Terminated Commitments	Amount Funded	Amount Distributed	Reported Value	Call Ratio	Distribution Ratio
\$125,250,000	\$0	\$97,185,437	\$64,919,387	\$81,219,100	77.59%	66.80%

Unfunded Commitments	Market Exposure (Reported Value + Unfunded Commitments)	Total Fund Composite as of 3/31/2014	Real Assets Target	Reported Value % of Total Fund	Market Exposure as a % of Total Fund
\$28,064,563	\$109,283,663	\$1,824,813,273	5%	4.45%	5.99%

Total Value (Reported Value + Distributions)	Total Value To Paid In Capital	Internal Rate of Return IRR, Since Inception March, 2000)
\$146,138,487	1.50	7.75%

- **What has worked thus far?**

- In its first year separated out from the Private Equity portfolio, the Real Assets portfolio is off to a great start as it is up 17% year to date and 21% over the past year
  - The portfolio has significantly exceeded its absolute return benchmark of CPI+4% and is MPERS strongest performing asset class thus far in 2014
- The Real Assets portfolio's strong performance has been driven by MPERS energy focused funds which make up over 50% of the Real Assets portfolio
  - NGP and EMG, MPERS two largest energy managers, have performed exceptionally well

- **What are the major concerns within the portfolio?**

- The performance of the American Infrastructure Fund is currently the main concern within the portfolio
  - While short term performance has been mediocre, since-inception performance remains in line with expectations which may suggest that recent performance has been driven by a few concentrated deals that have done poorly
  - NEPC along with Staff continue to monitor the relationship
- Energy Investor Funds ("EIF"), which focuses on power generation assets, has posted disappointing results
  - EIF's disappointing performance is due in part to a poor vintage year; EIF continues to work through problem assets and should post a positive, albeit somewhat disappointing final return to investors
- Other funds showing weak performance are generally immature funds still working their way through the J-curve

- **MPERS Plan Going Forward**

- 2014 has been an active vintage year for commitments in the Real Assets sector, with several existing relationships coming to market
  - MPERS has been and will continue to focus on coo-investments with existing managers, which allow MPERS to gain more exposure to specific deals at no or reduced fees
- As the portfolio's energy funds continue to do well it is important to begin diversifying away from the energy sector
  - Some new relationships include a fund focused on shipping (Sciens) and a fund focused on metals & mining (Orion)

## Hedge Funds – Portfolio Review

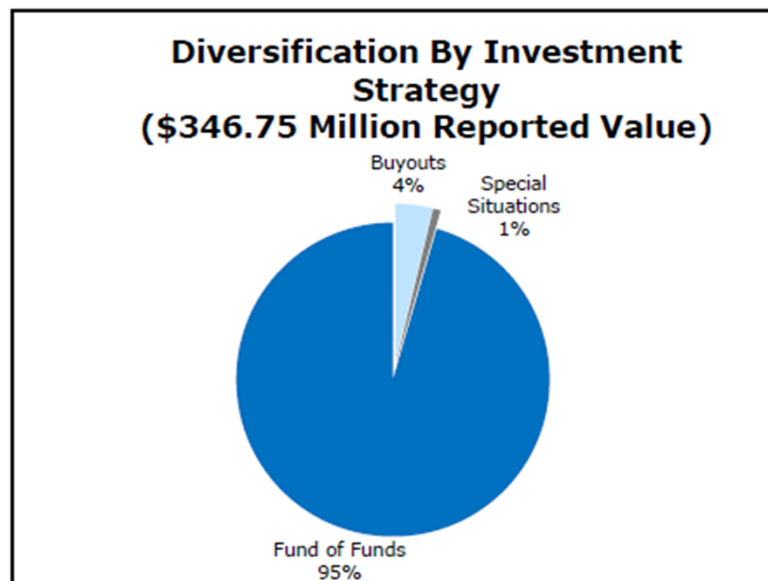
	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>Hedge Fund Composite</b>	<b>203,461,299</b>	<b>10.61</b>	<b>15.00</b>	<b>2.19</b>	<b>2.74</b>	<b>9.14</b>	<b>6.11</b>	<b>7.81</b>	<b>--</b>
AQR Capital	16,264,115	0.85		-2.51	-5.31	-0.21	6.03	11.31	--
BGI Global Ascent	12,017,399	0.63		1.14	-8.72	-6.08	-3.90	0.24	--
BlueTrend	9,620,951	0.50		10.27	6.16	4.87	--	--	--
Brevan Howard	14,770,185	0.77		-1.56	-4.40	-5.76	3.42	3.74	--
Bridgewater Pure Alpha	17,601,559	0.92		5.33	7.83	14.99	9.34	17.95	--
Cevian	15,750,800	0.82		3.19	10.68	26.39	--	--	--
Deephaven Capital	0	0.00		0.00	2.10	157.76	37.69	23.01	--
Luxor Capital	17,800,677	0.93		-0.18	1.78	7.96	3.93	9.12	--
Metacapital	10,585,391	0.55		3.22	8.45	18.98	--	--	--
Peak6	15,920,901	0.83		2.06	3.57	8.16	--	--	--
PFM	11,494,851	0.60		-1.77	-0.28	15.04	8.01	--	--
RK Capital Management LLP	10,313,641	0.54		0.75	--	--	--	--	--
Shepard International	1,457,229	0.08		1.47	-0.37	-4.46	-5.95	0.45	--
Stelliam Investment	14,615,005	0.76		7.46	9.33	13.30	13.48	--	--
Taconic Capital	18,264,567	0.95		3.65	3.80	9.20	8.12	7.69	--
ValueAct	16,984,030	0.89		2.58	7.17	24.35	--	--	--
<i>HFRI Fund of Funds Composite Index</i>				1.47	2.04	7.55	3.28	4.23	3.42



- **What has worked thus far?**
  - MPERS’s Hedge Fund portfolio has consistently outperformed its HFRI benchmark by 150 to 350 basis points over the trailing 1,3, and 5 year periods
  - The hedged equity (market neutral) and activist portion of the portfolio has performed well
    - Cevian and ValueAct, the portfolio’s activists managers, are up 25% on average over the trailing 1 year period and up 20% or more since inception
  
- **What are the major concerns within the portfolio?**
  - It is becoming increasingly more difficult to identify good managers who are not in the same trades as everyone else
    - As a result, the hedge fund space has experienced “crowded trades’ which increase volatility within the portfolio as managers become more correlated to each other
  - The low interest rate environment and Quantitative Easing by the Fed has made it difficult for systematic managers (those driven by trends and computer models) to outperform
    - Global Ascent and Brevan Howard are two managers that have suffered from the above
  
- **MPERS Plan Going Forward**
  - Staff recently sent notice to terminate Global Ascent effective Sept. 30<sup>th</sup>
  - Upon review of the Brevan Howard relationship, Staff and NEPC remain confident in the team and process.
  - MPERS made a new commitment to Millennium, effective Oct. 1<sup>st</sup>
    - Millennium is a multi-platform, multi-strategy, market neutral hedge fund
    - Millennium has shown consistent positive performance in different market environments and would nicely compliment the existing hedge fund line up

- **Final Thoughts:**

- While Hedge Funds have had a difficult time keeping up with the current market environment, we believe hedge funds still play a valuable role in a broad portfolio context
- The downside protection and diversification that hedge funds offer should prove to be valuable when/if the market corrects



The following table presents the status of the private equity portfolio as of March 31, 2014:

Commitments	Terminated Commitments	Amount Funded	Amount Distributed	Reported Value	Call Ratio	Distribution Ratio
\$472,500,000	\$1,125,000	\$356,103,890	\$124,074,636	\$346,751,553	75.37%	34.84%

Unfunded Commitments	Market Exposure (Reported Value + Unfunded Commitments)	Total Fund Composite as of 3/31/2014	Private Equity Target	Reported Value % of Total Fund	Market Exposure as a % of Total Fund
\$115,271,110	\$462,022,663	\$1,824,813,273	15%	19.00%	25.32%

Total Value (Reported Value + Distributions)	Total Value To Paid In Capital	Internal Rate of Return IRR, Since Inception (October, 2005)
\$470,826,189	1.32	8.17%

- **What has worked thus far?**

- On an absolute basis, the Private Equity portfolio has posted strong 1,3, and 5 year returns
- Private Equity was MPERS best performing asset class in fiscal year 2014 returning over 25%
  - Private equity has also been the strongest performing asset class over the trailing 3 year period

- **What are the major concerns within the portfolio?**

- On a relative basis, MPERS's private equity returns have lagged a strong public market
  - MP Ventures I – MPERS committed \$200 million in 2005 and fund is now starting to mature. It is expected that MP Ventures will make significant exits and improve relative performance
  - MP Ventures II – Unlike fund I, MP Ventures II is fairly early in its life cycle. Grove Street finished committing capital on MPERS behalf in the first quarter of 2014

- **MPERS Plan Going Forward**

- Staff continues to increase their knowledge of Private Equity and competitive funds by working with NEPC, Grove Street, and Albourne
- Staff has focused on hiring Private Equity funds directly instead of through Grove Street's platform thus removing an additional layer of fees.
  - Examples of recent direct investments include: Shore Capital, Capital Partners, and Turnbridge
- MPERS recently hired Kennedy Capital (micro-cap equity manager) as a diversifier in Global Equity and a Private Equity surrogate. Their track record shows a Private equity like return with significantly better liquidity

- **Final Thoughts:**

- Private equity is long-term asset class that must be judged over several market cycles. We still believe that over the long term, private equity will provide better risk adjusted returns than public equity
- The portfolio continues to mature and work its way through the J-curve, and we're optimistic about future returns in the sector.

# Portfolio Considerations Moving Forward



- **Active versus Passive in the Large Cap space**
  - MPERS's large cap equity portfolio includes INTECH who manages roughly 74% of the large cap assets in an enhanced index strategy
  - NEPC has seen a trend of clients switching to passive management in more efficient asset classes such as large cap for several reasons:
    - Lower fees; less manager due diligence; and more resources to research and vet other, less efficient, asset classes
  - NEPC believes that there are managers who can add value in this space however, it is a lower probability game and the expected rewards are modest
  
- **Further diversifying the Emerging Market Equity portfolio**
  - Emerging markets remain one of NEPC's best ideas in particular, strategies that can exploit the emerging market consumer
    - NEPC Research views the emerging market consumer sector as one of the best ideas within the Non U.S. space and a potential source of outsized alpha
    - As emerging market countries continue to grow and develop, the consumer will play a larger role within the economy
  - Adding another manager or shifting assets among the existing managers could help in further diversifying the Emerging Market Equity portfolio
    - Staff and NEPC are currently reviewing an investment in Aberdeen's Emerging Market strategy
  
- **Investing in a low return environment: What goes up must come down**
  - Despite episodes of volatility and market corrections, investors have experienced an incredible multi-decade run of robust returns across capital markets
  - The tailwinds that have helped the capital markets are unlikely to provide similar support in the future

- **Successful investing traits to navigate a low return environment**
  - Be forward-looking
    - Be realistic about lower return prospects
    - Look for opportunities to be dynamic
  - Maintain vigilance and risk-awareness
    - Diversification
    - Discipline and rebalancing
    - Assess tail risks
  - Take smart risks
    - Contrarian opportunities (Emerging Markets, Europe)
    - Identify talented unconstrained investors



# Appendix



MPERS

Total Fund Performance Detail

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>Total Composite</b>	<b>1,917,976,552</b>	<b>100.00</b>	<b>100.00</b>	<b>5.69</b>	<b>8.31</b>	<b>17.56</b>	<b>11.07</b>	<b>13.50</b>	<b>7.63</b>
<i>Policy Index</i>				3.03	6.07	14.47	9.10	11.65	7.41
<b>Global Equity Composite</b>	<b>609,018,734</b>	<b>31.75</b>	<b>30.00</b>	<b>5.44</b>	<b>7.50</b>	<b>23.78</b>	<b>12.87</b>	<b>17.10</b>	<b>8.58</b>
<b>Domestic Equity Composite</b>	<b>265,782,292</b>	<b>13.86</b>	<b>--</b>	<b>4.41</b>	<b>5.96</b>	<b>26.10</b>	<b>16.39</b>	<b>20.69</b>	<b>8.10</b>
<i>Russell 3000</i>				4.87	6.94	25.22	16.46	19.33	8.23
<b>Large Cap Composite</b>	<b>202,735,856</b>	<b>10.57</b>	<b>--</b>	<b>4.76</b>	<b>6.78</b>	<b>24.59</b>	<b>16.45</b>	<b>19.11</b>	<b>8.47</b>
Cash/S&P Futures	53,330,318	2.78							
Intech	149,405,538	7.79		4.97	7.01	25.44	16.12	18.87	8.54
<i>S&amp;P 500</i>				5.23	7.14	24.61	16.58	18.83	7.78
<b>Small/Mid Cap Composite</b>	<b>63,046,436</b>	<b>3.29</b>	<b>--</b>	<b>3.10</b>	<b>3.04</b>	<b>26.05</b>	<b>15.61</b>	<b>21.96</b>	<b>--</b>
Bernzott	28,106,204	1.47		4.29	0.79	--	--	--	--
Pinnacle	34,940,233	1.82		2.17	4.90	27.60	15.54	23.43	--
<i>Russell 2500</i>				3.56	5.95	25.58	15.51	21.63	9.78
<b>International Equity Composite</b>	<b>273,029,635</b>	<b>14.24</b>	<b>--</b>	<b>3.98</b>	<b>5.05</b>	<b>19.30</b>	<b>6.75</b>	<b>12.27</b>	<b>8.63</b>
<i>MSCI ACWI ex USA</i>				5.03	5.56	21.75	5.73	11.11	7.75
Transition Account	797,307	0.04							
Silchester	114,021,140	5.94		4.10	6.68	25.45	13.07	15.76	11.08
<i>MSCI EAFE</i>				4.09	4.78	23.57	8.10	11.77	6.93
Gryphon	50,346,411	2.62		0.65	--	--	--	--	--
<i>MSCI EAFE Growth</i>				3.45	3.56	20.33	7.68	12.22	7.09
Acadian Int'l Small Cap	35,356,025	1.84		3.39	7.28	--	--	--	--
<i>MSCI EAFE Small Cap</i>				2.08	5.50	29.08	9.84	15.21	8.73
Acadian Emerging Markets	41,039,504	2.14		7.86	6.69	13.46	1.23	10.95	--
GMO EM	31,469,248	1.64		5.39	2.75	--	--	--	--
<i>MSCI Emerging Markets</i>				6.60	6.14	14.31	-0.39	9.24	11.94
Tortoise	70,206,807	3.66		16.48	26.52	37.81	27.26	--	--
<i>Alerian MLP Index</i>				14.18	16.31	21.57	18.95	26.18	17.28

Bernzott - 10/08/2013

Acadian Int'l Small Cap - 10/10/2013

GMO EM - 9/30/2013

Gryphon - 1/2/2014



MPERS

Total Fund Performance Detail

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>Fixed Income Composite</b>	<b>427,312,959</b>	<b>22.28</b>	<b>25.00</b>	<b>3.26</b>	<b>7.10</b>	<b>8.51</b>	<b>7.76</b>	<b>10.79</b>	<b>6.08</b>
<i>Barclays U.S. Universal</i>				2.20	4.19	5.20	4.22	5.58	5.27
<b>Core Fixed Income Composite</b>	<b>205,252,106</b>	<b>10.70</b>	<b>10.00</b>	<b>2.37</b>	<b>4.82</b>	<b>5.61</b>	<b>4.72</b>	<b>8.87</b>	<b>4.22</b>
<i>Aberdeen Asset Mgmt</i>	9,504,444	0.50		2.29	3.99	6.41	8.59	9.76	--
<i>Barclays Aggregate</i>				2.04	3.93	4.37	3.66	4.85	4.93
<i>Internal Fixed - Core</i>	145,069,029	7.56		2.42	5.36	5.80	--	--	--
<i>NTGI Government/Credit</i>	11,482,901	0.60		1.96	3.98	4.35	--	--	--
<i>Barclays Govt/Credit</i>				1.92	3.94	4.28	4.08	5.09	4.94
<i>Principal CMBS Fixed</i>	39,195,732	2.04		2.38	4.09	4.81	--	--	--
<i>Barclays CMBS ERISA Eligible</i>				1.31	2.62	4.22	4.86	10.87	5.61
<b>Long Duration Composite</b>	<b>96,609,639</b>	<b>5.04</b>	<b>5.00</b>	<b>4.02</b>	<b>8.51</b>	<b>7.61</b>	<b>6.30</b>	<b>--</b>	<b>--</b>
<i>Internal Fixed - Long Duration</i>	96,609,639	5.04		4.02	8.51	7.61	6.51	8.00	--
<i>Barclays LT Govt/Credit</i>				4.93	11.81	10.77	9.57	9.60	7.60
<b>Opportunistic Debt Composite</b>	<b>99,931,328</b>	<b>5.21</b>	<b>5.00</b>	<b>4.21</b>	<b>9.75</b>	<b>15.59</b>	<b>16.14</b>	<b>--</b>	<b>--</b>
<i>ABRY ASF</i>	717,694	0.04		14.76	31.37	42.74	27.21	30.82	--
<i>Anchorage Capital</i>	5,071,661	0.26		4.72	11.13	16.13	14.26	--	--
<i>Anchorage Capital III</i>	11,110,570	0.58		3.04	6.69	19.56	--	--	--
<i>Audax Mezzanine II</i>	1,322,478	0.07		6.40	12.22	16.83	12.07	12.59	--
<i>CVI Credit Value</i>	17,208,957	0.90		5.59	20.55	28.49	27.74	--	--
<i>CVI Global Value</i>	11,206,012	0.58		3.99	6.50	12.52	14.23	17.27	--
<i>GOLUB Capital</i>	13,211,996	0.69		1.60	3.06	5.33	6.43	--	--
<i>GSO Capital Opp II</i>	2,990,554	0.16		3.88	7.71	15.50	--	--	--
<i>GSO Capital Opp</i>	5,272,643	0.27		2.38	3.18	9.55	22.65	21.77	--
<i>M&amp;G III</i>	1,096,246	0.06		-4.91	-40.59	--	--	--	--
<i>Och-Ziff II</i>	13,812,091	0.72		4.86	10.40	13.96	--	--	--
<i>OCP Asia</i>	10,777,077	0.56		5.86	8.67	--	--	--	--
<i>Northern Shipping II</i>	6,133,349	0.32		--	--	--	--	--	--
<i>Barclays High Yield</i>				2.41	5.46	11.73	9.48	13.98	9.05
<b>Inflation Protection Securities Composite</b>	<b>25,519,886</b>	<b>1.33</b>	<b>5.00</b>	<b>4.13</b>	<b>6.58</b>	<b>4.91</b>	<b>4.32</b>	<b>--</b>	<b>--</b>
<i>Internal US TIPS</i>	25,519,886	1.33		4.13	6.58	4.91	4.32	--	--
<i>Barclays US TIPS</i>				3.81	5.83	4.44	3.55	5.55	5.25

MPERS

Total Fund Performance Detail

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>Cash Composite</b>	<b>7,749,416</b>	<b>0.40</b>	<b>0.00</b>	<b>0.00</b>	<b>0.15</b>	<b>0.17</b>	<b>0.09</b>	<b>0.06</b>	<b>1.68</b>
Cash Account	7,749,416	0.40		0.00	0.15	0.17	0.09	0.06	1.68
91 Day T-Bills				0.01	0.02	0.03	0.05	0.07	1.51
<b>Real Assets Composite</b>	<b>88,034,700</b>	<b>4.59</b>	<b>5.00</b>	<b>-1.64</b>	<b>8.67</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
American Infrastructure I MLP	17,861,355	0.93		-15.23	-14.35	-9.53	-7.59	10.70	--
American Infrastructure II MLP	1,242,696	0.06		-1.31	-43.94	--	--	--	--
EIF - US Power III	7,649,297	0.40		1.06	3.84	4.83	5.10	1.49	--
Energy & Mineral Group II	11,084,123	0.58		8.90	43.53	49.53	--	--	--
Energy & Mineral Group III	1,137,401	0.06		-11.14	--	--	--	--	--
Natural Gas Partners - IX	6,732,793	0.35		-2.64	21.35	29.39	15.46	17.59	--
NGP Midstream & Resources I	13,101,734	0.68		1.50	18.77	58.36	42.29	33.13	--
NGP X	6,436,751	0.34		0.64	0.31	13.74	--	--	--
Ridgewood Energy	1,576,379	0.08		22.31	-11.71	--	--	--	--
Sciens Marine Investments	8,647,402	0.45		--	--	--	--	--	--
CPI + 4% (Unadjusted)				1.86	4.29	6.15	5.90	6.09	6.39
RMK - Timberland	12,564,769	0.66		4.91	18.41	16.77	18.56	8.20	4.09
NCREIF Timberland 1 Qtr Lag				1.62	7.64	9.78	6.58	2.86	8.33
<b>Real Estate Composite</b>	<b>234,048,972</b>	<b>12.20</b>	<b>10.00</b>	<b>6.35</b>	<b>11.12</b>	<b>17.78</b>	<b>13.41</b>	<b>10.11</b>	<b>6.55</b>
NFI-ODCE Eq Wtd Net Non Lag				2.54	4.90	11.37	11.21	8.48	5.76
<b>Core Real Estate Composite</b>	<b>144,171,098</b>	<b>7.52</b>	<b>--</b>	<b>5.81</b>	<b>10.37</b>	<b>16.69</b>	<b>14.66</b>	<b>11.66</b>	<b>6.05</b>
NCREIF Property Index				2.91	5.73	11.21	11.32	9.67	8.63
CBRE Capital Partners	22,865,192	1.19		16.35	18.30	25.58	15.59	--	--
Principal CMBS	31,111,244	1.62		7.98	17.30	30.66	23.25	37.10	--
Principal Enhanced Property	40,601,814	2.12		2.77	6.08	10.50	15.74	7.95	--
NCREIF Property Index				2.91	5.73	11.21	11.32	9.67	8.63
ING Clarion Lion Properties	31,363,826	1.64		2.42	7.48	10.06	11.00	8.29	--
Principal US Property	18,229,022	0.95		3.00	5.12	11.25	12.16	9.21	5.93
NCREIF ODCE				2.93	5.52	12.74	12.45	10.00	7.14

MPERS

Total Fund Performance Detail

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>Non-Core Real Estate Composite</b>	<b>74,710,577</b>	<b>3.90</b>	<b>--</b>	<b>6.88</b>	<b>12.00</b>	<b>19.20</b>	<b>10.71</b>	<b>5.12</b>	<b>--</b>
AEW EISPO	9,738,245	0.51		-0.16	3.00	9.06	2.15	9.16	--
AEW Partners V	3,779,798	0.20		6.26	11.99	26.78	21.48	2.88	--
Apollo European III	9,167,541	0.48		1.03	27.30	34.18	7.28	7.31	--
Apollo Real Estate	7,239,335	0.38		0.00	8.58	9.34	11.59	-1.18	--
ING Lion Mexico Fund	6,939,026	0.36		0.39	-2.14	-1.94	-4.03	-2.08	--
Colony Capital VIII	3,780,664	0.20		1.10	12.95	34.50	2.92	9.69	--
M&G II	3,282,671	0.17		5.73	6.07	--	--	--	--
Och-Ziff	4,433,697	0.23		2.32	10.17	18.43	31.79	23.45	--
Och-Ziff RE III	0	0.00		0.00	--	--	--	--	--
Urdang Value Added Fund	111,347	0.01		-5.89	-16.21	-7.15	-3.06	-7.24	--
Urdang Value Added Fund II	5,001,871	0.26		1.59	4.07	11.45	16.10	6.48	--
<i>NCREIF Property Index</i>				2.91	5.73	11.21	11.32	9.67	8.63
Tristan EPISO 3	1,629,748	0.08		0.66	--	--	--	--	--
Torchlight Debt Opp II	15,795,441	0.82		11.71	--	--	--	--	--
Torchlight Debt Opp III	3,811,192	0.20		33.13	--	--	--	--	--
<b>REITS Composite</b>	<b>15,167,296</b>	<b>0.79</b>	<b>--</b>	<b>8.11</b>	<b>11.06</b>	<b>18.51</b>	<b>6.71</b>	<b>13.29</b>	<b>--</b>
CBRE Investors	15,167,296	0.79		8.11	11.06	18.51	6.71	13.29	--
<i>FTSE EPRA/NAREIT Developed</i>				7.62	11.74	13.55	9.74	17.12	8.98
<b>Private Equity Composite</b>	<b>348,350,472</b>	<b>18.16</b>	<b>15.00</b>	<b>13.64</b>	<b>13.69</b>	<b>25.28</b>	<b>14.15</b>	<b>13.49</b>	<b>--</b>
Abry Partners VI	5,648,329	0.29		6.77	8.22	23.12	22.90	22.38	--
Abry VII	4,605,006	0.24		1.40	4.50	12.88	--	--	--
Capital Partners II	1,871,942	0.10		92.06	38.57	--	--	--	--
CarVal Specialized Ventures	0	0.00		--	--	--	--	--	--
Grove Street - MP Ventures	185,434,305	9.67		12.26	12.25	27.03	15.32	13.38	--
Grove Street - MP Ventures II	137,861,135	7.19		16.62	16.33	22.58	10.11	7.40	--
KPS IV	812,772	0.04							
Ospraie	2,603,229	0.14		0.00	14.01	30.05	10.94	11.02	--
Vectis H & L II	9,513,754	0.50		6.23	6.23	18.22	9.04	4.32	--
<i>MO Hwy Priv. Equ. Index - Lagged</i>				2.56	14.15	25.45	18.06	24.97	11.27

MPERS

Total Fund Performance Detail

	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>Hedge Fund Composite</b>	<b>203,461,299</b>	<b>10.61</b>	<b>15.00</b>	<b>2.19</b>	<b>2.74</b>	<b>9.14</b>	<b>6.11</b>	<b>7.81</b>	<b>--</b>
AQR Capital	16,264,115	0.85		-2.51	-5.31	-0.21	6.03	11.31	--
BGI Global Ascent	12,017,399	0.63		1.14	-8.72	-6.08	-3.90	0.24	--
BlueTrend	9,620,951	0.50		10.27	6.16	4.87	--	--	--
Brevan Howard	14,770,185	0.77		-1.56	-4.40	-5.76	3.42	3.74	--
Bridgewater Pure Alpha	17,601,559	0.92		5.33	7.83	14.99	9.34	17.95	--
Cevian	15,750,800	0.82		3.19	10.68	26.39	--	--	--
Deephaven Capital	0	0.00		0.00	2.10	157.76	37.69	23.01	--
Luxor Capital	17,800,677	0.93		-0.18	1.78	7.96	3.93	9.12	--
Metacapital	10,585,391	0.55		3.22	8.45	18.98	--	--	--
Peak6	15,920,901	0.83		2.06	3.57	8.16	--	--	--
PFM	11,494,851	0.60		-1.77	-0.28	15.04	8.01	--	--
RK Capital Management LLP	10,313,641	0.54		0.75	--	--	--	--	--
Shepard International	1,457,229	0.08		1.47	-0.37	-4.46	-5.95	0.45	--
Stelliam Investment	14,615,005	0.76		7.46	9.33	13.30	13.48	--	--
Taconic Capital	18,264,567	0.95		3.65	3.80	9.20	8.12	7.69	--
ValueAct	16,984,030	0.89		2.58	7.17	24.35	--	--	--
<i>HFRI Fund of Funds Composite Index</i>				<i>1.47</i>	<i>2.04</i>	<i>7.55</i>	<i>3.28</i>	<i>4.23</i>	<i>3.42</i>

Performance shown is net of manager fees.

All market values are provided by custodian.

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