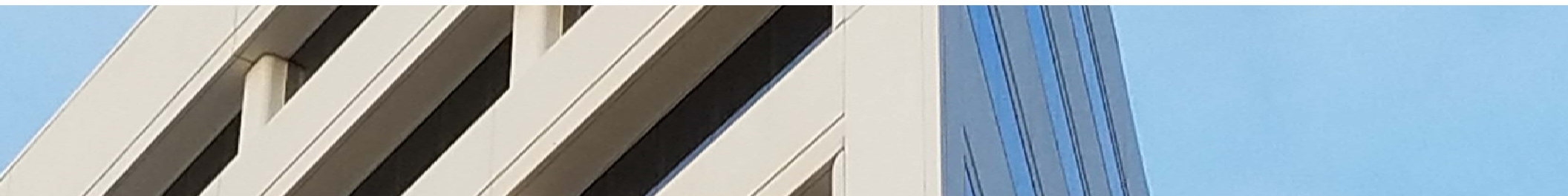




# Public Employees Retirement Association of New Mexico

Wilshire Consulting



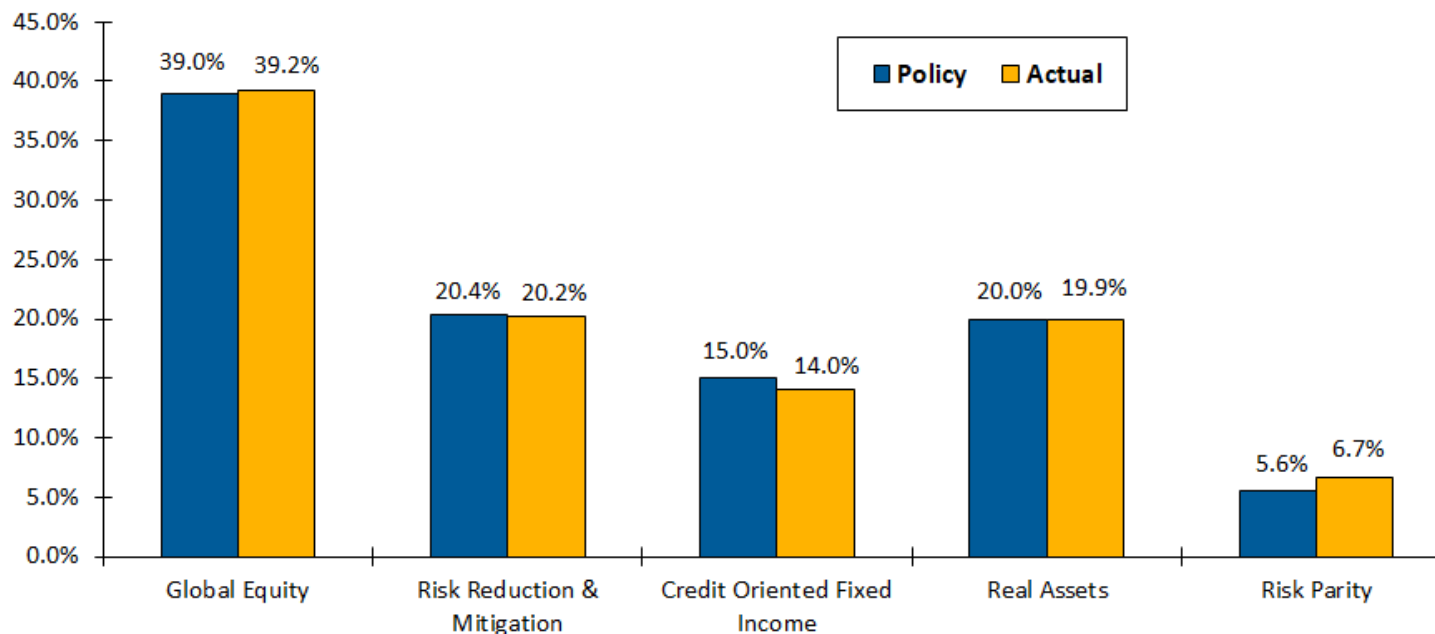
## Q2 FY 20 Investment Performance Review

Thomas Toth, CFA – Managing Director

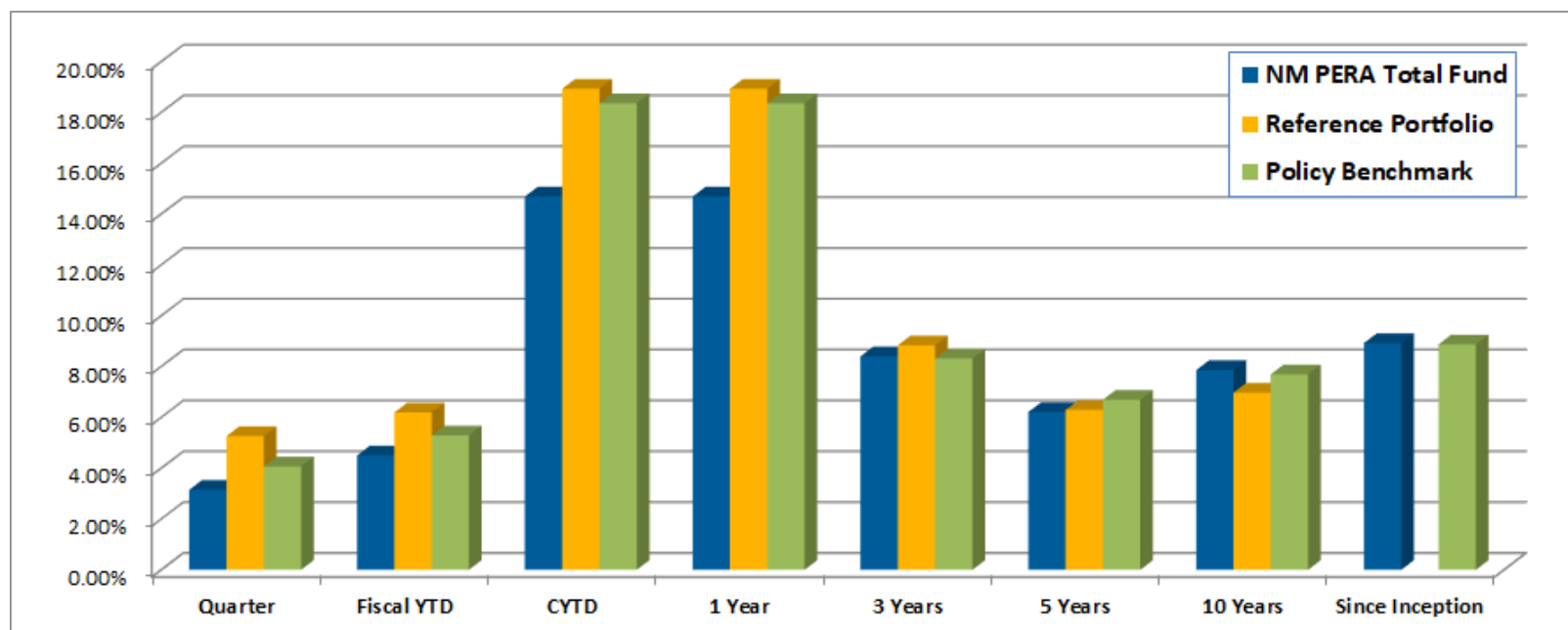
February 2020

# Total Fund Asset Allocation

- Total Fund Market Value (12/31/19): \$16.0 Billion
- STO Cash Balance: \$29.7 Million
- Previous Quarter Market Value (9/30/19): \$15.7 Billion
  - Change from previous quarter: +\$316.7 Million:
    - \$192.2 Million in net distributions
    - \$509.0 Million in investment gains
- Expected Return and Risk
  - Target: 6.5%, 11.6%
  - Actual: 6.3%, 10.9%



# Total Fund Performance as of 12/31/19



Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date
<b>TOTAL FUND</b>	3.15	4.50	14.69	14.69	8.40	6.21	7.86	8.92	6/1/1985
TOTAL FUND REF INDEX	5.26	6.19	18.93	18.93	8.83	6.29	6.97		6/1/1985
Excess Return VS TOTAL FUND REF INDEX	-2.11	-1.70	-4.23	-4.23	-0.44	-0.08	0.89		6/1/1985
Total Policy Benchmark	4.07	5.29	18.36	18.36	8.31	6.69	7.69	8.87	6/1/1985
Excess Return VS Total Policy Benchmark	-0.93	-0.79	-3.66	-3.66	0.09	-0.47	0.17	0.05	6/1/1985
7.25 Annual (7.75 before 7/16)	1.77	3.56	7.25	7.25	7.25	7.40	7.58	7.70	6/1/1985
Excess Return VS 7.25 Annual (7.75 before 7/16)	1.38	0.94	7.44	7.44	1.15	-1.19	0.28	1.22	6/1/1985
Total Policy Dynamic BM	3.20	4.51	14.62	14.62	8.35	6.06			6/1/1985
Excess Return VS Total Policy Dynamic BM	-0.05	-0.01	0.07	0.07	0.04	0.15			6/1/1985
Beta				0.62	0.73	0.87	0.99		
Information Ratio				-1.18	0.05	-0.23	0.17		
Sharpe Ratio				2.78	1.39	0.91	0.95		
Index Sharpe Ratio				2.26	1.02	0.90	0.93		
Standard Deviation				4.37	4.77	5.62	7.56		
Index Standard Deviation				6.94	6.41	6.14	7.47		

# Total Fund Composites

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>TOTAL FUND</b>	<b>3.15</b>	<b>4.50</b>	<b>14.69</b>	<b>14.69</b>	<b>8.40</b>	<b>6.21</b>	<b>7.86</b>	<b>8.92</b>	<b>6/1/1985</b>	<b>\$16,013,716,416</b>	<b>100.00</b>
TOTAL FUND REF INDEX	5.26	6.19	18.93	18.93	8.83	6.29	6.97		6/1/1985		
Excess Return VS TOTAL FUND REF INDEX	-2.11	-1.70	-4.23	-4.23	-0.44	-0.08	0.89		6/1/1985		
Total Policy Benchmark	4.07	5.29	18.36	18.36	8.31	6.69	7.69	8.87	6/1/1985		
Excess Return VS Total Policy Benchmark	-0.93	-0.79	-3.66	-3.66	0.09	-0.47	0.17	0.05	6/1/1985		
7.25 Annual (7.75 before 7/16)	1.77	3.56	7.25	7.25	7.25	7.40	7.58	7.70	6/1/1985		
Excess Return VS 7.25 Annual (7.75 before 7/16)	1.38	0.94	7.44	7.44	1.15	-1.19	0.28	1.22	6/1/1985		
Total Policy Dynamic BM	3.20	4.51	14.62	14.62	8.35	6.06			6/1/1985		
Excess Return VS Total Policy Dynamic BM	-0.05	-0.01	0.07	0.07	0.04	0.15			6/1/1985		
<b>GLOBAL EQUITY</b>	<b>6.42</b>	<b>7.45</b>	<b>23.27</b>	<b>23.27</b>	<b>12.59</b>	<b>8.74</b>		<b>9.63</b>	<b>4/1/2013</b>	<b>\$6,276,081,728</b>	<b>39.19</b>
Global Equity BM	8.05	8.37	25.55	25.55	12.28	9.23		10.37	4/1/2013		
Excess Return VS Global Equity BM	-1.63	-0.92	-2.27	-2.27	0.31	-0.49		-0.75	4/1/2013		
Global Equity Dynamic BM	6.92	7.80	22.68	22.68	12.46	8.84		9.59	4/1/2013		
Excess Return VS Global Equity Dynamic BM	-0.50	-0.35	0.59	0.59	0.13	-0.10		0.04	4/1/2013		
<b>RISK REDUCTION &amp; MITIGATION</b>	<b>0.04</b>	<b>2.48</b>	<b>8.92</b>	<b>8.92</b>	<b>4.13</b>	<b>3.40</b>		<b>3.07</b>	<b>4/1/2013</b>	<b>\$3,226,010,849</b>	<b>20.15</b>
Risk Reduction & Mitigation BM	0.10	2.41	8.66	8.66	4.06	3.10		2.91	4/1/2013		
Excess Return VS Risk Reduction & Mitigation BM	-0.06	0.06	0.26	0.26	0.08	0.31		0.16	4/1/2013		
Risk Red & Mitigation Dyn BM	0.20	2.47	8.66	8.66	4.10	3.15		2.98	4/1/2013		
Excess Return VS Risk Red & Mitigation Dyn BM	-0.16	0.00	0.25	0.25	0.04	0.26		0.09	4/1/2013		
<b>CREDIT ORIENTED FIXED INCOME</b>	<b>1.02</b>	<b>1.69</b>	<b>5.58</b>	<b>5.58</b>	<b>5.10</b>	<b>4.16</b>		<b>4.64</b>	<b>4/1/2013</b>	<b>\$2,248,387,896</b>	<b>14.04</b>
Credit Oriented FI BM	3.14	3.33	13.54	13.54	6.01	5.79		5.37	4/1/2013		
Excess Return VS Credit Oriented FI BM	-2.11	-1.64	-7.97	-7.97	-0.90	-1.63		-0.73	4/1/2013		
Credit Oriented FI Dynamic BM	1.17	1.70	5.99	5.99	5.68	4.78		5.73	4/1/2013		
Excess Return VS Credit Oriented FI Dynamic BM	-0.15	0.00	-0.41	-0.41	-0.58	-0.62		-1.09	4/1/2013		
<b>REAL ASSETS</b>	<b>1.90</b>	<b>2.59</b>	<b>10.22</b>	<b>10.22</b>	<b>5.42</b>	<b>3.08</b>		<b>5.01</b>	<b>4/1/2013</b>	<b>\$3,189,220,118</b>	<b>19.92</b>
Real Assets BM	1.65	3.49	16.92	16.92	5.56	3.04		5.07	4/1/2013		
Excess Return VS Real Assets BM	0.25	-0.91	-6.70	-6.70	-0.14	0.03		-0.06	4/1/2013		
Real Assets Dynamic BM	0.80	1.78	10.78	10.78	5.40	3.10		4.20	4/1/2013		
Excess Return VS Real Assets Dynamic BM	1.10	0.81	-0.56	-0.56	0.03	-0.02		0.81	4/1/2013		
<b>MULTI-RISK ALLOCATION</b>	<b>0.73</b>	<b>6.88</b>						<b>14.68</b>	<b>4/1/2019</b>	<b>\$1,074,015,825</b>	<b>6.71</b>
Wilshire Risk Parity 15% Target Volatility Index	1.33	7.83						16.65	4/1/2019		
Excess Return VS Wilshire Risk Parity 15% Index	-0.60	-0.95						-1.97	4/1/2019		

# Total Fund Attribution – Quarter

Quarter - 12/31/19	Net Management Effects								
	NM PERA		Policy		Difference		Allocation	Selection	Total
	Weight	Return	Weight	Return	Weight	Return			
<b>GLOBAL EQUITY</b>	<b>40.12</b>	<b>6.42</b>	<b>39.71</b>	<b>7.96</b>	0.41	-1.54	<b>-0.01</b>	<b>-0.58</b>	<b>-0.59</b>
Global Public Stock	25.81	8.65	23.71	9.05	2.10	-0.40	0.10	-0.10	0.00
Global Low Volatility	6.94	3.07	5.00	2.96	1.94	0.11	-0.02	0.01	-0.01
Hedged Equity	0.29	0.78	2.00	2.96	-1.71	-2.18	0.02	-0.01	0.01
Private Equity	7.07	2.24	9.00	9.05	-1.93	-6.81	-0.10	-0.48	-0.58
LGIMA Global Equity Overlay	0.01	0.00	0.00	0.00	0.01	0.00	-0.02	0.00	-0.02
<b>RISK REDUCTION &amp; MITIGATION</b>	<b>20.84</b>	<b>0.04</b>	<b>20.55</b>	<b>0.10</b>	0.29	-0.06	<b>0.00</b>	<b>-0.02</b>	<b>-0.02</b>
Domestic Core Fixed Income	17.65	0.07	18.05	0.18	-0.40	-0.11	0.02	-0.02	0.00
Global Core Fixed Income	2.56	-0.57	2.50	-0.49	0.06	-0.08	0.00	0.00	-0.01
Cash	0.56	0.15	0.00	0.00	0.56	0.15	-0.02	0.00	-0.02
LGIMA Overlay Collateral	0.00	444.29	0.00	0.00	0.00	444.29	0.00	0.00	0.00
LGIMA TAA Overlay	0.07	10.52	0.00	0.00	0.07	10.52	0.01	0.00	0.01
<b>CREDIT ORIENTED FIXED INCOME</b>	<b>14.30</b>	<b>1.03</b>	<b>15.00</b>	<b>3.14</b>	-0.70	-2.11	<b>0.00</b>	<b>-0.30</b>	<b>-0.30</b>
Liquid Credit	5.60	0.92	3.00	3.04	2.60	-2.12	-0.03	-0.12	-0.15
Emerging Market Debt	2.16	2.47	3.00	3.51	-0.84	-1.04	0.00	-0.02	-0.02
Illiquid Credit - PE/RE Debt	3.62	1.81	6.00	3.04	-2.38	-1.23	0.02	-0.04	-0.02
Illiquid Credit - CO HF	2.92	-0.79	3.00	3.04	-0.08	-3.83	0.00	-0.11	-0.11
<b>REAL ASSETS</b>	<b>19.86</b>	<b>1.90</b>	<b>20.00</b>	<b>1.65</b>	-0.14	0.25	<b>-0.02</b>	<b>0.07</b>	<b>0.05</b>
Liquid Real Estate	2.41	0.77	2.00	0.43	0.41	0.34	-0.01	0.01	-0.01
Illiquid Real Estate	4.93	3.91	5.00	0.43	-0.07	3.48	0.00	0.17	0.17
Liquid Real Assets	7.83	2.03	8.00	0.97	-0.17	1.06	0.00	0.08	0.08
Illiquid Real Assets	4.69	0.25	5.00	4.36	-0.31	-4.11	0.00	-0.20	-0.20
Market Neutral HF	0.02	-0.39	0.00	0.00	0.02	-0.39	0.00	0.00	0.00
<b>MULTI-RISK ALLOCATION</b>	<b>4.88</b>	<b>0.73</b>	<b>4.73</b>	<b>1.33</b>	0.15	-0.60	<b>-0.01</b>	<b>-0.03</b>	<b>-0.03</b>
<b>TOTAL</b>	<b>100.0</b>	<b>3.15</b>	<b>100.0</b>	<b>4.04</b>			<b>-0.03</b>	<b>-0.86</b>	<b>-0.89</b>

# Total Fund Attribution – 1 year

1 year - 12/31/19	Net Management Effects								
	NM PERA		Policy		Difference		Allocation	Selection	Total
	Weight	Return	Weight	Return	Weight	Return			
<b>GLOBAL EQUITY</b>	<b>41.81</b>	<b>23.27</b>	<b>41.84</b>	<b>25.47</b>	-0.03	-2.20	<b>-0.06</b>	<b>-0.88</b>	<b>-0.93</b>
Global Public Stock	28.04	26.69	25.84	26.35	2.20	0.34	0.10	0.11	0.21
Global Low Volatility	6.69	21.59	5.00	21.05	1.69	0.54	0.04	0.04	0.08
Hedged Equity	0.29	5.35	2.00	21.05	-1.71	-15.70	-0.05	-0.05	-0.09
Private Equity	6.79	12.48	9.00	26.35	-2.21	-13.87	-0.15	-0.98	-1.13
LGIMA Global Equity Overlay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>RISK REDUCTION &amp; MITIGATION</b>	<b>21.33</b>	<b>8.91</b>	<b>21.17</b>	<b>8.66</b>	0.16	0.25	<b>-0.02</b>	<b>0.03</b>	<b>0.01</b>
Domestic Core Fixed Income	17.98	8.97	18.67	8.72	-0.69	0.25	0.06	0.05	0.11
Global Core Fixed Income	2.54	7.61	2.50	8.22	0.04	-0.61	-0.01	-0.02	-0.03
Cash	0.78	11.21	0.00	0.00	0.78	11.21	-0.08	0.00	-0.08
LGIMA Overlay Collateral	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LGIMA TAA Overlay	0.02	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.01
<b>CREDIT ORIENTED FIXED INCOME</b>	<b>14.84</b>	<b>5.58</b>	<b>15.00</b>	<b>13.54</b>	-0.16	-7.96	<b>-0.04</b>	<b>-1.24</b>	<b>-1.28</b>
Liquid Credit	5.14	4.47	3.00	13.34	2.14	-8.87	-0.10	-0.47	-0.58
Emerging Market Debt	2.40	11.39	3.00	14.31	-0.60	-2.92	-0.01	-0.06	-0.07
Illiquid Credit - PE/RE Debt	4.32	5.70	6.00	13.34	-1.68	-7.64	0.08	-0.37	-0.29
Illiquid Credit - CO HF	2.97	2.62	3.00	13.34	-0.03	-10.72	0.00	-0.34	-0.34
<b>REAL ASSETS</b>	<b>19.93</b>	<b>10.22</b>	<b>20.00</b>	<b>16.92</b>	-0.07	-6.70	<b>-0.01</b>	<b>-1.38</b>	<b>-1.39</b>
Liquid Real Estate	2.61	24.12	2.00	24.90	0.61	-0.78	0.07	-0.03	0.04
Illiquid Real Estate	4.41	10.18	5.00	24.90	-0.59	-14.72	-0.08	-0.57	-0.65
Liquid Real Assets	8.14	13.03	8.00	11.88	0.14	1.15	-0.01	0.08	0.08
Illiquid Real Assets	4.76	-2.12	5.00	13.98	-0.24	-16.10	0.01	-0.87	-0.85
Market Neutral HF	0.02	9.33	0.00	0.00	0.02	9.33	0.00	0.00	0.00
<b>MULTI-RISK ALLOCATION</b>	<b>2.09</b>		<b>2.00</b>		0.09	0.00	<b>0.00</b>	<b>-0.05</b>	<b>-0.05</b>
<b>TOTAL</b>	<b>100.0</b>	<b>14.69</b>	<b>100.0</b>	<b>18.32</b>			<b>-0.12</b>	<b>-3.51</b>	<b>-3.63</b>



# Total Fund Attribution – 2 years

2 years - 12/31/19	NM PERA		Policy		Difference		Net Management Effects		
	Weight	Return	Weight	Return	Weight	Return	Allocation	Selection	Total
<b>GLOBAL EQUITY</b>	<b>42.75</b>	<b>7.35</b>	<b>42.67</b>	<b>7.52</b>	0.08	-0.17	<b>-0.17</b>	<b>0.04</b>	<b>-0.13</b>
Global Public Stock	30.18	5.94	27.06	6.59	3.12	-0.65	-0.03	-0.20	-0.22
Global Low Volatility	6.02	9.60	4.68	9.16	1.34	0.44	0.03	0.03	0.06
Hedged Equity	0.29	9.25	2.09	9.16	-1.80	0.09	-0.06	0.00	-0.06
Private Equity	6.27	13.97	8.85	9.42	-2.58	4.55	-0.11	0.21	0.10
LGIMA Global Equity Overlay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>RISK REDUCTION &amp; MITIGATION</b>	<b>21.12</b>	<b>4.42</b>	<b>21.33</b>	<b>4.37</b>	-0.21	0.05	<b>-0.02</b>	<b>-0.01</b>	<b>-0.03</b>
Domestic Core Fixed Income	17.40	4.35	18.58	4.27	-1.18	0.08	-0.02	0.01	-0.01
Global Core Fixed Income	2.79	3.81	2.54	4.94	0.25	-1.13	0.01	-0.03	-0.03
Cash	0.93	7.12	0.21	0.00	0.72	7.12	-0.01	0.01	-0.01
LGIMA Overlay Collateral	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LGIMA TAA Overlay	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
<b>CREDIT ORIENTED FIXED INCOME</b>	<b>14.95</b>	<b>3.77</b>	<b>15.00</b>	<b>4.26</b>	-0.05	-0.49	<b>-0.04</b>	<b>-0.05</b>	<b>-0.08</b>
Liquid Credit	5.31	3.49	3.00	4.28	2.31	-0.79	-0.04	-0.02	-0.06
Emerging Market Debt	2.83	1.52	3.00	4.13	-0.17	-2.61	-0.03	-0.07	-0.10
Illiquid Credit - PE/RE Debt	3.88	6.95	6.00	4.28	-2.12	2.67	0.04	0.05	0.09
Illiquid Credit - CO HF	2.94	3.96	3.00	4.28	-0.06	-0.32	0.00	-0.01	-0.01
<b>REAL ASSETS</b>	<b>20.13</b>	<b>4.90</b>	<b>20.00</b>	<b>4.39</b>	0.13	0.51	<b>0.01</b>	<b>0.09</b>	<b>0.10</b>
Liquid Real Estate	3.19	8.83	2.00	8.95	1.19	-0.12	0.04	-0.01	0.03
Illiquid Real Estate	3.69	12.46	5.00	8.95	-1.31	3.51	-0.04	0.04	0.01
Liquid Real Assets	8.68	1.96	8.00	2.17	0.68	-0.21	-0.01	-0.02	-0.03
Illiquid Real Assets	4.54	3.59	5.00	1.34	-0.46	2.25	0.02	0.08	0.09
Market Neutral HF	0.03	5.74	0.00	0.00	0.03	5.74	0.00	0.00	0.00
<b>MULTI-RISK ALLOCATION</b>	<b>1.05</b>		<b>1.00</b>		0.05	0.00	<b>0.00</b>	<b>-0.02</b>	<b>-0.02</b>
<b>TOTAL</b>	<b>100.0</b>	<b>5.73</b>	<b>100.0</b>	<b>5.90</b>			<b>-0.21</b>	<b>0.05</b>	<b>-0.16</b>

# Total Fund Attribution – 3 years

3 Years - 12/31/19	Net Management Effects								
	NM PERA		Policy		Difference		Allocation	Selection	Total
	Weight	Return	Weight	Return	Weight	Return			
<b>GLOBAL EQUITY</b>	<b>44.53</b>	<b>12.58</b>	<b>42.95</b>	<b>12.25</b>	1.58	0.33	<b>0.09</b>	<b>0.17</b>	<b>0.26</b>
Global Public Stock	32.63	12.22	27.46	12.09	5.17	0.13	0.29	0.08	0.38
Global Low Volatility	5.57	12.55	4.57	12.01	1.00	0.54	0.02	0.03	0.05
Hedged Equity	0.56	8.64	2.12	10.35	-1.56	-1.71	-0.04	-0.01	-0.06
Private Equity	5.77	14.94	8.80	13.37	-3.03	1.57	-0.18	0.07	-0.11
LGIMA Global Equity Overlay	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>RISK REDUCTION &amp; MITIGATION</b>	<b>22.48</b>	<b>4.13</b>	<b>21.39</b>	<b>4.06</b>	1.09	0.07	<b>-0.16</b>	<b>0.02</b>	<b>-0.14</b>
Domestic Core Fixed Income	18.16	4.18	18.55	4.03	-0.39	0.15	-0.06	0.03	-0.03
Global Core Fixed Income	2.90	3.79	2.55	4.30	0.35	-0.51	-0.01	-0.02	-0.03
Cash	1.41	5.05	0.28	0.00	1.13	5.05	-0.09	0.01	-0.08
LGIMA Overlay Collateral	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LGIMA TAA Overlay	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
<b>CREDIT ORIENTED FIXED INCOME</b>	<b>14.37</b>	<b>5.10</b>	<b>15.00</b>	<b>6.01</b>	-0.63	-0.91	<b>-0.01</b>	<b>-0.11</b>	<b>-0.11</b>
Liquid Credit	5.15	4.66	3.00	6.29	2.15	-1.63	-0.05	-0.07	-0.11
Emerging Market Debt	3.00	3.09	3.00	6.13	0.00	-3.04	-0.03	-0.09	-0.11
Illiquid Credit - PE/RE Debt	3.37	8.67	6.00	6.24	-2.63	2.43	0.06	0.05	0.11
Illiquid Credit - CO HF	2.85	5.16	3.00	5.03	-0.15	0.13	0.01	0.00	0.01
<b>REAL ASSETS</b>	<b>17.93</b>	<b>5.42</b>	<b>20.00</b>	<b>5.56</b>	-2.07	-0.14	<b>0.09</b>	<b>0.02</b>	<b>0.11</b>
Liquid Real Estate	2.75	9.30	1.67	8.56	1.08	0.74	0.01	0.01	0.02
Illiquid Real Estate	3.60	10.96	5.87	8.86	-2.27	2.10	0.05	0.02	0.06
Liquid Real Assets	6.56	-1.22	6.00	-0.82	0.56	-0.40	0.01	-0.03	-0.02
Illiquid Real Assets	4.73	5.83	6.13	4.58	-1.40	1.25	0.02	0.04	0.06
Market Neutral HF	0.29	2.94	0.33	0.00	-0.04	2.94	0.00	-0.02	-0.01
<b>MULTI-RISK ALLOCATION</b>	<b>0.70</b>		<b>0.67</b>		0.03	0.00	<b>0.00</b>	<b>-0.02</b>	<b>-0.02</b>
<b>TOTAL</b>	<b>100.0</b>	<b>8.39</b>	<b>100.0</b>	<b>8.30</b>			<b>0.01</b>	<b>0.09</b>	<b>0.10</b>



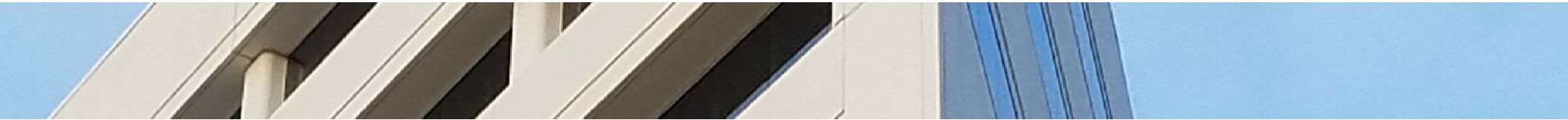
# Financial Reconciliation and Schedule of Investable Assets

## Financial Reconciliation - Quarter to Date

	Beg. Market Value \$(000)	Contributions \$(000)	Distributions \$(000)	Fees \$(000)	Return on Investment \$(000)	End Market Value \$(000)
NM PERA Total Fund	\$ 15,697,004	\$ 3,621	\$ (178,646)	\$ (17,215)	\$ 508,952	\$ 16,013,716

## NM PERA Total Fund - Schedule of Investable Assets - Quarter to Date

Periods	Beg. Market Value \$(000)	Net Cash Flow \$(000)	Gain/Loss \$(000)	End Market Value \$(000)	Time Wtd Return (%)	Unit Value
QTD	\$ 15,697,004	\$ (192,240)	\$ 508,952	\$ 16,013,716	3.15	103.15



# Global Equity

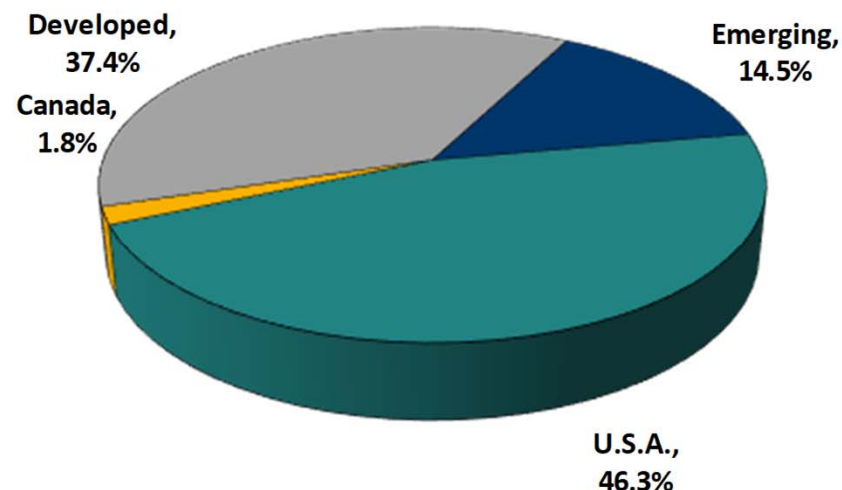
# Global Equity Structure

GLOBAL EQUITY				
Manager	Benchmark	Market Value	Actual %	
SSgA ACWI IMI Index	MSCI ACWI IMI Index	\$ 2,329,037,615	58.6%	
Global Equity Overlay	Global Equity Blend	\$ 160,934,957	4.0%	
AQR Alphaport	MSCI ACWI IMI Index	\$ -	0.0%	
Portable Alpha	S&P 500	\$ 6,286,808	0.2%	
TimesSquare SMID Growth	Russell 2500 Growth	\$ 168,768,701	4.2%	
Kayne Anderson Small Core	Russell 2000	\$ 270,348,476	6.8%	
DFA US Targeted Value	Russell 2000 Value	\$ 51,884	0.0%	
NT MSCI ACWI x-US Index	MSCI ACWI ex-US	\$ 2,976,772	0.1%	
Acadian International Equity	MSCI EAFE Index	\$ 293,498,877	7.4%	
KBI Global Investors EAFE Dev	MSCI EAFE Value	\$ 1,278,052	0.0%	
MFS International Value	MSCI EAFE Index	\$ 204,140,347	5.1%	
Principal International Small Cap	MSCI World ex-US Small	\$ 179,136,512	4.5%	
Schroder International Small	MSCI EAFE Small	\$ 759,811	0.0%	
Axiom Emerging Markets	MSCI Emerging Markets	\$ 270,673,989	6.8%	
Russell Transition	MSCI Emerging Markets	\$ 86,180,994	2.2%	
BlackRock Equity Transition	n/a	\$ 90,534	0.0%	
<b>Global Public Equity Composite</b>	MSCI ACWI IMI (\$n)	\$ 3,974,164,331	63.3%	
BlackRock MSCI ACWI Minimum Volatility	MSCI ACWI Min Vol (\$n)	\$ 1,118,814,136		
<b>Global Low Volatility Equity Comp</b>	MSCI ACWI Min Vol (\$n)	\$ 1,118,814,136	17.8%	
<b>Hedged Equity Composite</b>	MSCI ACWI Min Vol (\$n)	\$ 754,144	0.0%	
<b>Private Equity Composite</b>	Russell 3000	\$ 1,183,102,179	18.9%	
LGIMA Global Equity Overlay		\$ (753,062)	0.0%	
<b>TOTAL GLOBAL EQUITY COMPOSITE</b>	82.05% MSCI ACWI IMI (\$n) / 17.95% MSCI ACWI Min Vol (\$n)	\$ 6,276,081,728		

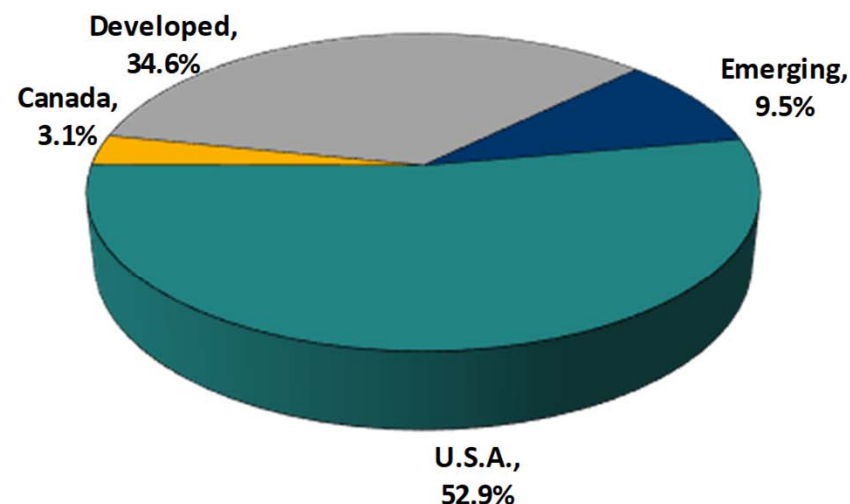
# Global Public Equity Region Allocation

Region	NM PERA	MSCI ACWI	Over / Under weight
		IMI	
U.S.A.	46.3%	52.9%	-6.6%
Canada	1.8%	3.1%	-1.3%
Developed	37.4%	34.6%	2.8%
Emerging	14.5%	9.5%	5.0%
Total	100%	100%	

**NM PERA Global Public Equity**



**MSCI ACWI IMI Index**



# Global Equity Composite Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>GLOBAL EQUITY</b>	<b>6.42</b>	<b>7.45</b>	<b>23.27</b>	<b>23.27</b>	<b>12.59</b>	<b>8.74</b>		<b>9.63</b>	<b>4/1/2013</b>	<b>\$6,276,081,728</b>	<b>39.19</b>
Global Equity BM	8.05	8.37	25.55	25.55	12.28	9.23		10.37	4/1/2013		
Excess Return VS Global Equity BM	-1.63	-0.92	-2.27	-2.27	0.31	-0.49		-0.75	4/1/2013		
Global Equity Dynamic BM	6.92	7.80	22.68	22.68	12.46	8.84		9.59	4/1/2013		
Excess Return VS Global Equity Dynamic BM	-0.50	-0.35	0.59	0.59	0.13	-0.10		0.04	4/1/2013		
Beta				0.76	0.83	0.95					
Information Ratio				-0.61	0.12	-0.17					
Sharpe Ratio				2.34	1.19	0.77					
Index Sharpe Ratio				1.97	0.97	0.81					
Standard Deviation				8.79	9.01	9.83					
Index Standard Deviation				11.54	10.76	9.99					
<b>Global Public Stock</b>	<b>8.65</b>	<b>8.50</b>	<b>26.69</b>	<b>26.69</b>	<b>12.22</b>	<b>8.27</b>	<b>9.55</b>	<b>7.95</b>	<b>10/1/2004</b>	<b>\$3,974,164,331</b>	<b>24.82</b>
Public Equity Benchmark	9.05	8.86	26.35	26.35	12.09	8.19	10.15		10/1/2004		
Excess Return VS Public Equity Benchmark	-0.40	-0.36	0.34	0.34	0.13	0.08	-0.60		10/1/2004		
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34	8.91	7.74	10/1/2004		
Excess Return VS MSCI ACWI IMI (\$N)	-0.40	-0.36	0.34	0.34	0.13	-0.07	0.64	0.21	10/1/2004		
Global Public Stock Dynamic BM	9.42	8.75	26.11	26.11	11.80	8.20			10/1/2004		
Excess Return VS Global Public Stock Dynamic BM	-0.77	-0.25	0.58	0.58	0.42	0.07			10/1/2004		
Beta				0.99	1.01	1.00	0.96				
Information Ratio				0.45	0.18	0.01	-0.18				
Sharpe Ratio				1.88	0.89	0.60	0.71				
Index Sharpe Ratio				1.83	0.89	0.60	0.71				
Standard Deviation				12.73	11.68	11.94	12.60				
Index Standard Deviation				12.83	11.49	11.84	13.05				
<b>Global Low Volatility Equity</b>	<b>3.07</b>	<b>5.94</b>	<b>21.59</b>	<b>21.59</b>	<b>12.55</b>			<b>11.96</b>	<b>11/1/2016</b>	<b>\$1,118,814,136</b>	<b>6.99</b>
MSCI ACWI Min Vol (\$N)	2.96	5.78	21.05	21.05	12.01			11.38	11/1/2016		
Excess Return VS MSCI ACWI Min Vol (\$N)	0.11	0.16	0.54	0.54	0.54			0.58	11/1/2016		
<b>Blackrock Low Vol Intl Equity</b>	<b>3.07</b>	<b>5.94</b>	<b>21.59</b>	<b>21.59</b>	<b>12.55</b>			<b>11.96</b>	<b>11/1/2016</b>	<b>\$1,118,814,136</b>	<b>6.99</b>
MSCI ACWI Min Vol (\$N)	2.96	5.78	21.05	21.05	12.01			11.38	11/1/2016		
Excess Return VS MSCI ACWI Min Vol (\$N)	0.11	0.16	0.54	0.54	0.54			0.58	11/1/2016		
Beta				1.00	1.00						
Information Ratio				2.80	2.98						
Sharpe Ratio				3.18	1.42						
Index Sharpe Ratio				3.09	1.36						
Standard Deviation				5.93	7.52						
Index Standard Deviation				5.96	7.49						

# Global Equity Composite Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>Hedged Equity</b>	<b>0.78</b>	<b>3.81</b>	<b>5.35</b>	<b>5.35</b>	<b>8.64</b>	<b>4.39</b>		<b>5.68</b>	<b>4/1/2013</b>	<b>\$754,144</b>	<b>0.00</b>
Hedged Equity BM	2.96	5.78	21.05	21.05	10.35	6.84		6.64	4/1/2013		
Excess Return VS Hedged Equity BM	-2.18	-1.97	-15.70	-15.70	-1.71	-2.45		-0.96	4/1/2013		
MSCI ACWI Min Vol (\$N)	2.96	5.78	21.05	21.05	12.01	9.18		9.11	4/1/2013		
Excess Return VS MSCI ACWI Min Vol (\$N)	-2.18	-1.97	-15.70	-15.70	-3.37	-4.79		-3.43	4/1/2013		
Hedged Equity Dynamic BM	1.31	1.62	3.27	3.27	4.53	3.54		4.10	4/1/2013		
Excess Return VS Hedged Equity Dynamic BM	-0.54	2.19	2.08	2.08	4.11	0.85		1.57	4/1/2013		
Beta				-0.19	-0.09	0.12					
Information Ratio				-1.73	-0.15	-0.25					
Sharpe Ratio				0.90	0.98	0.51					
Index Sharpe Ratio				3.08	1.20	0.81					
Standard Deviation				3.33	7.01	6.48					
Index Standard Deviation				5.95	7.13	6.99					
<b>Private Equity</b>	<b>2.24</b>	<b>5.67</b>	<b>12.48</b>	<b>12.48</b>	<b>15.00</b>	<b>14.85</b>	<b>14.60</b>	<b>5.97</b>	<b>12/1/2006</b>	<b>\$1,183,102,179</b>	<b>7.39</b>
Private Equity BM	9.05	8.86	26.35	26.35	13.37	12.00			12/1/2006		
Excess Return VS Private Equity BM	-6.81	-3.18	-13.87	-13.87	1.63	2.85			12/1/2006		
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34	8.91	5.82	12/1/2006		
Excess Return VS MSCI ACWI IMI (\$N)	-6.81		-13.87	-13.87	2.91	6.51	5.69	0.15	12/1/2006		
Private Equity Dynamic BM	1.55	6.87	12.54	12.54	15.91	14.02			12/1/2006		
Excess Return VS Private Equity Dynamic BM	0.69	-1.20	-0.06	-0.06	-0.91	0.83			12/1/2006		
Beta				-0.31	-0.06	-0.02	0.04				
Information Ratio				-0.64	0.10	0.30	0.11				
Sharpe Ratio				1.94	2.89	3.05	2.99				
Index Sharpe Ratio				1.83	0.93	0.78	0.97				
Standard Deviation				5.15	4.54	4.48	4.67				
Index Standard Deviation				12.83	12.36	11.94	12.73				



# Global Public Stock Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>Global Public Stock</b>	<b>8.65</b>	<b>8.50</b>	<b>26.69</b>	<b>26.69</b>	<b>12.22</b>	<b>8.27</b>	<b>9.55</b>	<b>7.95</b>	<b>10/1/2004</b>	<b>\$3,974,164,331</b>	<b>24.82</b>
Public Equity Benchmark	9.05	8.86	26.35	26.35	12.09	8.19	10.15		10/1/2004		
Excess Return VS Public Equity Benchmark	-0.40	-0.36	0.34	0.34	0.13	0.08	-0.60		10/1/2004		
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34	8.91	7.74	10/1/2004		
Excess Return VS MSCI ACWI IMI (\$N)	-0.40	-0.36	0.34	0.34	0.13	-0.07	0.64	0.21	10/1/2004		
Global Public Stock Dynamic BM	9.42	8.75	26.11	26.11	11.80	8.20			10/1/2004		
Excess Return VS Global Public Stock Dynamic BM	-0.77	-0.25	0.58	0.58	0.42	0.07			10/1/2004		
Beta				0.99	1.01	1.00	0.96				
Information Ratio				0.45	0.18	0.01	-0.18				
Sharpe Ratio				1.88	0.89	0.60	0.71				
Index Sharpe Ratio				1.83	0.89	0.60	0.71				
Standard Deviation				12.73	11.68	11.94	12.60				
Index Standard Deviation				12.83	11.49	11.84	13.05				
<b>Global Public Stock - Active</b>	<b>7.96</b>	<b>7.64</b>	<b>25.85</b>	<b>25.85</b>	<b>10.61</b>	<b>6.90</b>		<b>8.44</b>	<b>4/1/2013</b>	<b>\$1,481,124,453</b>	<b>9.25</b>
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34		9.02	4/1/2013		
Excess Return VS MSCI ACWI IMI (\$N)	-1.09	-1.22	-0.50	-0.50	-1.48	-1.44		-0.58	4/1/2013		
Glb Public Stock Active Dyn BM	10.00	8.32	24.60	24.60	10.70	7.41		8.48	4/1/2013		
Excess Return VS Glb Public Stock Active Dyn BM	-2.03	-0.68	1.25	1.25	-0.09	-0.51		-0.03	4/1/2013		
<b>Global Public Stock - Passive</b>	<b>9.08</b>	<b>9.10</b>	<b>26.82</b>	<b>26.82</b>	<b>12.51</b>	<b>8.58</b>		<b>9.24</b>	<b>4/1/2013</b>	<b>\$2,332,104,921</b>	<b>14.56</b>
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34		9.02	4/1/2013		
Excess Return VS MSCI ACWI IMI (\$N)	0.03	0.25	0.46	0.46	0.43	0.24		0.22	4/1/2013		
Glb Public Stock - Pass Dyn BM	9.05	8.85	26.35	26.35	12.14	8.44		9.08	4/1/2013		
Excess Return VS Glb Public Stock - Pass Dyn BM	0.03	0.25	0.47	0.47	0.38	0.15		0.16	4/1/2013		
<b>Blackrock Equity Transition</b>	<b>2.10</b>	<b>27.69</b>	<b>28.26</b>	<b>28.26</b>	<b>4.15</b>			<b>4.74</b>	<b>8/1/2016</b>	<b>\$90,534</b>	<b>0.00</b>
NTGI ACWI X US	2.11	-1.47	-2.09	-2.09	1.45	0.71		1.79	1/1/2011	\$2,976,772	0.02
<b>SSGA ACWI IMI</b>	<b>9.09</b>	<b>9.07</b>	<b>26.66</b>	<b>26.66</b>	<b>12.48</b>			<b>11.94</b>	<b>10/1/2016</b>	<b>\$2,329,037,615</b>	<b>14.54</b>
<b>Equity Cash Overlay</b>	<b>7.82</b>	<b>6.91</b>	<b>45.69</b>	<b>45.69</b>	<b>38.14</b>			<b>42.47</b>	<b>7/1/2016</b>	<b>\$160,934,957</b>	<b>1.00</b>
Parametric Gbl Equity Overlay	8.45	9.79	27.37	27.37	13.16			13.47	7/1/2016	\$160,934,957	1.00
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09			12.40	7/1/2016		
Excess Return VS MSCI ACWI IMI (\$N)	-0.60	0.93	1.02	1.02	1.07			1.07	7/1/2016		
<b>LGIMA GLB EQ OVRLY</b>									<b>8/1/2019</b>	<b>(\$753,062)</b>	<b>0.00</b>

# Global Public Stock Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>Active U.S. Equity</b>	<b>5.04</b>	<b>6.26</b>	<b>28.42</b>	<b>28.42</b>	<b>11.13</b>	<b>9.29</b>	<b>11.48</b>	<b>9.55</b>	<b>10/1/2004</b>	<b>\$445,455,870</b>	<b>2.78</b>
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34	8.91	7.74	10/1/2004		
Excess Return VS MSCI ACWI IMI (\$N)	-4.01	-2.59	2.07	2.07	-0.96	0.95	2.57	1.82	10/1/2004		
Active U.S. Equity Dynamic BM	9.66	8.97	29.72	29.72	12.70	10.38			10/1/2004		
Excess Return VS Active U.S. Equity Dynamic BM	-4.62	-2.71	-1.30	-1.30	-1.58	-1.09			10/1/2004		
Beta				1.04	1.10	1.02	0.89				
Information Ratio				0.50	-0.15	0.23	0.29				
Sharpe Ratio				1.95	0.73	0.65	0.90				
Index Sharpe Ratio				1.96	0.89	0.60	0.71				
Standard Deviation				13.66	13.30	13.01	12.25				
Index Standard Deviation				12.31	11.49	11.84	13.05				
<b>Kayne Anderson SCC</b>	<b>4.39</b>	<b>8.40</b>	<b>38.88</b>	<b>38.88</b>				<b>9.27</b>	<b>9/1/2018</b>	<b>\$270,348,476</b>	<b>1.69</b>
Russell 2000 Index	9.94	7.30	25.53	25.53				-1.69	9/1/2018		
Excess Return VS Russell 2000 Index	-5.55	1.10	13.36	13.36				10.95	9/1/2018		
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35				7.22	9/1/2018		
Excess Return VS MSCI ACWI IMI (\$N)	-4.66	-0.46	12.53	12.53				2.05	9/1/2018		
Beta				0.69							
Information Ratio				1.56							
Sharpe Ratio				2.74							
Index Sharpe Ratio				1.36							
Standard Deviation				13.85							
Index Standard Deviation				17.11							
<b>AQR ALPHAPORT</b>									<b>8/1/2015</b>	<b>\$0</b>	<b>0.00</b>
<b>DFA</b>									<b>10/1/2010</b>	<b>\$51,884</b>	<b>0.00</b>

# Global Public Stock Performance

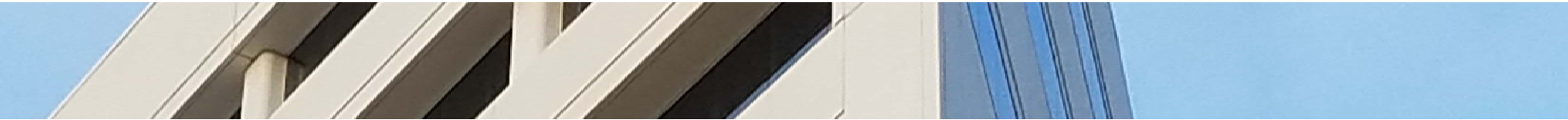
Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>TimesSquare</b>	<b>7.95</b>	<b>4.81</b>	<b>38.21</b>	<b>38.21</b>	<b>14.57</b>	<b>9.13</b>	<b>13.59</b>	<b>11.72</b>	<b>4/1/2005</b>	<b>\$168,768,701</b>	<b>1.05</b>
Russell 2500 Growth Index	10.57	7.05	32.65	32.65	15.17	10.84	14.01	10.36	4/1/2005		
Excess Return VS Russell 2500 Growth Index	-2.62	-2.24	5.56	5.56	-0.60	-1.72	-0.42	1.36	4/1/2005		
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34	8.91	7.21	4/1/2005		
Excess Return VS MSCI ACWI IMI (\$N)	-1.10	-4.05	11.86	11.86	2.48	0.79	4.69	4.51	4/1/2005		
<i>Beta</i>				1.02	1.00	0.96	0.93				
<i>Information Ratio</i>				1.30	-0.08	-0.38	0.02				
<i>Sharpe Ratio</i>				2.01	0.82	0.54	0.86				
<i>Index Sharpe Ratio</i>				1.77	0.85	0.62	0.81				
<i>Standard Deviation</i>				18.00	16.19	15.46	15.75				
<i>Index Standard Deviation</i>				17.20	15.87	15.73	16.55				
<b>Portable Alpha Composite</b>	<b>1.77</b>	<b>5.09</b>	<b>8.79</b>	<b>8.79</b>	<b>11.71</b>	<b>9.64</b>	<b>15.02</b>	<b>6.80</b>	<b>10/1/2007</b>	<b>\$6,286,808</b>	<b>0.04</b>
S&P 500 - Total Return + 1%	9.36	11.49	32.49	32.49	16.28	12.70	14.57	9.62	10/1/2007		
Excess Return VS S&P 500 - Total Return + 1%	-7.59	-6.40	-23.70	-23.70	-4.57	-3.06	0.45	-2.82	10/1/2007		
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34	8.91	4.96	10/1/2007		
Excess Return VS MSCI ACWI IMI (\$N)	-7.27	-3.77	-17.56	-17.56	-0.38	1.30	6.11	1.84	10/1/2007		

# Global Public Stock Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>Active Non-US Developed Equity</b>	<b>9.52</b>	<b>8.02</b>	<b>22.38</b>	<b>22.38</b>	<b>10.55</b>	<b>5.40</b>	<b>8.32</b>	<b>3.19</b>	<b>12/1/2007</b>	<b>\$678,813,599</b>	<b>4.24</b>
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34	8.91	5.10	12/1/2007		
Excess Return VS MSCI ACWI IMI (\$N)	0.47	-0.84	-3.97	-3.97	-1.54	-2.94	-0.59	-1.91	12/1/2007		
Active Non U.S. Equity Dynamic	9.24	8.36	23.03	23.03	9.79	6.69			12/1/2007		
Excess Return VS Active Non U.S. Equity Dynamic	0.28	-0.34	-0.65	-0.65	0.76	-1.29			12/1/2007		
Beta				0.82	0.92	0.95	0.92				
Information Ratio				-1.08	-0.28	-0.44	0.19				
Sharpe Ratio				1.97	0.84	0.38	0.58				
Index Sharpe Ratio				1.96	0.89	0.60	0.71				
Standard Deviation				10.41	11.07	12.46	13.84				
Index Standard Deviation				12.31	11.49	11.84	13.05				
<b>Acadian Intl Equity</b>	<b>8.89</b>	<b>7.06</b>	<b>19.42</b>	<b>19.42</b>				<b>1.32</b>	<b>5/1/2018</b>	<b>\$293,498,877</b>	<b>1.83</b>
MSCI EAFE (\$N)	8.17	7.01	22.01	22.01				2.64	5/1/2018		
Excess Return VS MSCI EAFE (\$N)	0.72	0.05	-2.60	-2.60				-1.32	5/1/2018		
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35				7.94	5/1/2018		
Excess Return VS MSCI ACWI IMI (\$N)	-0.16	-1.80	-6.94	-6.94				-6.62	5/1/2018		
Beta				0.92							
Information Ratio				-0.67							
Sharpe Ratio				1.62							
Index Sharpe Ratio				1.78							
Standard Deviation				10.74							
Index Standard Deviation				11.06							
<b>MFS</b>	<b>8.37</b>	<b>8.16</b>	<b>24.87</b>	<b>24.87</b>	<b>12.90</b>	<b>8.85</b>		<b>9.98</b>	<b>4/1/2010</b>	<b>\$204,140,347</b>	<b>1.27</b>
MSCI EAFE (\$N)	8.17	7.01	22.01	22.01	9.56	5.67		5.55	4/1/2010		
Excess Return VS MSCI EAFE (\$N)	0.20	1.15	2.86	2.86	3.34	3.18		4.43	4/1/2010		
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34		8.75	4/1/2010		
Excess Return VS MSCI ACWI IMI (\$N)	-0.68	-0.70	-1.48	-1.48	0.82	0.51		1.23	4/1/2010		
Beta				0.63	0.78	0.78					
Information Ratio				0.61	0.82	0.72					
Sharpe Ratio				3.03	1.25	0.80					
Index Sharpe Ratio				1.78	0.73	0.38					
Standard Deviation				7.59	9.43	10.42					
Index Standard Deviation				11.06	10.85	12.13					
<b>KBI</b>	<b>2.28</b>	<b>-0.63</b>	<b>-0.12</b>	<b>-0.12</b>	<b>7.51</b>	<b>4.05</b>		<b>5.12</b>	<b>4/1/2010</b>	<b>\$1,278,052</b>	<b>0.01</b>

# Global Public Stock Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>Principal</b>	<b>9.58</b>	<b>9.32</b>	<b>27.54</b>	<b>27.54</b>	<b>11.95</b>	<b>9.40</b>	<b>11.24</b>	<b>5.48</b>	<b>12/1/2007</b>	<b>\$179,136,512</b>	<b>1.12</b>
MSCI World ex-US Small (\$N)	11.40	11.10	25.41	25.41	10.42	8.17	8.04	4.23	12/1/2007		
Excess Return VS MSCI World ex-US Small (\$N)	-1.82	-1.77	2.13	2.13	1.53	1.23	3.19	1.25	12/1/2007		
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34	8.91	5.10	12/1/2007		
Excess Return VS MSCI ACWI IMI (\$N)	0.53	0.47	1.19	1.19	-0.14	1.06	2.33	0.38	12/1/2007		
Beta				0.99	1.04	1.00	0.99				
Information Ratio				1.15	0.77	0.63	1.34				
Sharpe Ratio				2.15	0.85	0.69	0.74				
Index Sharpe Ratio				1.93	0.74	0.57	0.50				
Standard Deviation				12.00	12.59	12.81	14.90				
Index Standard Deviation				11.96	11.82	12.47	14.89				
<b>Schroder</b>	<b>-0.61</b>	<b>-4.21</b>	<b>6.06</b>	<b>6.06</b>	<b>5.00</b>	<b>5.06</b>		<b>7.17</b>	<b>5/1/2012</b>	<b>\$759,811</b>	<b>0.00</b>
<b>Active Emerging Market Equity</b>	<b>10.43</b>	<b>8.12</b>	<b>21.98</b>	<b>21.98</b>	<b>10.36</b>	<b>5.48</b>	<b>4.60</b>	<b>4.81</b>	<b>7/1/2006</b>	<b>\$356,854,984</b>	<b>2.23</b>
MSCI Emerging Markets (\$N)	11.84	7.09	18.42	18.42	11.57	5.61	3.68	5.48	7/1/2006		
Excess Return VS MSCI Emerging Markets (\$N)	-1.41	1.03	3.56	3.56	-1.21	-0.13	0.92	-0.67	7/1/2006		
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35	12.09	8.34	8.91	6.48	7/1/2006		
Excess Return VS MSCI ACWI IMI (\$N)	1.38	-0.74	-4.37	-4.37	-1.73	-2.86	-4.31	-1.67	7/1/2006		
Beta				0.90	0.89	0.87	0.90				
Information Ratio				1.02	-0.27	0.05	0.40				
Sharpe Ratio				1.36	0.69	0.34	0.29				
Index Sharpe Ratio				0.96	0.68	0.28	0.18				
Standard Deviation				14.41	12.98	14.06	15.62				
Index Standard Deviation				16.46	14.37	15.79	17.16				
<b>AXIOM INVESTORS</b>	<b>12.48</b>	<b>10.11</b>	<b>25.89</b>	<b>25.89</b>				<b>25.89</b>	<b>1/1/2019</b>	<b>\$270,673,989</b>	<b>1.69</b>
MSCI Emerging Markets (\$N)	11.84	7.09	18.42	18.42				18.42	1/1/2019		
Excess Return VS MSCI Emerging Markets (\$N)	0.64	3.02	7.47	7.47				7.47	1/1/2019		
MSCI ACWI IMI (\$N)	9.05	8.86	26.35	26.35				26.35	1/1/2019		
Excess Return VS MSCI ACWI IMI (\$N)	3.43	1.26	-0.46	-0.46				-0.46	1/1/2019		
Beta				0.99							
Information Ratio				4.54							
Sharpe Ratio				1.50							
Index Sharpe Ratio				0.96							
Standard Deviation				15.73							
Index Standard Deviation				16.46							
<b>Russell Transition</b>	<b>0.63</b>	<b>5.16</b>	<b>19.18</b>	<b>19.18</b>	<b>9.18</b>	<b>4.61</b>	<b>4.62</b>	<b>1.86</b>	<b>11/1/2007</b>	<b>\$86,180,994</b>	<b>0.54</b>



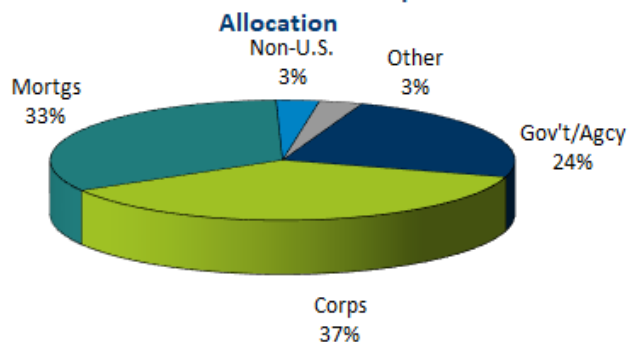
# Risk Reduction & Mitigation



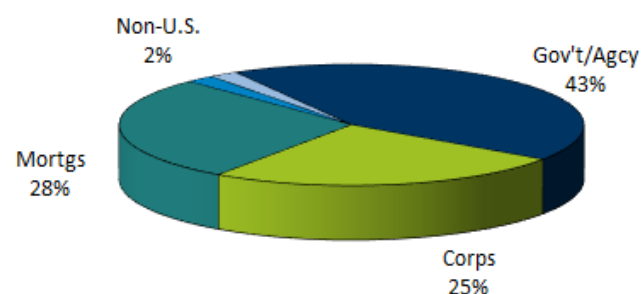
# Risk Reduction & Mitigation Investment Structure

RISK REDUCTION & MITIGATION			
Manager	Benchmark	Market Value	Actual %
BlackRock Core Active	Bloomberg U.S. Aggregate	\$ 1,004,614,551	43.3%
Mackay Shields Core Inv Grade	Bloomberg U.S. Aggregate	\$ 482,850,487	20.8%
Prudential Core Conservative	Bloomberg U.S. Aggregate	\$ 758,882,005	32.7%
Risk Reduction Cash Overlay	Bloomberg U.S. Aggregate	\$ 75,367,428	3.2%
<b>Domestic Core Fixed Income Comp</b>		<b>\$ 2,321,714,471</b>	<b>72.0%</b>
BlackRock Global Fixed Income	Bloomberg Global Aggregate Hdg	\$ 402,473,809	
Manulife Core Global Aggregate	Bloomberg Global Aggregate Hdg	\$ 48,962	
<b>Global Core Fixed Income Comp</b>		<b>\$ 402,522,771</b>	<b>12.5%</b>
Anchorage	Bloomberg U.S. Aggregate	\$ 139,553,491	32.3%
AQR SPF	Bloomberg U.S. Aggregate	\$ 69,479,545	16.1%
Elliott	Bloomberg U.S. Aggregate	\$ 53,278,270	12.3%
Napier Park Class A	Bloomberg U.S. Aggregate	\$ 143,654,314	33.3%
Parametric Bonds Plus	Bloomberg U.S. Aggregate	\$ 25,697,025	6.0%
<b>Bonds Plus Comp</b>		<b>\$ 431,662,645</b>	<b>13.4%</b>
<b>Cash Composite</b>		<b>\$ 49,747,733</b>	<b>1.5%</b>
LGIMA Overlay Collateral		\$ 9,149	0.0%
LGIMA TAA Overlay		\$ 20,354,081	0.6%
<b>RISK REDUCTION &amp; MITIGATION COMPOSITE</b>		<b>87.7% Bloomberg U.S. Aggregate / 12.3% Bloomberg Global Aggregate Hdg</b>	<b>\$ 3,226,010,849</b>

Actual Domestic Fixed Income Composite Sector



Bloomberg Aggregate Sector Allocation



# Risk Reduction & Mitigation Composite – Performance

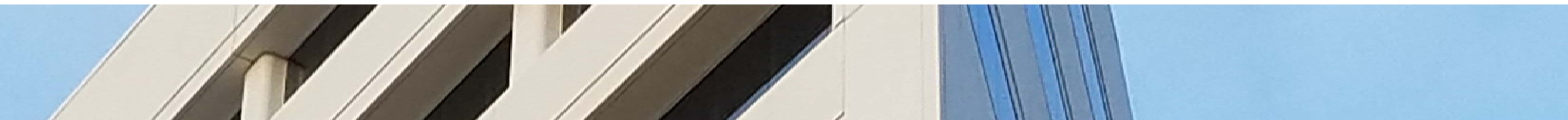
Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>RISK REDUCTION &amp; MITIGATION</b>	<b>0.04</b>	<b>2.48</b>	<b>8.92</b>	<b>8.92</b>	<b>4.13</b>	<b>3.40</b>		<b>3.07</b>	<b>4/1/2013</b>	<b>\$3,226,010,849</b>	<b>20.15</b>
Risk Reduction & Mitigation BM	0.10	2.41	8.66	8.66	4.06	3.10		2.91	4/1/2013		
Excess Return VS Risk Reduction & Mitigation BM	-0.06	0.06	0.26	0.26	0.08	0.31		0.16	4/1/2013		
Risk Red & Mitigation Dyn BM	0.20	2.47	8.66	8.66	4.10	3.15		2.98	4/1/2013		
Excess Return VS Risk Red & Mitigation Dyn BM	-0.16	0.00	0.25	0.25	0.04	0.26		0.09	4/1/2013		
Beta				1.02	1.00	0.95					
Information Ratio				1.27	0.43	0.36					
Sharpe Ratio				1.88	0.86	0.79					
Index Sharpe Ratio				1.85	0.84	0.68					
Standard Deviation				3.46	2.82	2.93					
Index Standard Deviation				3.38	2.81	2.96					
<b>Domestic Core Fixed Income</b>	<b>0.10</b>	<b>2.53</b>	<b>9.14</b>	<b>9.14</b>	<b>4.23</b>	<b>3.24</b>	<b>4.21</b>	<b>7.04</b>	<b>6/1/1985</b>	<b>\$2,321,714,471</b>	<b>14.50</b>
BBG U.S. Agg Bond Index	0.18	2.45	8.72	8.72	4.03	3.05	3.75	6.60	6/1/1985		
Excess Return VS BBG U.S. Agg Bond Index	-0.08	0.08	0.42	0.42	0.20	0.20	0.46	0.44	6/1/1985		
Beta				1.04	1.01	1.00	0.99				
Information Ratio				1.48	0.94	0.65	0.75				
Sharpe Ratio				1.87	0.85	0.70	1.29				
Index Sharpe Ratio				1.84	0.80	0.64	1.09				
Standard Deviation				3.57	2.96	3.06	3.00				
Index Standard Deviation				3.43	2.91	3.06	2.87				
<b>Global Core Fixed Income</b>	<b>-0.57</b>	<b>1.94</b>	<b>7.69</b>	<b>7.69</b>	<b>3.66</b>	<b>3.17</b>		<b>4.25</b>	<b>5/1/2011</b>	<b>\$402,522,771</b>	<b>2.51</b>
BBG Global Agg Hdg	-0.49	2.09	8.22	8.22	4.30	3.57		4.10	5/1/2011		
Excess Return VS BBG Global Agg Hdg	-0.07	-0.15	-0.53	-0.53	-0.64	-0.39		0.15	5/1/2011		
Beta				0.99	0.93	0.75					
Information Ratio				-0.56	-0.59	-0.09					
Sharpe Ratio				1.64	0.88	0.56					
Index Sharpe Ratio				1.84	1.06	0.91					
Standard Deviation				3.23	2.40	3.88					
Index Standard Deviation				3.16	2.43	2.70					
<b>Cash</b>	<b>1.29</b>	<b>4.23</b>	<b>7.15</b>	<b>7.15</b>	<b>4.59</b>	<b>3.71</b>	<b>3.50</b>	<b>4.74</b>	<b>3/1/1989</b>	<b>\$49,747,733</b>	<b>0.31</b>
ICE BofAML US 3 Month Treasury Bill Index G001	0.46	1.03	2.28	2.28	1.67	1.07	0.58	3.09	3/1/1989		
Excess Return VS ICE BofAML US 3 Month Treasury	0.83	3.21	4.87	4.87	2.92	2.64	2.92	1.65	3/1/1989		
Cash Dynamic Benchmark	1.45	3.78	6.51	6.51	4.15	3.18			3/1/1989		
Excess Return VS Cash Dynamic Benchmark	-0.16	0.45	0.63	0.63	0.44	0.53			3/1/1989		

# Risk Reduction & Mitigation – Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>Domestic Core Fixed Income</b>	<b>0.10</b>	<b>2.53</b>	<b>9.14</b>	<b>9.14</b>	<b>4.23</b>	<b>3.24</b>	<b>4.21</b>	<b>7.04</b>	<b>6/1/1985</b>	<b>\$2,321,714,471</b>	<b>14.50</b>
BBG U.S. Agg Bond Index	0.18	2.45	8.72	8.72	4.03	3.05	3.75	6.60	6/1/1985		
Excess Return VS BBG U.S. Agg Bond Index	-0.08	0.08	0.42	0.42	0.20	0.20	0.46	0.44	6/1/1985		
<b>Black Rock Core</b>	<b>0.06</b>	<b>2.38</b>	<b>9.09</b>	<b>9.09</b>	<b>4.42</b>	<b>3.41</b>	<b>4.23</b>	<b>5.59</b>	<b>7/1/1995</b>	<b>\$1,004,614,551</b>	<b>6.27</b>
BBG U.S. Agg Bond Index	0.18	2.45	8.72	8.72	4.03	3.05	3.75	5.22	7/1/1995		
Excess Return VS BBG U.S. Agg Bond Index	-0.12	-0.07	0.37	0.37	0.39	0.36	0.48	0.38	7/1/1995		
Beta				1.05	1.02	1.00	1.03				
Information Ratio				1.78	1.86	1.35	1.01				
Sharpe Ratio				2.08	1.01	0.82	1.25				
Index Sharpe Ratio				1.84	0.80	0.64	1.09				
Standard Deviation				3.38	2.87	2.99	3.00				
Index Standard Deviation				3.43	2.91	3.06	2.87				
<b>MACKAY SHIELDS</b>	<b>0.20</b>	<b>2.61</b>	<b>9.04</b>	<b>9.04</b>	<b>4.07</b>	<b>3.03</b>		<b>2.98</b>	<b>7/1/2012</b>	<b>\$482,850,487</b>	<b>3.02</b>
BBG U.S. Agg Bond Index	0.18	2.45	8.72	8.72	4.03	3.05		2.78	7/1/2012		
Excess Return VS BBG U.S. Agg Bond Index	0.02	0.16	0.32	0.32	0.04	-0.02		0.20	7/1/2012		
Beta				1.01	0.99	0.98					
Information Ratio				1.81	0.59	0.36					
Sharpe Ratio				2.10	0.89	0.70					
Index Sharpe Ratio				1.84	0.80	0.64					
Standard Deviation				3.23	2.80	2.94					
Index Standard Deviation				3.43	2.91	3.06					
<b>Prudential</b>	<b>0.18</b>	<b>2.51</b>	<b>8.82</b>	<b>8.82</b>	<b>4.04</b>	<b>3.14</b>		<b>3.65</b>	<b>6/1/2012</b>	<b>\$758,882,005</b>	<b>4.74</b>
BBG U.S. Agg Bond Index	0.18	2.45	8.72	8.72	4.03	3.05		2.75	6/1/2012		
Excess Return VS BBG U.S. Agg Bond Index	0.00	0.06	0.11	0.11	0.01	0.10		0.90	6/1/2012		
Beta				1.00	1.00	1.01					
Information Ratio				1.39	1.05	0.67					
Sharpe Ratio				2.05	0.87	0.71					
Index Sharpe Ratio				1.84	0.80	0.64					
Standard Deviation				3.22	2.82	3.04					
Index Standard Deviation				3.43	2.91	3.06					

# Risk Reduction & Mitigation – Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>BONDS PLUS COMPOSITE</b>									1/1/2020	\$ 431,662,645	2.69
ANCHORAGE									1/1/2020	\$139,553,491	0.87
AQR SPF									1/1/2020	\$69,479,545	0.43
ELLIOTT									1/1/2020	\$53,278,270	0.33
NAPIER PARK CLASS A									1/1/2020	\$143,654,314	0.90
PARAMETRIC BNDS PLUS									1/1/2020	\$25,697,025	0.16
<b>Global Core Fixed Income</b>	-0.57	1.94	7.69	7.69	3.66	3.17		4.25	5/1/2011	\$402,522,771	2.51
BBG Global Agg Hdg	-0.49	2.09	8.22	8.22	4.30	3.57		4.10	5/1/2011		
Excess Return VS BBG Global Agg Hdg	-0.07	-0.15	-0.53	-0.53	-0.64	-0.39		0.15	5/1/2011		
<b>Blackrock Glb Fixed Income</b>	-0.56	1.94						4.78	5/1/2019	\$402,473,809	2.51
Manulife	-11.41	-10.99	5.91	5.91	3.09	2.88		3.41	5/1/2011	\$48,962	0.00
<b>Cash</b>	1.29	4.23	7.15	7.15	4.59	3.71	3.50	4.74	3/1/1989	\$49,747,733	0.31
ICE BofAML US 3 Month Treasury Bill Index G001	0.46	1.03	2.28	2.28	1.67	1.07	0.58	3.09	3/1/1989		
Excess Return VS ICE BofAML US 3 Month Treasury	0.83	3.21	4.87	4.87	2.92	2.64	2.92	1.65	3/1/1989		
Cash Dynamic Benchmark	1.45	3.78	6.51	6.51	4.15	3.18			3/1/1989		
Excess Return VS Cash Dynamic Benchmark	-0.16	0.45	0.63	0.63	0.44	0.53			3/1/1989		
<b>CASH ACCOUNT</b>	0.29	1.50	2.93	2.93	2.12	1.54	2.63	4.45	3/1/1989	\$46,960,204	0.29
ICE BofAML US 3 Month Treasury Bill Index G001	0.46	1.03	2.28	2.28	1.67	1.07	0.58	3.09	3/1/1989		
Excess Return VS ICE BofAML US 3 Month Treasury	-0.17	0.48	0.65	0.65	0.45	0.47	2.05	1.36	3/1/1989		
<b>SUSPENSE ACCOUNT</b>	17.78	52.47	148.91	148.91	140.58	121.56		130.48	7/1/2010	\$2,787,528	0.02
<b>Risk Reduction Cash Overlay</b>	-1.56	1.75	14.11	14.11	1.69	9.73		5.80	9/1/2014	\$75,367,428	0.47
Risk Reduction & Mitigation BM	0.10	2.41	8.66	8.66	4.06	3.10		3.13	9/1/2014		
Excess Return VS Risk Reduction & Mitigation BM	-1.67	-0.66	5.45	5.45	-2.37	6.63		2.68	9/1/2014		
<b>Parametric Risk Mitigation O/L</b>	-0.59	1.63	6.72	6.72	2.64	3.31		2.61	9/1/2014	\$75,367,428	0.47
Cash Overlay Benchmark	0.18	2.45	8.72	8.72	4.03	2.24		1.71	9/1/2014		
Excess Return VS Cash Overlay Benchmark	-0.77	-0.83	-2.00	-2.00	-1.39	1.07		0.90	9/1/2014		
<b>LGIMA OVRLY COLL</b>	444.28							2,367.63	8/1/2019	\$9,149	0.00
<b>LGIMA TAA OVERLAY</b>	10.52							5.71	8/1/2019	\$20,354,081	0.13
ICE BofAML US 3 Month Treasury Bill Index G001	0.46							0.84	8/1/2019		
Excess Return VS ICE BofAML US 3 Mo T-Bill Index	10.06							4.87	8/1/2019		



# Credit Oriented Fixed Income

# Credit Oriented Fixed Income – Investment Structure

CREDIT ORIENTED FIXED INCOME				
Manager	Benchmark	Market Value		Actual %
PineBridge High Yield	Bloomberg Global High Yield Hedged	\$	189,951,133	17.8%
CVC Global Credit Opp	Bloomberg Global High Yield Hedged	\$	157,254,090	14.7%
Ellington HF	Bloomberg Global High Yield Hedged	\$	194,833,560	18.2%
HIG II	Bloomberg Global High Yield Hedged	\$	3,549,914	0.3%
Credit Cash Overlay	Credit Oriented FI Blend	\$	523,213,656	49.0%
Liquid Credit Composite		\$	1,068,802,355	47.5%
Lazard Emerging Market Debt	JP Morgan EMD Blend	\$	348,714,913	
Emerging Market Debt Composite		\$	348,714,913	15.5%
Credit Oriented Hedge Funds		\$	79,605,279	3.5%
Private Debt	Bloomberg Global High Yield Hedged	\$	146,140,929	6.5%
High Return Seeking Debt	Bloomberg Global High Yield Hedged	\$	605,124,419	26.9%
Illiquid Credit Composite		\$	751,265,348	33.4%
CREDIT ORIENTED FIXED INCOME COMPOSITE		80% Bloomberg Global High Yield Hdg / 20% JP Morgan EMD Blend	\$	2,248,387,896



# Credit Oriented Fixed Income Composite – Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>CREDIT ORIENTED FIXED INCOME</b>	<b>1.02</b>	<b>1.69</b>	<b>5.58</b>	<b>5.58</b>	<b>5.10</b>	<b>4.16</b>		<b>4.64</b>	<b>4/1/2013</b>	<b>\$2,248,387,896</b>	<b>14.04</b>
Credit Oriented FI BM	3.14	3.33	13.54	13.54	6.01	5.79		5.37	4/1/2013		
Excess Return VS Credit Oriented FI BM	-2.11	-1.64	-7.97	-7.97	-0.90	-1.63		-0.73	4/1/2013		
Credit Oriented FI Dynamic BM	1.17	1.70	5.99	5.99	5.68	4.78		5.73	4/1/2013		
Excess Return VS Credit Oriented FI Dynamic BM	-0.15	0.00	-0.41	-0.41	-0.58	-0.62		-1.09	4/1/2013		
<b>Liquid Credit</b>	<b>0.92</b>	<b>0.96</b>	<b>4.46</b>	<b>4.46</b>	<b>4.66</b>	<b>3.95</b>		<b>2.95</b>	<b>4/1/2013</b>	<b>\$1,068,802,355</b>	<b>6.67</b>
BBG Global High Yield Hdg	3.04	3.19	13.34	13.34	6.13	6.53		5.86	4/1/2013		
Excess Return VS BBG Global High Yield Hdg	-2.12	-2.23	-8.87	-8.87	-1.47	-2.58		-2.91	4/1/2013		
Liquid Credit Dynamic BM	2.45	3.03	9.26	9.26	5.79	5.53		6.01	4/1/2013		
Excess Return VS Liquid Credit Dynamic BM	-1.53	-2.07	-4.80	-4.80	-1.13	-1.58		-3.06	4/1/2013		
Beta				0.11	0.15	0.44					
Information Ratio				-1.65	-0.37	-0.52					
Sharpe Ratio				1.82	1.77	0.94					
Index Sharpe Ratio				2.01	1.00	0.87					
Standard Deviation				1.19	1.67	3.07					
Index Standard Deviation				5.37	4.52	5.51					
<b>Emerging Markets Debt Composite</b>	<b>2.47</b>	<b>3.12</b>	<b>11.39</b>	<b>11.39</b>	<b>3.09</b>			<b>3.51</b>	<b>8/1/2015</b>	<b>\$348,714,913</b>	<b>2.18</b>
JP Morgan EMD SOV50 LM50 Bond Index <sup>***</sup>	3.51	3.89	14.31	14.31	6.92			5.83	8/1/2015		
Excess Return VS JP Morgan EMD SOV50 LM50 Bon	-1.04	-0.77	-2.93	-2.93	-3.83			-2.33	8/1/2015		
<b>LAZARD EM MKT DEBT TR</b>	<b>2.47</b>	<b>3.12</b>	<b>11.39</b>	<b>11.39</b>	<b>3.09</b>			<b>3.51</b>	<b>8/1/2015</b>	<b>\$348,714,913</b>	<b>2.18</b>
JP Morgan EMD SOV50 LM50 Bond Index <sup>***</sup>	3.51	3.89	14.31	14.31	6.92			5.83	8/1/2015		
Excess Return VS JP Morgan EMD SOV50 LM50	-1.04	-0.77	-2.93	-2.93	-3.83			-2.33	8/1/2015		
Beta				0.74	0.90						
Information Ratio				-0.50	-1.05						
Sharpe Ratio				1.25	0.20						
Index Sharpe Ratio				1.69	0.78						
Standard Deviation				7.14	6.86						
Index Standard Deviation				6.94	6.60						

# Credit Oriented Fixed Income – Performance

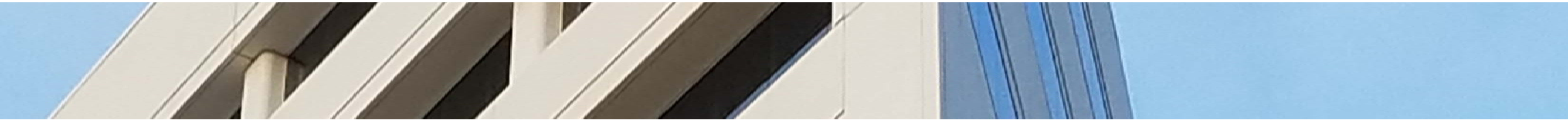
Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>Illiquid Credit</b>	<b>1.81</b>	<b>3.24</b>	<b>5.70</b>	<b>5.70</b>	<b>8.67</b>	<b>6.88</b>	<b>10.02</b>	<b>7.61</b>	<b>12/1/2006</b>	<b>\$751,265,348</b>	<b>4.69</b>
Illiquid Credit BM	3.04	3.19	13.34	13.34	6.24	5.82			12/1/2006		
Excess Return VS Illiquid Credit BM	-1.23	0.05	-7.63	-7.63	2.43	1.05			12/1/2006		
BBG Global High Yield Hdg	3.04	3.19	13.34	13.34	6.13	6.53	7.86	7.55	12/1/2006		
Excess Return VS BBG Global High Yield Hdg	-1.23	0.05	-7.63	-7.63	2.54	0.34	2.16	0.07	12/1/2006		
Illiquid Credit Dynamic BM	-0.28	1.29	2.46	2.46	7.41	6.24			12/1/2006		
Excess Return VS Illiquid Credit Dynamic BM	2.08	1.95	3.24	3.24	1.26	0.64			12/1/2006		
<i>Beta</i>				-0.12	-0.02	-0.05	0.01				
<i>Information Ratio</i>				-1.10	0.44	0.05	0.28				
<i>Sharpe Ratio</i>				1.74	3.60	2.04	2.19				
<i>Index Sharpe Ratio</i>				2.01	0.95	0.96	1.03				
<i>Standard Deviation</i>				1.92	1.92	2.80	4.27				
<i>Index Standard Deviation</i>				5.37	4.75	5.61	6.82				
<b>Credit Oriented Hedge Funds</b>	<b>-0.79</b>	<b>-0.10</b>	<b>2.62</b>	<b>2.62</b>	<b>5.16</b>	<b>3.77</b>	<b>5.83</b>	<b>5.29</b>	<b>2/1/2007</b>	<b>\$79,605,279</b>	<b>0.50</b>
Credit Oriented Hedge Funds BM	3.04	3.19	13.34	13.34	5.03	4.11			2/1/2007		
Excess Return VS Credit Oriented Hedge Funds BM	-3.83	-3.28	-10.72	-10.72	0.13	-0.33			2/1/2007		
BBG Global High Yield Hdg	3.04	3.19	13.34	13.34	6.13	6.53	7.86	7.49	2/1/2007		
Excess Return VS BBG Global High Yield Hdg	-3.83	-3.28	-10.72	-10.72	-0.97	-2.76	-2.03	-2.20	2/1/2007		
<i>Beta</i>				-0.22	-0.04	0.20	0.33				
<i>Information Ratio</i>				-1.36	-0.34	-0.35	-0.11				
<i>Sharpe Ratio</i>				0.11	1.27	0.98	1.56				
<i>Index Sharpe Ratio</i>				2.02	1.33	1.10	1.57				
<i>Standard Deviation</i>				3.14	2.71	2.72	3.35				
<i>Index Standard Deviation</i>				5.36	3.84	3.72	3.61				

# Credit Oriented Fixed Income – Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>LAZARD EM MKT DEBT TR</b>	<b>2.47</b>	<b>3.12</b>	<b>11.39</b>	<b>11.39</b>	<b>3.09</b>			<b>3.51</b>	<b>8/1/2015</b>	<b>\$348,714,913</b>	<b>2.18</b>
JP Morgan EMD SOV50 LM50 Bond Index <sup>***</sup>	3.51	3.89	14.31	14.31	6.92			5.83	8/1/2015		
Excess Return VS JP Morgan EMD SOV50 LM50	-1.04	-0.77	-2.93	-2.93	-3.83			-2.33	8/1/2015		
Beta				0.74	0.92						
Information Ratio				-0.56	-0.88						
Sharpe Ratio				1.33	0.21						
Index Sharpe Ratio				1.69	0.78						
Standard Deviation				6.83	6.77						
Index Standard Deviation				6.94	6.60						
<b>PINEBRIDGE HY</b>	<b>2.66</b>	<b>2.83</b>	<b>13.82</b>	<b>13.82</b>				<b>7.54</b>	<b>10/1/2018</b>	<b>\$189,951,133</b>	<b>1.19</b>
BBG Global High Yield Hdg	3.04	3.19	13.34	13.34				7.81	10/1/2018		
Excess Return VS BBG Global High Yield Hdg	-0.38	-0.36	0.48	0.48				-0.27	10/1/2018		
Beta				0.99							
Information Ratio				0.79							
Sharpe Ratio				2.31							
Index Sharpe Ratio				2.01							
Standard Deviation				5.21							
Index Standard Deviation				5.37							
<b>CVC Global Credit Opp</b>	<b>-2.16</b>	<b>-4.08</b>	<b>-8.06</b>	<b>-8.06</b>	<b>1.93</b>			<b>2.48</b>	<b>11/1/2015</b>	<b>\$157,254,090</b>	<b>0.98</b>
BBG Global High Yield Hdg	3.04	3.19	13.34	13.34	6.13			7.20	11/1/2015		
Excess Return VS BBG Global High Yield Hdg	-5.20	-7.27	-21.39	-21.39	-4.19			-4.72	11/1/2015		
S&P LSTA Leveraged Loan Index	1.73	2.74	8.64	8.64	4.35			5.04	11/1/2015		
Excess Return VS S&P LSTA Leveraged Loan Inc	-3.90	-6.83	-16.70	-16.70	-2.41			-2.57	11/1/2015		
Beta				-0.36	-0.22						
Information Ratio				-2.78	-0.62						
Sharpe Ratio				-3.47	0.06						
Index Sharpe Ratio				2.01	1.04						
Standard Deviation				4.31	4.35						
Index Standard Deviation				5.37	4.20						
<b>GUGGENHEIM GLOBAL HY</b>	<b>0.00</b>	<b>100.02</b>							<b>11/1/2015</b>	<b>\$1</b>	<b>0.00</b>

# Credit Oriented Fixed Income – Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>Ellington HF</b>	<b>0.89</b>	<b>1.67</b>	<b>4.50</b>	<b>4.50</b>	<b>4.37</b>			<b>4.37</b>	<b>1/1/2017</b>	<b>\$194,833,560</b>	<b>1.22</b>
BBG Global High Yield Hdg	3.04	3.19	13.34	13.34	6.13			6.13	1/1/2017		
Excess Return VS BBG Global High Yield Hdg	-2.15	-1.51	-8.83	-8.83	-1.76			-1.76	1/1/2017		
HFRI RV: Fixed Income-Asset Backed	1.61	2.90	6.21	6.21	5.90			5.90	1/1/2017		
Excess Return VS HFRI RV: FI-Asset Backed	-0.71	-1.23	-1.70	-1.70	-1.53			-1.53	1/1/2017		
Beta				-0.16	-0.11						
Information Ratio				-1.40	-0.37						
Sharpe Ratio				1.64	2.74						
Index Sharpe Ratio				2.01	1.04						
Standard Deviation				1.35	0.99						
Index Standard Deviation				5.37	4.20						
<b>HIG II</b>	<b>5.77</b>	<b>3.34</b>	<b>-0.24</b>	<b>-0.24</b>	<b>11.39</b>	<b>6.45</b>		<b>4.55</b>	<b>7/1/2010</b>	<b>\$3,549,914</b>	<b>0.02</b>
BBG Global High Yield Hdg	3.04	3.19	13.34	13.34	6.13	6.53		7.74	7/1/2010		
Excess Return VS BBG Global High Yield Hdg	2.72	0.15	-13.57	-13.57	5.26	-0.09		-3.18	7/1/2010		
HFRI RV: Fixed Income-Asset Backed	1.61	2.90	6.21	6.21	5.90	4.96		7.59	7/1/2010		
Excess Return VS HFRI RV: FI-Asset Backed	4.16	0.43	-6.44	-6.44	5.49	1.49		-3.04	7/1/2010		
Beta				-0.20	-0.79	-0.41					
Information Ratio				-0.70	0.52	0.09					
Sharpe Ratio				0.11	0.98	0.67					
Index Sharpe Ratio				2.01	1.04	1.07					
Standard Deviation				11.83	12.09	9.75					
Index Standard Deviation				5.37	4.20	5.04					
<b>Napier Park LP</b>	<b>-1.00</b>	<b>0.41</b>	<b>3.46</b>	<b>3.46</b>	<b>5.43</b>			<b>5.30</b>	<b>12/1/2016</b>	<b>\$0</b>	<b>0.00</b>
BBG Global High Yield Hdg	3.04	3.19	13.34	13.34	6.13			6.60	12/1/2016		
Excess Return VS BBG Global High Yield Hdg	-4.04	-2.78	-9.88	-9.88	-0.70			-1.30	12/1/2016		
HFRI Credit 1M in Arrears^	0.60	1.07	3.67	3.67	4.10			4.19	12/1/2016		
Excess Return VS HFRI Credit 1M in Arrears^	-1.60	-0.67	-0.21	-0.21	1.32			1.11	12/1/2016		
Beta				-0.17	-0.10						
Information Ratio				-1.42	-0.13						
Sharpe Ratio				0.40	1.32						
Index Sharpe Ratio				2.01	1.04						
Standard Deviation				2.97	2.84						
Index Standard Deviation				5.37	4.20						



# Real Assets

# Real Assets – Investment Structure

REAL ASSETS			
Manager/Composite	Benchmark	Market Value	Actual %
Deutsche Listed Infrastructure	DJ Brookfield Global Infrastructure	\$ 96,840,327	7.4%
Harvest MLP Alpha	Alerian MLP Index	\$ 277,041,081	21.0%
PIMCO TIPS	Bloomberg U.S. TIPS Index	\$ 468,838,847	35.6%
PIMCO Commodities	Bloomberg Commodity Index	\$ 215,308,246	16.3%
Real Assets Cash Overlay	Real Assets BM	\$ 259,496,626	19.7%
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Liquid Real Assets	Blend (18.75% Infrastructure / 25%		
	Alerian MLP / 37.5% TIPS / 18.75% Commodity)	\$ 1,317,525,127	41.3%
Illiquid Real Assets	Blend (30% Infrastructure / 70% Commodity)	\$ 760,850,432	23.9%
DFA Real Estate Securities	Wilshire Global REIT	\$ 155,391,104	51.2%
Security Capital REIT	Wilshire Global REIT	\$ 148,338,513	48.8%
Liquid Real Estate	Wilshire Global REIT	\$ 303,729,617	9.5%
Illiquid Real Estate	Wilshire Global REIT	\$ 804,817,411	25.2%
Market Neutral Hedge Funds / Risk Premia		\$ 2,297,530	0.1%
<hr/>			
REAL ASSETS COMPOSITE	35% Wilshire Global REIT / 10% Alerian MLP / 15% DJ Brookfield Global Infrastructure / 15% TIPS / 25% Bloomberg Commodity	\$ 3,189,220,118	



# Real Assets Composite – Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>REAL ASSETS</b>	<b>1.90</b>	<b>2.59</b>	<b>10.22</b>	<b>10.22</b>	<b>5.42</b>	<b>3.08</b>		<b>5.01</b>	<b>4/1/2013</b>	<b>\$3,189,220,118</b>	<b>19.92</b>
Real Assets BM	1.65	3.49	16.92	16.92	5.56	3.04		5.07	4/1/2013		
Excess Return VS Real Assets BM	0.25	-0.91	-6.70	-6.70	-0.14	0.03		-0.06	4/1/2013		
Real Assets Dynamic BM	0.80	1.78	10.78	10.78	5.40	3.10		4.20	4/1/2013		
Excess Return VS Real Assets Dynamic BM	1.10	0.81	-0.56	-0.56	0.03	-0.02		0.81	4/1/2013		
Beta				0.46	0.47	0.44					
Information Ratio				-1.24	-0.01	0.02					
Sharpe Ratio				1.91	0.89	0.42					
Index Sharpe Ratio				1.63	0.48	0.27					
Standard Deviation				4.10	4.19	4.78					
Index Standard Deviation				8.78	7.94	6.99					
<b>Liquid Real Estate</b>	<b>0.77</b>	<b>6.25</b>	<b>24.12</b>	<b>24.12</b>	<b>9.30</b>	<b>6.81</b>	<b>10.59</b>	<b>11.74</b>	<b>12/1/2008</b>	<b>\$303,729,617</b>	<b>1.90</b>
Wilshire Global REIT TR	0.43	6.71	24.90	24.90	8.56	6.71	10.88	13.72	12/1/2008		
Excess Return VS Wilshire Global REIT TR	0.34	-0.46	-0.77	-0.77	0.74	0.10	-0.29	-1.98	12/1/2008		
Liquid Real Estate Dyn BM	0.16	6.50	23.93	23.93	7.91	6.67			12/1/2008		
Excess Return VS Liquid Real Estate Dyn BM	0.60	-0.25	0.19	0.19	1.39	0.14			12/1/2008		
Beta				0.86	0.86	0.95	0.99				
Information Ratio				-0.34	0.33	0.04	-0.12				
Sharpe Ratio				2.21	0.80	0.49	0.70				
Index Sharpe Ratio				1.98	0.63	0.46	0.73				
Standard Deviation				9.64	9.34	11.56	14.08				
Index Standard Deviation				11.15	10.69	12.07	13.97				
<b>Illiquid Real Estate</b>	<b>3.91</b>	<b>6.03</b>	<b>10.18</b>	<b>10.18</b>	<b>10.96</b>	<b>11.59</b>	<b>13.53</b>	<b>6.95</b>	<b>5/1/2007</b>	<b>\$804,817,411</b>	<b>5.03</b>
Wilshire Global REIT TR	0.43	6.71	24.90	24.90	8.56	6.71	10.88	4.29	5/1/2007		
Excess Return VS Wilshire Global REIT TR	3.48	-0.68	-14.72	-14.72	2.40	4.89	2.66	2.66	5/1/2007		
NCREIF OEDC Fd 1Q in Arrears^	1.31	2.32	5.59	5.59	7.30	9.34	10.86	6.15	5/1/2007		
Excess Return VS NCREIF OEDC Fd 1Q in Arrears^	2.61	3.72	4.58	4.58	3.66	2.25	2.67	0.80	5/1/2007		
Beta				-0.05	-0.02	0.03	0.00				
Information Ratio				-1.05	0.19	0.37	0.16				
Sharpe Ratio				2.26	2.18	2.55	2.32				
Index Sharpe Ratio				1.98	0.63	0.46	0.73				
Standard Deviation				3.42	4.20	4.07	5.55				
Index Standard Deviation				11.15	10.69	12.07	13.97				

# Real Assets Composite – Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>Liquid Real Assets</b>	<b>2.03</b>	<b>1.57</b>	<b>13.03</b>	<b>13.03</b>	<b>-1.22</b>	<b>-4.24</b>	<b>-1.24</b>	<b>-0.56</b>	<b>9/1/2009</b>	<b>\$1,317,525,127</b>	<b>8.23</b>
Liquid Real Assets BM	0.97	0.40	11.88	11.88	-0.81	-4.89			9/1/2009		
Excess Return VS Liquid Real Assets BM	1.06	1.17	1.15	1.15	-0.41	0.65			9/1/2009		
Liquid Real Assets Dyn BM	0.78	0.35	10.23	10.23	2.13	-3.70			9/1/2009		
Excess Return VS Liquid Real Assets Dyn BM	1.24	1.21	2.80	2.80	-3.35	-0.55			9/1/2009		
Beta				0.92	0.90	0.97	0.74				
Information Ratio				0.53	-0.14	0.21	-0.80				
Sharpe Ratio				1.33	-0.32	-0.33	-0.14				
Index Sharpe Ratio				1.12	-0.26	-0.37	0.32				
Standard Deviation				7.99	8.78	15.70	13.21				
Index Standard Deviation				8.38	9.40	15.89	15.09				
<b>Illiquid Real Assets</b>	<b>0.25</b>	<b>-0.84</b>	<b>-2.11</b>	<b>-2.11</b>	<b>5.83</b>	<b>-0.90</b>	<b>8.73</b>	<b>-10.70</b>	<b>1/1/2007</b>	<b>\$760,850,432</b>	<b>4.75</b>
Illiquid Real Assets BM	4.36	3.87	13.98	13.98	4.58	-2.26			1/1/2007		
Excess Return VS Illiquid Real Assets BM	-4.11	-4.70	-16.10	-16.10	1.25	1.36			1/1/2007		
Illiquid Real Assets Dyn BM	0.61	1.32	8.29	8.29	8.30	0.12			1/1/2007		
Excess Return VS Illiquid Real Assets Dyn BM	-0.36	-2.15	-10.40	-10.40	-2.46	-1.02			1/1/2007		
Beta				0.07	0.03	0.07					
Information Ratio				-1.52	0.13	0.12					
Sharpe Ratio				-1.13	1.13	-0.32					
Index Sharpe Ratio				1.20	0.32	-0.31					
Standard Deviation				3.79	3.65	6.01					
Index Standard Deviation				9.53	8.85	10.73					
<b>Market Neutral Hedge Fund</b>	<b>-0.39</b>	<b>5.44</b>	<b>9.33</b>	<b>9.33</b>	<b>2.94</b>	<b>2.17</b>		<b>3.02</b>	<b>4/1/2013</b>	<b>\$2,297,530</b>	<b>0.01</b>
Libor + 2% 1 MA	0.98	2.06	4.44	4.44	3.93	3.35		3.06	4/1/2013		
Excess Return VS Libor + 2% 1 MA	-1.37	3.39	4.89	4.89	-0.99	-1.18		-0.04	4/1/2013		
HFRI EH: Equity Market Neutral Index	0.35	0.84	2.29	2.29	2.03	2.52		2.97	4/1/2013		
Excess Return VS HFRI EH: Equity Market Neutral Index	-0.75	4.60	7.04	7.04	0.90	-0.35		0.05	4/1/2013		
Beta				6.27	6.63	2.73					
Information Ratio				0.73	-0.17	-0.23					
Sharpe Ratio				1.06	0.21	0.21					
Index Sharpe Ratio				21.86	13.78	9.46					
Standard Deviation				6.54	5.94	5.13					
Index Standard Deviation				0.09	0.17	0.24					

# Real Assets – Performance

Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>Real Assets Cash Overlay</b>	<b>3.77</b>	<b>6.08</b>						<b>7.22</b>	<b>5/1/2019</b>	<b>\$259,496,626</b>	<b>1.62</b>
Real Assets BM	1.65	3.49						5.16	5/1/2019		
Excess Return VS Real Assets BM	2.12	2.59						2.05	5/1/2019		
<b>MULTI-RISK ALLOCATION</b>	<b>0.73</b>	<b>6.88</b>						<b>14.68</b>	<b>4/1/2019</b>	<b>\$1,074,015,825</b>	<b>6.71</b>
Wilshire Risk Parity 15% Target Volatility Index	1.33	7.83						16.65	4/1/2019		
Excess Return VS Wilshire Risk Parity 15% Index	-0.60	-0.95						-1.97	4/1/2019		
Zia Risk Parity FD LP	0.73	6.88						14.68	4/1/2019	\$1,074,015,825	6.71
Wilshire Risk Parity 15% Index	1.33	7.83						16.65	4/1/2019		
Excess Return VS Wilshire Risk Parity 15% Index	-0.60	-0.95						-1.97	4/1/2019		
<b>Security Capital REIT</b>	<b>0.26</b>	<b>5.03</b>	<b>20.83</b>	<b>20.83</b>				<b>7.34</b>	<b>5/1/2017</b>	<b>\$148,338,513</b>	<b>0.93</b>
Wilshire Global REIT TR	0.43	6.71	24.90	24.90				9.00	5/1/2017		
Excess Return VS Wilshire Global REIT TR	-0.17	-1.67	-4.07	-4.07				-1.66	5/1/2017		
DJ U.S. Select REIT Index	-1.23	5.51	23.10	23.10				8.06	5/1/2017		
Excess Return VS DJ U.S. Select REIT Index	1.50	-0.48	-2.28	-2.28				-0.73	5/1/2017		
Beta				0.72							
Information Ratio				-0.83							
Sharpe Ratio				2.53							
Index Sharpe Ratio				1.98							
Standard Deviation				7.81							
Index Standard Deviation				11.15							
<b>DFA REIT</b>	<b>1.48</b>	<b>7.45</b>	<b>26.49</b>	<b>26.49</b>				<b>10.38</b>	<b>5/1/2017</b>	<b>\$155,391,104</b>	<b>0.97</b>
Wilshire Global REIT TR	0.43	6.71	24.90	24.90				9.00	5/1/2017		
Excess Return VS Wilshire Global REIT TR	1.05	0.74	1.59	1.59				1.38	5/1/2017		
S&P Global REIT Index	1.07	7.14	24.49	24.49				8.97	5/1/2017		
Excess Return VS S&P Global REIT Index	0.41	0.31	2.00	2.00				1.41	5/1/2017		
Beta				0.95							
Information Ratio				0.86							
Sharpe Ratio				2.36							
Index Sharpe Ratio				1.98							
Standard Deviation				10.18							
Index Standard Deviation				11.15							

# Wilshire Consulting

## Real Assets – Performance



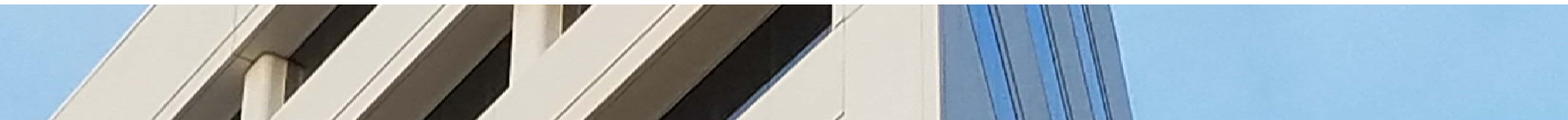
Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>Deutsche Listed Infrastructure</b>	<b>4.56</b>	<b>7.58</b>	<b>29.82</b>	<b>29.82</b>	<b>11.52</b>			<b>8.85</b>	<b>9/1/2016</b>	<b>\$96,840,327</b>	<b>0.60</b>
DJ Brkfld Global Infrastructure Index	4.20	7.04	29.84	29.84	12.11			10.09	9/1/2016		
Excess Return VS DJ Brkfld Global Infrastructure	0.36	0.54	-0.01	-0.01	-0.59			-1.23	9/1/2016		
Beta				0.91	0.94						
Information Ratio				0.53	-0.08						
Sharpe Ratio				3.13	1.15						
Index Sharpe Ratio				2.60	1.08						
Standard Deviation				9.06	8.95						
Index Standard Deviation				10.37	9.51						
<b>Harvest MLP</b>	<b>-1.07</b>	<b>-6.21</b>	<b>12.76</b>	<b>12.76</b>	<b>-2.77</b>	<b>-5.21</b>		<b>-4.33</b>	<b>6/1/2014</b>	<b>\$277,041,081</b>	<b>1.73</b>
Alerian MLP Index	-4.08	-8.90	6.56	6.56	-4.45	-7.00		-7.07	6/1/2014		
Excess Return VS Alerian MLP Index	3.00	2.69	6.20	6.20	1.68	1.78		2.74	6/1/2014		
Beta				1.01	1.03	1.01					
Information Ratio				1.61	0.70	0.65					
Sharpe Ratio				0.58	-0.20	-0.28					
Index Sharpe Ratio				0.23	-0.34	-0.40					
Standard Deviation				19.46	18.55	20.08					
Index Standard Deviation				18.74	17.95	19.76					

# Wilshire Consulting

## Real Assets – Performance



Composite / Manager	Quarter	Fiscal YTD	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Inception Date	Market Value	% of Total
<b>PIMCO TIPS</b>	<b>1.17</b>	<b>2.11</b>	<b>8.55</b>	<b>8.55</b>				<b>3.46</b>	<b>11/1/2017</b>	<b>\$468,838,847</b>	<b>2.93</b>
BBG US TIPS Index	0.79	2.15	8.43	8.43				3.70	11/1/2017		
Excess Return VS BBG US TIPS Index	0.38	-0.03	0.13	0.13				-0.23	11/1/2017		
<i>Beta</i>				0.96							
<i>Information Ratio</i>				0.47							
<i>Sharpe Ratio</i>				2.03							
<i>Index Sharpe Ratio</i>				1.73							
<i>Standard Deviation</i>				3.17							
<i>Index Standard Deviation</i>				3.48							
<b>PIMCO Commodities</b>	<b>5.47</b>	<b>4.28</b>	<b>13.27</b>	<b>13.27</b>				<b>0.03</b>	<b>1/1/2018</b>	<b>\$215,308,246</b>	<b>1.34</b>
Bloomberg Commodity Index Total Return	4.42	2.50	7.69	7.69				-2.23	1/1/2018		
Excess Return VS Bloomberg Commodity Inde	1.05	1.78	5.58	5.58				2.26	1/1/2018		
<i>Beta</i>				1.23							
<i>Information Ratio</i>				1.04							
<i>Sharpe Ratio</i>				0.89							
<i>Index Sharpe Ratio</i>				0.54							
<i>Standard Deviation</i>				12.54							
<i>Index Standard Deviation</i>				9.77							



# Placement Agent Disclosure



# Placement Agent Disclosure

Pursuant to New Mexico statute PERA shall not make any investment, other than investments in publicly traded equities or publicly traded fixed-income securities, unless the recipient of the investment discloses the identity of any third-party marketer who rendered services on behalf of the recipient in obtaining the investment and also discloses the amount of any fee, commission or retainer paid to the third-party marketer for the services rendered. “Third-party marketer” means a person who, on behalf of an investment fund manager or other person seeking an investment from the fund and under a written or implied agreement, receives a fee, commission or retainer for such services from the person seeking an investment from the fund.

**The following investments were approved by the PERA Investment Committee and Board during the quarter, with disclosures made under the policy:**

Madison Dearborn Capital Partners VIII, L.P. received final approval in the quarter for an investment up to \$75 This is an Illiquid Equity allocation. Madison Dearborn Capital Partners has stated that a placement agent was used for certain funds, but these fees are offset 100% by managements fees.

TSSP NM Contingent Capital Fund. received final approval in the quarter for an investment up to \$150 million. This is a Private Credit (High Return Seeking) allocation. TPG Sixth Street Partners Group has stated that they did not use a placement agent during fundraising, however in any case, placement fees would not be payable by the fund.

**Investments approved prior to the current quarter for which the fund engaged a placement agent follow:**

Petershill IV, L.P. – Petershill IV, L.P. received final approval in the quarter for an investment up to \$101 million (\$20-\$31 million of this in the Co-Invest Fund of One). This is a Illiquid Equity allocation. The Goldman Sachs Group, Inc. AIMS Group has stated that it did not use placement agents during the fundraising period.

Rockwood Capital Real Estate Partners Fund XI– Rockwood Capital received final approval in the quarter for an investment up to \$50million in the Illiquid Real Estate allocation. Rockwood Capital has stated that it does use placement agent fees in some situations. However, all placement agent fees are incurred by the General Partner or its affiliates and not by the Fund.

Montagu VI., LP – Montagu Private Equity LLP received final approval in the quarter for an investment up to \$75 million in the Illiquid Real Estate allocation. Montagu Private Equity LLP has stated that it did not use placement agents during the fundraising period.

# Placement Agent Disclosure

Ardian Infrastructure V, L.P. – Ardian Group received final approval in the quarter for an investment up to €60 million in the Illiquid Real Assets allocation. Ardian Group has stated that it does use placement agent fees in some situations. However, all placement agent fees are incurred by the General Partner or its affiliates and not by the Fund. Axiom Emerging Markets Equity Fund. – Axiom Investors received final approval in the quarter for an investment of \$215 million in the Liquid Equity Assets allocation. Axiom Investors did not use placement agents for our investment in the fund.

Aermont Capital Real Estate Fund IV SCPs –Aermont Capital LLP received final approval in the quarter for an investment up to Euro 50 million in the Illiquid Real Estate allocation. Aermont Capital LLP has stated that the Fund will pay all fees, costs and expenses relating to the formation and launch of the Fund, the General Partner and any Feeder Fund provided that the amount of such costs and expenses will not exceed 0.15% of Total Commitments (inclusive of VAT). Any fees, costs and expenses in excess of such amount will be borne by Aermont

Harrison Real Estate Partners VII, L.P. – Harrison Street Real Estate Capital, LLC received final approval in the quarter for an investment up to \$75 million in the Illiquid Real Estate allocation. Harrison Street Real Estate Capital, LLC has confirmed that no placement agents were used for this commitment.

TCV X, L.P. – Technology Crossover Ventures received final approval in the quarter for an investment up to \$65 million in the Illiquid Equity allocation. Technology Crossover Ventures has stated that all placement agent fees will be borne by the GP.

Kayne Anderson Rudnick Investment Management LLC – Kayne Anderson Rudnick Investment Management LLC received final approval in the quarter for an investment up to \$350 million in the Liquid Equity allocation. Kayne Anderson Rudnick Investment Management LLC has confirmed that no placement agents were used for this commitment.

Pine Bridge High Yield Fixed Income – PineBridge Investments received final approval in the quarter for an investment up to \$350 million in the Risk Mitigation allocation. PineBridge Investments has confirmed that no placement agents were used for this commitment.

Rock Point Growth and Income Real Estate Fund III, L.P. – Rockpoint Group LLC received final approval in the quarter for an investment up to \$60 million in the Liquid Equity allocation. Rockpoint Group LLC may engage one or more placement agents on a limited basis for engagement solely with a small number of investors outside of the United States. If a placement agent fee is paid in connection with Growth and Income Fund III, the General Partner will be responsible for all such fees and expenses.

Warburg Pincus Global Growth, L.P. – Warburg Pincus LLC received final approval in the quarter for an investment up to \$115 million in the Illiquid Equity allocation. Warburg Pincus LLC does not expect to engage a placement agent in the U.S., although the firm has engaged financial

# Placement Agent Disclosure

institutions to sponsor or arrange feeder funds that target high net worth individuals to invest in WPGG. In connection with the engagements, the firm may pay customary fees to such financial institutions. Any fees paid to such financial institutions would be borne by Warburg Pincus and/or the respective feeder fund.

**Kelso & Company**– Kelso Investment Associates X, L.P. received final approval in the quarter for an investment up to \$60 million in the Illiquid Equity allocation. Kelso & Company has confirmed that it did use placement agents for this commitment. It was stated that “Kelso will bear the economic burden of all placement agent fees.”

Acadian Asset Management LLC – Acadian Asset Management LLC received final approval in the quarter for an investment up to \$285 million in the Liquid Equity allocation. Acadian Asset Management has confirmed that no placement agents were used for this commitment.

Patria Private Equity VI, L.P. – Patria Finance Limited received final approval in the quarter for an investment up to \$70 million in the Illiquid Real Assets allocation. Patria Finance Limited has confirmed that no placement agents were used for this commitment.

Jordan Resolute IV, L.P. – The Jordan Company received final approval in the quarter for an investment up to \$70 million in the Illiquid Real Assets allocation. The Jordan Company has confirmed that no placement agents were used for this commitment.

Neuberger Berman Global Put-Write (ATM) strategy – Neuberger Berman Investment Advisers received final approval in the quarter for the Global Volatility Equity RFP an investment up to 2.2% of the total fund in public equity allocation. There was no placement agent was engaged.

UBS Dynamic Put-Writing Strategy – UBS Asset Management received final approval in the quarter as secondary option for the Global Volatility Equity RFP an investment up to 2.2% of the total fund in public equity allocation. There was no placement agent was engaged.

PIMCO Liquid Real Assets Completion Portfolio – Pacific Investment Management Company received final approval in the quarter for Liquid Real Assets Completion Portfolio RFP an investment up to 2% of the total fund of approximately \$300 million in Real Assets allocation. There was no placement agent was engaged.

Nuveen Asset Management – Nuveen Asset Management received final approval in the quarter as a secondary option for Liquid Real Assets Completion Portfolio RFP an investment up to 2% of the total fund of approximately \$300 million in Real Assets allocation. There was no placement agent was engaged.

# Placement Agent Disclosure

NGP Natural Resources XII, L.P. – Natural Gas Partners received final approval in the quarter for an investment up to \$70 million in the Illiquid Real Assets allocation. Natural Gas Partners has confirmed that placement fees will be paid by the fund. However, all placement agent fees paid by the fund will be offset.

Altaris Health Partners IV, L.P. – Altaris Health Partners received final approval in the quarter for an investment up to \$75 million in the Private Equity allocation. Altaris Health Partners has confirmed that no placement agent was engaged.

Altaris Constellation Partners IV, L.P. – Altaris Health Partners received final approval in the quarter to commit a 4:1 split to Altaris Health Partners IV, L.P. (“Altaris”) and Altaris Constellation Partners IV, L.P. (“Constellation IV”). Constellation IV is an overflow vehicle designed to accommodate potential transactions larger than \$100 million in the Private Equity allocation. Altaris Constellation Partners has that there was no placement agent used for fundraising

CVC Capital Partners VII, L.P. – CVC Capital Partners received final approval in the quarter for an investment up to €100 million in the Illiquid Real Estate (Core) allocation. CVC Capital Partners has confirmed that CVC Funding, LLC is to conduct activities as a distributor and/or placement agent for private funds managed by or otherwise affiliated with CVC Credit Partners or a CVC Entity. The Distributor does not sit within the same corporate group as the General Partner. No placement agent fees or expenses will be borne by the Fund.

EnCap Energy Capital Fund XI, L.P. – EnCap Investments. L.P. received final approval in the quarter for an investment up to \$100 million in the Private Equity allocation. EnCap Investments. L.P. has confirmed that there was no placement agent used for fundraising

Cerberus Global Residential Mortgage Opportunity Fund, L.P. – Cerberus Capital Management received final approval in the quarter for an investment up to \$100 million in the Illiquid Credit allocation. Cerberus Capital Management has confirmed that there was no placement agent used for fundraising

Eagle Point Credit Partners, L.P. – Eagle Point Credit Partners, L.P. received final approval in the quarter for an investment up to \$100 million in the Illiquid Credit allocation. Eagle Point Credit Partners, L.P. has confirmed that there was no placement agent used for fundraising

Meridiam Infrastructure North America Fund III, LP. – Meridiam Infrastructure Partners received final approval in the quarter for an investment up to \$75 million in the Illiquid Real Assets allocation. Meridiam Infrastructure Partners has confirmed that they have used CL to act as placement agent for the Fund. Meridiam or its affiliates will bear the cost of all placement fees.

Onex Partners V, L.P. – Onex Partners Manager LP received final approval in the quarter for an investment up to \$75 million in the Private Equity allocation. Onex Partners Manager LP Partners has confirmed that Credit Suisse to act as placement agent for the Fund. Meridiam or its affiliates



# Placement Agent Disclosure

will bear the cost of all placement fees. 100% of any advisory, monitoring, transaction, topping, break-up, or directors' fees and other fees received, including placement agent fees will be offset by management fees.

Cheyne Real Estate Credit Fund V –Opportunistic L.P. – Cheyne Real Estate Credit Fund V –Opportunistic L.P. received final approval in the quarter for an investment up to \$90 million in the Illiquid Real Estate Credit (opportunistic) allocation. Cheyne Capital has communicated that there was no placement agent used for fundraising

Rockpoint Growth and Income Real Estate Fund II– Rockpoint Growth and Income Real Estate Fund II, L.P received final approval in the quarter for an investment up to \$75 million in the Illiquid Real Estate (Growth) allocation. Rockpoint Group, L.L.C. has confirmed that Hodes Weill UK LLP on a limited basis for engagement solely with a small number of investors outside of the United States. If a placement agent fee is paid in connection with Growth and Income Fund II, the General Partner will be responsible for all such fees and expenses.

Rockwood Capital– Rockwood Capital received final approval in the quarter for an investment up to \$150 million in the Illiquid Real Estate (Core) allocation. Rockwood Capital, L.L.C. has communicated that there was no placement agent used for fundraising.

GEM Realty Evergreen Fund, L.P. – GEM Realty Evergreen Fund, L.P. received final approval in the quarter for an investment up to \$100 million in the Illiquid Real Estate (Core) allocation. GEM Realty Capital, Inc. has confirmed that they have not engaged a private placement agent to assist with its current fundraising efforts.

Petershill Private Equity L.P. – Petershill Private Equity LP. Received final approval in the quarter for an investment up to \$150 million in the illiquid private equity allocation. GSAM –Petershill Alternative Investments & Manager Selection (AIMS) has communicated that there was no placement agent used for fundraising.

Antin Infrastructure Partners III, L.P. – Antin Infrastructure Partners III, L.P. received final approval in the quarter for an investment up to 65 million Euros (approx. 72 million USD) in the illiquid infrastructure (Real Assets) allocation. Antin Infrastructure Partners has confirmed that Campbell Lutyens & Co. Ltd are engaged as placement agent. The fee terms are as follows: GP will incur all costs associated with the hiring of said placement agent.

# Placement Agent Disclosure

Tennenbaum Capital Partners, Direct Lending Fund of One – Tennenbaum Capital Partners, Direct Lending Fund of One received final approval in the quarter for an investment up to \$200 million in the Illiquid Credit allocation. Tennenbaum Capital Partners has they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

RCP Small & Emerging Manager Fund of One – RCP Small & Emerging Manager Fund of One received final approval in the quarter for an investment up to \$75 million in the Global Equity allocation. RCP Advisors has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Napier Park Global Capital Specialized & Complex Credit – Napier Park Global Capital Specialized & Complex Credit Received final approval in the quarter for an investment up to \$300 million in the Illiquid Credit allocation. Napier Park Global Capital (US) has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Ellington Structured Credit – Ellington Structured Credit Received final approval in the quarter for an investment up to \$100 million in the Global Equity allocation. Ellington Management Group, LLC has confirmed that UBS are engaged as placement agent. The fee terms are as follows:

FountainVest China Capital Partners III, L.P. – FountainVest China Capital Partners III, L.P. Received final approval in the quarter for an investment up to \$85 million in the Global Equity allocation. FountainVest Advisors Ltd. has confirmed that UBS are engaged as placement agent. The fee terms are as follows: FountainVest believes that the amount that will be paid to UBS which relates to NM PERA's investment is between 0.3% and 1.75% of NM PERA's commitment. The actual dollar amount of placement fees payable being US\$685,201. As per the LPA, as the entire placement agent fee is not treated as a fund expense but a GP expense, NM PERA will in effect be paying US\$0 to the placement agent.

Harrison Street Real Estate Partners VI, L.P. - Harrison Street Real Estate Partners VI, L.P. received final approval in the quarter for an investment up to \$75 million in the Real Estate allocation. . Harrison Street Real Estate Capital, LLC has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Tillridge Global Agribusiness Partners II, L.P. – Tillridge Global Agribusiness Partners II, L.P. received final approval in the quarter for an investment up to \$75 million in the Real Assets allocation. Tillridge is a NGP affiliate, a 35% owner. Tillridge Capital Partners, LLC has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Charterhouse Capital Partners X, L.P. – Charterhouse Capital Partners X, L.P. received final approval in the quarter for an investment up to \$45 million in the Illiquid Credit allocation Charterhouse Capital Partners LLP LLC has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.



# Placement Agent Disclosure

ACM Fund II, LLC. – ACM Fund II, LLC. Received final approval in the quarter for an investment up to \$40 million in the Real Assets allocation. ACM Management Company, LLC. ACM is working with Equilibrium Capital to fundraise for Fund II. Equilibrium Capital is a founding member of ACM, a significant minority shareholder and a member of the Investment and Management Committees. For the current Fund, ECS will receive 1.5 percent of total committed capital, paid over two years, as compensation for these services. For Fund I, ECS was also paid 1.5 percent of total committed capital, paid over three years, for these services. No placement fees will be paid by the Fund. The GP will pay placement costs out of its management fee. The amount relating to NM PERA commitment of \$40 million is therefore \$600,000.

DRC European Real Estate Debt Fund III, L.P. DRC European Real Estate Debt Fund III, L.P. received final approval in the quarter for an investment up to \$75 million in the Private Credit allocation. DRC Capital Partners has confirmed that Evercore Partners International are engaged as placement agent. The fee terms are as follows: “New” Capital Commitments (new investors & element of re-ups exceeding Fund II commitment level) – 1.5%. “Existing” Capital Commitments (existing investors with re-ups up to Fund II commitment level) – 1.0%

Starwood XI Management, L.P. – Starwood XI Management, L.P. received final approval in the quarter for an investment up to \$75 million in the Real Estate allocation. Starwood Capital has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

DFJ Venture XII, L.P. – DFJ Venture XII, L.P. received final approval in the quarter for an investment up to \$25 million in the Private Equity allocation. Draper Fisher Jurvetson has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Brookfield Infrastructure Fund III, L.P. – Brookfield Infrastructure Fund III, L.P. received final approval in the quarter for an investment up to \$75 million in the Real Assets allocation. Brookfield Asset Management Inc. has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

TCV IX Fund – TCV IX Fund, L.P. received final approval in the quarter for an investment up to \$65 million in the Private Equity allocation. Technology Crossover Ventures has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

# Placement Agent Disclosure

PineBridge Passport I, L.P. - PineBridge Passport I, L.P. received final approval in the quarter for an investment up to \$150 million in the Private Equity allocation. PineBridge has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Quadrant Enhanced Debt Fund, L.P. - Quadrant Enhanced Debt Fund, L.P. received final approval in the quarter for an investment up to \$70 million in the Private Credit allocation. Quadrant has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Carlyle Power Partners II, L.P. - Carlyle Power Partners II, L.P. received final approval in the quarter for an investment up to \$65 million in the Private Equity allocation. Carlyle has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Warburg Pincus Private Equity XII, L.P. - Warburg Pincus Private Equity XII, L.P. received final approval in the quarter for an investment up to \$85 million in the Private Equity allocation. Warburg Pincus has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

PW (Perella Weinberg) Real Estate Fund III, L.P. - PW (Perella Weinberg) Real Estate Fund III, L.P. received final approval in the quarter for an investment up to \$70 million in the Real Estate allocation. Perella Weinberg has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Madison Realty Capital Debt Fund III, L.P. - Madison Realty Capital Debt Fund III, L.P. received final approval in the quarter for an investment up to \$50 million in the Real Estate allocation. Madison has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Century Focused Fund IV, L.P. - Century Focused Fund IV, L.P. received final approval in the quarter for an investment up to \$30 million in the Private Equity allocation. Century Capital Management has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Trinity Ventures XII, L.P. - Trinity Ventures XII, L.P. received final approval in the quarter for an investment up to \$30 million in the Private Equity allocation. Trinity Ventures has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

# Placement Agent Disclosure

RRJ Capital Master Fund III, L.P. – RRJ Capital Master Fund III, L.P. received final approval in the quarter for an investment up to \$75 million in the Private Equity allocation. RRJ Capital III Ltd. has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Rockwood X, L.P. – Rockwood X, L.P. received final approval in the quarter for an investment up to \$60 million in the Real Estate allocation. Rockwood Capital has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Ardian Infrastructure IV, L.P. – Ardian Infrastructure IV, L.P. received final approval in the quarter for an investment up to \$65 million in the Real Assets allocation. Ardian has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Atalaya Special Opportunities Fund VI, L.P. – Atalaya Special Opportunities Fund VI, L.P. received final approval in the quarter for an investment up to \$50 million in the Private Equity-Credit allocation. Atalaya Capital Management has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Charterhouse Capital Partners X, L.P. – Charterhouse Capital Partners X, L.P. received final approval in the quarter for an investment up to \$70 million in the Private Equity allocation. Charterhouse Capital Partners LLP has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

57 Stars – 57 Stars received final approval in the quarter for an investment up to \$150 million in the Private Equity allocation. 57 Stars, LLC has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Athyrium Opportunities Fund II, L.P. – Athyrium Opportunities Fund II, L.P. received final approval in the quarter for an investment up to \$65 million in the Private Equity allocation. Neuberger Berman Alternatives Advisers LLC and its affiliates (“Neuberger Berman”) provide sub-advisory services and other ancillary services to Athyrium Capital Management LLC, including assistance with fundraising and marketing of the Fund. For investors introduced by Neuberger Berman, Neuberger Berman typically receives approximately 60% of one year’s management fee, paid out over a three year period. Such fees are not paid by the fund, rather out of the management fee collected by Athyrium Capital Management, LLC. Neuberger Berman, LLC. is a FINRA regulated broker dealer.

KSL Capital Partners IV, L.P. – KSL Capital Partners IV, L.P. received final approval in the quarter for an investment up to \$60 million in the Real Estate allocation. KSL Capital Partners, LLC has confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

# Placement Agent Disclosure

Garrison Opportunity Fund IV-A, LLC. - Garrison Opportunity Fund IV-A, LLC received final approval in the quarter for an investment up to \$60 million in the Private Equity allocation. Garrison Investment Group confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Harrison Street Real Estate Partners V, L.P. – Harrison Street Real Estate Partners V, L.P. received final approval in the quarter for an investment up to \$45 million in the Real Estate allocation. Harrison Street confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Paine & Partners Capital Fund IV, L.P. - Paine & Partners Capital Fund IV, L.P. received final approval in the quarter for an investment up to \$50 million in the Real Assets allocation. Paine & Partners confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Kelso Investments Associates IX - Kelso Investments Associates IX received final approval in the quarter for investment up to \$60 million in the Private Equity allocation. Kelso disclosed that TransPacific Group LLC and TransPacific Group (Asia) Ltd will act as a placement agent in relation to the targeted marketing of limited partner interests in KIA IX to certain specified prospective investors in East Asia and Hong Kong & China respectively. Kelso was introduced to Mark Mason, the founder of the TransPacific companies, by a former executive of a limited partner. KTB Investment & Securities Co., Ltd. is the sub-agent in Korea. The placement agent fee is 100% offset to management fees.

KKR Global Infrastructure Fund II - KKR Global Infrastructure Fund received final approval in the quarter for investment up to \$50 million in the Real Assets allocation. KKR confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Natural Gas Partners XI - Natural Gas Partners XI received final approval in the quarter for investment up to \$50 million in the Real Assets allocation. NGP confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

Starwood Global Opportunity X - Starwood Global Opportunity X received final approval in the quarter for investment up to \$60 million in the Real Estate allocation. Starwood confirmed that they did not engage a placement agent or third party marketer with respect to the NM PERA commitment.

EnCap Flatrock Midstream Energy III - Encap Flatrock III received final approval in the quarter for investment up to \$45 million in the Real Asset allocation. Encap disclosed that no placement agent or third-party marketer was used.



# Placement Agent Disclosure

Harvest MLP – Harvest received final approval in the quarter for investment up to \$140 million in the Real Assets allocation. Harvest disclosed that no placement agent or third-party marketer was used.

DRC European Real Estate Debt Fund II – PERA committed £26 million to DRC a 2013 vintage year fund in the Real Estate allocation. DRC engaged EverCore Private Funds Group for the marketing of ERED II in North America. The GP pays up to 2% on amounts raised by Evercore payable in installments over 3 years, or up to 520,000 on PERA's £26 million commitment. The GP pays the placement fee.

Onex Partners IV, LP – PERA committed \$45 million to Onex IV a 2013 vintage year fund in the US buyout allocation. Onex engaged Credit Suisse for the marketing of Fund IV. Onex pays a flat fee. The GP pays the placement fee.

Blackstone Real Estate Partners VII – PERA committed \$35 million to Blackstone VII a 2012 vintage year fund in the Real Estate allocation. Blackstone engaged Park Hill Group LLC for the marketing of BREP VII. Although Blackstone engaged Park Hill in connection for certain clients, Park Hill was not used in connection with PERA's commitment, thus PERA did not pay any placement fees.

Gilde Buyout Fund IV – PERA committed €15 million Euro to Gilde IV a 2011 vintage year fund in the non-US buyout allocation. Gilde engaged MVision for the marketing of Fund IV. Gilde pays a 0.35% fee on aggregate commitments, or €52,500 on PERA's €15 million commitment. The GP pays the placement fee.

Selene Residential Mortgage Opportunity Fund II – PERA committed \$20 million to Selene II a 2011 vintage year fund in the Real Estate allocation. Selene engaged Capstone Partners for the marketing of Fund II. Selene pays a 1% fee, or \$200,000 on PERA's \$20 million commitment. The fee is offset by the management fee.

Blackstone Real Estate Partners Europe III – PERA committed \$25 million to BREP Europe III a 2008 vintage year fund in the Real Estate allocation. Blackstone engaged Park Hill Group LLC for the marketing of BREP Europe III. BREP's agreement is to pay Park Hill 1% on aggregate commitments, or \$250,000 on PERA's \$25 million commitment.

Onex Partners III – PERA committed \$25 million to Onex III a 2008 vintage year fund in the Private Equity buyout allocation. Onex engaged Credit Suisse for the marketing of Fund III. The approximate fee paid on PERA's \$25 million commitment was \$325,000.

Selene Residential Mortgage Opportunity Fund I – PERA committed \$30 million to Selene I a 2008 vintage year fund in the Real Estate allocation. Selene engaged Capstone Partners for the marketing of Fund II. Selene pays a 1% fee, or \$300,000 on PERA's \$30 million commitment. The fee is offset by the management fee.

# Placement Agent Disclosure

Jordan Resolute Fund II – PERA committed \$25 million to Jordan Resolute II a 2007 vintage year fund in the Private Equity buyout allocation. Jordan engaged Credit Suisse for the marketing of Fund II. Jordan pays Credit Suisse 0.5%, or \$113,354 on PERA’s \$25 million commitment.

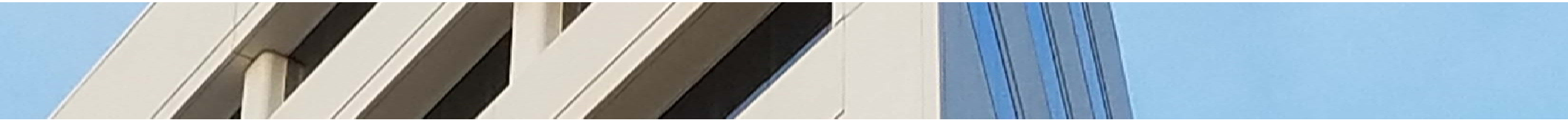
Kelso Investment Associates VIII – PERA committed \$30 million to Kelso III a 2007 vintage year fund in the Private Equity buyout allocation. Kelso engaged Credit Suisse for the marketing of Fund VIII. Kelso pays Credit Suisse 0.143%, or \$43,045 on PERA’s \$30 million commitment.

Wayzata Opportunities Fund II – PERA committed \$30 million to Wayzata II a 2007 vintage year fund in the distressed private equity allocation. Wayzata engaged Park Hill Group LLC for the marketing of Fund II. Wayzata pays a fee of 0.35% on aggregate commitments, or \$105,000 on PERA’s \$30 million commitment.

Cerberus Institutional Partners – Series IV – PERA committed \$25 million to Cerberus IV a 2006 vintage year fund in the distressed Private Equity allocation. Cerberus engaged Monument Group for the marketing of Fund IV.

Coller International Partners V – PERA committed \$25 million to Coller V a 2006 vintage year fund in the non-US Private Equity allocation. Coller engaged Credit Suisse for the marketing of Fund V.





# Additional Information

# Wilshire Consulting Benchmarks



	Policy Index 1/1 - 4/30/19	Policy Index 5/1 - 5/31/19	Policy Index 6/1 - 6/30/19	Policy Index 7/1 - 7/31/19	Policy Index 8/1 - 8/31/19	Policy Index 9/1 - 9/30/19	Policy Index 10/1 - 10/31/19	Policy Index 11/1 - 11/30/19	Policy Index 12/1 - 12/31/19
Global Equity	43.50%	<u>42.85%</u>	<u>42.33%</u>	<u>41.81%</u>	<u>41.29%</u>	<u>40.77%</u>	<u>40.38%</u>	<u>39.74%</u>	<u>39.02%</u>
MSCI ACWI IMI (\$net)	36.50%	<u>35.85%</u>	<u>35.33%</u>	<u>34.81%</u>	<u>34.29%</u>	<u>33.77%</u>	<u>33.38%</u>	<u>32.74%</u>	<u>32.02%</u>
MSCI ACWI Min Vol (\$net)	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Credit	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
Barclays Global HY (Hedged)	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%
50% JPM EMBI(\$)/ 50% JMP GBI (\$)	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Risk Mitigation	21.50%	21.50%	<u>21.37%</u>	<u>21.24%</u>	<u>21.11%</u>	<u>20.98%</u>	<u>20.72%</u>	<u>20.56%</u>	<u>20.38%</u>
Barclays U.S. Agg	19.00%	19.00%	<u>18.87%</u>	<u>18.74%</u>	<u>18.61%</u>	<u>18.48%</u>	<u>18.22%</u>	<u>18.06%</u>	<u>17.88%</u>
Barclays Global Agg (Hedged)	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Real Assets	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Wilshire Global REIT	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Alerian MLP Index	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
DJB Global Infra Index	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Barclays U.S. TIPS	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Bloomberg Commodity Index (TR)	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Multi Risk	0.00%	<u>0.65%</u>	<u>1.30%</u>	<u>1.95%</u>	<u>2.60%</u>	<u>3.25%</u>	<u>3.90%</u>	<u>4.70%</u>	<u>5.60%</u>
Wilshire Risk Parity - 15%	0.00%	<u>0.65%</u>	<u>1.30%</u>	<u>1.95%</u>	<u>2.60%</u>	<u>3.25%</u>	<u>3.90%</u>	<u>4.70%</u>	<u>4.70%</u>
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

# Wilshire Consulting

## Footnotes



### Since Inception Dates

#### *COMPOSITES*

- NM PERA Total Fund 6/30/1985
- Global Equity 3/31/2013
- Risk Reduction & Mitig 3/31/2013
- Credit Oriented Fixed Inc 3/31/2013
- Real Assets 3/31/2013
- Multi-Risk 4/30/2019

#### *GLOBAL EQUITY*

- Global Public Stock 5/31/1998
- Global Low Vol 10/31/2016
- BlackRock MSCI ACWI LV 10/31/2016
- SSgA ACWI IMI Index 9/30/2016
- Portable Alpha 9/30/2006
- Active U.S. Equity 9/30/2004
- AQR Alphaport 7/31/2015
- Kayne Anderson SC 8/31/2018
- TimesSquare SMID Grow 3/31/2005
- NT MSCI ACWI xUS 12/31/2010
- Active Non-US Equity 11/30/2007
- Acadian Int'l Equity 4/30/2018
- MFS International Value 3/31/2010
- Principal Int'l Small Cap 12/31/2007
- Schroder Int'l Small Cap 6/30/2012
- Active Emerging Markets 6/30/2006
- Axiom EME 12/31/2018
- Hedged Equity 6/30/2015
- Private Equity 6/30/2015

#### *RISK REDUCTION & MITIGATION*

- Domestic Core Fixed Inc 6/30/1995
- BlackRock Core Active 6/30/1995

- MacKay Shields Core IG 6/30/2012
- Prudential Core Cons 6/30/2012
- Global Core Fixed Income 6/30/2011
- Manulife Core Global Agg 3/31/2011
- BlackRock Global Fixed Inc 4/30/2019
- Cash 3/31/1989

#### *CREDIT ORIENTED FIXED INCOME*

- Liquid Credit 6/30/2015
- PineBridge Global HY 9/30/2018
- CVC Global Credit Opp 10/31/2015
- Ellington HF 12/31/2016
- HIG Bayside Loan Opp II 6/30/2010
- Emerging Markets Debt 7/31/2015
- Lazard EMD 7/31/2015
- Illiquid Credit 6/30/2015
- Napier Park 11/30/2016
- Credit Oriented HF 1/31/2007

#### *REAL ASSETS*

- Liquid Real Estate 11/30/2008
- Security Capital REIT 4/30/2017
- DFA Global REIT 4/30/2017
- Illiquid Real Estate 6/30/2015
- Liquid Real Assets 8/31/2009
- Deutsche Infrastructure 8/31/2016
- Harvest MLP 5/31/2014
- PIMCO TIPS 10/31/2017
- PIMCO Commodities 12/31/2017
- Illiquid Real Assets 6/30/2015
- Market Neutral HF 6/30/2015

### Performance Related Comments

Performance shown is gross of fees unless otherwise noted. Fiscal year ends on June 30th. Performance is preliminary and subject to change.

"Inception Date" refers to the first full month following initial funding. "Inception Date" for Alternatives is as of the first funding of the asset class.

Indices show N/A for since inception returns when the fund contains more history than the corresponding index.

The Cash Equivalent Composite return includes tax reclaims on two bond issues which were received by the Corporate Action Clearing Account. This accounts for the additional return over the JP Morgan STIF account in the longer-term periods.

Updated returns for the NCREIF Property Index are currently unavailable for use in calculating the Long-Term Target Allocation Index and the Real Estate Custom Index. As such, a 0.00% return is assumed for the NCREIF Property Index. Therefore, returns for these custom indices are preliminary and subject to change.

# Wilshire Consulting

## Footnotes

**Long-Term Target Allocation Index** consists of:

- 40% S&P 500 Index (Cap Wtd), 60% LB Aggregate Bond Index until 08/31/1992
- 55% S&P 500 Index (Cap Wtd), 45% LB Aggregate Bond Index until 08/31/1995
- 52.5% S&P 500 Index (Cap Wtd), 2.5% MSCI EAFE Blend, 45% LB Aggregate Bond Index until 11/30/1995
- 50% S&P 500 Index (Cap Wtd), 5% MSCI EAFE Blend, 45% LB Aggregate Bond Index until 02/29/1996
- 45% S&P 500 Index (Cap Wtd), 10% MSCI EAFE Blend, 45% LB Aggregate Bond Index until 11/30/1997
- 45% S&P 500 Index (Cap Wtd), 15% MSCI EAFE Blend, 40% LB Aggregate Bond Index until 02/28/1999
- 42% Russell 3000 Index, 18% MSCI EAFE Blend, 40% LB Aggregate Bond Index until 05/31/1999
- 45% Russell 3000 Index, 15% MSCI EAFE Index (Gross), 40% LB Aggregate Bond Index until 06/30/2000
- 42% Russell 3000 Index, 18% MSCI EAFE Index (Gross), 40% LB Aggregate Bond Index until 06/30/2005
- 40% Russell 3000 Index, 25% MSCI EAFE Index (Gross), 35% LB Aggregate Bond Index until 06/30/2007
- 35% Russell 3000 Index, 25% MSCI ACW Ex US Blended Index (Gross), 25% LB Aggregate Bond Index, 5% 3 Mo LIBOR Index + 4%, 5% Venture Economics All Private Equity Index (lagged one quarter), 2.5% NCREIF Property Index, and 2.5% CPI + 5% until 10/31/2009
- 35% Russell 3000 Index, 25% MSCI ACW Ex US Blended Index (Gross), 25% Barclays Global Agg Blended Index, 5% 3 Mo LIBOR Index + 4%, 5% Venture Economics All Private Equity Index (lagged one quarter), 2.5% NCREIF Property Index, 1% Barclays US TIPS Index, 1% S&P GSCI Light Energy Index, and 0.5% CPI + 5% until 06/30/2010
- 27% Russell 3000 Index, 27% MSCI ACW Ex US Blended Index (Gross), 26% Barclays Global Agg Blended Index, 9% HFRI Fund of Funds Composite Index, 5% Private Equity Custom Index, 3% Real Estate Custom Index, and 3% Real Assets Custom Index until 11/30/2012
- 29% Russell 3000 Index, 20% Int'l Equity Custom Index, 26% Fixed Income Custom Index, 5% Liquid Alpha Index, 7% HFRI Fund of Funds Composite Index, 5% Private Equity Custom Index, 3% Real Estate Custom Index, and 5% Real Assets Custom Index until 12/31/2012.
- 21.1% Russell 3000 Index, 24.8% Int'l Equity Custom Index, 26.1% Core and Global Fixed Income Custom Index, 5% Fixed Income Plus Sectors Custom Index, 4% HFRI Fund of Funds Composite Index, 7% Private Equity Custom Index, 5% Real Estate Custom Index, and 7% Real Assets Custom Index until 04/30/2016.
- 43.5% Global Equity, 21.5% Risk Reduction & Mitigation, 20% Real Assets, 15% Credit Oriented Fixed Income until 4/30/20

	Policy Index 1/1 - 4/30/19	Policy Index 5/1 - 5/31/19	Policy Index 6/1 - 6/30/19	Policy Index 7/1 - 7/31/19	Policy Index 8/1 - 8/31/19	Policy Index 9/1 - 9/30/19	Policy Index 10/1 - 10/31/19	Policy Index 11/1 - 11/30/19	Policy Index 12/1 - 12/31/19
Global Equity	43.50%	42.85%	42.33%	41.81%	41.29%	40.77%	40.38%	39.74%	39.02%
MSCI ACWI IMI (\$net)	36.50%	35.85%	35.33%	34.81%	34.29%	33.77%	33.38%	32.74%	32.02%
MSCI ACWI Min Vol (\$net)	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Credit	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
Barclays Global HY (Hedged)	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%
50% JPM EMBI(\$)/ 50% JPM GBI (\$)	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Risk Mitigation	21.50%	21.50%	21.37%	21.24%	21.11%	20.98%	20.72%	20.56%	20.38%
Barclays U.S. Agg	19.00%	19.00%	18.87%	18.74%	18.61%	18.48%	18.22%	18.06%	17.88%
Barclays Global Agg (Hedged)	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Real Assets	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
Wilshire Global REIT	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Alerian MLP Index	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
DJB Global Infra Index	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Barclays U.S. TIPS	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Bloomberg Commodity Index (TR)	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Multi Risk	0.00%	0.65%	1.30%	1.95%	2.60%	3.25%	3.90%	4.70%	5.60%
Wilshire Risk Parity - 15%	0.00%	0.65%	1.30%	1.95%	2.60%	3.25%	3.90%	4.70%	5.60%
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

### Manager Transition Comments

During December 2019 Rockwood Capital RE XI, Parametric Bonds Plus, Elliott, AQR SPF, Anchorage, Napier Park A, Napier Park B were funded. BPG VIII was defunded.

During November 2019 Tennenbaum was defunded.

During August 2019 LGIMA Equity Overlay was funded.

During July 2019 LGIMA Overlay and LGIMA TAA Overlay were funded.

During April 2019 Parametric Credit Cash Overlay, Aermont Cap RE Fund IV, Real Assets Cash Overlay, BlackRock Global FI and Zia Risk Parity were funded.

During March 2019 Warburg Pincus PE GG and Harrison Street Real Estate Partners VII were funded. Mason Capital LP was defunded.

During February 2019 TCV X and Kelso X were funded.

During December 2018 Axiom EM, Patria PE Fund VI and Ardian V were funded. Aberdeen EM was defunded

During November 2018 Onex V was funded.

During October 2018 GoldenTree Offshore was defunded. GEM RLTY EVERGREEN was funded.

During September 2018 PineBridge High Yield, Resolute Fund VI, and Kayne Anderson SCC were funded. Guggenheim Global High Yield and DFA US Target Value were defunded.

During August 2018 CVC VII was funded.

During July 2018 NEW ROCK CORE FUND was funded. BPG Investment Partnership VIII was defunded.

During June 2018 Altaris Con Partners IV and Altaris Health Partners IV were funded.

During May 2018 BEP Legacy A was funded and EnerVest Energy XII was defunded.

During April 2018 Acadian International Equity and Helm & Frid Spock 1 were funded. RBC, KBI and Brevan Howard LP were defunded.

During March 2018 Samlyn Onshore Fund was defunded.

During February 2018 Highline Capital Partners and KRG Capital Fund IV were defunded.

During December 2017 PIMCO Commodities was funded. Selene I, Taconic Opportunity Fund and Pradium Fund VII were defunded.

During November 2017 PIMCO TIPS and NGP XII were funded.

During October 2017 Eagle Point and Cerberus Global RPL were funded.

During September 2017 Sarofim and MINA III were funded.

During August 2017 Cheyne V, Rockpoint Fund II and Starwood Global Opportunity Fund XI were funded; Fountainvest Fund II, Tillridge and Capula were defunded.

During July 2017 Petershill and EnCap XI were funded; Davidson Kempner, Graham Global and LIM Asia Multi-Strategy were defunded.

During June 2017 BlackRock Real Estate Transition was defunded.

During May 2017 JCAM Global Fund, Pershing Square L.P. and Lynx (Bermuda) Ltd. were defunded.

During April 2017 DFA REIT, Security Capital REIT and BlackRock REIT Transition were funded. BlackRock REIT, LaSalle REIT, Morgan Stanley REIT and SSGA Russell 1000 were defunded.

During March 2017 Tennenbaum and RCP Fund of One were funded.

During February 2017 FountainVest Fund II was funded.

During January 2017 Tillridge and Antin III were funded.



During December 2016 Harrison Street VI, Ellington HF, Charterhouse Capital Partners X and TCV IX LP were funded.

During November 2016 Napier Park L.P. was funded.

During October 2016 BlackRock MSCI ACWI Minimum Volatility and Perella Weinberg III Fund were funded. Pelican Value Equity was defunded.

During September 2016 SSGA ACWI IMI Index Fund, European Real Estate Debt III, and Rockwood Capital Real Estate Partners X were funded.

During August 2016 ACM II & Deutsche Listed Infrastructure were funded.

During July 2016 DFJ Fund XII, L.P. was funded

During June 2016 Pine Bridge Passport I was funded.

During May 2016 Brookfield Infrastructure Fund III was funded.

During March 2016 KSL Capital Partners Fund IV was funded.

During February 2016 Century Focused Fund IV was funded.

During January 2016 Carlyle Power Partners IO was funded.

During December 2015 RRJ Capital Master Fund III L.P. and Warburg Pincus PE XII were funded.

During November 2015 Madison RE Debt Fund III was funded.

During October 2015 CVC Global Credit Opportunities and Guggenheim Global High Yield were funded.

During September 2015 Atalaya SOF VI and Kelso Investment Advisors IX were funded

During July 2015 Lazard Emerging Market Debt, Ardian Infrastructure IV, AQR Alphaport was funded.

During June 2015 Athyrium Opportunities Fund II, L.P. was funded.

During May 2015 IFM Global Infrastructure Fund, L.P. was funded.

During March 2015 Harrison Street Real Estate Partners V was funded.

During January 2015 Paine & Partners was funded.

During January 2015 Kleinwort Benson Dividend Plus strategy changed its product name to "Kleinwort Benson EAFE Developed Equity" strategy.

During December 2014 Garrison Opportunity Fund IV A LLC and KKR Global Infrastructure Investors II L.P. was funded.

During November 2014 Onex Partners IV L.P. and NGP Natural Resources XI, L.P. was funded

During September 2014 GTCR Fund XI L.P. was funded.

During August 2014 The Resolute Fund III L.P., Wheelock Street Real Estate Fund II LLC, Parametric Clifton were funded.

During July 2014 EnCap Flatrock Midstream Fund III L.P. was funded.

During June 2014 Harvest MLP – Alpha was funded.

During February 2014 TPG Opp Fund III was funded.

During January 2014 Lime Rock III was funded.

During December 2013 Denham Coinvestment IX was funded.

During November 2013 Brookfield Infrastructure II and Carlyle Partners VI was funded.

During February 2013, Wayzata Opportunities III and IVP XIV were funded.



# Wilshire Consulting

## Footnotes



During January 2013, Encap Energy Capital Fund IX was funded. During December 2012, Linsalata Capital Partners VI and Rockwood Capital RE IX were funded. During November 2012, Lime Rock Partners VI was funded.

During September 2012, State Street International Alpha Select was liquidated. The account was fully liquidated in December 2012, but received tax reclaims in the amount of 1,232 in January 2013. Blackstone RE Partners VII, Highline Capital Partners, LP, and Saba Capital Partners, LP were funded along with the Market Neutral Composite.

During August 2012, Graham Global Investment Fund was funded.

During June 2012, MacKay Shields Core Investment Grade and New Enterprise Associates LP XIV were funded.

During May 2012, Prudential Core Plus was funded with proceeds from the liquidation of Western Asset Management US Core Full, which was fully liquidated in November 2012. Riverstone Global Energy & Power Fund V, LP was also funded.

During April 2012, Schroder International Small Companies and Denham Commodity Partners Fund VI were funded

During January 2012, NGP X, LP was funded.

During November 2011, OCM European Principal Opp Fund III, LP was funded.

During September 2011, Carlyle Realty Partners VI (CF) was funded

During August 2011, JP Morgan US Small Cap Growth and Hellman & Friedman Cap Ptnr VIII were funded.

During July 2011, GTCR Fund X was funded

During April 2011, Manulife Strategic Fixed Income and F. Templeton Global Multi-Sector Plus were funded.

During March 2011, PIMCO Total Return Full Authority was funded and F. Templeton Opp Core Plus (Fiduciary Trust) was liquidated.

During December 2010, Northern Trust EAFE Index and State Street Emerging Markets Index were liquidated and Northern Trust ACW Ex US Index was funded. Additionally, assets were transitioned through Credit Suisse ACWI Ex US Transition Account. This account was subsequently used to manage the liquidation of Artio International II, which took place in April 2011. Artio International Equity II was fully liquidated in February 2012, but it received tax reclaims in the amount of 1,697 in January 2013. During September 2010, BlackRock EAFE Transition Account was incepted to manage the transition from Domestic Equity to EAFE. This account was subsequently used to manage the liquidation of Loomis Sayles High Yield Conservative, which took place in March 2011. Accordingly, the transition account has been reclassified as fixed income and renamed to BlackRock Manulife Transition Account. During June 2012, the transition account was used to manage the funding of MacKay Shields Core Investment Grade. During September 2012, the transition account was used to manage the liquidation of State Street International Alpha Select and has since been reclassified as international equity and renamed to BlackRock Transition Account. During October 2013, Wellington Emerging Markets was terminated and the assets were moved to the BlackRock Transition Account and then Aberdeen Emerging Markets. During March 2014, CS McKee and Russell 1000 Growth was defunded and the assets were moved to the BlackRock Transition Account. There is currently \$0 in the transition account.

# Glossary

Term	Definition
<b>Absolute Return</b>	An investment in a fund with a goal of consistent positive returns, one sub-category is referred to as “market neutral”
<b>Actual Allocation</b>	The actual current percentage weightings of a portfolio
<b>Alpha</b>	A measure of performance on risk-adjusted basis. Alpha takes the volatility of a fund and compares its risk-adjusted performance to a benchmark index. The excess return of the fund relative to the return of the benchmark index is a fund’s alpha.
<b>Arithmetic Excess</b>	Excess return calculated by simply subtracting manager’s return from index return for same period
<b>Asset Allocation Effect (Group Weight)</b>	Variance attributable to asset allocation decisions, deviations from target policy.
<b>Beta</b>	Volatility of portfolio versus market. Beta = 1: portfolio will move with the market. Beta < 1: portfolio will be less volatile than market.
<b>Duration</b>	Duration is a measure of the price volatility of fixed income securities. The greater the duration of the product, the greater its percentage value volatility. Options include: 1) short/cash duration focus of 0-3 years; 2) intermediate duration focus of 3-5 years; 3) core/market duration focus of 5-7 years; 4) long duration focus of 7+ years.
<b>Geometric Excess</b>	Excess return calculated using the following formula: $(1 + \text{Manager}) / (1 + \text{Index}) - 1$
<b>Holdings-based Attribution</b>	US Equity, Non-US Equity, and Fixed Income tables are holdings-based. The table details various attribution subcategories which impacted each manager’s performance such as: selection, weighting, duration, yield, quality, etc.
<b>Information Ratio</b>	A ratio of portfolio returns above the returns of a benchmark (usually an index) to the volatility of those returns. The information ratio (IR) measures a portfolio manager’s ability to generate excess returns relative to a benchmark, but also attempts to identify the consistency of the investor. In other words, a measure of risk-adjusted return of actively managed portfolio. This ratio will identify if a manager has beaten the benchmark by a lot in a few months or a little every month. The higher the IR, the more consistent a manager is and consistency is an ideal trait. Defined as amount of excess return per unit of excess risk taken, as in $IR = \text{excess return (“alpha”)} / \text{tracking error (excess risk)}$ .
<b>Interaction Effect (Selection)</b>	Part of return variance that cannot be attributed solely to Asset Allocation Effect or Manager Performance. Mathematically, Interaction is the product of each group’s active weight (i.e., over/underweight) and active return (i.e., out/underperformance). For example, a group with an overweight that outperformed its benchmark would contribute positively to Interaction.
<b>Internal Rate of Return (IRR)</b>	The discount rate often used in capital budgeting that makes the net present value of all cash flows from a particular project equal to zero. A preferred method of calculating Private Equity performance
<b>R-squared</b>	A statistical measure that describes how much of the fund’s movements are explained by movements in an index. Its value ranges from 0 to 1.00. An R-squared of 1.00 means that all movements of a fund are completely explained by movements in the index. A fund with a low R-squared does not act much like the index.

# Glossary, continued

Term	Definition
<b>Semi-Variance</b>	Measure of variability (or dispersion) of all returns that fall <u>below</u> mean. Measures only downside risk, or negative asset class or alpha returns. Estimates average loss that portfolio could incur.
<b>Sharpe Ratio</b>	A risk-adjusted measure calculated by using standard deviation and excess return to determine reward per unit of risk. The higher the Sharpe Ratio, the better the fund's historical risk-adjusted performance. For example, the one-year Sharpe Ratio, defined as the one-year return of the product minus the risk-free rate (90 day T-Bill), divided by the standard deviation of the product returns.
<b>Standard Deviation</b>	A measure of variability (or dispersion) of returns around mean return. A low standard deviation (e.g., 5%) indicates returns tend to be very close to mean return, whereas high standard deviation (e.g., 20%) indicates returns can be far from mean return. A manager with a one-year return of 5% and a standard deviation of 5 indicates the range of returns for this manager will likely fall between 0% and 10% during most annual time periods.
<b>Time Weighted Return</b>	The actual rate of return or earnings for the particular period, adjusted for cash flow additions or deletions
<b>Total Alpha</b>	Total Variance: sum of Asset Allocation, Interaction, Manager Performance, and Trading.
<b>Total Return</b>	The return of a particular portfolio that includes both increases or decreases in asset values as well as dividends received
<b>Tracking Error</b>	Standard deviation of excess return. Measure of closely portfolio follows index to which it is benchmarked. Traditional actively managed portfolio has higher tracking error (i.e., >4%). Passively managed portfolio has tracking error close to zero. / A measure of the difference between returns of the portfolio and that of the benchmark it was attempting to imitate; reported as a "standard deviation percentage" difference.
<b>Trading Effect</b>	Difference between buy/hold and total return.
<b>TUCS (Trust Universe Comparison Service)</b>	A collaborative effort between Wilshire Associates and custodial organizations. Custodians submit asset positions and performance data to be pooled into universes of managed tax-exempt portfolios. TUCS is a widely accepted benchmark for the performance of institutional assets.
<b>Variance</b>	Refers to the amount of movement in prices of a particular portfolio; a portfolio that moves a lot has a higher variance

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