



# Quarterly Investment Performance Analysis

Kentucky Retirement Systems

Period Ended: March 31, 2017



**First Quarter Economic Environment**

**Key Economic Indicators**

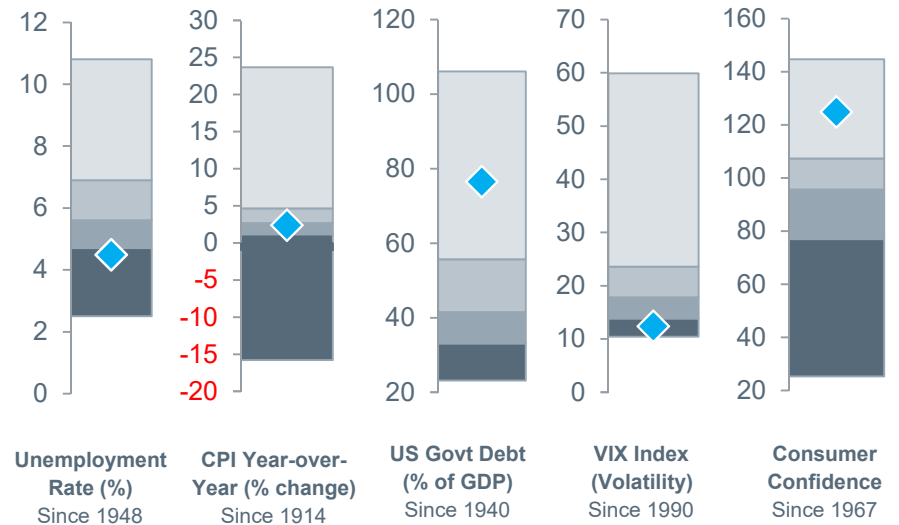
Global risk assets rallied during the first quarter of 2017, driven largely by continued positive expectations for US fiscal policy, as well as continued improvements in global economic growth and inflation, more broadly. Duration sensitive assets, however, traded with less conviction and direction, as sovereign debt yields of developed economies ended the quarter relatively unchanged.

Globally, commodities were mixed, but traded down as a broad category, and the dollar weakened against a trade weighted basket of currencies. Oil prices declined during the quarter, as increased US shale production offset production cuts announced by OPEC in November of last year. In the US, the new administration provided few details regarding proposed pro-growth policies, which may include infrastructure spending, tax reform, and easing of regulations. Nevertheless, elevated valuations in domestic equity markets suggested that investors anticipate positive changes and are comfortable with near-term equity risk.

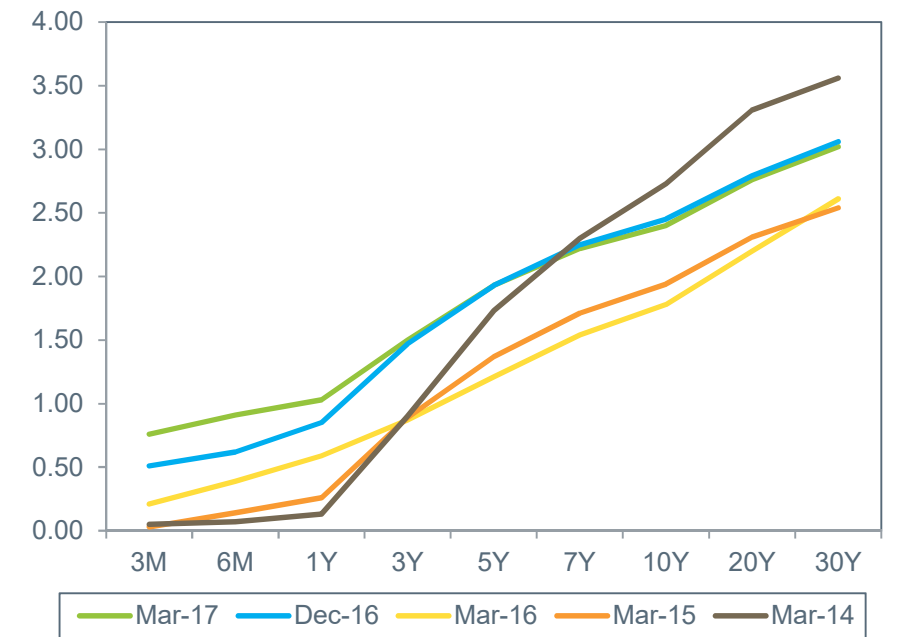
| Economic Indicators           | Mar-17    | Dec-16  | Mar-16  | Mar-14  | 20 Yr |
|-------------------------------|-----------|---------|---------|---------|-------|
| Federal Funds Rate (%)        | 0.82 ▲    | 0.55    | 0.25    | 0.06    | 2.29  |
| Breakeven Infl. - 1 Yr (%)    | 2.06 ▲    | 1.27    | 2.10    | 1.79    | N/A   |
| Breakeven Infl. - 10 Yr (%)   | 1.98 ▲    | 1.97    | 1.63    | 2.14    | N/A   |
| CPI YoY (Headline) (%)        | 2.4 ▲     | 2.1     | 0.9     | 1.5     | 2.2   |
| Unemployment Rate (%)         | 4.5 ▼     | 4.7     | 5.0     | 6.7     | 6.0   |
| Real GDP YoY (%)              | 1.9 ▼     | 2.0     | 1.6     | 1.6     | 2.3   |
| PMI - Manufacturing           | 57.20 ▲   | 54.50   | 51.70   | 55.00   | 52.24 |
| USD Total Wtd Idx             | 94.01 ▼   | 95.76   | 89.73   | 76.63   | 86.89 |
| WTI Crude Oil per Barrel (\$) | 50.6 ▼    | 53.7    | 38.3    | 101.6   | 56.4  |
| Gold Spot per Oz (\$)         | 1,249.4 ▲ | 1,152.3 | 1,232.7 | 1,284.0 | 795.0 |

| Market Performance (%) | QTD   | CYTD  | 1 Yr  | 5 Yr  | 10 Yr |
|------------------------|-------|-------|-------|-------|-------|
| S&P 500 (Cap Wtd)      | 6.07  | 6.07  | 17.17 | 13.30 | 7.51  |
| Russell 2000           | 2.47  | 2.47  | 26.22 | 12.35 | 7.12  |
| MSCI EAFE (Net)        | 7.25  | 7.25  | 11.67 | 5.83  | 1.05  |
| MSCI EAFE SC (Net)     | 7.97  | 7.97  | 10.99 | 9.20  | 3.03  |
| MSCI Emg Mkts (Net)    | 11.44 | 11.44 | 17.21 | 0.81  | 2.72  |
| Bloomberg US Agg Bond  | 0.82  | 0.82  | 0.44  | 2.34  | 4.27  |
| BofA ML 3 Mo US T-Bill | 0.10  | 0.10  | 0.36  | 0.14  | 0.68  |
| NCREIF ODCE (Gross)    | 1.77  | 1.77  | 8.34  | 11.98 | 5.59  |
| Wilshire US REIT       | 0.03  | 0.03  | 1.98  | 9.76  | 4.42  |
| HFRI FOF Comp          | 2.39  | 2.39  | 6.23  | 3.22  | 1.24  |
| Bloomberg Cmdty (TR)   | -2.33 | -2.33 | 8.69  | -9.54 | -6.22 |

**Key Economic Indicators**



**Treasury Yield Curve (%)**



Treasury data courtesy of the US Department of the Treasury. Economic data courtesy of Bloomberg Professional Service. Breakeven Inflation does not have 20 years of history; therefore, its 20-year average is shown as N/A.

# Kentucky Retirement Systems

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Kentucky Retirement Systems - Pension Plan  
Asset Allocation & Performance

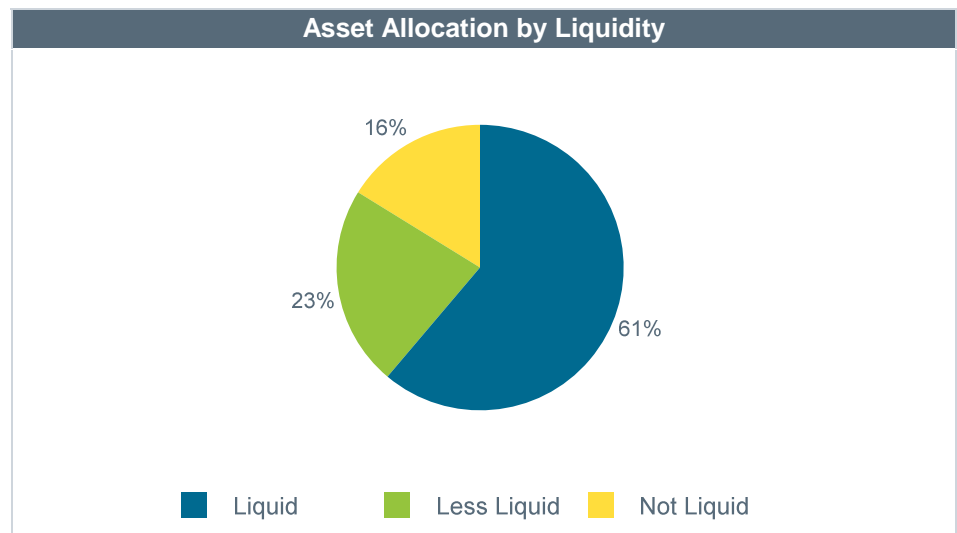
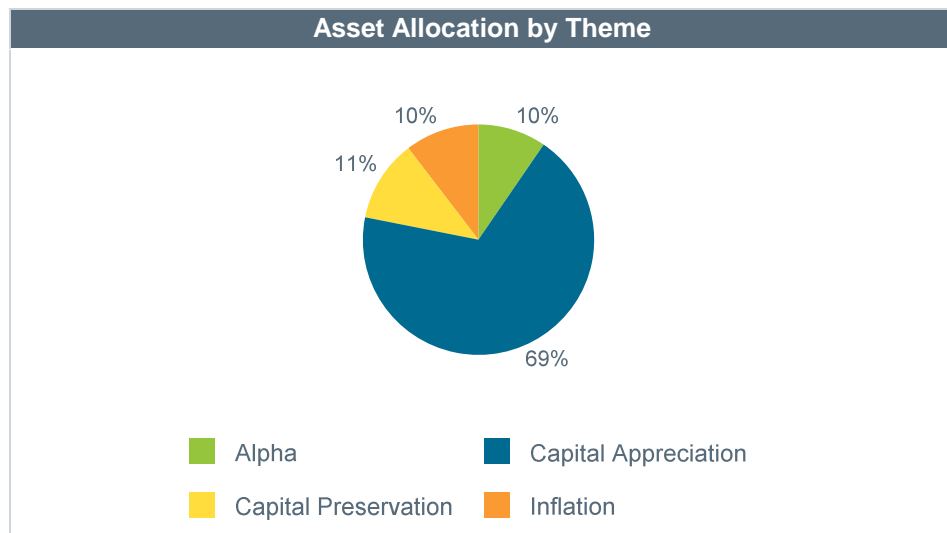
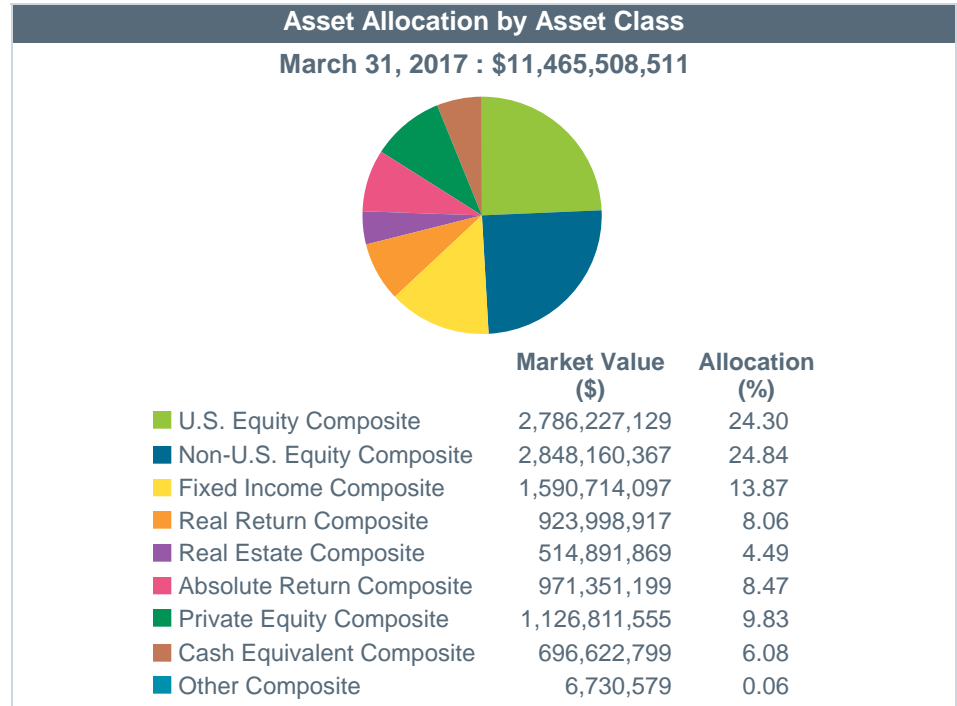
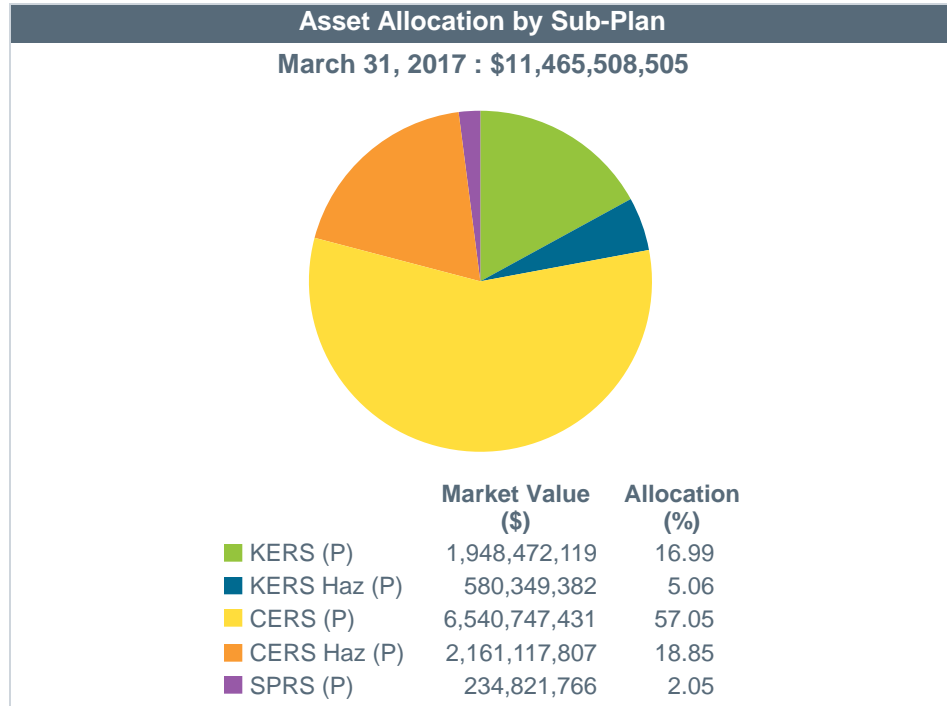
As of March 31, 2017

| Asset Allocation & Performance             |                       |               |                 |
|--|-----------------------|---------------|-----------------|
|  | Allocation            |               | Performance (%) |
|  | Market Value (\$)     | %             | FYTD            |
| <b>Total Fund</b>                          | <b>11,465,508,511</b> | <b>100.00</b> | <b>9.93</b>     |
| <b>U.S. Equity Composite</b>               | <b>2,786,227,129</b>  | <b>24.30</b>  | <b>14.95</b>    |
| River Road Asset Management (SA)           | 55,451,226            | 0.48          | 13.99           |
| River Road FAV (SA)                        | 118,961,813           | 1.04          | 21.62           |
| Westfield Capital (SA)                     | 148,238,054           | 1.29          | 17.17           |
| Scientific Beta                            | 327,168,192           | 2.85          | 11.17           |
| Internal S&P 500 Index (SA)                | 1,307,117,608         | 11.40         | 14.39           |
| Internal US Mid Cap (SA)                   | 302,895,325           | 2.64          | 16.13           |
| Systematic Financial Management (SA)       | 297,102,496           | 2.59          | 18.44           |
| NT Structured Small Cap (SA)               | 229,243,677           | 2.00          | 19.99           |
| Pension Transition                         | 15,674                | 0.00          | 4.45            |
| <b>Non-U.S. Equity Composite</b>           | <b>2,848,160,367</b>  | <b>24.84</b>  | <b>13.13</b>    |
| Lazard Int'l Strategic Equity (SA)         | 502,622,844           | 4.38          | 7.13            |
| LSV Int'l Concentrated Value Equity (SA)   | 465,506,162           | 4.06          | 20.37           |
| BTC ACWI Ex US Fund (CF)                   | 1,190,934,702         | 10.39         | 14.11           |
| American Century Non-US Growth Equity (SA) | 314,419,566           | 2.74          | 8.48            |
| Franklin Templeton Non-US Equity (SA)      | 227,482,368           | 1.98          | 15.28           |
| NT Int'l Sm Cap Eq Index (SA)              | 141,011,355           | 1.23          | 13.60           |
| Non-US Transition Account                  | 1,790,132             | 0.02          | -4.85           |
| <b>Fixed Income Composite</b>              | <b>1,590,714,097</b>  | <b>13.87</b>  | <b>4.80</b>     |
| NISA Core Agg Fixed Income (SA)            | 294,455,654           | 2.57          | -1.64           |
| Cerberus KRS Levered Loan Opps, L.P.       | 85,084,917            | 0.74          | 6.37            |
| Columbia HY Fixed Income (SA)              | 255,517,602           | 2.23          | 7.83            |
| Marathon Bluegrass Credit Fund             | 307,122,801           | 2.68          | 12.49           |
| Shenkman Capital (SA)                      | 87,454,484            | 0.76          | 5.93            |
| Waterfall (SA)                             | 146,123,228           | 1.27          | 13.01           |
| Manulife Asset Mgmt (SA)                   | 414,524,631           | 3.62          | 1.20            |
| <b>Real Return Composite</b>               | <b>923,998,917</b>    | <b>8.06</b>   | <b>6.84</b>     |
| Internal TIPS (SA)                         | 94,344,726            | 0.82          | 0.55            |
| Nuveen Real Asset Income (SA)              | 216,122,165           | 1.88          | 4.72            |
| PIMCO:All Asset;Inst (PAAIX)               | 336,724,508           | 2.94          | 8.73            |
| Tortoise Capital (CF)                      | 82,141,383            | 0.72          | 10.73           |
| Amerra Ag Fund II (CF)                     | 27,815,965            | 0.24          | 1.84            |
| Amerra-AGRI Holding (CF)                   | 44,859,055            | 0.39          | 2.32            |
| BTG Pactual Brazil Timberland Fund I, L.P. | 8,507,011             | 0.07          | 10.86           |
| Magnetar MTP Energy Fund, L.P.             | 79,369,781            | 0.69          | 11.40           |
| Magnetar MTP EOF II, L.P.                  | 18,794,581            | 0.16          | 16.04           |
| Oberland Capital Healthcare, L.P.          | 1,267,261             | 0.01          | -5.87           |
| Taurus Mining Finance Fund                 | 13,094,032            | 0.11          | 20.18           |
| Tenaska Power Fund II (CF)                 | 958,448               | 0.01          | 13.12           |

| Asset Allocation & Performance             |                      |             |                 |
|--|----------------------|-------------|-----------------|
|  | Allocation           |             | Performance (%) |
|  | Market Value (\$)    | %           | FYTD            |
| <b>Real Estate Composite</b>               | <b>514,891,869</b>   | <b>4.49</b> | <b>7.47</b>     |
| H/2 Credit Partners (CF)                   | 80,638,732           | 0.70        | 10.47           |
| Harrison Street Core (CF)                  | 75,104,433           | 0.66        | 6.46            |
| Mesa West Core Lending, L.P.               | 58,289,220           | 0.51        | 6.73            |
| Mesa West IV, L.P.                         | 4,986,644            | 0.04        | N/A             |
| Prologis Targeted U.S. Logistics Fund (CF) | 62,145,233           | 0.54        | 10.96           |
| Stockbridge SmtMkts, L.P.                  | 81,203,111           | 0.71        | 7.03            |
| DivcoWest Fund IV, L.P.                    | 9,721,651            | 0.08        | 26.57           |
| Greenfield Acquisition Partners VI, L.P.   | 17,312,695           | 0.15        | 1.25            |
| Greenfield Acquisition Partners VII, L.P.  | 25,729,430           | 0.22        | 10.04           |
| Lubert Adler Real Estate Fund VII, L.P.    | 33,644,293           | 0.29        | 5.60            |
| Patron Capital V, L.P.                     | 4,075,579            | 0.04        | N/A             |
| Rubenstein Properties Fund II, L.P.        | 15,205,502           | 0.13        | 2.37            |
| Walton Street Real Estate Fund VI, L.P.    | 15,716,507           | 0.14        | -5.46           |
| Walton Street Real Estate Fund VII, L.P.   | 29,464,221           | 0.26        | 8.67            |
| <b>Absolute Return Composite</b>           | <b>971,351,199</b>   | <b>8.47</b> | <b>4.94</b>     |
| BAAM (SA)                                  | 37,403,580           | 0.33        | 3.88            |
| Davidson-Kemper, L.P.                      | 46,327,442           | 0.40        | 6.24            |
| PAAMCO (SA)                                | 9,236,034            | 0.08        | -0.01           |
| Prisma Capital Partners (SA)               | 531,895,743          | 4.64        | 4.61            |
| Senator Investment Group, L.P.             | 22,685,700           | 0.20        | N/A             |
| Tourbillon Global Master Fund, Ltd         | 27,013,671           | 0.24        | 6.29            |
| Anchorage Capital                          | 26,494,712           | 0.23        | N/A             |
| Blackrock GAO Fund, Ltd (CF)               | 28,400,286           | 0.25        | N/A             |
| Coatue Qualified Partners, L.P.            | 18,082,918           | 0.16        | 13.62           |
| DSAM Fund, L.P.                            | 15,313,790           | 0.13        | 2.20            |
| Finisterre Global Op                       | 19,261,658           | 0.17        | N/A             |
| Glenview Capital (CF)                      | 18,837,604           | 0.16        | 20.05           |
| HBK II (CF)                                | 44,266,933           | 0.39        | 5.49            |
| Knighthead Capital (CF)                    | 12,064,997           | 0.11        | 12.82           |
| LibreMax Capital (CF)                      | 4,090,899            | 0.04        | 6.09            |
| Liquidalts H2O Force (CF)                  | 15,513,607           | 0.14        | N/A             |
| Luxor Capital (CF)                         | 13,137,472           | 0.11        | 29.88           |
| Myriad Opportunities                       | 30,965,834           | 0.27        | 4.60            |
| Pine River (CF)                            | 11,348,994           | 0.10        | 4.29            |
| QMS Diversified Global Macro (CF)          | 17,323,951           | 0.15        | -10.17          |
| Scopia PX, LLC                             | 21,685,374           | 0.19        | 5.23            |
| <b>Private Equity Composite</b>            | <b>1,126,811,555</b> | <b>9.83</b> | <b>6.81</b>     |
| <b>Cash Equivalent Composite</b>           | <b>696,622,799</b>   | <b>6.08</b> | <b>0.76</b>     |
| Cash Equivalents (SA)                      | 696,622,799          | 6.08        | 0.76            |
| <b>Other Composite</b>                     | <b>6,730,579</b>     | <b>0.06</b> | <b>N/A</b>      |

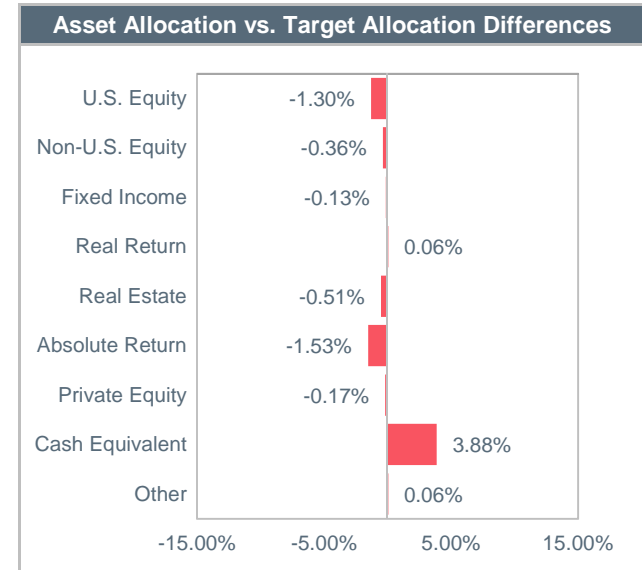
Performance shown is net of fees. Fiscal year ends June 30th. Allocations shown may not sum up to 100% exactly due to rounding. Other Composite consists of Perimeter Park (SA) and BNY fee accruals. Real Estate and Private Equity valuations shown are as of the most recent date available.





Allocations shown may not sum up to 100% exactly due to rounding. Totals shown may not match due to differences between BNY Mellon's performance and accounting departments. Other Composite consists of Perimeter Park (SA) and BNY fee accruals. The market value for KERS (P) excludes \$7,360,815 in an HB 62 escrow account.

| Asset Allocation vs. Target Allocation |                       |                      |                        |                       |                        |
|--|-----------------------|----------------------|------------------------|-----------------------|------------------------|
|  | Asset Allocation (\$) | Asset Allocation (%) | Minimum Allocation (%) | Target Allocation (%) | Maximum Allocation (%) |
| Total Fund                             | 11,465,508,511        | 100.00               | -                      | 100.00                | -                      |
| U.S. Equity Composite                  | 2,786,227,129         | 24.30                | 20.60                  | 25.60                 | 30.60                  |
| Non-U.S. Equity Composite              | 2,848,160,367         | 24.84                | 20.20                  | 25.20                 | 30.20                  |
| Fixed Income Composite                 | 1,590,714,097         | 13.87                | 10.00                  | 14.00                 | 18.00                  |
| Real Return Composite                  | 923,998,917           | 8.06                 | 6.00                   | 8.00                  | 10.00                  |
| Real Estate Composite                  | 514,891,869           | 4.49                 | 3.00                   | 5.00                  | 7.00                   |
| Absolute Return Composite              | 971,351,199           | 8.47                 | 8.00                   | 10.00                 | 12.00                  |
| Private Equity Composite               | 1,126,811,555         | 9.83                 | 7.00                   | 10.00                 | 13.00                  |
| Cash Equivalent Composite              | 696,622,799           | 6.08                 | 0.20                   | 2.20                  | 4.20                   |
| Other Composite                        | 6,730,579             | 0.06                 | -                      | -                     | -                      |



| Individual Plan Asset Allocation Monitor |          |          |          |          |           |
|--|----------|----------|----------|----------|-----------|
|  | KERS     | KERS Haz | CERS     | CERS Haz | SPRS      |
| U.S. Equity Composite                    | In Range | In Range | In Range | In Range | In Range  |
| Non-U.S. Equity Composite                | In Range | In Range | In Range | In Range | In Range  |
| Fixed Income Composite                   | In Range | In Range | In Range | In Range | In Range  |
| Real Return Composite                    | In Range | In Range | In Range | In Range | In Range  |
| Real Estate Composite                    | In Range | In Range | In Range | In Range | In Range  |
| Absolute Return Composite                | In Range | In Range | In Range | In Range | Under Min |
| Private Equity Composite                 | Over Max | In Range | In Range | In Range | In Range  |
| Cash Equivalent Composite                | Over Max | Over Max | Over Max | Over Max | Over Max  |
| Other Composite                          | In Range | In Range | In Range | In Range | In Range  |

Allocations shown may not sum to 100% exactly due to rounding. Other Composite consists of Perimeter Park (SA) and BNY fee accruals.  
 KERS Private Equity Composite is over the maximum allocation by 0.29%. This is an illiquid asset class and may take additional time to bring back into target range.  
 KERS Cash Equivalent Composite is over the maximum allocation by 1.01%.  
 KERS Haz Cash Equivalent Composite is over the maximum allocation by 2.17%.  
 CERS Cash Equivalent Composite is over the maximum allocation by 2.04%.  
 CERS Haz Cash Equivalent Composite is over the maximum allocation by 2.40%.  
 SPRS Absolute Return Composite is under the minimum allocation by 0.04%.  
 SPRS Cash Equivalent Composite is over the maximum allocation by 2.38%.

**Kentucky Retirement Systems - Pension Plan  
Plan Comparative Performance**

As of March 31, 2017

|                                      | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years  | 10<br>Years | 2016        | 2015         | 2014        | Since<br>Incep. | Inception<br>Date |
|--------------------------------------|-------------|-------------|--------------|--------------|-------------|-------------|-------------|-------------|--------------|-------------|-----------------|-------------------|
| <b>Total Fund</b>                    | <b>4.50</b> | <b>4.50</b> | <b>9.93</b>  | <b>11.37</b> | <b>4.93</b> | <b>7.12</b> | <b>4.85</b> | <b>7.84</b> | <b>-0.02</b> | <b>5.14</b> | <b>9.12</b>     | <b>04/01/1984</b> |
| Target Allocation Index (P)          | 4.37        | 4.37        | 9.64         | 11.86        | 5.45        | 7.54        | 5.34        | 7.97        | 0.75         | 5.84        | 9.28            |                   |
| Difference                           | 0.13        | 0.13        | 0.29         | -0.49        | -0.52       | -0.42       | -0.49       | -0.13       | -0.77        | -0.70       | -0.16           |                   |
| <b>KERS (P)</b>                      | <b>3.87</b> | <b>3.87</b> | <b>8.77</b>  | <b>10.18</b> | <b>4.59</b> | <b>6.92</b> | <b>4.75</b> | <b>6.49</b> | <b>0.61</b>  | <b>5.98</b> | <b>9.09</b>     | <b>04/01/1984</b> |
| Target Allocation Index (KERS P)     | 3.90        | 3.90        | 8.83         | 11.33        | 5.18        | 7.43        | 5.28        | 8.18        | 0.58         | 5.57        | 9.26            |                   |
| Difference                           | -0.03       | -0.03       | -0.06        | -1.15        | -0.59       | -0.51       | -0.53       | -1.69       | 0.03         | 0.41        | -0.17           |                   |
| <b>KERS Haz (P)</b>                  | <b>4.58</b> | <b>4.58</b> | <b>9.87</b>  | <b>11.25</b> | <b>4.97</b> | <b>7.15</b> | <b>4.87</b> | <b>8.01</b> | <b>0.03</b>  | <b>4.90</b> | <b>9.13</b>     | <b>04/01/1984</b> |
| Target Allocation Index (KERS Haz P) | 4.48        | 4.48        | 9.84         | 11.99        | 5.12        | 7.42        | 5.28        | 7.92        | 0.22         | 5.43        | 9.26            |                   |
| Difference                           | 0.10        | 0.10        | 0.03         | -0.74        | -0.15       | -0.27       | -0.41       | 0.09        | -0.19        | -0.53       | -0.13           |                   |
| <b>CERS (P)</b>                      | <b>4.65</b> | <b>4.65</b> | <b>10.23</b> | <b>11.68</b> | <b>5.00</b> | <b>7.16</b> | <b>4.87</b> | <b>8.16</b> | <b>-0.20</b> | <b>4.91</b> | <b>9.13</b>     | <b>04/01/1984</b> |
| Target Allocation Index (CERS P)     | 4.48        | 4.48        | 9.84         | 11.99        | 5.12        | 7.42        | 5.28        | 7.92        | 0.22         | 5.43        | 9.26            |                   |
| Difference                           | 0.17        | 0.17        | 0.39         | -0.31        | -0.12       | -0.26       | -0.41       | 0.24        | -0.42        | -0.52       | -0.13           |                   |
| <b>CERS Haz (P)</b>                  | <b>4.62</b> | <b>4.62</b> | <b>10.15</b> | <b>11.58</b> | <b>5.04</b> | <b>7.17</b> | <b>4.87</b> | <b>8.19</b> | <b>-0.10</b> | <b>4.92</b> | <b>9.13</b>     | <b>04/01/1984</b> |
| Target Allocation Index (CERS Haz P) | 4.48        | 4.48        | 9.84         | 11.99        | 5.12        | 7.42        | 5.28        | 7.92        | 0.22         | 5.43        | 9.26            |                   |
| Difference                           | 0.14        | 0.14        | 0.31         | -0.41        | -0.08       | -0.25       | -0.41       | 0.27        | -0.32        | -0.51       | -0.13           |                   |
| <b>SPRS (P)</b>                      | <b>4.23</b> | <b>4.23</b> | <b>9.23</b>  | <b>10.72</b> | <b>4.31</b> | <b>6.76</b> | <b>4.67</b> | <b>6.75</b> | <b>-0.41</b> | <b>4.96</b> | <b>9.07</b>     | <b>04/01/1984</b> |
| Target Allocation Index (SPRS P)     | 4.11        | 4.11        | 9.10         | 11.41        | 4.99        | 7.33        | 5.23        | 7.92        | 0.21         | 5.37        | 9.24            |                   |
| Difference                           | 0.12        | 0.12        | 0.13         | -0.69        | -0.68       | -0.57       | -0.56       | -1.17       | -0.62        | -0.41       | -0.17           |                   |

Performance shown is net of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. See the Addendum for the complete historical composition of custom indices.



**Kentucky Retirement Systems - Pension Plan  
Composite Comparative Performance**

As of March 31, 2017

|  | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>U.S. Equity Composite</b>                           | <b>4.98</b> | <b>4.98</b> | <b>14.95</b> | <b>17.70</b> | <b>8.89</b> | <b>12.50</b> | <b>14.10</b> | <b>-0.95</b> | <b>10.78</b> | <b>11.27</b>    | <b>04/01/1984</b> |
| Russell 3000 Index (P)*                                | 5.74        | 5.74        | 15.04        | 18.07        | 9.76        | 13.18        | 12.74        | 0.48         | 12.56        | 11.27           |                   |
| Difference   | -0.76       | -0.76       | -0.09        | -0.37        | -0.87       | -0.68        | 1.36         | -1.43        | -1.78        | 0.00            |                   |
| <b>Non-U.S. Equity Composite</b>                       | <b>7.98</b> | <b>7.98</b> | <b>13.13</b> | <b>11.62</b> | <b>1.21</b> | <b>5.14</b>  | <b>3.93</b>  | <b>-3.34</b> | <b>-4.12</b> | <b>2.50</b>     | <b>07/01/2000</b> |
| MSCI ACW Ex US Investable Mkt Index (Gross) (P)*       | 8.10        | 8.10        | 14.06        | 13.55        | 1.03        | 4.84         | 4.91         | -5.25        | -3.44        | 2.98            |                   |
| Difference   | -0.12       | -0.12       | -0.93        | -1.93        | 0.18        | 0.30         | -0.98        | 1.91         | -0.68        | -0.48           |                   |
| <b>Fixed Income Composite</b>                          | <b>1.59</b> | <b>1.59</b> | <b>4.80</b>  | <b>7.42</b>  | <b>4.51</b> | <b>4.54</b>  | <b>8.45</b>  | <b>0.48</b>  | <b>5.42</b>  | <b>7.69</b>     | <b>04/01/1984</b> |
| 50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (P)* | 1.90        | 1.90        | 4.73         | 8.95         | 5.36        | 4.24         | 10.38        | 0.43         | 5.56         | 7.51            |                   |
| Difference   | -0.31       | -0.31       | 0.07         | -1.53        | -0.85       | 0.30         | -1.93        | 0.05         | -0.14        | 0.18            |                   |
| <b>Real Return Composite</b>                           | <b>4.91</b> | <b>4.91</b> | <b>6.84</b>  | <b>12.96</b> | <b>2.84</b> | <b>2.80</b>  | <b>10.46</b> | <b>-5.96</b> | <b>3.20</b>  | <b>4.06</b>     | <b>07/01/2011</b> |
| Real Return Actual Allocation Index (P)*               | 2.56        | 2.56        | 3.19         | 8.23         | 2.20        | 2.81         | 7.22         | -4.07        | 2.95         | 2.96            |                   |
| Difference   | 2.35        | 2.35        | 3.65         | 4.73         | 0.64        | -0.01        | 3.24         | -1.89        | 0.25         | 1.10            |                   |
| <b>Real Estate Composite</b>                           | <b>2.99</b> | <b>2.99</b> | <b>7.47</b>  | <b>9.57</b>  | <b>8.97</b> | <b>9.35</b>  | <b>9.44</b>  | <b>8.89</b>  | <b>8.85</b>  | <b>5.93</b>     | <b>07/01/1984</b> |
| NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)              | 1.88        | 1.88        | 5.72         | 7.79         | 11.04       | 11.16        | 9.08         | 13.86        | 11.36        | 6.44            |                   |
| Difference   | 1.11        | 1.11        | 1.75         | 1.78         | -2.07       | -1.81        | 0.36         | -4.97        | -2.51        | -0.51           |                   |
| <b>Absolute Return Composite</b>                       | <b>1.53</b> | <b>1.53</b> | <b>4.94</b>  | <b>5.41</b>  | <b>1.50</b> | <b>4.65</b>  | <b>-0.25</b> | <b>1.70</b>  | <b>4.84</b>  | <b>4.04</b>     | <b>04/01/2010</b> |
| HFRI FOF: Dvf'd Index (1 Mo Lag)                       | 2.78        | 2.78        | 4.18         | 5.29         | 1.41        | 3.20         | -1.34        | 0.79         | 4.72         | 2.72            |                   |
| Difference   | -1.25       | -1.25       | 0.76         | 0.12         | 0.09        | 1.45         | 1.09         | 0.91         | 0.12         | 1.32            |                   |
| <b>Private Equity Composite</b>                        | <b>2.73</b> | <b>2.73</b> | <b>6.81</b>  | <b>7.77</b>  | <b>8.63</b> | <b>12.26</b> | <b>5.74</b>  | <b>11.15</b> | <b>16.20</b> | <b>10.74</b>    | <b>07/01/2002</b> |
| Private Equity Benchmark (P) [Short Term]              | 2.73        | 2.73        | 6.81         | 7.77         | 8.63        | 12.26        | 5.74         | 11.15        | 16.20        | 10.74           |                   |
| Difference   | 0.00        | 0.00        | 0.00         | 0.00         | 0.00        | 0.00         | 0.00         | 0.00         | 0.00         | 0.00            |                   |
| Russell 3000 Index+3% (Qtr Lag) (P)* [Long Term]       | 7.07        | 7.07        | 16.63        | 18.83        | 12.75       | 18.88        | 17.96        | 3.51         | 21.76        | 10.86           |                   |
| Difference   | -4.34       | -4.34       | -9.82        | -11.06       | -4.12       | -6.62        | -12.22       | 7.64         | -5.56        | -0.12           |                   |
| <b>Cash Equivalent Composite</b>                       | <b>0.18</b> | <b>0.18</b> | <b>0.76</b>  | <b>1.02</b>  | <b>0.47</b> | <b>0.47</b>  | <b>0.93</b>  | <b>0.20</b>  | <b>0.17</b>  | <b>3.68</b>     | <b>01/01/1988</b> |
| Citi 3 Mo T-Bill Index                                 | 0.12        | 0.12        | 0.27         | 0.34         | 0.15        | 0.12         | 0.27         | 0.03         | 0.02         | 3.23            |                   |
| Difference   | 0.06        | 0.06        | 0.49         | 0.68         | 0.32        | 0.35         | 0.66         | 0.17         | 0.15         | 0.45            |                   |

Performance shown is net of fees, except where noted. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices.

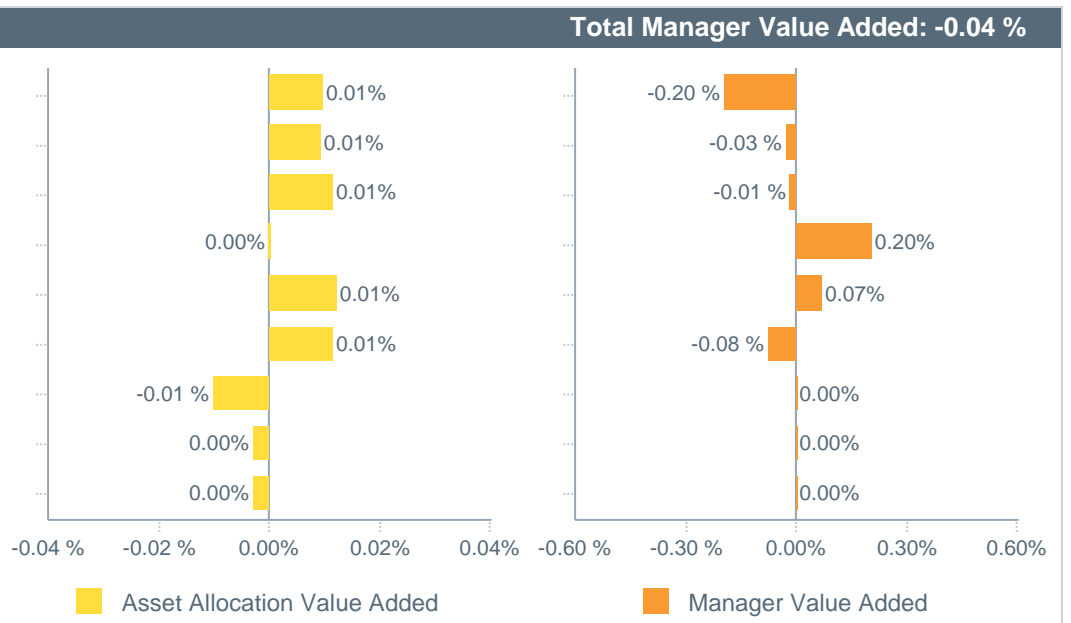
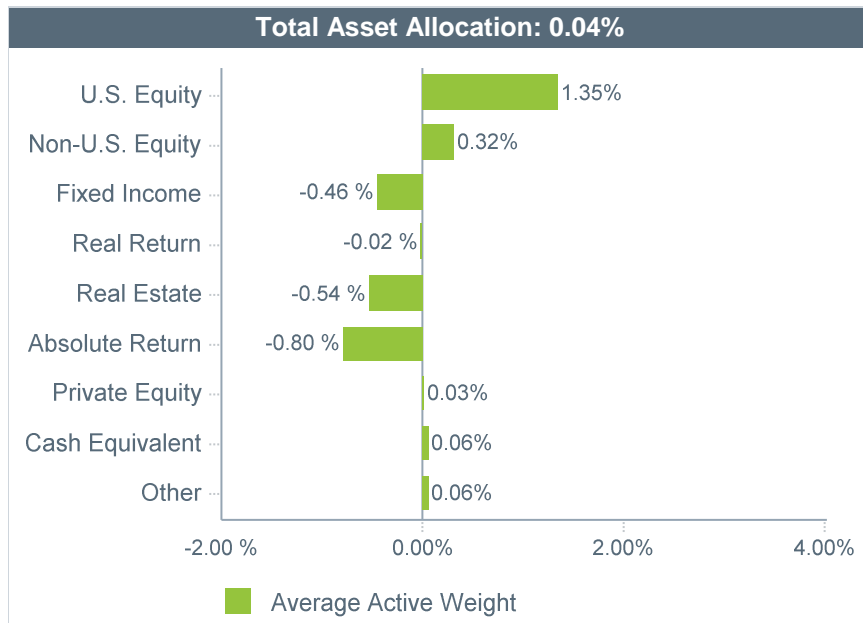
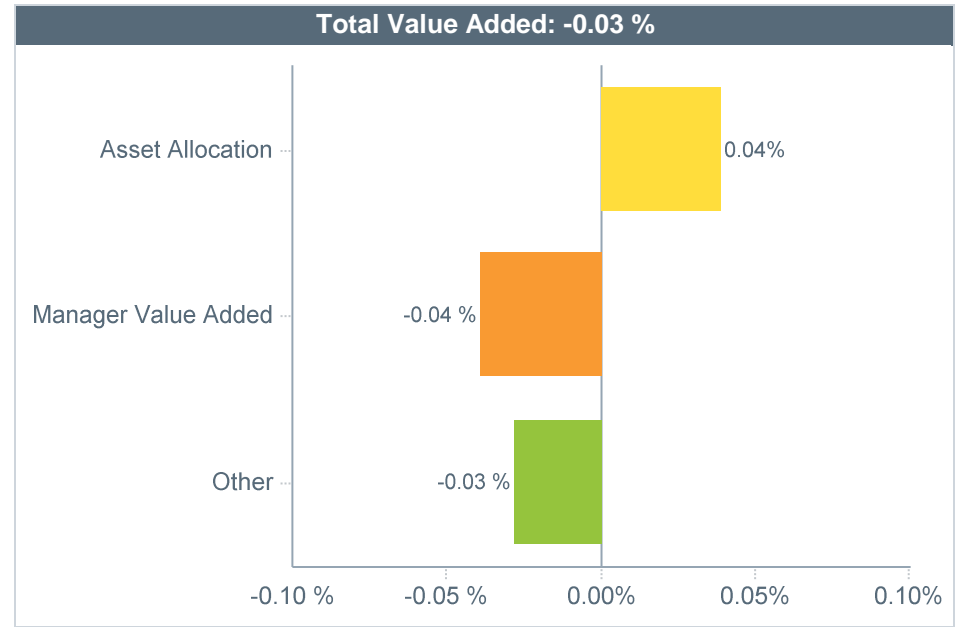
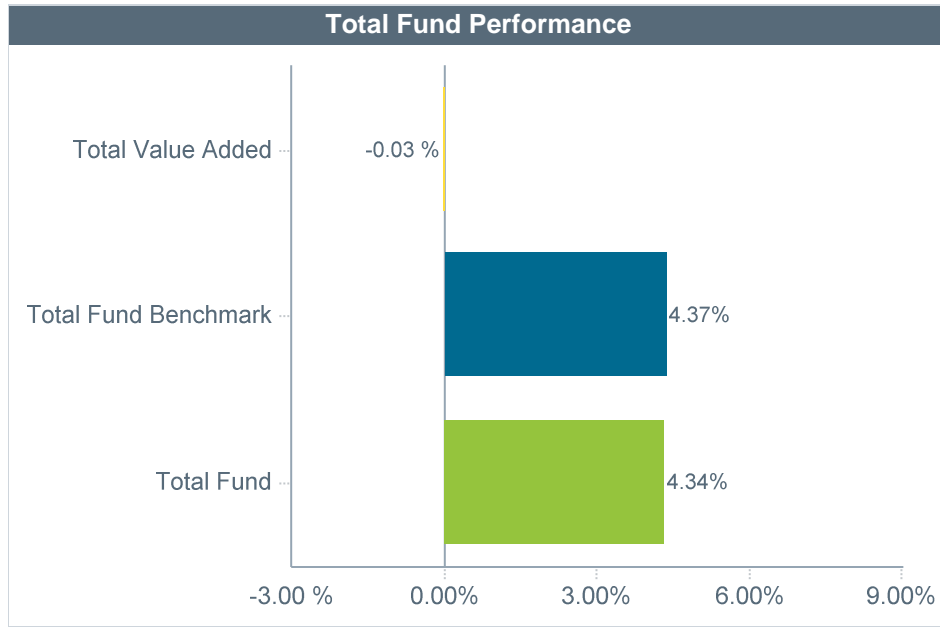


Kentucky Retirement Systems - Pension Plan  
Composite Comparative Performance

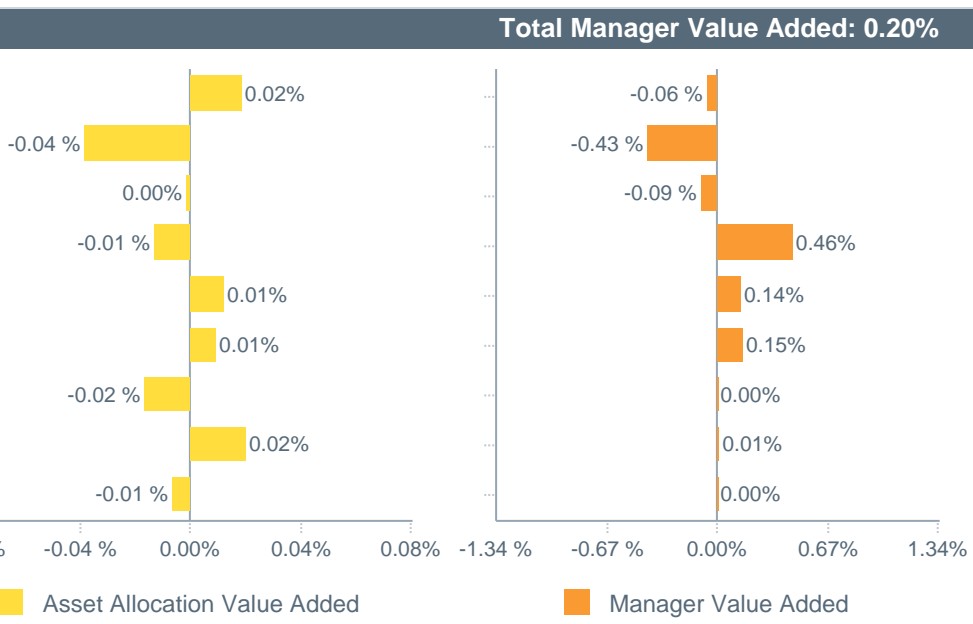
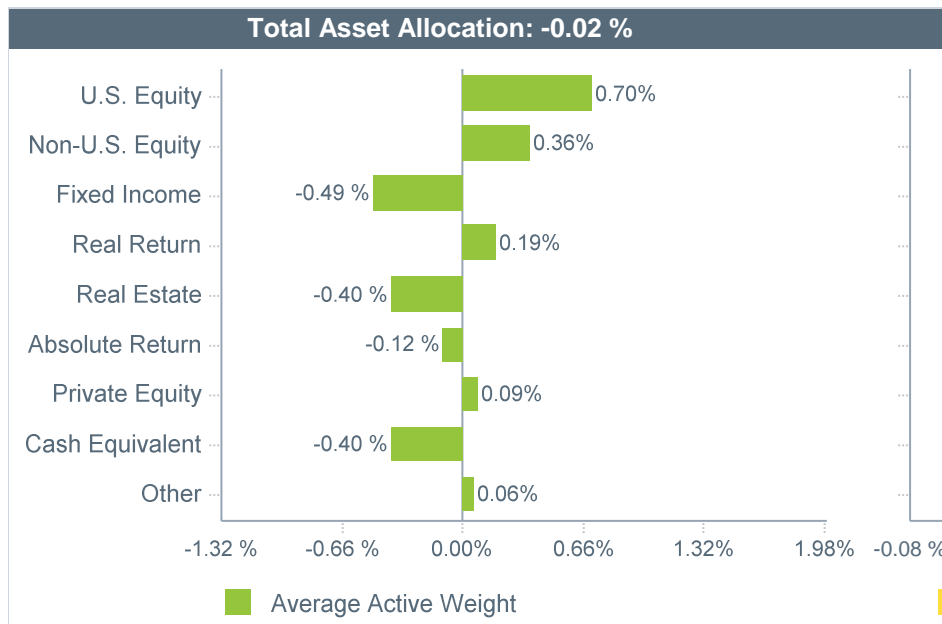
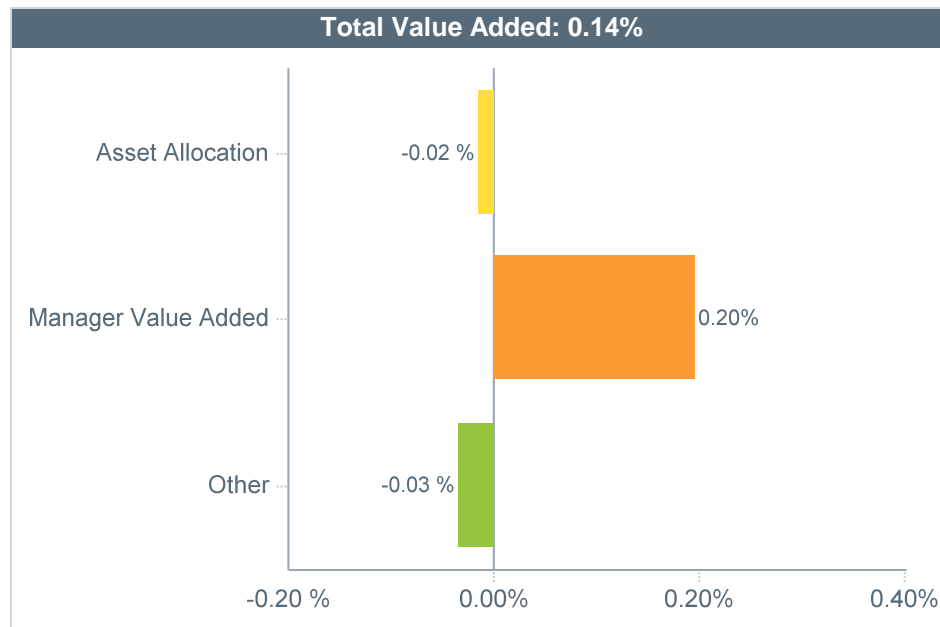
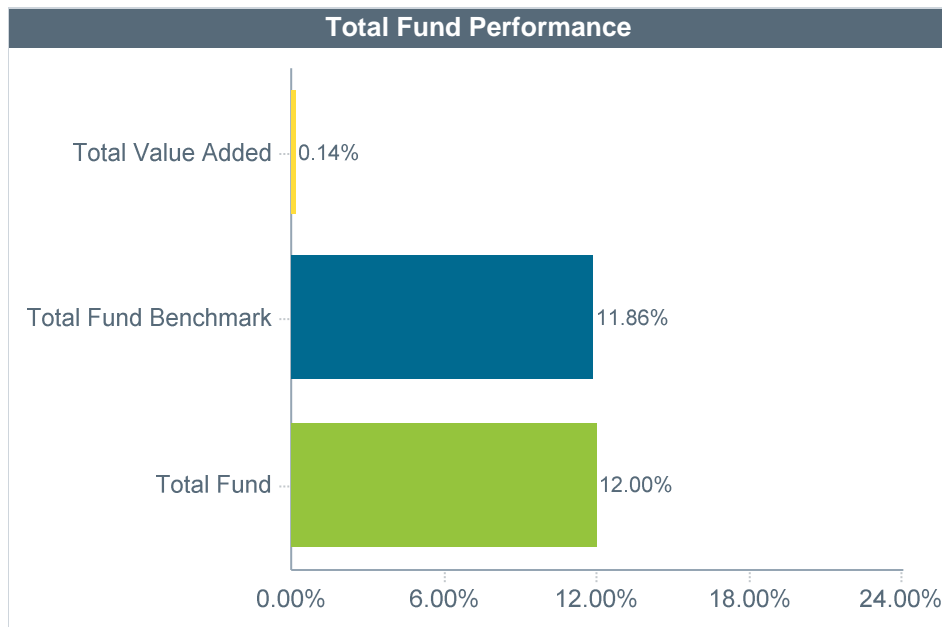
As of March 31, 2017

|  | 7<br>Years   | 10<br>Years | 12<br>Years | 15<br>Years | 20<br>Years | 25<br>Years |
|--|--------------|-------------|-------------|-------------|-------------|-------------|
| <b>U.S. Equity Composite</b>                           | <b>12.39</b> | <b>7.32</b> | <b>8.33</b> | <b>7.25</b> | <b>8.27</b> | <b>9.83</b> |
| Russell 3000 Index (P)*                                | 12.93        | 7.59        | 8.47        | 7.58        | 8.32        | 9.81        |
| Difference   | -0.54        | -0.27       | -0.14       | -0.33       | -0.05       | 0.02        |
| <b>Non-U.S. Equity Composite</b>                       | <b>3.76</b>  | <b>1.66</b> | <b>4.72</b> | <b>5.71</b> | <b>N/A</b>  | <b>N/A</b>  |
| MSCI ACW Ex US Investable Mkt Index (Gross) (P)*       | 4.36         | 1.44        | 4.72        | 6.03        | N/A         | N/A         |
| Difference   | -0.60        | 0.22        | 0.00        | -0.32       | N/A         | N/A         |
| <b>Fixed Income Composite</b>                          | <b>5.47</b>  | <b>5.33</b> | <b>5.13</b> | <b>5.58</b> | <b>5.99</b> | <b>6.18</b> |
| 50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (P)* | 5.02         | 5.36        | 5.13        | 5.61        | 6.00        | 6.20        |
| Difference   | 0.45         | -0.03       | 0.00        | -0.03       | -0.01       | -0.02       |
| <b>Real Return Composite</b>                           | <b>N/A</b>   | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  |
| Real Return Actual Allocation Index (P)*               | N/A          | N/A         | N/A         | N/A         | N/A         | N/A         |
| Difference   | N/A          | N/A         | N/A         | N/A         | N/A         | N/A         |
| <b>Real Estate Composite</b>                           | <b>10.95</b> | <b>7.00</b> | <b>6.72</b> | <b>6.66</b> | <b>5.94</b> | <b>5.27</b> |
| NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)              | 12.27        | 4.84        | 6.88        | 7.15        | 8.29        | 7.16        |
| Difference   | -1.32        | 2.16        | -0.16       | -0.49       | -2.35       | -1.89       |
| <b>Absolute Return Composite</b>                       | <b>4.04</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  |
| HFRI FOF: Dvf'd Index (1 Mo Lag)                       | 2.72         | 1.36        | 2.62        | 3.46        | 4.23        | 5.55        |
| Difference   | 1.32         | N/A         | N/A         | N/A         | N/A         | N/A         |
| <b>Private Equity Composite</b>                        | <b>12.39</b> | <b>6.39</b> | <b>9.35</b> | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  |
| Private Equity Benchmark (P) [Short Term]              | 12.39        | 6.39        | 9.35        | N/A         | N/A         | N/A         |
| Difference   | 0.00         | 0.00        | 0.00        | N/A         | N/A         | N/A         |
| Russell 3000 Index+3% (Qtr Lag) (P)* [Long Term]       | 15.32        | 10.63       | 10.71       | 9.88        | 9.40        | N/A         |
| Difference   | -2.93        | -4.24       | -1.36       | N/A         | N/A         | N/A         |
| <b>Cash Equivalent Composite</b>                       | <b>0.49</b>  | <b>1.17</b> | <b>1.76</b> | <b>1.74</b> | <b>2.59</b> | <b>3.02</b> |
| Citi 3 Mo T-Bill Index                                 | 0.11         | 0.61        | 1.20        | 1.24        | 2.13        | 2.59        |
| Difference   | 0.38         | 0.56        | 0.56        | 0.50        | 0.46        | 0.43        |

Performance shown is net of fees, except where noted. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices.



Performance shown is gross of fees. Calculation is based on monthly periodicity. Allocation to "Other" is the contribution of other residual factors, including market timing and cash flows.



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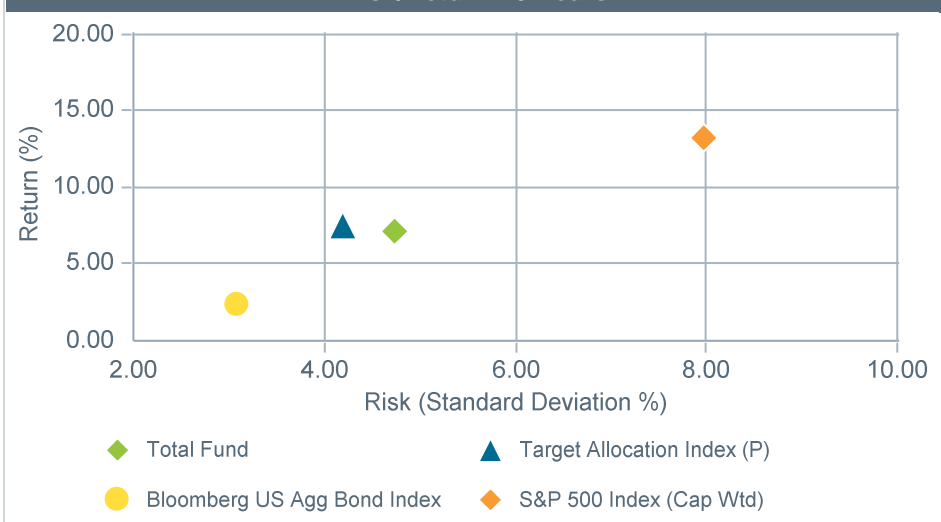
Historical Statistics - 5 Years

|                    | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|--------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Standard Deviation | 5.41       | 10.50                 | 12.53                     | 2.86                   | 5.34                  | 3.34                  | 3.15                      | 5.84                     | 0.22                      |
| Sharpe Ratio       | 1.28       | 1.17                  | 0.45                      | 1.52                   | 0.46                  | 2.67                  | 1.42                      | 1.99                     | 1.53                      |
| Downside Risk      | 3.07       | 5.88                  | 8.43                      | 1.65                   | 3.59                  | 0.07                  | 1.75                      | 0.13                     | 0.00                      |
| Excess Return      | 6.90       | 12.24                 | 5.68                      | 4.35                   | 2.47                  | 8.88                  | 4.47                      | 11.65                    | 0.33                      |

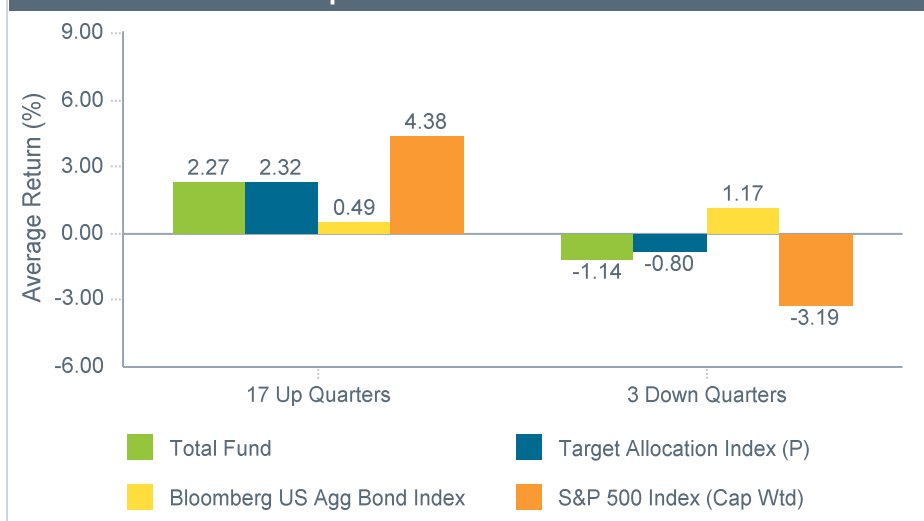
Correlation Matrix - 5 Years

|                           | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|---------------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Total Fund                | 1.00       |                       |                           |                        |                       |                       |                           |                          |                           |
| U.S. Equity Composite     | 0.89       | 1.00                  |                           |                        |                       |                       |                           |                          |                           |
| Non-U.S. Equity Composite | 0.95       | 0.80                  | 1.00                      |                        |                       |                       |                           |                          |                           |
| Fixed Income Composite    | 0.53       | 0.30                  | 0.47                      | 1.00                   |                       |                       |                           |                          |                           |
| Real Return Composite     | 0.65       | 0.39                  | 0.59                      | 0.78                   | 1.00                  |                       |                           |                          |                           |
| Real Estate Composite     | 0.00       | -0.12                 | -0.09                     | -0.17                  | 0.01                  | 1.00                  |                           |                          |                           |
| Absolute Return Composite | -0.07      | -0.13                 | -0.12                     | -0.26                  | -0.16                 | 0.12                  | 1.00                      |                          |                           |
| Private Equity Composite  | 0.01       | -0.11                 | -0.11                     | -0.22                  | -0.12                 | 0.66                  | 0.25                      | 1.00                     |                           |
| Cash Equivalent Composite | 0.06       | 0.06                  | 0.10                      | 0.10                   | 0.12                  | -0.14                 | -0.13                     | -0.14                    | 1.00                      |

Risk/Return - 5 Years



Up Down Market Bar Chart



Performance shown is net of fees. Calculation is based on quarterly periodicity. Excess return is measured against the BofA ML 3 Mo US T-Bill Index.

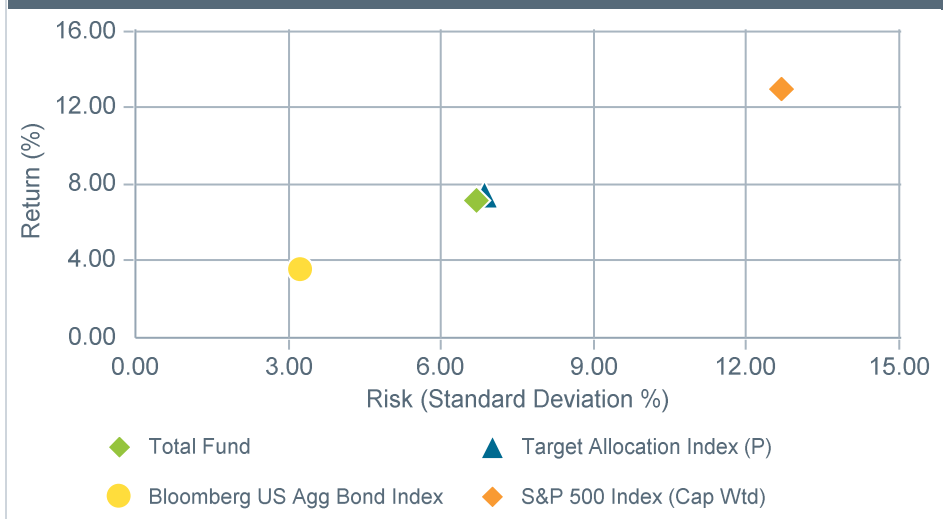
Historical Statistics - 7 Years

|                    | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|--------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Standard Deviation | 6.57       | 13.01                 | 14.59                     | 2.95                   | N/A                   | 4.29                  | 3.47                      | 5.64                     | 0.21                      |
| Sharpe Ratio       | 1.07       | 0.96                  | 0.32                      | 1.78                   | N/A                   | 2.43                  | 1.12                      | 2.08                     | 1.74                      |
| Downside Risk      | 3.82       | 7.64                  | 9.93                      | 1.59                   | N/A                   | 0.32                  | 2.10                      | 0.55                     | 0.00                      |
| Excess Return      | 7.03       | 12.45                 | 4.64                      | 5.26                   | N/A                   | 10.40                 | 3.90                      | 11.76                    | 0.36                      |

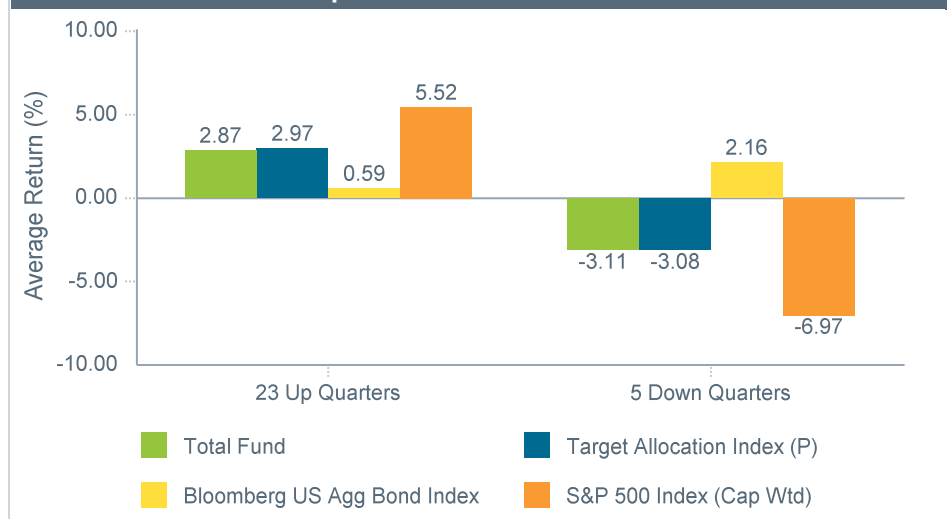
Correlation Matrix - 7 Years

|                           | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|---------------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Total Fund                | 1.00       |                       |                           |                        |                       |                       |                           |                          |                           |
| U.S. Equity Composite     | 0.93       | 1.00                  |                           |                        |                       |                       |                           |                          |                           |
| Non-U.S. Equity Composite | 0.96       | 0.86                  | 1.00                      |                        |                       |                       |                           |                          |                           |
| Fixed Income Composite    | 0.37       | 0.18                  | 0.37                      | 1.00                   |                       |                       |                           |                          |                           |
| Real Return Composite     | N/A        | N/A                   | N/A                       | N/A                    | N/A                   |                       |                           |                          |                           |
| Real Estate Composite     | -0.14      | -0.19                 | -0.17                     | -0.13                  | N/A                   | 1.00                  |                           |                          |                           |
| Absolute Return Composite | 0.04       | 0.03                  | -0.04                     | -0.29                  | N/A                   | 0.15                  | 1.00                      |                          |                           |
| Private Equity Composite  | -0.10      | -0.17                 | -0.21                     | -0.18                  | N/A                   | 0.49                  | 0.27                      | 1.00                     |                           |
| Cash Equivalent Composite | -0.02      | -0.04                 | 0.01                      | 0.10                   | N/A                   | -0.06                 | -0.13                     | -0.07                    | 1.00                      |

Risk/Return - 5 Years



Up Down Market Bar Chart



Performance shown is net of fees. Calculation is based on quarterly periodicity.  
 Excess return is measured against the BofA ML 3 Mo US T-Bill Index. Composites marked N/A have less history than the specified time period.

Historical Statistics - 10 Years

|                    | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|--------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Standard Deviation | 9.05       | 15.61                 | 17.88                     | 3.87                   | N/A                   | 5.20                  | N/A                       | 8.05                     | 0.49                      |
| Sharpe Ratio       | 0.49       | 0.49                  | 0.15                      | 1.18                   | N/A                   | 1.18                  | N/A                       | 0.72                     | 1.84                      |
| Downside Risk      | 6.48       | 10.87                 | 12.91                     | 2.45                   | N/A                   | 3.09                  | N/A                       | 4.95                     | 0.00                      |
| Excess Return      | 4.48       | 7.65                  | 2.60                      | 4.60                   | N/A                   | 6.24                  | N/A                       | 5.85                     | 0.48                      |

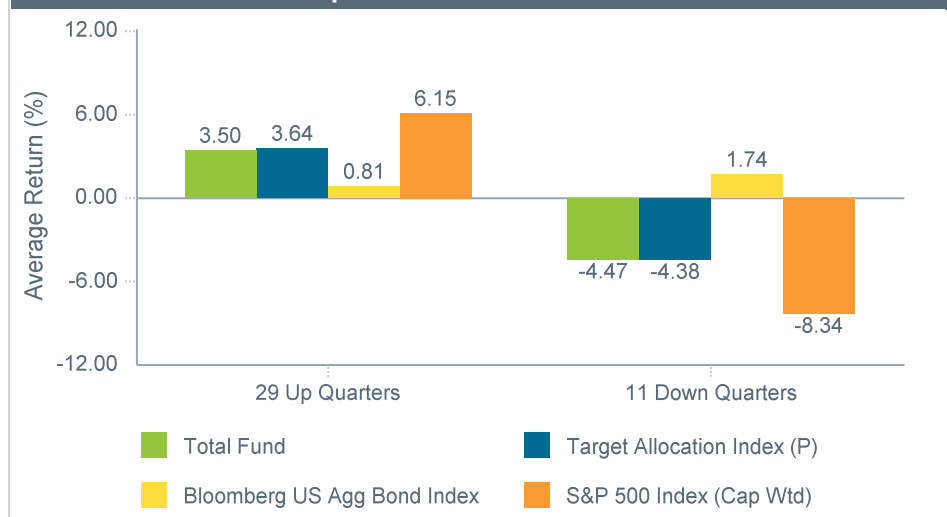
Correlation Matrix - 10 Years

|                           | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|---------------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Total Fund                | 1.00       |                       |                           |                        |                       |                       |                           |                          |                           |
| U.S. Equity Composite     | 0.95       | 1.00                  |                           |                        |                       |                       |                           |                          |                           |
| Non-U.S. Equity Composite | 0.95       | 0.88                  | 1.00                      |                        |                       |                       |                           |                          |                           |
| Fixed Income Composite    | 0.50       | 0.32                  | 0.45                      | 1.00                   |                       |                       |                           |                          |                           |
| Real Return Composite     | N/A        | N/A                   | N/A                       | N/A                    | N/A                   |                       |                           |                          |                           |
| Real Estate Composite     | -0.07      | -0.08                 | -0.13                     | -0.09                  | N/A                   | 1.00                  |                           |                          |                           |
| Absolute Return Composite | N/A        | N/A                   | N/A                       | N/A                    | N/A                   | N/A                   | N/A                       |                          |                           |
| Private Equity Composite  | 0.34       | 0.27                  | 0.15                      | 0.13                   | N/A                   | 0.31                  | N/A                       | 1.00                     |                           |
| Cash Equivalent Composite | -0.07      | -0.08                 | -0.06                     | 0.11                   | N/A                   | -0.21                 | N/A                       | -0.18                    | 1.00                      |

Risk/Return - 5 Years

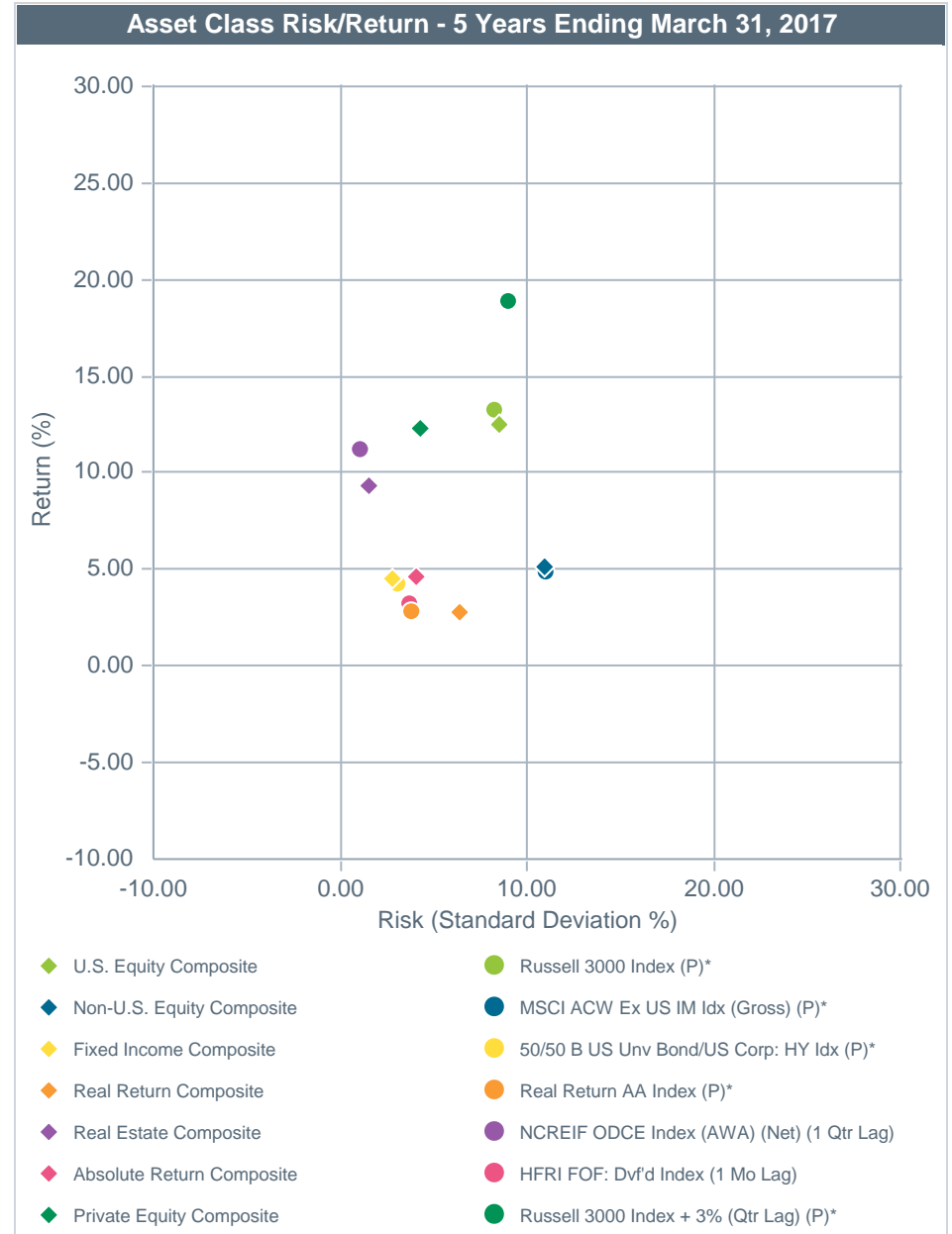
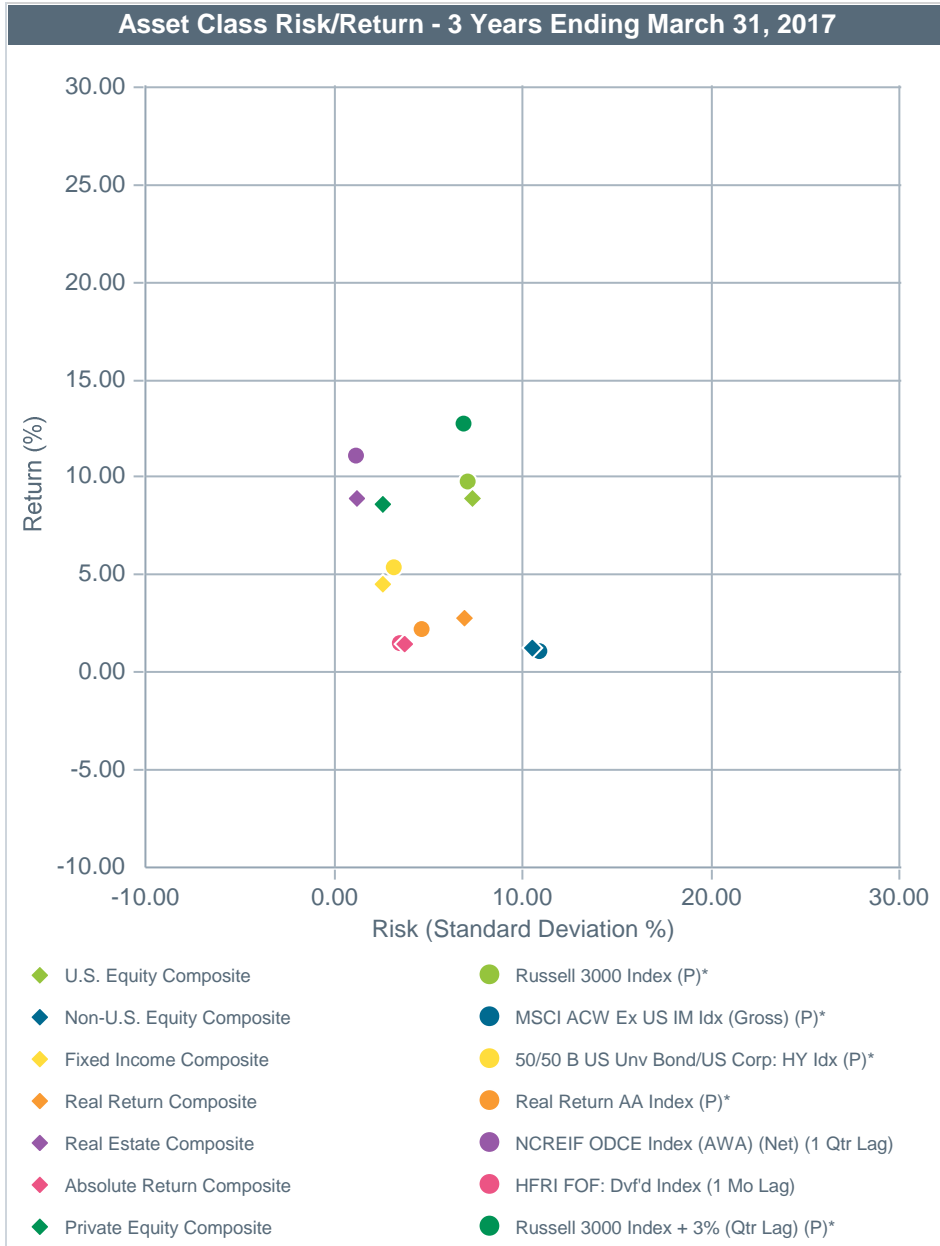


Up Down Market Bar Chart



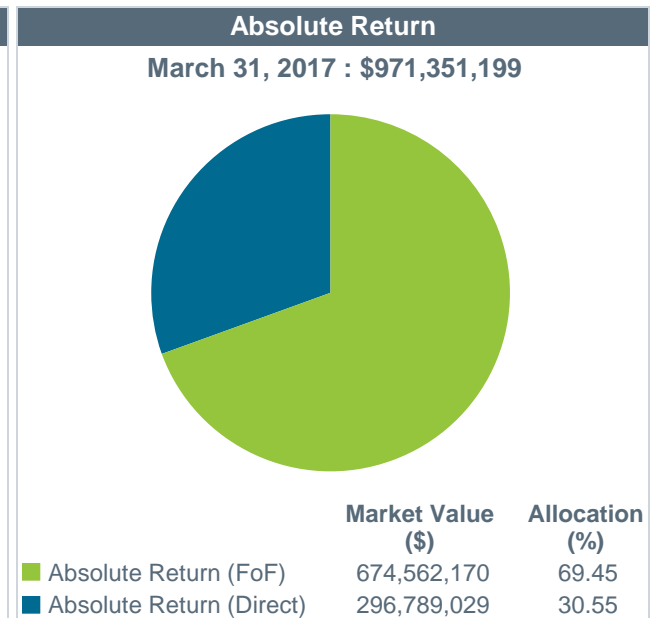
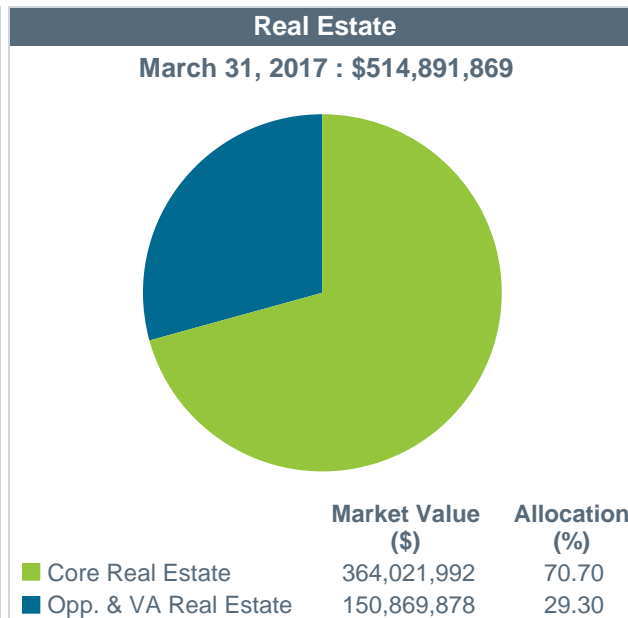
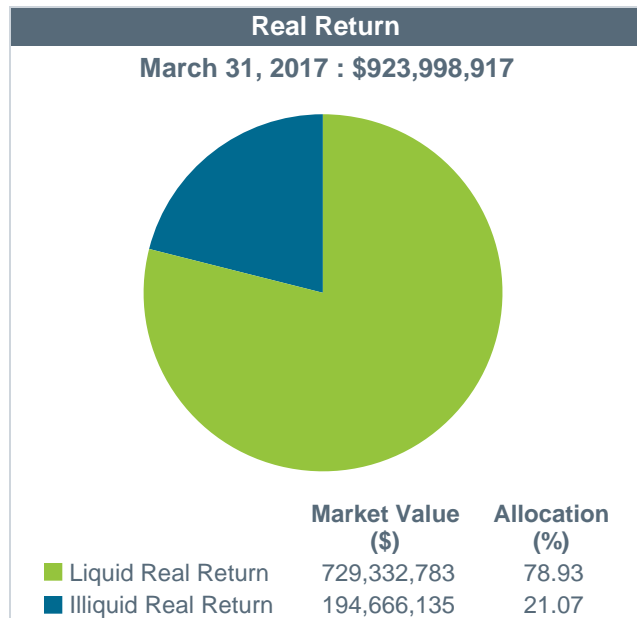
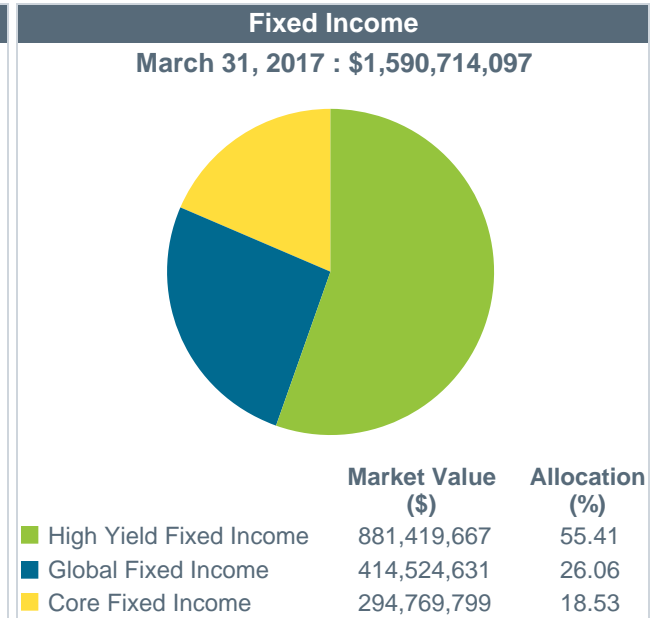
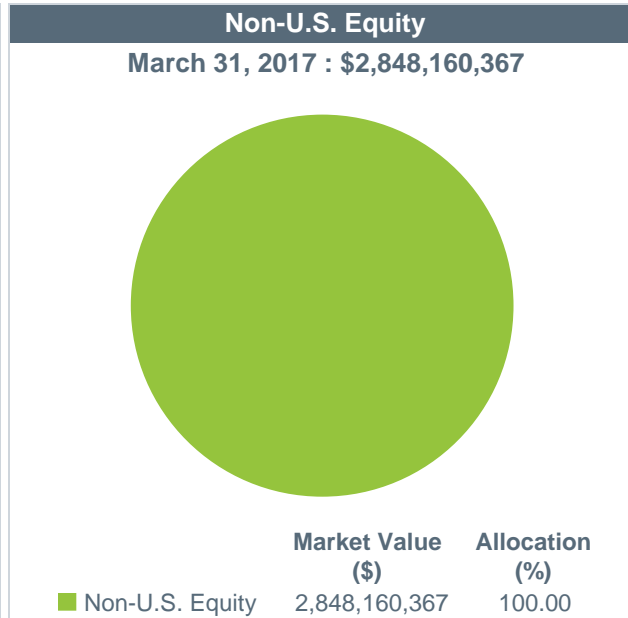
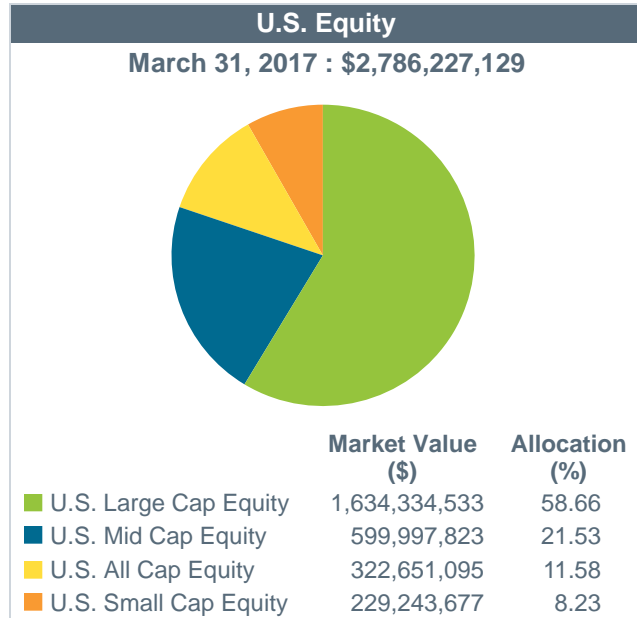
Performance shown is net of fees. Calculation is based on quarterly periodicity.  
 Excess return is measured against the BofA ML 3 Mo US T-Bill Index. Composites marked N/A have less history than the specified time period.





Performance shown is net of fees.





Allocations shown may not sum to 100% exactly due to rounding. Pension Transition account is included in U.S. Large Cap Equity.



**Kentucky Retirement Systems - Pension Plan  
Manager Comparative Performance (Net of Fees)**

As of March 31, 2017

|   | QTD          | CYTD         | FYTD         | 1<br>Year    | 3<br>Years   | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>River Road Asset Management (SA)</b> | <b>3.12</b>  | <b>3.12</b>  | <b>13.99</b> | <b>15.74</b> | <b>9.42</b>  | <b>12.51</b> | <b>20.99</b> | <b>-3.83</b> | <b>9.82</b>  | <b>12.01</b>    | <b>07/01/2011</b> |
| Russell 3000 Val Index                  | 2.99         | 2.99         | 14.73        | 19.97        | 8.58         | 13.08        | 18.40        | -4.13        | 12.70        | 12.23           |                   |
| Difference                              | 0.13         | 0.13         | -0.74        | -4.23        | 0.84         | -0.57        | 2.59         | 0.30         | -2.88        | -0.22           |                   |
| <b>River Road FAV (SA)</b>              | <b>2.65</b>  | <b>2.65</b>  | <b>21.62</b> | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>21.62</b>    | <b>07/01/2016</b> |
| Russell 3000 Val Index                  | 2.99         | 2.99         | 14.73        | 19.97        | 8.58         | 13.08        | 18.40        | -4.13        | 12.70        | 14.73           |                   |
| Difference                              | -0.34        | -0.34        | 6.89         | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | 6.89            |                   |
| <b>Westfield Capital (SA)</b>           | <b>10.37</b> | <b>10.37</b> | <b>17.17</b> | <b>15.35</b> | <b>6.91</b>  | <b>12.21</b> | <b>1.17</b>  | <b>-1.37</b> | <b>12.34</b> | <b>11.54</b>    | <b>07/01/2011</b> |
| Russell 3000 Grth Index                 | 8.63         | 8.63         | 15.35        | 16.27        | 10.90        | 13.22        | 7.39         | 5.09         | 12.44        | 13.16           |                   |
| Difference                              | 1.74         | 1.74         | 1.82         | -0.92        | -3.99        | -1.01        | -6.22        | -6.46        | -0.10        | -1.62           |                   |
| <b>U.S. All Cap Equity Composite</b>    | <b>5.79</b>  | <b>5.79</b>  | <b>16.08</b> | <b>16.89</b> | <b>7.65</b>  | <b>12.17</b> | <b>10.02</b> | <b>-2.31</b> | <b>11.30</b> | <b>11.27</b>    | <b>07/01/2011</b> |
| Russell 3000 Index                      | 5.74         | 5.74         | 15.04        | 18.07        | 9.76         | 13.18        | 12.74        | 0.48         | 12.56        | 12.72           |                   |
| Difference                              | 0.05         | 0.05         | 1.04         | -1.18        | -2.11        | -1.01        | -2.72        | -2.79        | -1.26        | -1.45           |                   |
| <b>Scientific Beta</b>                  | <b>5.54</b>  | <b>5.54</b>  | <b>11.17</b> | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>11.17</b>    | <b>07/01/2016</b> |
| S&P 500 Index (Cap Wtd)                 | 6.07         | 6.07         | 14.36        | 17.17        | 10.37        | 13.30        | 11.96        | 1.38         | 13.69        | 14.36           |                   |
| Difference                              | -0.53        | -0.53        | -3.19        | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | -3.19           |                   |
| <b>Internal S&amp;P 500 Index (SA)</b>  | <b>6.16</b>  | <b>6.16</b>  | <b>14.39</b> | <b>17.13</b> | <b>10.31</b> | <b>13.21</b> | <b>11.71</b> | <b>1.37</b>  | <b>13.61</b> | <b>6.81</b>     | <b>07/01/2001</b> |
| S&P 500 Index (Cap Wtd)*                | 6.07         | 6.07         | 14.36        | 17.17        | 10.37        | 13.30        | 11.96        | 1.38         | 13.69        | 6.77            |                   |
| Difference                              | 0.09         | 0.09         | 0.03         | -0.04        | -0.06        | -0.09        | -0.25        | -0.01        | -0.08        | 0.04            |                   |
| <b>U.S. Large Cap Equity Composite</b>  | <b>6.03</b>  | <b>6.03</b>  | <b>13.89</b> | <b>16.40</b> | <b>9.87</b>  | <b>N/A</b>   | <b>11.87</b> | <b>0.77</b>  | <b>13.20</b> | <b>12.89</b>    | <b>07/01/2013</b> |
| Russell 1000 Index                      | 6.03         | 6.03         | 14.52        | 17.43        | 9.99         | 13.26        | 12.05        | 0.92         | 13.24        | 13.10           |                   |
| Difference                              | 0.00         | 0.00         | -0.63        | -1.03        | -0.12        | N/A          | -0.18        | -0.15        | -0.04        | -0.21           |                   |

Performance shown is net of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



Kentucky Retirement Systems - Pension Plan  
 Manager Comparative Performance (Net of Fees)

As of March 31, 2017

|   | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|-------------|-------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>Internal US Mid Cap (SA)</b>             | <b>3.92</b> | <b>3.92</b> | <b>16.13</b> | <b>20.81</b> | <b>N/A</b>  | <b>N/A</b>   | <b>20.60</b> | <b>-2.37</b> | <b>N/A</b>   | <b>10.48</b>    | <b>08/01/2014</b> |
| S&P Mid Cap 400 Index (Cap Wtd)             | 3.94        | 3.94        | 16.28        | 20.92        | 9.36        | 13.32        | 20.74        | -2.18        | 9.77         | 10.64           |                   |
| Difference                                  | -0.02       | -0.02       | -0.15        | -0.11        | N/A         | N/A          | -0.14        | -0.19        | N/A          | -0.16           |                   |
| <b>Systematic Financial Management (SA)</b> | <b>1.34</b> | <b>1.34</b> | <b>18.44</b> | <b>20.79</b> | <b>5.81</b> | <b>N/A</b>   | <b>20.12</b> | <b>-5.24</b> | <b>5.34</b>  | <b>12.95</b>    | <b>07/01/2012</b> |
| Russell Mid Cap Val Index                   | 3.76        | 3.76        | 14.36        | 19.82        | 8.94        | 14.07        | 20.00        | -4.78        | 14.75        | 15.67           |                   |
| Difference                                  | -2.42       | -2.42       | 4.08         | 0.97         | -3.13       | N/A          | 0.12         | -0.46        | -9.41        | -2.72           |                   |
| <b>U.S. Mid Cap Equity Composite</b>        | <b>2.64</b> | <b>2.64</b> | <b>16.92</b> | <b>20.96</b> | <b>6.80</b> | <b>N/A</b>   | <b>21.74</b> | <b>-4.79</b> | <b>3.72</b>  | <b>10.76</b>    | <b>07/01/2013</b> |
| S&P Mid Cap 400 Index (Cap Wtd)             | 3.94        | 3.94        | 16.28        | 20.92        | 9.36        | 13.32        | 20.74        | -2.18        | 9.77         | 12.78           |                   |
| Difference                                  | -1.30       | -1.30       | 0.64         | 0.04         | -2.56       | N/A          | 1.00         | -2.61        | -6.05        | -2.02           |                   |
| <b>NT Structured Small Cap (SA)</b>         | <b>2.68</b> | <b>2.68</b> | <b>19.99</b> | <b>24.37</b> | <b>8.07</b> | <b>13.42</b> | <b>21.09</b> | <b>-3.18</b> | <b>6.55</b>  | <b>10.17</b>    | <b>10/01/1999</b> |
| Russell 2000 Index                          | 2.47        | 2.47        | 21.60        | 26.22        | 7.22        | 12.35        | 21.31        | -4.41        | 4.89         | 8.39            |                   |
| Difference                                  | 0.21        | 0.21        | -1.61        | -1.85        | 0.85        | 1.07         | -0.22        | 1.23         | 1.66         | 1.78            |                   |
| <b>U.S. Small Cap Equity Composite</b>      | <b>2.22</b> | <b>2.22</b> | <b>19.01</b> | <b>23.36</b> | <b>7.75</b> | <b>N/A</b>   | <b>20.64</b> | <b>-3.26</b> | <b>6.55</b>  | <b>12.03</b>    | <b>07/01/2013</b> |
| Russell 2000 Index                          | 2.47        | 2.47        | 21.60        | 26.22        | 7.22        | 12.35        | 21.31        | -4.41        | 4.89         | 11.29           |                   |
| Difference                                  | -0.25       | -0.25       | -2.59        | -2.86        | 0.53        | N/A          | -0.67        | 1.15         | 1.66         | 0.74            |                   |
| <b>U.S. Equity Composite</b>                | <b>4.98</b> | <b>4.98</b> | <b>14.95</b> | <b>17.70</b> | <b>8.89</b> | <b>12.50</b> | <b>14.10</b> | <b>-0.95</b> | <b>10.78</b> | <b>11.27</b>    | <b>04/01/1984</b> |
| Russell 3000 Index (P)*                     | 5.74        | 5.74        | 15.04        | 18.07        | 9.76        | 13.18        | 12.74        | 0.48         | 12.56        | 11.27           |                   |
| Difference                                  | -0.76       | -0.76       | -0.09        | -0.37        | -0.87       | -0.68        | 1.36         | -1.43        | -1.78        | 0.00            |                   |

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Kentucky Retirement Systems - Pension Plan  
 Manager Comparative Performance (Net of Fees)

As of March 31, 2017

|   | QTD          | CYTD         | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years  | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|--------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>Lazard Int'l Strategic Equity (SA)</b>         | <b>6.31</b>  | <b>6.31</b>  | <b>7.13</b>  | <b>6.67</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>0.36</b>  | <b>-0.62</b> | <b>N/A</b>   | <b>-0.35</b>    | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | -1.67        | -1.67        | -7.03        | -7.03        | N/A         | N/A         | -4.65        | 4.63         | N/A          | 0.39            |                   |
| <b>LSV Int'l Concentrated Value Equity (SA)</b>   | <b>8.32</b>  | <b>8.32</b>  | <b>20.37</b> | <b>16.64</b> | <b>N/A</b>  | <b>N/A</b>  | <b>7.07</b>  | <b>-5.96</b> | <b>N/A</b>   | <b>0.17</b>     | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | 0.34         | 0.34         | 6.21         | 2.94         | N/A         | N/A         | 2.06         | -0.71        | N/A          | 0.91            |                   |
| <b>BTC ACWI Ex US Fund (CF)</b>                   | <b>8.03</b>  | <b>8.03</b>  | <b>14.11</b> | <b>13.57</b> | <b>0.81</b> | <b>4.61</b> | <b>4.83</b>  | <b>-5.42</b> | <b>-3.85</b> | <b>6.81</b>     | <b>07/01/2009</b> |
| MSCI ACW Ex US Index (USD) (Net)                  | 7.86         | 7.86         | 13.87        | 13.13        | 0.56        | 4.36        | 4.50         | -5.66        | -3.87        | 6.59            |                   |
| Difference  | 0.17         | 0.17         | 0.24         | 0.44         | 0.25        | 0.25        | 0.33         | 0.24         | 0.02         | 0.22            |                   |
| <b>American Century Non-US Growth Equity (SA)</b> | <b>6.64</b>  | <b>6.64</b>  | <b>8.48</b>  | <b>5.19</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>-4.26</b> | <b>-0.88</b> | <b>N/A</b>   | <b>-1.83</b>    | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | -1.34        | -1.34        | -5.68        | -8.51        | N/A         | N/A         | -9.27        | 4.37         | N/A          | -1.09           |                   |
| <b>Franklin Templeton Non-US Equity (SA)</b>      | <b>11.88</b> | <b>11.88</b> | <b>15.28</b> | <b>12.78</b> | <b>N/A</b>  | <b>N/A</b>  | <b>1.31</b>  | <b>1.00</b>  | <b>N/A</b>   | <b>2.16</b>     | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | 3.90         | 3.90         | 1.12         | -0.92        | N/A         | N/A         | -3.70        | 6.25         | N/A          | 2.90            |                   |
| <b>NT Int'l Sm Cap Eq Index (SA)</b>              | <b>8.97</b>  | <b>8.97</b>  | <b>13.60</b> | <b>12.75</b> | <b>2.81</b> | <b>7.06</b> | <b>4.13</b>  | <b>2.87</b>  | <b>-3.76</b> | <b>12.92</b>    | <b>12/01/2008</b> |
| MSCI ACW Ex US Sm Cap Index (USD) (Net)           | 8.78         | 8.78         | 13.25        | 12.26        | 2.46        | 6.68        | 3.91         | 2.60         | -4.03        | 13.30           |                   |
| Difference  | 0.19         | 0.19         | 0.35         | 0.49         | 0.35        | 0.38        | 0.22         | 0.27         | 0.27         | -0.38           |                   |
| <b>Non-U.S. Equity Composite</b>                  | <b>7.98</b>  | <b>7.98</b>  | <b>13.13</b> | <b>11.62</b> | <b>1.21</b> | <b>5.14</b> | <b>3.93</b>  | <b>-3.34</b> | <b>-4.12</b> | <b>2.50</b>     | <b>07/01/2000</b> |
| MSCI ACW Ex US Investable Mkt Index (Gross) (P)*  | 8.10         | 8.10         | 14.06        | 13.55        | 1.03        | 4.84        | 4.91         | -5.25        | -3.44        | 2.98            |                   |
| Difference  | -0.12        | -0.12        | -0.93        | -1.93        | 0.18        | 0.30        | -0.98        | 1.91         | -0.68        | -0.48           |                   |

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Kentucky Retirement Systems - Pension Plan  
 Manager Comparative Performance (Net of Fees)

As of March 31, 2017

|   | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|-------------|-------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>NISA Core Agg Fixed Income (SA)</b>      | <b>0.82</b> | <b>0.82</b> | <b>-1.64</b> | <b>0.62</b>  | <b>3.00</b> | <b>2.55</b>  | <b>3.08</b>  | <b>0.87</b>  | <b>6.27</b>  | <b>4.26</b>     | <b>02/01/2009</b> |
| Bloomberg US Agg Bond Index                 | 0.82        | 0.82        | -1.73        | 0.44         | 2.68        | 2.34         | 2.65         | 0.55         | 5.97         | 4.05            |                   |
| Difference                                  | 0.00        | 0.00        | 0.09         | 0.18         | 0.32        | 0.21         | 0.43         | 0.32         | 0.30         | 0.21            |                   |
| <b>Core Fixed Income Composite</b>          | <b>0.82</b> | <b>0.82</b> | <b>-1.65</b> | <b>0.59</b>  | <b>2.80</b> | <b>N/A</b>   | <b>3.14</b>  | <b>0.61</b>  | <b>5.67</b>  | <b>2.95</b>     | <b>07/01/2013</b> |
| Bloomberg US Agg Bond Index                 | 0.82        | 0.82        | -1.73        | 0.44         | 2.68        | 2.34         | 2.65         | 0.55         | 5.97         | 2.76            |                   |
| Difference                                  | 0.00        | 0.00        | 0.08         | 0.15         | 0.12        | N/A          | 0.49         | 0.06         | -0.30        | 0.19            |                   |
| <b>Cerberus KRS Levered Loan Opps, L.P.</b> | <b>2.41</b> | <b>2.41</b> | <b>6.37</b>  | <b>8.65</b>  | <b>N/A</b>  | <b>N/A</b>   | <b>8.63</b>  | <b>9.29</b>  | <b>N/A</b>   | <b>8.34</b>     | <b>09/01/2014</b> |
| S&P-LSTA Lvg'd Loan Index                   | 1.15        | 1.15        | 6.61         | 9.72         | 3.57        | 4.58         | 10.16        | -0.69        | 1.60         | 3.55            |                   |
| Difference                                  | 1.26        | 1.26        | -0.24        | -1.07        | N/A         | N/A          | -1.53        | 9.98         | N/A          | 4.79            |                   |
| <b>Columbia HY Fixed Income (SA)</b>        | <b>2.17</b> | <b>2.17</b> | <b>7.83</b>  | <b>10.94</b> | <b>4.82</b> | <b>6.88</b>  | <b>11.65</b> | <b>-0.25</b> | <b>4.38</b>  | <b>7.51</b>     | <b>11/01/2011</b> |
| Bloomberg US Corp: Hi Yld Index             | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82         | 17.13        | -4.47        | 2.45         | 7.39            |                   |
| Difference                                  | -0.53       | -0.53       | -2.47        | -5.45        | 0.26        | 0.06         | -5.48        | 4.22         | 1.93         | 0.12            |                   |
| <b>Marathon Bluegrass Credit Fund</b>       | <b>0.64</b> | <b>0.64</b> | <b>12.49</b> | <b>17.13</b> | <b>N/A</b>  | <b>N/A</b>   | <b>16.38</b> | <b>N/A</b>   | <b>N/A</b>   | <b>13.48</b>    | <b>01/01/2016</b> |
| Bloomberg US Corp: Hi Yld Index             | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82         | 17.13        | -4.47        | 2.45         | 15.93           |                   |
| Difference                                  | -2.06       | -2.06       | 2.19         | 0.74         | N/A         | N/A          | -0.75        | N/A          | N/A          | -2.45           |                   |
| <b>Shenkman Capital (SA)</b>                | <b>0.81</b> | <b>0.81</b> | <b>5.93</b>  | <b>8.45</b>  | <b>2.90</b> | <b>4.39</b>  | <b>8.95</b>  | <b>-0.61</b> | <b>1.64</b>  | <b>4.93</b>     | <b>10/01/2010</b> |
| Shenkman Blended Index                      | 1.15        | 1.15        | 6.61         | 9.72         | 3.74        | 5.54         | 10.16        | -0.69        | 2.98         | 5.98            |                   |
| Difference                                  | -0.34       | -0.34       | -0.68        | -1.27        | -0.84       | -1.15        | -1.21        | 0.08         | -1.34        | -1.05           |                   |
| <b>Waterfall (SA)</b>                       | <b>4.33</b> | <b>4.33</b> | <b>13.01</b> | <b>16.27</b> | <b>8.28</b> | <b>10.05</b> | <b>9.84</b>  | <b>3.17</b>  | <b>10.71</b> | <b>12.13</b>    | <b>02/01/2010</b> |
| Opportunistic FI Blended Index              | 2.10        | 2.10        | 7.72         | 11.63        | 3.44        | 4.73         | 11.22        | -2.73        | 2.16         | 5.48            |                   |
| Difference                                  | 2.23        | 2.23        | 5.29         | 4.64         | 4.84        | 5.32         | -1.38        | 5.90         | 8.55         | 6.65            |                   |
| <b>High Yield Fixed Income Composite</b>    | <b>1.95</b> | <b>1.95</b> | <b>9.51</b>  | <b>12.78</b> | <b>5.41</b> | <b>N/A</b>   | <b>11.80</b> | <b>0.20</b>  | <b>5.61</b>  | <b>6.67</b>     | <b>07/01/2013</b> |
| Bloomberg US Corp: Hi Yld Index             | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82         | 17.13        | -4.47        | 2.45         | 6.07            |                   |
| Difference                                  | -0.75       | -0.75       | -0.79        | -3.61        | 0.85        | N/A          | -5.33        | 4.67         | 3.16         | 0.60            |                   |

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**Kentucky Retirement Systems - Pension Plan  
Manager Comparative Performance (Net of Fees)**

As of March 31, 2017

|  | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016        | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| <b>Manulife Asset Mgmt (SA)</b>                        | <b>1.44</b> | <b>1.44</b> | <b>1.20</b> | <b>3.21</b> | <b>2.60</b> | <b>3.80</b> | <b>4.46</b> | <b>0.59</b> | <b>3.95</b> | <b>4.45</b>     | <b>12/01/2011</b> |
| Bloomberg US Unv Bond Index*                           | 1.09        | 1.09        | -0.60       | 1.92        | -0.12       | 0.70        | 3.91        | -3.29       | 0.48        | 1.00            |                   |
| Difference   | 0.35        | 0.35        | 1.80        | 1.29        | 2.72        | 3.10        | 0.55        | 3.88        | 3.47        | 3.45            |                   |
| <b>Global Fixed Income Composite</b>                   | <b>1.45</b> | <b>1.45</b> | <b>1.20</b> | <b>3.19</b> | <b>2.48</b> | <b>N/A</b>  | <b>4.43</b> | <b>0.98</b> | <b>3.63</b> | <b>3.02</b>     | <b>07/01/2013</b> |
| Bloomberg Gbl Agg Bond Index                           | 1.76        | 1.76        | -4.66       | -1.90       | -0.39       | 0.38        | 2.09        | -3.15       | 0.59        | 0.94            |                   |
| Difference   | -0.31       | -0.31       | 5.86        | 5.09        | 2.87        | N/A         | 2.34        | 4.13        | 3.04        | 2.08            |                   |
| <b>Fixed Income Composite</b>                          | <b>1.59</b> | <b>1.59</b> | <b>4.80</b> | <b>7.42</b> | <b>4.51</b> | <b>4.54</b> | <b>8.45</b> | <b>0.48</b> | <b>5.42</b> | <b>7.69</b>     | <b>04/01/1984</b> |
| 50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (P)* | 1.90        | 1.90        | 4.73        | 8.95        | 5.36        | 4.24        | 10.38       | 0.43        | 5.56        | 7.51            |                   |
| Difference   | -0.31       | -0.31       | 0.07        | -1.53       | -0.85       | 0.30        | -1.93       | 0.05        | -0.14       | 0.18            |                   |

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|   | QTD         | CYTD        | FYTD         | 1<br>Year     | 3<br>Years   | 5<br>Years   | 2016          | 2015          | 2014         | Since<br>Incep. | Inception<br>Date |
|---|-------------|-------------|--------------|---------------|--------------|--------------|---------------|---------------|--------------|-----------------|-------------------|
| <b>Internal TIPS (SA)</b>                         | <b>1.02</b> | <b>1.02</b> | <b>0.55</b>  | <b>1.86</b>   | <b>2.27</b>  | <b>1.20</b>  | <b>4.56</b>   | <b>0.22</b>   | <b>3.03</b>  | <b>5.21</b>     | <b>05/01/2002</b> |
| Internal US TIPS Blend                            | 1.05        | 1.05        | 0.14         | 1.45          | 1.72         | 0.79         | 4.01          | -0.52         | 2.63         | 5.06            |                   |
| Difference  | -0.03       | -0.03       | 0.41         | 0.41          | 0.55         | 0.41         | 0.55          | 0.74          | 0.40         | 0.15            |                   |
| <b>Nuveen Real Asset Income (SA)</b>              | <b>4.89</b> | <b>4.89</b> | <b>4.72</b>  | <b>10.34</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>10.19</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>4.57</b>     | <b>02/01/2015</b> |
| Nuveen Real Asset Custom Index                    | 5.30        | 5.30        | 3.86         | 8.87          | N/A          | N/A          | 8.74          | N/A           | N/A          | 4.65            |                   |
| Difference  | -0.41       | -0.41       | 0.86         | 1.47          | N/A          | N/A          | 1.45          | N/A           | N/A          | -0.08           |                   |
| <b>PIMCO:All Asset;Inst (PAAIX)</b>               | <b>7.52</b> | <b>7.52</b> | <b>8.73</b>  | <b>13.14</b>  | <b>2.33</b>  | <b>3.74</b>  | <b>12.87</b>  | <b>-7.87</b>  | <b>0.52</b>  | <b>4.77</b>     | <b>12/01/2011</b> |
| Bloomberg US Trsy Infl Notes: 1-10 Yr Index       | 1.05        | 1.05        | 0.14         | 1.45          | 1.46         | 0.62         | 4.01          | -0.52         | 0.91         | 0.82            |                   |
| Difference  | 6.47        | 6.47        | 8.59         | 11.69         | 0.87         | 3.12         | 8.86          | -7.35         | -0.39        | 3.95            |                   |
| <b>Tortoise Capital (CF)</b>                      | <b>5.08</b> | <b>5.08</b> | <b>10.73</b> | <b>29.53</b>  | <b>-1.76</b> | <b>8.08</b>  | <b>16.10</b>  | <b>-27.04</b> | <b>15.54</b> | <b>14.64</b>    | <b>08/01/2009</b> |
| Alerian MLP Index                                 | 3.95        | 3.95        | 7.21         | 28.32         | -5.17        | 2.64         | 18.31         | -32.59        | 4.80         | 10.33           |                   |
| Difference  | 1.13        | 1.13        | 3.52         | 1.21          | 3.41         | 5.44         | -2.21         | 5.55          | 10.74        | 4.31            |                   |
| <b>Amerra Ag Fund II (CF)</b>                     | <b>0.42</b> | <b>0.42</b> | <b>1.84</b>  | <b>5.78</b>   | <b>8.22</b>  | <b>N/A</b>   | <b>3.50</b>   | <b>14.34</b>  | <b>8.63</b>  | <b>6.09</b>     | <b>12/01/2012</b> |
| <b>Amerra-AGRI Holding (CF)</b>                   | <b>2.52</b> | <b>2.52</b> | <b>2.32</b>  | <b>3.26</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>0.72</b>   | <b>N/A</b>    | <b>N/A</b>   | <b>1.73</b>     | <b>08/01/2015</b> |
| <b>BTG Pactual Brazil Timberland Fund I, L.P.</b> | <b>0.96</b> | <b>0.96</b> | <b>10.86</b> | <b>10.89</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>-16.19</b> | <b>-17.41</b> | <b>N/A</b>   | <b>-14.24</b>   | <b>12/01/2014</b> |
| <b>Magnetar MTP Energy Fund, L.P.</b>             | <b>2.64</b> | <b>2.64</b> | <b>11.40</b> | <b>30.59</b>  | <b>-0.61</b> | <b>N/A</b>   | <b>13.68</b>  | <b>-15.63</b> | <b>2.98</b>  | <b>1.18</b>     | <b>07/01/2013</b> |
| <b>Magnetar MTP EOF II, L.P.</b>                  | <b>0.74</b> | <b>0.74</b> | <b>16.04</b> | <b>15.39</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>-3.75</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>-1.83</b>    | <b>08/01/2015</b> |
| <b>Oberland Capital Healthcare, L.P.</b>          | <b>3.61</b> | <b>3.61</b> | <b>-5.87</b> | <b>59.25</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>53.70</b>  | <b>-27.53</b> | <b>N/A</b>   | <b>4.54</b>     | <b>10/01/2014</b> |
| <b>Taurus Mining Finance Fund</b>                 | <b>6.18</b> | <b>6.18</b> | <b>20.18</b> | <b>36.49</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>31.15</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>18.30</b>    | <b>04/01/2015</b> |
| <b>Tenaska Power Fund II (CF)</b>                 | <b>0.00</b> | <b>0.00</b> | <b>13.12</b> | <b>-23.28</b> | <b>-3.68</b> | <b>-5.00</b> | <b>-23.28</b> | <b>16.85</b>  | <b>-0.88</b> | <b>-4.43</b>    | <b>10/01/2008</b> |
| <b>Real Return Composite</b>                      | <b>4.91</b> | <b>4.91</b> | <b>6.84</b>  | <b>12.96</b>  | <b>2.84</b>  | <b>2.80</b>  | <b>10.46</b>  | <b>-5.96</b>  | <b>3.20</b>  | <b>4.06</b>     | <b>07/01/2011</b> |
| Real Return Actual Allocation Index (P)*          | 2.56        | 2.56        | 3.19         | 8.23          | 2.20         | 2.81         | 7.22          | -4.07         | 2.95         | 2.96            |                   |
| Difference  | 2.35        | 2.35        | 3.65         | 4.73          | 0.64         | -0.01        | 3.24          | -1.89         | 0.25         | 1.10            |                   |

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|  | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016        | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| H/2 Credit Partners (CF)                   | 2.93        | 2.93        | 10.47       | 12.00       | 5.83        | 6.69        | 9.29        | 2.11        | 6.57        | 6.48            | 07/01/2011        |
| Harrison Street Core (CF)                  | 2.27        | 2.27        | 6.46        | 9.60        | 9.97        | N/A         | 10.18       | 9.53        | 10.12       | 8.57            | 05/01/2012        |
| Mesa West Core Lending, L.P.               | 1.92        | 1.92        | 6.73        | 7.97        | 7.13        | N/A         | 8.22        | 7.56        | 4.84        | 6.47            | 05/01/2013        |
| Prologis Targeted U.S. Logistics Fund (CF) | 5.54        | 5.54        | 10.96       | 14.34       | N/A         | N/A         | 13.39       | 14.74       | N/A         | 13.52           | 10/01/2014        |
| Stockbridge SmtMkts, L.P.                  | 2.58        | 2.58        | 7.03        | 9.50        | N/A         | N/A         | 9.82        | 12.00       | N/A         | 10.00           | 05/01/2014        |
| DivcoWest Fund IV, L.P.                    | 6.12        | 6.12        | 26.57       | 35.97       | 25.51       | N/A         | 38.32       | 28.79       | N/A         | 24.27           | 03/01/2014        |
| Greenfield Acquisition Partners VI, L.P.   | 4.88        | 4.88        | 1.25        | 2.48        | 10.80       | N/A         | 0.93        | 18.77       | 16.59       | 11.97           | 12/01/2012        |
| Greenfield Acquisition Partners VII, L.P.  | 5.36        | 5.36        | 10.04       | 11.07       | N/A         | N/A         | 12.78       | 15.29       | N/A         | 11.23           | 07/01/2014        |
| Lubert Adler Real Estate Fund VII, L.P.    | 1.68        | 1.68        | 5.60        | 5.94        | N/A         | N/A         | 4.19        | -0.33       | N/A         | -7.42           | 07/01/2014        |
| Mesa West IV, L.P.                         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 0.00            | 03/01/2017        |
| Patron Capital V, L.P.                     | 3.29        | 3.29        | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | -28.05          | 08/01/2016        |
| Rubenstein Properties Fund II, L.P.        | 1.12        | 1.12        | 2.37        | 4.48        | 16.27       | N/A         | 1.34        | 11.17       | 44.51       | 13.14           | 07/01/2013        |
| Walton Street Real Estate Fund VI, L.P.    | 0.86        | 0.86        | -5.46       | -6.89       | 6.89        | 8.95        | -3.80       | 12.99       | 16.41       | -21.81          | 05/01/2009        |
| Walton Street Real Estate Fund VII, L.P.   | 2.69        | 2.69        | 8.67        | 10.99       | 14.73       | N/A         | 12.32       | 16.78       | 15.13       | 14.08           | 07/01/2013        |
| <b>Real Estate Composite</b>               | <b>2.99</b> | <b>2.99</b> | <b>7.47</b> | <b>9.57</b> | <b>8.97</b> | <b>9.35</b> | <b>9.44</b> | <b>8.89</b> | <b>8.85</b> | <b>5.93</b>     | <b>07/01/1984</b> |
| NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)  | 1.88        | 1.88        | 5.72        | 7.79        | 11.04       | 11.16       | 9.08        | 13.86       | 11.36       | 6.44            |                   |
| Difference                                 | 1.11        | 1.11        | 1.75        | 1.78        | -2.07       | -1.81       | 0.36        | -4.97       | -2.51       | -0.51           |                   |

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|                                    | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016         | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-----------------|-------------------|
| BAAM (SA)                          | 0.11        | 0.11        | 3.88        | 4.40        | 3.73        | 6.20        | 0.71         | 6.10        | 7.97        | 6.12            | 09/01/2011        |
| Davidson-Kemper, L.P.              | 2.04        | 2.04        | 6.24        | 9.41        | N/A         | N/A         | N/A          | N/A         | N/A         | 7.80            | 02/01/2016        |
| PAAMCO (SA)                        | 0.00        | 0.00        | -0.01       | 1.59        | -1.40       | 3.38        | -1.85        | -2.01       | 3.83        | 3.47            | 09/01/2011        |
| Prisma Capital Partners (SA)       | 1.03        | 1.03        | 4.61        | 4.74        | 1.20        | 3.84        | -0.87        | 2.52        | 3.30        | 3.62            | 09/01/2011        |
| Senator Investment Group, L.P.     | 3.36        | 3.36        | N/A         | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 3.84            | 09/01/2016        |
| Tourbillon Global Master Fund, Ltd | -0.92       | -0.92       | 6.29        | 0.39        | N/A         | N/A         | -9.76        | N/A         | N/A         | -7.14           | 11/01/2015        |
| Anchorage Capital                  | 3.37        | 3.37        | N/A         | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 5.43            | 08/01/2016        |
| Blackrock GAO Fund, Ltd (CF)       | 3.56        | 3.56        | N/A         | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | -2.26           | 08/01/2016        |
| Coatue Qualified Partners, L.P.    | 9.24        | 9.24        | 13.62       | 13.84       | N/A         | N/A         | 4.26         | N/A         | N/A         | 11.27           | 07/01/2015        |
| DSAM Fund, L.P.                    | 4.00        | 4.00        | 2.20        | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 2.09            | 05/01/2016        |
| Finisterre Global Op               | 0.34        | 0.34        | N/A         | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 2.76            | 08/01/2016        |
| Glenview Capital (CF)              | 9.76        | 9.76        | 20.05       | 26.28       | N/A         | N/A         | -3.28        | N/A         | N/A         | 1.82            | 11/01/2015        |
| HBK II (CF)                        | 1.57        | 1.57        | 5.49        | 9.64        | 2.53        | N/A         | 5.39         | -1.46       | 3.93        | 3.09            | 12/01/2013        |
| Knighthead Capital (CF)            | 2.47        | 2.47        | 12.82       | 15.24       | -0.08       | N/A         | 8.51         | -10.22      | 5.59        | 1.63            | 01/01/2014        |
| LibreMax Capital (CF)              | 1.20        | 1.20        | 6.09        | 7.00        | N/A         | N/A         | 2.53         | -0.16       | N/A         | 2.50            | 08/01/2014        |
| Liquidalts H2O Force (CF)          | -0.83       | -0.83       | N/A         | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 8.26            | 08/01/2016        |
| Luxor Capital (CF)                 | 10.67       | 10.67       | 29.88       | 25.64       | -4.32       | N/A         | 0.85         | -16.70      | N/A         | -4.32           | 04/01/2014        |
| Myriad Opportunities               | 0.77        | 0.77        | 4.60        | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 6.15            | 05/01/2016        |
| Pine River (CF)                    | -0.47       | -0.47       | 4.29        | 6.43        | N/A         | N/A         | 0.63         | 0.09        | N/A         | 0.26            | 05/01/2014        |
| QMS Diversified Global Macro (CF)  | 1.23        | 1.23        | -10.17      | -13.87      | N/A         | N/A         | -10.36       | N/A         | N/A         | -6.12           | 11/01/2015        |
| Scopia PX, LLC                     | -0.87       | -0.87       | 5.23        | -1.60       | N/A         | N/A         | -4.46        | 0.92        | N/A         | -0.09           | 11/01/2014        |
| <b>Absolute Return Composite</b>   | <b>1.53</b> | <b>1.53</b> | <b>4.94</b> | <b>5.41</b> | <b>1.50</b> | <b>4.65</b> | <b>-0.25</b> | <b>1.70</b> | <b>4.84</b> | <b>4.04</b>     | <b>04/01/2010</b> |
| HFRI FOF: Dv'f'd Index (1 Mo Lag)  | 2.78        | 2.78        | 4.18        | 5.29        | 1.41        | 3.20        | -1.34        | 0.79        | 4.72        | 2.72            |                   |
| Difference                         | -1.25       | -1.25       | 0.76        | 0.12        | 0.09        | 1.45        | 1.09         | 0.91        | 0.12        | 1.32            |                   |

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|------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| <b>Cash Equivalents (SA)</b> | <b>0.18</b> | <b>0.18</b> | <b>0.76</b> | <b>1.02</b> | <b>0.48</b> | <b>0.47</b> | <b>0.94</b> | <b>0.21</b> | <b>0.17</b> | <b>3.68</b>     | <b>01/01/1988</b> |
| Citi 3 Mo T-Bill Index       | 0.12        | 0.12        | 0.27        | 0.34        | 0.15        | 0.12        | 0.27        | 0.03        | 0.02        | 3.23            |                   |
| Difference                   | 0.06        | 0.06        | 0.49        | 0.68        | 0.33        | 0.35        | 0.67        | 0.18        | 0.15        | 0.45            |                   |

Performance for Absolute Return managers and the HFRI FOF Diversified Index is lagged by one month.

Performance for the NCREIF ODCE Index (Net) (AWA) is lagged by one quarter and available quarterly; interim month returns assume a 0.00% return.

**Kentucky Retirement Systems - Pension Plan  
Manager Comparative Performance (Gross of Fees)**

As of March 31, 2017

|  | QTD          | CYTD         | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|--|--------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>River Road Asset Management (SA)</b>      | <b>3.23</b>  | <b>3.23</b>  | <b>14.32</b> | <b>16.16</b> | <b>9.99</b> | <b>13.14</b> | <b>21.47</b> | <b>-3.27</b> | <b>10.50</b> | <b>12.61</b>    | <b>07/01/2011</b> |
| Russell 3000 Val Index                       | 2.99         | 2.99         | 14.73        | 19.97        | 8.58        | 13.08        | 18.40        | -4.13        | 12.70        | 12.23           |                   |
| Difference                                   | 0.24         | 0.24         | -0.41        | -3.81        | 1.41        | 0.06         | 3.07         | 0.86         | -2.20        | 0.38            |                   |
| IM U.S. All Cap Value Equity (SA+CF) Median  | 4.36         | 4.36         | 16.55        | 19.11        | 8.40        | 12.86        | 16.50        | -3.50        | 10.06        | 11.85           |                   |
| Rank   | 71           | 71           | 67           | 84           | 24          | 40           | 18           | 49           | 48           | 35              |                   |
| <b>River Road FAV (SA)</b>                   | <b>2.82</b>  | <b>2.82</b>  | <b>21.97</b> | <b>N/A</b>   | <b>N/A</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>21.97</b>    | <b>07/01/2016</b> |
| Russell 3000 Val Index                       | 2.99         | 2.99         | 14.73        | 19.97        | 8.58        | 13.08        | 18.40        | -4.13        | 12.70        | 14.73           |                   |
| Difference                                   | -0.17        | -0.17        | 7.24         | N/A          | N/A         | N/A          | N/A          | N/A          | N/A          | 7.24            |                   |
| IM U.S. All Cap Value Equity (SA+CF) Median  | 4.36         | 4.36         | 16.55        | 19.11        | 8.40        | 12.86        | 16.50        | -3.50        | 10.06        | 16.55           |                   |
| Rank   | 81           | 81           | 11           | N/A          | N/A         | N/A          | N/A          | N/A          | N/A          | 11              |                   |
| <b>Westfield Capital (SA)</b>                | <b>10.51</b> | <b>10.51</b> | <b>17.58</b> | <b>15.93</b> | <b>7.51</b> | <b>12.87</b> | <b>1.72</b>  | <b>-0.81</b> | <b>13.03</b> | <b>12.17</b>    | <b>07/01/2011</b> |
| Russell 3000 Grth Index                      | 8.63         | 8.63         | 15.35        | 16.27        | 10.90       | 13.22        | 7.39         | 5.09         | 12.44        | 13.16           |                   |
| Difference                                   | 1.88         | 1.88         | 2.23         | -0.34        | -3.39       | -0.35        | -5.67        | -5.90        | 0.59         | -0.99           |                   |
| IM U.S. All Cap Growth Equity (SA+CF) Median | 8.03         | 8.03         | 14.08        | 16.07        | 7.71        | 11.32        | 3.73         | 3.32         | 8.88         | 11.11           |                   |
| Rank   | 16           | 16           | 14           | 53           | 55          | 21           | 57           | 85           | 23           | 26              |                   |
| <b>U.S. All Cap Equity Composite</b>         | <b>5.91</b>  | <b>5.91</b>  | <b>16.47</b> | <b>17.46</b> | <b>8.22</b> | <b>12.78</b> | <b>10.59</b> | <b>-1.81</b> | <b>11.93</b> | <b>11.85</b>    | <b>07/01/2011</b> |
| Russell 3000 Index                           | 5.74         | 5.74         | 15.04        | 18.07        | 9.76        | 13.18        | 12.74        | 0.48         | 12.56        | 12.72           |                   |
| Difference                                   | 0.17         | 0.17         | 1.43         | -0.61        | -1.54       | -0.40        | -2.15        | -2.29        | -0.63        | -0.87           |                   |

Performance shown is gross of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



**Kentucky Retirement Systems - Pension Plan  
Manager Comparative Performance (Gross of Fees)**

As of March 31, 2017

|   | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years   | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>Scientific Beta</b>                        | <b>5.54</b> | <b>5.54</b> | <b>11.17</b> | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>11.17</b>    | <b>07/01/2016</b> |
| S&P 500 Index (Cap Wtd)                       | 6.07        | 6.07        | 14.36        | 17.17        | 10.37        | 13.30        | 11.96        | 1.38         | 13.69        | 14.36           |                   |
| Difference                                    | -0.53       | -0.53       | -3.19        | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | -3.19           |                   |
| IM U.S. Large Cap Index Equity (SA+CF) Median | 6.01        | 6.01        | 14.49        | 17.35        | 10.20        | 13.27        | 12.03        | 0.94         | 13.28        | 14.49           |                   |
| Rank  | 77          | 77          | 100          | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | 100             |                   |
| <b>Internal S&amp;P 500 Index (SA)</b>        | <b>6.16</b> | <b>6.16</b> | <b>14.39</b> | <b>17.13</b> | <b>10.31</b> | <b>13.22</b> | <b>11.71</b> | <b>1.37</b>  | <b>13.61</b> | <b>6.81</b>     | <b>07/01/2001</b> |
| S&P 500 Index (Cap Wtd)*                      | 6.07        | 6.07        | 14.36        | 17.17        | 10.37        | 13.30        | 11.96        | 1.38         | 13.69        | 6.77            |                   |
| Difference                                    | 0.09        | 0.09        | 0.03         | -0.04        | -0.06        | -0.08        | -0.25        | -0.01        | -0.08        | 0.04            |                   |
| IM U.S. Large Cap Index Equity (SA+CF) Median | 6.01        | 6.01        | 14.49        | 17.35        | 10.20        | 13.27        | 12.03        | 0.94         | 13.28        | 6.48            |                   |
| Rank  | 19          | 19          | 59           | 74           | 45           | 61           | 75           | 39           | 36           | 23              |                   |
| <b>U.S. Large Cap Equity Composite</b>        | <b>6.03</b> | <b>6.03</b> | <b>13.89</b> | <b>16.41</b> | <b>9.88</b>  | <b>N/A</b>   | <b>11.88</b> | <b>0.79</b>  | <b>13.22</b> | <b>12.90</b>    | <b>07/01/2013</b> |
| Russell 1000 Index                            | 6.03        | 6.03        | 14.52        | 17.43        | 9.99         | 13.26        | 12.05        | 0.92         | 13.24        | 13.10           |                   |
| Difference                                    | 0.00        | 0.00        | -0.63        | -1.02        | -0.11        | N/A          | -0.17        | -0.13        | -0.02        | -0.20           |                   |
| <b>Internal US Mid Cap (SA)</b>               | <b>3.92</b> | <b>3.92</b> | <b>16.13</b> | <b>20.81</b> | <b>N/A</b>   | <b>N/A</b>   | <b>20.71</b> | <b>-2.37</b> | <b>N/A</b>   | <b>10.52</b>    | <b>08/01/2014</b> |
| S&P Mid Cap 400 Index (Cap Wtd)               | 3.94        | 3.94        | 16.28        | 20.92        | 9.36         | 13.32        | 20.74        | -2.18        | 9.77         | 10.64           |                   |
| Difference                                    | -0.02       | -0.02       | -0.15        | -0.11        | N/A          | N/A          | -0.03        | -0.19        | N/A          | -0.12           |                   |
| IM U.S. Mid Cap Equity (SA+CF) Median         | 5.78        | 5.78        | 15.59        | 17.83        | 8.44         | 12.99        | 12.23        | -1.26        | 9.78         | 9.14            |                   |
| Rank  | 81          | 81          | 46           | 32           | N/A          | N/A          | 20           | 65           | N/A          | 30              |                   |
| <b>Systematic Financial Management (SA)</b>   | <b>1.44</b> | <b>1.44</b> | <b>18.71</b> | <b>21.19</b> | <b>6.20</b>  | <b>N/A</b>   | <b>20.54</b> | <b>-4.86</b> | <b>5.73</b>  | <b>13.36</b>    | <b>07/01/2012</b> |
| Russell Mid Cap Val Index                     | 3.76        | 3.76        | 14.36        | 19.82        | 8.94         | 14.07        | 20.00        | -4.78        | 14.75        | 15.67           |                   |
| Difference                                    | -2.32       | -2.32       | 4.35         | 1.37         | -2.74        | N/A          | 0.54         | -0.08        | -9.02        | -2.31           |                   |
| IM U.S. Mid Cap Value Equity (SA+CF) Median   | 4.19        | 4.19        | 17.15        | 20.88        | 8.92         | 13.81        | 18.23        | -3.47        | 11.86        | 15.68           |                   |
| Rank  | 98          | 98          | 40           | 45           | 83           | N/A          | 41           | 63           | 87           | 90              |                   |
| <b>U.S. Mid Cap Equity Composite</b>          | <b>2.69</b> | <b>2.69</b> | <b>17.07</b> | <b>21.17</b> | <b>7.04</b>  | <b>N/A</b>   | <b>21.96</b> | <b>-4.58</b> | <b>4.08</b>  | <b>11.06</b>    | <b>07/01/2013</b> |
| S&P Mid Cap 400 Index (Cap Wtd)               | 3.94        | 3.94        | 16.28        | 20.92        | 9.36         | 13.32        | 20.74        | -2.18        | 9.77         | 12.78           |                   |
| Difference                                    | -1.25       | -1.25       | 0.79         | 0.25         | -2.32        | N/A          | 1.22         | -2.40        | -5.69        | -1.72           |                   |

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Kentucky Retirement Systems - Pension Plan  
 Manager Comparative Performance (Gross of Fees)

As of March 31, 2017

|  | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>NT Structured Small Cap (SA)</b>          | <b>2.75</b> | <b>2.75</b> | <b>20.10</b> | <b>24.53</b> | <b>8.21</b> | <b>13.57</b> | <b>21.21</b> | <b>-3.05</b> | <b>6.65</b>  | <b>10.21</b>    | <b>10/01/1999</b> |
| Russell 2000 Index                           | 2.47        | 2.47        | 21.60        | 26.22        | 7.22        | 12.35        | 21.31        | -4.41        | 4.89         | 8.39            |                   |
| Difference                                   | 0.28        | 0.28        | -1.50        | -1.69        | 0.99        | 1.22         | -0.10        | 1.36         | 1.76         | 1.82            |                   |
| IM U.S. Small Cap Core Equity (SA+CF) Median | 2.93        | 2.93        | 21.09        | 24.15        | 8.75        | 13.90        | 20.61        | -1.36        | 6.55         | 10.83           |                   |
| Rank   | 53          | 53          | 60           | 46           | 60          | 57           | 46           | 71           | 49           | 72              |                   |
| <b>U.S. Small Cap Equity Composite</b>       | <b>2.28</b> | <b>2.28</b> | <b>19.13</b> | <b>23.52</b> | <b>7.88</b> | <b>N/A</b>   | <b>20.76</b> | <b>-3.14</b> | <b>6.65</b>  | <b>12.15</b>    | <b>07/01/2013</b> |
| Russell 2000 Index                           | 2.47        | 2.47        | 21.60        | 26.22        | 7.22        | 12.35        | 21.31        | -4.41        | 4.89         | 11.29           |                   |
| Difference                                   | -0.19       | -0.19       | -2.47        | -2.70        | 0.66        | N/A          | -0.55        | 1.27         | 1.76         | 0.86            |                   |
| <b>U.S. Equity Composite</b>                 | <b>5.01</b> | <b>5.01</b> | <b>15.03</b> | <b>17.81</b> | <b>9.01</b> | <b>12.64</b> | <b>14.21</b> | <b>-0.84</b> | <b>10.93</b> | <b>11.30</b>    | <b>04/01/1984</b> |
| Russell 3000 Index (P)*                      | 5.74        | 5.74        | 15.04        | 18.07        | 9.76        | 13.18        | 12.74        | 0.48         | 12.56        | 11.27           |                   |
| Difference                                   | -0.73       | -0.73       | -0.01        | -0.26        | -0.75       | -0.54        | 1.47         | -1.32        | -1.63        | 0.03            |                   |

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**Kentucky Retirement Systems - Pension Plan  
Manager Comparative Performance (Gross of Fees)**

As of March 31, 2017

|   | QTD          | CYTD         | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years  | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|--------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>Lazard Int'l Strategic Equity (SA)</b>         | <b>6.37</b>  | <b>6.37</b>  | <b>7.33</b>  | <b>6.95</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>0.60</b>  | <b>-0.39</b> | <b>N/A</b>   | <b>-0.05</b>    | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | -1.61        | -1.61        | -6.83        | -6.75        | N/A         | N/A         | -4.41        | 4.86         | N/A          | 0.69            |                   |
| IM International Value Equity (SA+CF) Median      | 7.73         | 7.73         | 15.48        | 13.15        | 1.85        | 7.00        | 3.78         | -1.00        | -4.25        | 0.45            |                   |
| Rank  | 86           | 86           | 95           | 94           | N/A         | N/A         | 83           | 44           | N/A          | 60              |                   |
| <b>LSV Int'l Concentrated Value Equity (SA)</b>   | <b>8.38</b>  | <b>8.38</b>  | <b>20.79</b> | <b>17.23</b> | <b>N/A</b>  | <b>N/A</b>  | <b>7.67</b>  | <b>-5.43</b> | <b>N/A</b>   | <b>0.74</b>     | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | 0.40         | 0.40         | 6.63         | 3.53         | N/A         | N/A         | 2.66         | -0.18        | N/A          | 1.48            |                   |
| IM International Value Equity (SA+CF) Median      | 7.73         | 7.73         | 15.48        | 13.15        | 1.85        | 7.00        | 3.78         | -1.00        | -4.25        | 0.45            |                   |
| Rank  | 33           | 33           | 12           | 17           | N/A         | N/A         | 21           | 87           | N/A          | 45              |                   |
| <b>BTC ACWI Ex US Fund (CF)</b>                   | <b>7.99</b>  | <b>7.99</b>  | <b>14.12</b> | <b>13.58</b> | <b>0.82</b> | <b>4.63</b> | <b>4.89</b>  | <b>-5.43</b> | <b>-3.80</b> | <b>6.83</b>     | <b>07/01/2009</b> |
| MSCI ACW Ex US Index (USD) (Net)                  | 7.86         | 7.86         | 13.87        | 13.13        | 0.56        | 4.36        | 4.50         | -5.66        | -3.87        | 6.59            |                   |
| Difference  | 0.13         | 0.13         | 0.25         | 0.45         | 0.26        | 0.27        | 0.39         | 0.23         | 0.07         | 0.24            |                   |
| IM International Core Equity (SA+CF) Median       | 8.04         | 8.04         | 13.37        | 11.64        | 1.92        | 7.19        | 1.39         | 1.13         | -3.51        | 8.80            |                   |
| Rank  | 54           | 54           | 42           | 28           | 78          | 92          | 18           | 94           | 55           | 95              |                   |
| <b>American Century Non-US Growth Equity (SA)</b> | <b>6.80</b>  | <b>6.80</b>  | <b>8.87</b>  | <b>5.68</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>-3.85</b> | <b>-0.53</b> | <b>N/A</b>   | <b>-1.41</b>    | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | -1.18        | -1.18        | -5.29        | -8.02        | N/A         | N/A         | -8.86        | 4.72         | N/A          | -0.67           |                   |
| IM International Growth Equity (SA+CF) Median     | 8.68         | 8.68         | 10.80        | 10.04        | 2.34        | 6.67        | -0.32        | 3.26         | -3.37        | 1.46            |                   |
| Rank  | 87           | 87           | 69           | 88           | N/A         | N/A         | 77           | 83           | N/A          | 90              |                   |
| <b>Franklin Templeton Non-US Equity (SA)</b>      | <b>11.71</b> | <b>11.71</b> | <b>15.36</b> | <b>12.98</b> | <b>N/A</b>  | <b>N/A</b>  | <b>1.76</b>  | <b>1.39</b>  | <b>N/A</b>   | <b>2.51</b>     | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | 3.73         | 3.73         | 1.20         | -0.72        | N/A         | N/A         | -3.25        | 6.64         | N/A          | 3.25            |                   |
| IM International Growth Equity (SA+CF) Median     | 8.68         | 8.68         | 10.80        | 10.04        | 2.34        | 6.67        | -0.32        | 3.26         | -3.37        | 1.46            |                   |
| Rank  | 9            | 9            | 19           | 24           | N/A         | N/A         | 26           | 67           | N/A          | 31              |                   |
| <b>NT Int'l Sm Cap Eq Index (SA)</b>              | <b>8.94</b>  | <b>8.94</b>  | <b>13.62</b> | <b>12.81</b> | <b>2.90</b> | <b>7.18</b> | <b>4.23</b>  | <b>2.95</b>  | <b>-3.62</b> | <b>13.00</b>    | <b>12/01/2008</b> |
| MSCI ACW Ex US Sm Cap Index (USD) (Gross)         | 8.86         | 8.86         | 13.49        | 12.67        | 2.82        | 7.06        | 4.29         | 2.95         | -3.69        | 13.69           |                   |
| Difference  | 0.08         | 0.08         | 0.13         | 0.14         | 0.08        | 0.12        | -0.06        | 0.00         | 0.07         | -0.69           |                   |
| IM International Small Cap Equity (SA+CF) Median  | 8.71         | 8.71         | 13.87        | 11.47        | 4.35        | 10.53       | 1.19         | 10.39        | -3.38        | 15.43           |                   |
| Rank  | 45           | 45           | 52           | 40           | 75          | 92          | 34           | 88           | 56           | 86              |                   |
| <b>Non-U.S. Equity Composite</b>                  | <b>7.99</b>  | <b>7.99</b>  | <b>13.28</b> | <b>11.84</b> | <b>1.44</b> | <b>5.38</b> | <b>4.20</b>  | <b>-3.12</b> | <b>-3.90</b> | <b>2.59</b>     | <b>07/01/2000</b> |
| MSCI ACW Ex US Investable Mkt Index (Gross) (P)*  | 8.10         | 8.10         | 14.06        | 13.55        | 1.03        | 4.84        | 4.91         | -5.25        | -3.44        | 2.98            |                   |
| Difference  | -0.11        | -0.11        | -0.78        | -1.71        | 0.41        | 0.54        | -0.71        | 2.13         | -0.46        | -0.39           |                   |

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**Kentucky Retirement Systems - Pension Plan  
Manager Comparative Performance (Gross of Fees)**

As of March 31, 2017

|   | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|-------------|-------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>NISA Core Agg Fixed Income (SA)</b>                | <b>0.86</b> | <b>0.86</b> | <b>-1.52</b> | <b>0.80</b>  | <b>3.18</b> | <b>2.72</b>  | <b>3.34</b>  | <b>0.97</b>  | <b>6.44</b>  | <b>4.38</b>     | <b>02/01/2009</b> |
| Bloomberg US Agg Bond Index                           | 0.82        | 0.82        | -1.73        | 0.44         | 2.68        | 2.34         | 2.65         | 0.55         | 5.97         | 4.05            |                   |
| Difference  | 0.04        | 0.04        | 0.21         | 0.36         | 0.50        | 0.38         | 0.69         | 0.42         | 0.47         | 0.33            |                   |
| IM U.S. Broad Market Core Fixed Income (SA+CF) Median | 0.92        | 0.92        | -1.30        | 1.01         | 2.97        | 2.81         | 3.10         | 0.82         | 6.14         | 4.97            |                   |
| Rank  | 61          | 61          | 62           | 60           | 34          | 58           | 43           | 32           | 35           | 77              |                   |
| <b>Core Fixed Income Composite</b>                    | <b>0.86</b> | <b>0.86</b> | <b>-1.52</b> | <b>0.78</b>  | <b>2.97</b> | <b>N/A</b>   | <b>3.30</b>  | <b>0.73</b>  | <b>5.92</b>  | <b>3.14</b>     | <b>07/01/2013</b> |
| Bloomberg US Agg Bond Index                           | 0.82        | 0.82        | -1.73        | 0.44         | 2.68        | 2.34         | 2.65         | 0.55         | 5.97         | 2.76            |                   |
| Difference  | 0.04        | 0.04        | 0.21         | 0.34         | 0.29        | N/A          | 0.65         | 0.18         | -0.05        | 0.38            |                   |
| <b>Cerberus KRS Levered Loan Opps, L.P.</b>           | <b>3.31</b> | <b>3.31</b> | <b>9.06</b>  | <b>12.35</b> | <b>N/A</b>  | <b>N/A</b>   | <b>12.02</b> | <b>13.09</b> | <b>N/A</b>   | <b>11.48</b>    | <b>09/01/2014</b> |
| S&P-LSTA Lvg'd Loan Index                             | 1.15        | 1.15        | 6.61         | 9.72         | 3.57        | 4.58         | 10.16        | -0.69        | 1.60         | 3.55            |                   |
| Difference  | 2.16        | 2.16        | 2.45         | 2.63         | N/A         | N/A          | 1.86         | 13.78        | N/A          | 7.93            |                   |
| IM U.S. High Yield Bonds (SA+CF) Median               | 2.44        | 2.44        | 9.34         | 14.16        | 4.29        | 6.57         | 14.04        | -2.16        | 2.55         | 3.90            |                   |
| Rank  | 9           | 9           | 56           | 67           | N/A         | N/A          | 70           | 1            | N/A          | 1               |                   |
| <b>Columbia HY Fixed Income (SA)</b>                  | <b>2.27</b> | <b>2.27</b> | <b>8.13</b>  | <b>11.35</b> | <b>5.22</b> | <b>7.30</b>  | <b>12.01</b> | <b>0.14</b>  | <b>4.82</b>  | <b>7.91</b>     | <b>11/01/2011</b> |
| Bloomberg US Corp: Hi Yld Index                       | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82         | 17.13        | -4.47        | 2.45         | 7.39            |                   |
| Difference  | -0.43       | -0.43       | -2.17        | -5.04        | 0.66        | 0.48         | -5.12        | 4.61         | 2.37         | 0.52            |                   |
| IM U.S. High Yield Bonds (SA+CF) Median               | 2.44        | 2.44        | 9.34         | 14.16        | 4.29        | 6.57         | 14.04        | -2.16        | 2.55         | 7.22            |                   |
| Rank  | 62          | 62          | 70           | 74           | 20          | 24           | 71           | 17           | 10           | 24              |                   |
| <b>Marathon Bluegrass Credit Fund</b>                 | <b>1.32</b> | <b>1.32</b> | <b>15.93</b> | <b>21.74</b> | <b>N/A</b>  | <b>N/A</b>   | <b>20.16</b> | <b>N/A</b>   | <b>N/A</b>   | <b>17.05</b>    | <b>01/01/2016</b> |
| Bloomberg US Corp: Hi Yld Index                       | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82         | 17.13        | -4.47        | 2.45         | 15.93           |                   |
| Difference  | -1.38       | -1.38       | 5.63         | 5.35         | N/A         | N/A          | 3.03         | N/A          | N/A          | 1.12            |                   |
| IM U.S. High Yield Bonds (SA+CF) Median               | 2.44        | 2.44        | 9.34         | 14.16        | 4.29        | 6.57         | 14.04        | -2.16        | 2.55         | 13.42           |                   |
| Rank  | 92          | 92          | 3            | 4            | N/A         | N/A          | 4            | N/A          | N/A          | 9               |                   |
| <b>Shenkman Capital (SA)</b>                          | <b>0.94</b> | <b>0.94</b> | <b>6.33</b>  | <b>9.02</b>  | <b>3.43</b> | <b>4.93</b>  | <b>9.52</b>  | <b>-0.10</b> | <b>2.16</b>  | <b>5.39</b>     | <b>10/01/2010</b> |
| Shenkman Blended Index                                | 1.15        | 1.15        | 6.61         | 9.72         | 3.74        | 5.54         | 10.16        | -0.69        | 2.98         | 5.98            |                   |
| Difference  | -0.21       | -0.21       | -0.28        | -0.70        | -0.31       | -0.61        | -0.64        | 0.59         | -0.82        | -0.59           |                   |
| <b>Waterfall (SA)</b>                                 | <b>4.47</b> | <b>4.47</b> | <b>13.47</b> | <b>16.89</b> | <b>9.16</b> | <b>11.40</b> | <b>10.44</b> | <b>4.57</b>  | <b>12.58</b> | <b>13.12</b>    | <b>02/01/2010</b> |
| Opportunistic FI Blended Index                        | 2.10        | 2.10        | 7.72         | 11.63        | 3.44        | 4.73         | 11.22        | -2.73        | 2.16         | 5.48            |                   |
| Difference  | 2.37        | 2.37        | 5.75         | 5.26         | 5.72        | 6.67         | -0.78        | 7.30         | 10.42        | 7.64            |                   |
| <b>High Yield Fixed Income Composite</b>              | <b>2.32</b> | <b>2.32</b> | <b>10.94</b> | <b>14.63</b> | <b>6.52</b> | <b>N/A</b>   | <b>13.42</b> | <b>1.21</b>  | <b>6.36</b>  | <b>7.74</b>     | <b>07/01/2013</b> |
| Bloomberg US Corp: Hi Yld Index                       | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82         | 17.13        | -4.47        | 2.45         | 6.07            |                   |
| Difference  | -0.38       | -0.38       | 0.64         | -1.76        | 1.96        | N/A          | -3.71        | 5.68         | 3.91         | 1.67            |                   |

Performance shown is gross of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



**Kentucky Retirement Systems - Pension Plan  
Manager Comparative Performance (Gross of Fees)**

As of March 31, 2017

|  | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016        | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| <b>Manulife Asset Mgmt (SA)</b>                        | <b>1.50</b> | <b>1.50</b> | <b>1.38</b> | <b>3.46</b> | <b>2.88</b> | <b>4.11</b> | <b>4.71</b> | <b>0.85</b> | <b>4.30</b> | <b>4.75</b>     | <b>12/01/2011</b> |
| Bloomberg US Unv Bond Index*                           | 1.09        | 1.09        | -0.60       | 1.92        | -0.12       | 0.70        | 3.91        | -3.29       | 0.48        | 1.00            |                   |
| Difference   | 0.41        | 0.41        | 1.98        | 1.54        | 3.00        | 3.41        | 0.80        | 4.14        | 3.82        | 3.75            |                   |
| <b>Global Fixed Income Composite</b>                   | <b>1.51</b> | <b>1.51</b> | <b>1.38</b> | <b>3.43</b> | <b>2.79</b> | <b>N/A</b>  | <b>4.67</b> | <b>1.28</b> | <b>4.09</b> | <b>3.37</b>     | <b>07/01/2013</b> |
| Bloomberg Gbl Agg Bond Index                           | 1.76        | 1.76        | -4.66       | -1.90       | -0.39       | 0.38        | 2.09        | -3.15       | 0.59        | 0.94            |                   |
| Difference   | -0.25       | -0.25       | 6.04        | 5.33        | 3.18        | N/A         | 2.58        | 4.43        | 3.50        | 2.43            |                   |
| <b>Fixed Income Composite</b>                          | <b>1.81</b> | <b>1.81</b> | <b>5.59</b> | <b>8.44</b> | <b>5.11</b> | <b>5.06</b> | <b>9.34</b> | <b>0.90</b> | <b>5.83</b> | <b>7.77</b>     | <b>04/01/1984</b> |
| 50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (P)* | 1.90        | 1.90        | 4.73        | 8.95        | 5.36        | 4.24        | 10.38       | 0.43        | 5.56        | 7.51            |                   |
| Difference   | -0.09       | -0.09       | 0.86        | -0.51       | -0.25       | 0.82        | -1.04       | 0.47        | 0.27        | 0.26            |                   |

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Kentucky Retirement Systems - Pension Plan  
 Manager Comparative Performance (Gross of Fees)

As of March 31, 2017

|   | QTD          | CYTD         | FYTD         | 1 Year        | 3 Years      | 5 Years      | 2016          | 2015          | 2014         | Since Incep. | Inception Date    |
|---|--------------|--------------|--------------|---------------|--------------|--------------|---------------|---------------|--------------|--------------|-------------------|
| <b>Internal TIPS (SA)</b>                         | <b>1.02</b>  | <b>1.02</b>  | <b>0.55</b>  | <b>1.86</b>   | <b>2.29</b>  | <b>1.22</b>  | <b>4.56</b>   | <b>0.22</b>   | <b>3.09</b>  | <b>5.21</b>  | <b>05/01/2002</b> |
| Internal US TIPS Blend                            | 1.05         | 1.05         | 0.14         | 1.45          | 1.72         | 0.79         | 4.01          | -0.52         | 2.63         | 5.06         |                   |
| Difference  | -0.03        | -0.03        | 0.41         | 0.41          | 0.57         | 0.43         | 0.55          | 0.74          | 0.46         | 0.15         |                   |
| IM U.S. TIPS (SA+CF) Median                       | 1.27         | 1.27         | -0.08        | 1.56          | 2.03         | 1.01         | 4.65          | -1.41         | 3.54         | 5.22         |                   |
| Rank  | 91           | 91           | 19           | 30            | 12           | 19           | 55            | 1             | 66           | 54           |                   |
| <b>Nuveen Real Asset Income (SA)</b>              | <b>5.05</b>  | <b>5.05</b>  | <b>5.25</b>  | <b>11.06</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>10.92</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>5.27</b>  | <b>02/01/2015</b> |
| Nuveen Real Asset Custom Index                    | 5.30         | 5.30         | 3.86         | 8.87          | N/A          | N/A          | 8.74          | N/A           | N/A          | 4.65         |                   |
| Difference  | -0.25        | -0.25        | 1.39         | 2.19          | N/A          | N/A          | 2.18          | N/A           | N/A          | 0.62         |                   |
| <b>PIMCO:All Asset;Inst (PAAIX)</b>               | <b>7.52</b>  | <b>7.52</b>  | <b>8.73</b>  | <b>13.14</b>  | <b>2.33</b>  | <b>3.74</b>  | <b>12.87</b>  | <b>-7.87</b>  | <b>0.52</b>  | <b>4.77</b>  | <b>12/01/2011</b> |
| Bloomberg US Trsy Infl Notes: 1-10 Yr Index       | 1.05         | 1.05         | 0.14         | 1.45          | 1.46         | 0.62         | 4.01          | -0.52         | 0.91         | 0.82         |                   |
| Difference  | 6.47         | 6.47         | 8.59         | 11.69         | 0.87         | 3.12         | 8.86          | -7.35         | -0.39        | 3.95         |                   |
| <b>Tortoise Capital (CF)</b>                      | <b>5.25</b>  | <b>5.25</b>  | <b>11.26</b> | <b>30.33</b>  | <b>-1.15</b> | <b>8.84</b>  | <b>16.81</b>  | <b>-26.63</b> | <b>16.37</b> | <b>15.24</b> | <b>08/01/2009</b> |
| Alerian MLP Index                                 | 3.95         | 3.95         | 7.21         | 28.32         | -5.17        | 2.64         | 18.31         | -32.59        | 4.80         | 10.33        |                   |
| Difference  | 1.30         | 1.30         | 4.05         | 2.01          | 4.02         | 6.20         | -1.50         | 5.96          | 11.57        | 4.91         |                   |
| <b>Amerra Ag Fund II (CF)</b>                     | <b>0.97</b>  | <b>0.97</b>  | <b>3.53</b>  | <b>8.85</b>   | <b>11.85</b> | <b>N/A</b>   | <b>5.92</b>   | <b>21.02</b>  | <b>10.65</b> | <b>8.93</b>  | <b>12/01/2012</b> |
| <b>Amerra-AGRI Holding (CF)</b>                   | <b>3.26</b>  | <b>3.26</b>  | <b>4.71</b>  | <b>7.40</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>4.01</b>   | <b>N/A</b>    | <b>N/A</b>   | <b>4.65</b>  | <b>08/01/2015</b> |
| <b>BTG Pactual Brazil Timberland Fund I, L.P.</b> | <b>1.88</b>  | <b>1.88</b>  | <b>14.78</b> | <b>18.63</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>-10.08</b> | <b>-11.97</b> | <b>N/A</b>   | <b>-8.81</b> | <b>12/01/2014</b> |
| <b>Magnetar MTP Energy Fund, L.P.</b>             | <b>3.02</b>  | <b>3.02</b>  | <b>12.66</b> | <b>32.58</b>  | <b>0.02</b>  | <b>N/A</b>   | <b>15.40</b>  | <b>-15.63</b> | <b>2.98</b>  | <b>1.68</b>  | <b>07/01/2013</b> |
| <b>Magnetar MTP EOF II, L.P.</b>                  | <b>1.02</b>  | <b>1.02</b>  | <b>17.04</b> | <b>16.38</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>-2.43</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>-0.86</b> | <b>08/01/2015</b> |
| <b>Oberland Capital Healthcare, L.P.</b>          | <b>27.20</b> | <b>27.20</b> | <b>24.60</b> | <b>146.31</b> | <b>N/A</b>   | <b>N/A</b>   | <b>93.64</b>  | <b>-15.28</b> | <b>N/A</b>   | <b>32.48</b> | <b>10/01/2014</b> |
| <b>Taurus Mining Finance Fund</b>                 | <b>7.41</b>  | <b>7.41</b>  | <b>25.61</b> | <b>45.55</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>41.30</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>25.61</b> | <b>04/01/2015</b> |
| <b>Tenaska Power Fund II (CF)</b>                 | <b>0.00</b>  | <b>0.00</b>  | <b>13.38</b> | <b>-21.75</b> | <b>-2.62</b> | <b>-4.20</b> | <b>-21.75</b> | <b>18.41</b>  | <b>-0.69</b> | <b>-3.10</b> | <b>10/01/2008</b> |
| <b>Real Return Composite</b>                      | <b>5.11</b>  | <b>5.11</b>  | <b>7.42</b>  | <b>13.86</b>  | <b>3.38</b>  | <b>3.17</b>  | <b>11.25</b>  | <b>-5.42</b>  | <b>3.36</b>  | <b>4.40</b>  | <b>07/01/2011</b> |
| Real Return Actual Allocation Index (P)*          | 2.56         | 2.56         | 3.19         | 8.23          | 2.20         | 2.81         | 7.22          | -4.07         | 2.95         | 2.96         |                   |
| Difference  | 2.55         | 2.55         | 4.23         | 5.63          | 1.18         | 0.36         | 4.03          | -1.35         | 0.41         | 1.44         |                   |

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Kentucky Retirement Systems - Pension Plan  
 Manager Comparative Performance (Gross of Fees)

As of March 31, 2017

|  | QTD         | CYTD        | FYTD        | 1<br>Year    | 3<br>Years   | 5<br>Years   | 2016         | 2015         | 2014        | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|-------------|-----------------|-------------------|
| H/2 Credit Partners (CF)                   | 2.93        | 2.93        | 10.47       | 12.00        | 5.83         | 6.69         | 9.29         | 2.11         | 6.57        | 6.48            | 07/01/2011        |
| Harrison Street Core (CF)                  | 2.47        | 2.47        | 7.07        | 10.45        | 10.62        | N/A          | 11.08        | 10.16        | 10.33       | 8.96            | 05/01/2012        |
| Mesa West Core Lending, L.P.               | 2.12        | 2.12        | 7.39        | 8.85         | 7.98         | N/A          | 9.12         | 8.40         | 5.63        | 7.22            | 05/01/2013        |
| Prologis Targeted U.S. Logistics Fund (CF) | 6.47        | 6.47        | 12.29       | 15.68        | N/A          | N/A          | 14.39        | 15.53        | N/A         | 14.64           | 10/01/2014        |
| Stockbridge SmtMkts, L.P.                  | 2.81        | 2.81        | 7.74        | 10.47        | N/A          | N/A          | 10.80        | 12.50        | N/A         | 10.58           | 05/01/2014        |
| DivcoWest Fund IV, L.P.                    | 9.74        | 9.74        | 34.56       | 46.84        | 33.52        | N/A          | 46.94        | 38.42        | N/A         | 31.97           | 03/01/2014        |
| Greenfield Acquisition Partners VI, L.P.   | 6.43        | 6.43        | 2.34        | 4.06         | 13.87        | N/A          | 1.90         | 24.47        | 18.30       | 14.40           | 12/01/2012        |
| Greenfield Acquisition Partners VII, L.P.  | 6.91        | 6.91        | 13.27       | 13.68        | N/A          | N/A          | 13.76        | 13.86        | N/A         | 12.44           | 07/01/2014        |
| Lubert Adler Real Estate Fund VII, L.P.    | 1.90        | 1.90        | 6.70        | 8.39         | N/A          | N/A          | 6.37         | 4.60         | N/A         | -0.64           | 07/01/2014        |
| Mesa West IV, L.P.                         | N/A         | N/A         | N/A         | N/A          | N/A          | N/A          | N/A          | N/A          | N/A         | 0.00            | 03/01/2017        |
| Patron Capital V, L.P.                     | 3.29        | 3.29        | N/A         | N/A          | N/A          | N/A          | N/A          | N/A          | N/A         | -28.05          | 08/01/2016        |
| Rubenstein Properties Fund II, L.P.        | 1.25        | 1.25        | 3.75        | 6.36         | 22.04        | N/A          | 7.61         | 16.23        | 50.33       | 17.61           | 07/01/2013        |
| Walton Street Real Estate Fund VI, L.P.    | 1.19        | 1.19        | -4.51       | -5.67        | 8.32         | 10.05        | -2.54        | 14.49        | 18.01       | -21.30          | 05/01/2009        |
| Walton Street Real Estate Fund VII, L.P.   | 3.14        | 3.14        | 10.15       | 12.95        | 16.51        | N/A          | 14.25        | 18.34        | 16.89       | 15.89           | 07/01/2013        |
| <b>Real Estate Composite</b>               | <b>3.44</b> | <b>3.44</b> | <b>8.51</b> | <b>10.90</b> | <b>10.29</b> | <b>10.20</b> | <b>10.79</b> | <b>10.45</b> | <b>9.53</b> | <b>6.05</b>     | <b>07/01/1984</b> |
| NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)  | 1.88        | 1.88        | 5.72        | 7.79         | 11.04        | 11.16        | 9.08         | 13.86        | 11.36       | 6.44            |                   |
| Difference                                 | 1.56        | 1.56        | 2.79        | 3.11         | -0.75        | -0.96        | 1.71         | -3.41        | -1.83       | -0.39           |                   |

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Kentucky Retirement Systems - Pension Plan  
 Manager Comparative Performance (Gross of Fees)

As of March 31, 2017

|                                    | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016        | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| BAAM (SA)                          | 0.19        | 0.19        | 4.27        | 4.92        | 4.01        | 6.38        | 1.28        | 6.30        | 7.97        | 6.27            | 09/01/2011        |
| Davidson-Kemper, L.P.              | 3.00        | 3.00        | 9.02        | 13.74       | N/A         | N/A         | N/A         | N/A         | N/A         | 11.70           | 02/01/2016        |
| PAAMCO (SA)                        | 0.00        | 0.00        | -0.01       | 1.59        | -1.40       | 3.38        | -1.85       | -2.01       | 3.83        | 3.47            | 09/01/2011        |
| Prisma Capital Partners (SA)       | 1.21        | 1.21        | 5.13        | 5.45        | 1.40        | 3.96        | -0.26       | 2.30        | 3.30        | 3.72            | 09/01/2011        |
| Senator Investment Group, L.P.     | 4.62        | 4.62        | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 5.76            | 09/01/2016        |
| Tourbillon Global Master Fund, Ltd | -0.48       | -0.48       | 7.67        | 2.15        | N/A         | N/A         | -8.33       | N/A         | N/A         | -5.59           | 11/01/2015        |
| Anchorage Capital                  | 4.76        | 4.76        | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 8.09            | 08/01/2016        |
| Blackrock GAO Fund, Ltd (CF)       | 3.69        | 3.69        | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | -1.85           | 08/01/2016        |
| Coatue Qualified Partners, L.P.    | 11.29       | 11.29       | 16.62       | 17.29       | N/A         | N/A         | 7.09        | N/A         | N/A         | 14.98           | 07/01/2015        |
| DSAM Fund, L.P.                    | 4.41        | 4.41        | 3.34        | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 3.57            | 05/01/2016        |
| Finisterre Global Op               | 0.76        | 0.76        | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 4.75            | 08/01/2016        |
| Glenview Capital (CF)              | 10.28       | 10.28       | 21.80       | 28.80       | N/A         | N/A         | -1.29       | N/A         | N/A         | 3.88            | 11/01/2015        |
| HBK II (CF)                        | 2.23        | 2.23        | 8.13        | 13.06       | 3.75        | N/A         | 8.38        | -1.38       | 3.93        | 4.19            | 12/01/2013        |
| Knighthead Capital (CF)            | 3.02        | 3.02        | 14.56       | 17.60       | 0.76        | N/A         | 10.69       | -10.22      | 5.59        | 2.43            | 01/01/2014        |
| LibreMax Capital (CF)              | 2.29        | 2.29        | 8.84        | 10.32       | N/A         | N/A         | 5.76        | -0.16       | N/A         | 4.11            | 08/01/2014        |
| Liquidalts H2O Force (CF)          | -0.58       | -0.58       | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 10.30           | 08/01/2016        |
| Luxor Capital (CF)                 | 10.95       | 10.95       | 30.97       | 27.18       | -3.54       | N/A         | 2.22        | -15.99      | N/A         | -3.54           | 04/01/2014        |
| Myriad Opportunities               | 2.86        | 2.86        | 11.53       | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 13.89           | 05/01/2016        |
| Pine River (CF)                    | -0.07       | -0.07       | 5.50        | 8.07        | N/A         | N/A         | 2.15        | 0.88        | N/A         | 1.19            | 05/01/2014        |
| QMS Diversified Global Macro (CF)  | 1.48        | 1.48        | -9.34       | -14.13      | N/A         | N/A         | -9.41       | N/A         | N/A         | -5.01           | 11/01/2015        |
| Scopia PX, LLC                     | -0.50       | -0.50       | 6.40        | 0.01        | N/A         | N/A         | -2.95       | 1.74        | N/A         | 1.06            | 11/01/2014        |
| <b>Absolute Return Composite</b>   | <b>1.94</b> | <b>1.94</b> | <b>6.06</b> | <b>6.72</b> | <b>2.00</b> | <b>4.96</b> | <b>0.77</b> | <b>1.74</b> | <b>4.84</b> | <b>4.26</b>     | <b>04/01/2010</b> |
| HFRI FOF: Dv1'd Index (1 Mo Lag)   | 2.78        | 2.78        | 4.18        | 5.29        | 1.41        | 3.20        | -1.34       | 0.79        | 4.72        | 2.72            |                   |
| Difference                         | -0.84       | -0.84       | 1.88        | 1.43        | 0.59        | 1.76        | 2.11        | 0.95        | 0.12        | 1.54            |                   |

Performance shown is gross of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



**Kentucky Retirement Systems - Pension Plan  
Manager Comparative Performance (Gross of Fees)**

**As of March 31, 2017**

|                              | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016        | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| <b>Cash Equivalents (SA)</b> | <b>0.18</b> | <b>0.18</b> | <b>0.76</b> | <b>1.02</b> | <b>0.48</b> | <b>0.47</b> | <b>0.94</b> | <b>0.21</b> | <b>0.17</b> | <b>3.68</b>     | <b>01/01/1988</b> |
| Citi 3 Mo T-Bill Index       | 0.12        | 0.12        | 0.27        | 0.34        | 0.15        | 0.12        | 0.27        | 0.03        | 0.02        | 3.23            |                   |
| Difference                   | 0.06        | 0.06        | 0.49        | 0.68        | 0.33        | 0.35        | 0.67        | 0.18        | 0.15        | 0.45            |                   |

Performance for Absolute Return managers and the HFRI FOF Diversified Index is lagged by one month.

Performance for the NCREIF ODCE Index (Net) (AWA) is lagged by one quarter and available quarterly; interim month returns assume a 0.00% return.

Kentucky Retirement Systems - Insurance Plan  
Asset Allocation & Performance

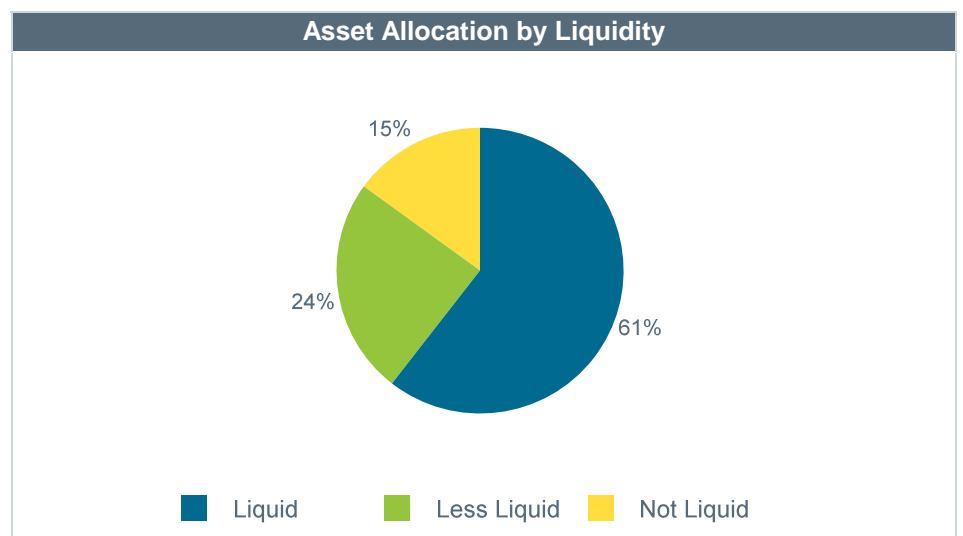
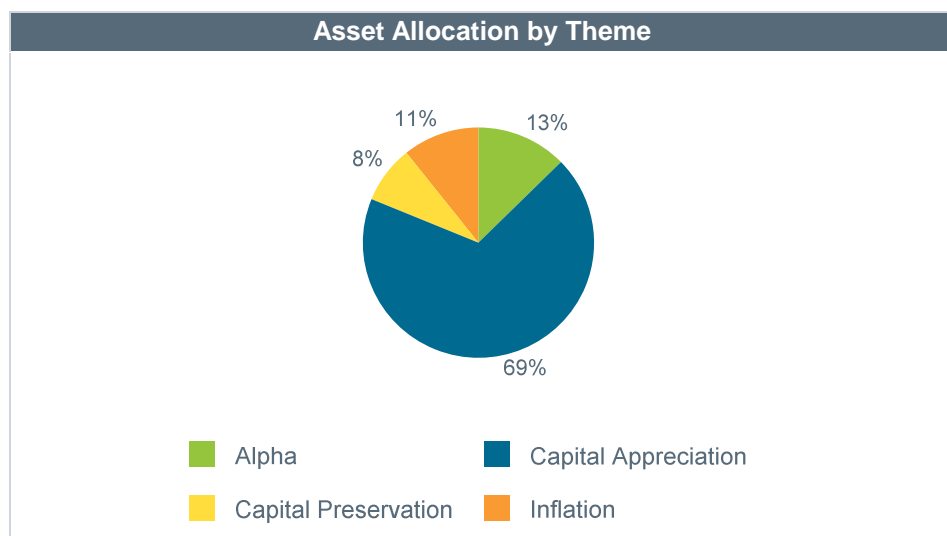
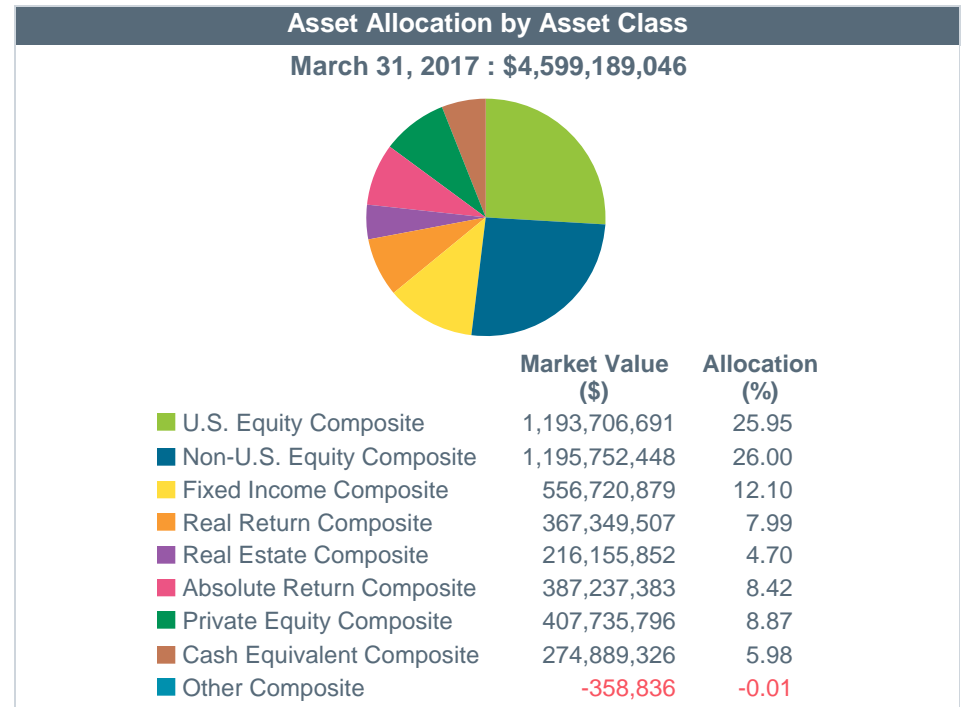
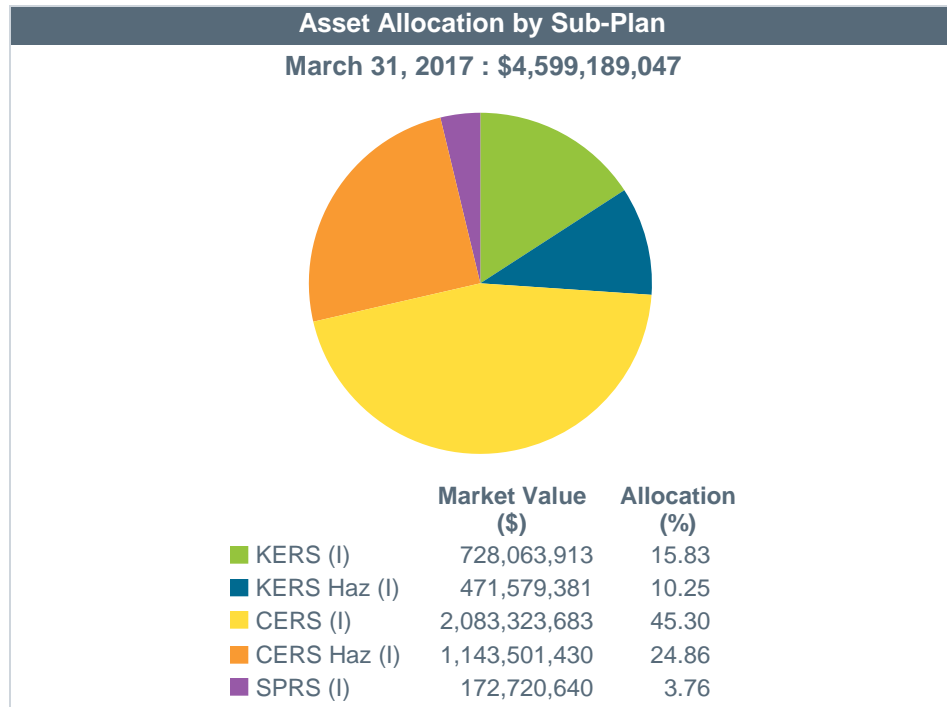
As of March 31, 2017

| Asset Allocation & Performance             |                      |               |                 |
|--|----------------------|---------------|-----------------|
|  | Allocation           |               | Performance (%) |
|  | Market Value (\$)    | %             | FYTD            |
| <b>Total Fund</b>                          | <b>4,599,189,046</b> | <b>100.00</b> | <b>10.12</b>    |
| <b>U.S. Equity Composite</b>               | <b>1,193,706,691</b> | <b>25.95</b>  | <b>14.96</b>    |
| River Road Asset Management (SA)           | 23,203,331           | 0.50          | 14.03           |
| River Road FAV (SA)                        | 52,282,604           | 1.14          | 21.59           |
| Westfield Capital (SA)                     | 60,525,603           | 1.32          | 17.38           |
| Scientific Beta                            | 141,446,373          | 3.08          | 9.47            |
| Internal S&P 500 Index (SA)                | 550,261,890          | 11.96         | 14.41           |
| Internal US Mid Cap (SA)                   | 135,758,125          | 2.95          | 16.11           |
| Systematic Financial Management (SA)       | 132,746,130          | 2.89          | 18.45           |
| NT Structured Small Cap (SA)               | 97,475,987           | 2.12          | 19.65           |
| <b>Non-U.S. Equity Composite</b>           | <b>1,195,752,448</b> | <b>26.00</b>  | <b>13.32</b>    |
| Lazard Int'l Strategic Equity (SA)         | 179,610,870          | 3.91          | 7.07            |
| LSV Int'l Concentrated Value Equity (SA)   | 208,014,033          | 4.52          | 20.61           |
| BTC ACWI Ex US Fund (CF)                   | 518,421,945          | 11.27         | 13.87           |
| American Century Non-US Growth Equity (SA) | 131,962,445          | 2.87          | 8.42            |
| Franklin Templeton Non-US Equity (SA)      | 95,567,873           | 2.08          | 15.22           |
| BTC ACWI Ex US Small Cap Fund (CF)         | 60,510,417           | 1.32          | 13.50           |
| Non-US Transition Account                  | 585,441              | 0.01          | -4.98           |
| <b>Fixed Income Composite</b>              | <b>556,720,879</b>   | <b>12.10</b>  | <b>4.31</b>     |
| NISA Core Agg Fixed Income (SA)            | 99,306,258           | 2.16          | -1.76           |
| Cerberus KRS Levered Loan Opps, L.P.       | 36,464,964           | 0.79          | 6.37            |
| Columbia HY Fixed Income (SA)              | 51,454,747           | 1.12          | 7.73            |
| Marathon Bluegrass Credit Fund             | 121,136,831          | 2.63          | 12.56           |
| Shenkman Capital (SA)                      | 40,789,593           | 0.89          | 5.78            |
| Waterfall (SA)                             | 50,735,106           | 1.10          | 8.36            |
| Manulife Asset Mgmt (SA)                   | 156,712,862          | 3.41          | 1.14            |
| <b>Real Return Composite</b>               | <b>367,349,507</b>   | <b>7.99</b>   | <b>5.90</b>     |
| Internal TIPS (SA)                         | 67,609,542           | 1.47          | 0.27            |
| Nuveen Real Asset Income (SA)              | 88,288,863           | 1.92          | 4.55            |
| PIMCO:All Asset;Inst (PAAIX)               | 110,237,683          | 2.40          | 8.73            |
| Tortoise Capital (CF)                      | 24,788,734           | 0.54          | 10.72           |
| Amerra Ag Fund II (CF)                     | 11,218,215           | 0.24          | 1.84            |
| Amerra-AGRI Holding (CF)                   | 24,154,876           | 0.53          | 2.32            |
| BTG Pactual Brazil Timberland Fund I, L.P. | 3,821,991            | 0.08          | 10.86           |
| Magnetar MTP Energy Fund, L.P.             | 24,511,263           | 0.53          | 11.40           |
| Magnetar MTP EOF II, L.P.                  | 6,264,860            | 0.14          | 16.04           |
| Oberland Capital Healthcare, L.P.          | 569,350              | 0.01          | -5.87           |
| Taurus Mining Finance Fund                 | 5,777,635            | 0.13          | 20.18           |
| Tenaska Power Fund II (CF)                 | 106,495              | 0.00          | 13.12           |

| Asset Allocation & Performance             |                    |              |                 |
|--|--------------------|--------------|-----------------|
|  | Allocation         |              | Performance (%) |
|  | Market Value (\$)  | %            | FYTD            |
| <b>Real Estate Composite</b>               | <b>216,155,852</b> | <b>4.70</b>  | <b>8.05</b>     |
| H/2 Credit Partners (CF)                   | 31,359,507         | 0.68         | 10.47           |
| Harrison Street Core (CF)                  | 30,798,433         | 0.67         | 6.95            |
| Mesa West Core Lending, L.P.               | 32,012,224         | 0.70         | 6.43            |
| Mesa West IV, L.P.                         | 1,939,250          | 0.04         | N/A             |
| Prologis Targeted U.S. Logistics Fund (CF) | 24,595,648         | 0.53         | 13.19           |
| Stockbridge SmtMkts, L.P.                  | 33,778,532         | 0.73         | 6.96            |
| DivcoWest Fund IV, L.P.                    | 4,299,961          | 0.09         | 26.57           |
| Greenfield Acquisition Partners VI, L.P.   | 7,609,502          | 0.17         | 1.25            |
| Greenfield Acquisition Partners VII, L.P.  | 11,291,331         | 0.25         | 10.04           |
| Lubert Adler Real Estate Fund VII, L.P.    | 14,764,761         | 0.32         | 5.60            |
| Patron Capital V, L.P.                     | 1,584,992          | 0.03         | N/A             |
| Rubenstein Properties Fund II, L.P.        | 6,725,510          | 0.15         | 2.37            |
| Walton Street Real Estate Fund VI, L.P.    | 1,746,278          | 0.04         | -5.46           |
| Walton Street Real Estate Fund VII, L.P.   | 12,950,499         | 0.28         | 8.67            |
| <b>Absolute Return Composite</b>           | <b>387,237,383</b> | <b>8.42</b>  | <b>4.88</b>     |
| BAAM (SA)                                  | 14,738,923         | 0.32         | 3.88            |
| Davidson-Kemper, L.P.                      | 18,230,530         | 0.40         | 6.32            |
| PAAMCO (SA)                                | 2,497,992          | 0.05         | -0.01           |
| Prisma Capital Partners (SA)               | 220,921,809        | 4.80         | 4.65            |
| Senator Investment Group, L.P.             | 9,348,535          | 0.20         | N/A             |
| Tourbillon Global Master Fund, Ltd         | 9,004,557          | 0.20         | 6.29            |
| Anchorage Capital                          | 10,577,780         | 0.23         | N/A             |
| Blackrock GAO Fund, Ltd (CF)               | 11,091,682         | 0.24         | N/A             |
| Coatue Qualified Partners, L.P.            | 6,027,639          | 0.13         | 13.62           |
| DSAM Fund, L.P.                            | 5,104,597          | 0.11         | 2.20            |
| Finisterre Global Op                       | 6,420,553          | 0.14         | N/A             |
| Glenview Capital (CF)                      | 7,716,089          | 0.17         | 20.04           |
| HBK II (CF)                                | 17,455,049         | 0.38         | 5.45            |
| Knighthood Capital (CF)                    | 4,021,666          | 0.09         | 12.82           |
| LibreMax Capital (CF)                      | 1,363,633          | 0.03         | 6.12            |
| Liquidalts H2O Force (CF)                  | 6,517,569          | 0.14         | N/A             |
| Luxor Capital (CF)                         | 4,379,156          | 0.10         | 29.88           |
| Myriad Opportunities                       | 12,131,774         | 0.26         | 4.60            |
| Pine River (CF)                            | 3,782,998          | 0.08         | 4.29            |
| QMS Diversified Global Macro (CF)          | 7,040,205          | 0.15         | -10.50          |
| Scopia PX, LLC                             | 8,864,648          | 0.19         | 5.18            |
| <b>Private Equity Composite</b>            | <b>407,735,796</b> | <b>8.87</b>  | <b>6.54</b>     |
| <b>Cash Equivalent Composite</b>           | <b>274,889,326</b> | <b>5.98</b>  | <b>0.39</b>     |
| Cash Equivalents (SA)                      | 274,889,326        | 5.98         | 0.39            |
| <b>Other Composite</b>                     | <b>-358,836</b>    | <b>-0.01</b> | <b>N/A</b>      |

Performance shown is net of fees. Fiscal year ends June 30th. Allocations shown may not sum up to 100% exactly due to rounding. Other Composite consists of BNY fee accruals. Real Estate and Private Equity valuations shown are as of the most recent date available.



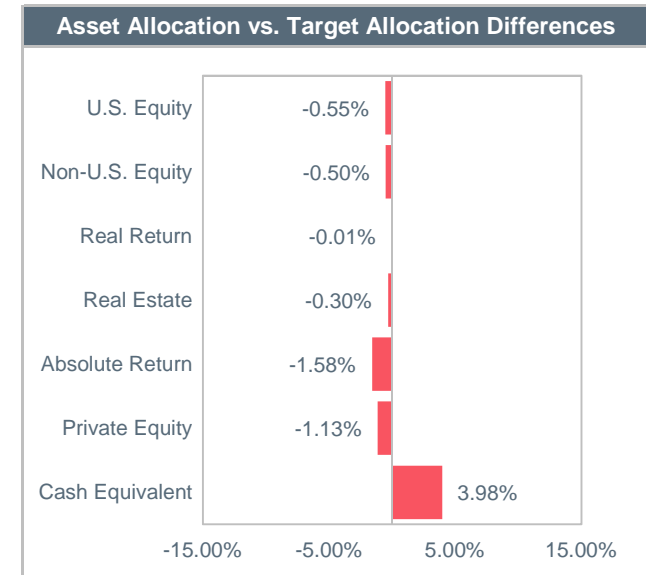


Allocations shown may not sum up to 100% exactly due to rounding. Totals shown may not match due to differences between BNY Mellon's performance and accounting departments. Other Composite consists of BNY fee accruals. The market values for KERS (I) excludes \$1,533,900 in an HB 62 escrow account.

**Kentucky Retirement Systems - Insurance Plan  
Asset Allocation vs. Target & Plan Compliance**

As of March 31, 2017

| Asset Allocation vs. Target Allocation |                       |                      |                        |                       |                        |
|--|-----------------------|----------------------|------------------------|-----------------------|------------------------|
|  | Asset Allocation (\$) | Asset Allocation (%) | Minimum Allocation (%) | Target Allocation (%) | Maximum Allocation (%) |
| Total Fund                             | 4,599,189,046         | 100.00               | -                      | 100.00                | -                      |
| U.S. Equity Composite                  | 1,193,706,691         | 25.95                | 21.50                  | 26.50                 | 31.50                  |
| Non-U.S. Equity Composite              | 1,195,752,448         | 26.00                | 21.50                  | 26.50                 | 31.50                  |
| Fixed Income Composite                 | 556,720,879           | 12.10                | 8.00                   | 12.00                 | 16.00                  |
| Real Return Composite                  | 367,349,507           | 7.99                 | 6.00                   | 8.00                  | 10.00                  |
| Real Estate Composite                  | 216,155,852           | 4.70                 | 3.00                   | 5.00                  | 7.00                   |
| Absolute Return Composite              | 387,237,383           | 8.42                 | 8.00                   | 10.00                 | 12.00                  |
| Private Equity Composite               | 407,735,796           | 8.87                 | 7.00                   | 10.00                 | 13.00                  |
| Cash Equivalent Composite              | 274,889,326           | 5.98                 | -                      | 2.00                  | 4.00                   |



| Individual Plan Asset Allocation Monitor |           |          |          |          |          |
|--|-----------|----------|----------|----------|----------|
|  | KERS      | KERS Haz | CERS     | CERS Haz | SPRS     |
| U.S. Equity Composite                    | In Range  | In Range | In Range | In Range | In Range |
| Non-U.S. Equity Composite                | In Range  | In Range | In Range | In Range | In Range |
| Fixed Income Composite                   | In Range  | In Range | In Range | In Range | In Range |
| Real Return Composite                    | In Range  | In Range | In Range | In Range | In Range |
| Real Estate Composite                    | In Range  | In Range | In Range | In Range | In Range |
| Absolute Return Composite                | In Range  | In Range | In Range | In Range | In Range |
| Private Equity Composite                 | Under Min | In Range | In Range | In Range | In Range |
| Cash Equivalent Composite                | Over Max  | Over Max | Over Max | Over Max | Over Max |

Allocations shown may not sum up to 100% due to rounding and the exclusion of the Other Composite from this page. Other Composite consists of BNY fee accruals.  
 KERS Private Equity Composite is under the minimum allocation by 2.49%. This is an illiquid asset class and may take additional time to bring back into target range.  
 KERS Cash Equivalent Composite is over the maximum allocation by 6.56%  
 KERS Haz Cash Equivalent Composite is over the maximum allocation by 2.44%  
 CERS Cash Equivalent Composite is over the maximum allocation by 1.12%  
 CERS Haz Cash Equivalent Composite is over the maximum allocation by 0.75%  
 SPRS Cash Equivalent Composite is over the maximum allocation by 0.67%

**Kentucky Retirement Systems - Insurance Plan  
Plan Comparative Performance**

As of March 31, 2017

|                                      | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years  | 10<br>Years | 2016        | 2015         | 2014        | Since<br>Incep. | Inception<br>Date |
|--------------------------------------|-------------|-------------|--------------|--------------|-------------|-------------|-------------|-------------|--------------|-------------|-----------------|-------------------|
| <b>Total Fund</b>                    | <b>4.57</b> | <b>4.57</b> | <b>10.12</b> | <b>11.69</b> | <b>5.07</b> | <b>6.90</b> | <b>3.99</b> | <b>8.36</b> | <b>-0.12</b> | <b>4.46</b> | <b>7.36</b>     | <b>04/01/1987</b> |
| Target Allocation Index (I)          | 4.67        | 4.67        | 9.90         | 12.16        | 5.92        | 7.73        | 4.63        | 8.15        | 1.38         | 6.05        | 7.80            |                   |
| Difference                           | -0.10       | -0.10       | 0.22         | -0.47        | -0.85       | -0.83       | -0.64       | 0.21        | -1.50        | -1.59       | -0.44           |                   |
| <b>KERS (I)</b>                      | <b>4.50</b> | <b>4.50</b> | <b>10.30</b> | <b>11.81</b> | <b>4.83</b> | <b>6.65</b> | <b>3.88</b> | <b>8.41</b> | <b>-0.68</b> | <b>4.27</b> | <b>7.32</b>     | <b>04/01/1987</b> |
| Target Allocation Index (KERS I)     | 4.67        | 4.67        | 9.90         | 12.16        | 5.63        | 7.62        | 4.57        | 8.15        | 0.96         | 5.67        | 7.78            |                   |
| Difference                           | -0.17       | -0.17       | 0.40         | -0.35        | -0.80       | -0.97       | -0.69       | 0.26        | -1.64        | -1.40       | -0.46           |                   |
| <b>KERS Haz (I)</b>                  | <b>4.59</b> | <b>4.59</b> | <b>10.18</b> | <b>11.76</b> | <b>5.02</b> | <b>6.91</b> | <b>4.00</b> | <b>8.31</b> | <b>-0.24</b> | <b>4.51</b> | <b>7.37</b>     | <b>04/01/1987</b> |
| Target Allocation Index (KERS Haz I) | 4.67        | 4.67        | 9.90         | 12.16        | 5.63        | 7.62        | 4.57        | 8.15        | 0.96         | 5.67        | 7.78            |                   |
| Difference                           | -0.08       | -0.08       | 0.28         | -0.40        | -0.61       | -0.71       | -0.57       | 0.16        | -1.20        | -1.16       | -0.41           |                   |
| <b>CERS (I)</b>                      | <b>4.58</b> | <b>4.58</b> | <b>10.06</b> | <b>11.65</b> | <b>5.11</b> | <b>6.94</b> | <b>4.02</b> | <b>8.31</b> | <b>-0.01</b> | <b>4.51</b> | <b>7.37</b>     | <b>04/01/1987</b> |
| Target Allocation Index (CERS I)     | 4.67        | 4.67        | 9.90         | 12.16        | 5.63        | 7.62        | 4.57        | 8.15        | 0.96         | 5.67        | 7.78            |                   |
| Difference                           | -0.09       | -0.09       | 0.16         | -0.51        | -0.52       | -0.68       | -0.55       | 0.16        | -0.97        | -1.16       | -0.41           |                   |
| <b>CERS Haz (I)</b>                  | <b>4.59</b> | <b>4.59</b> | <b>10.06</b> | <b>11.64</b> | <b>5.16</b> | <b>6.96</b> | <b>4.03</b> | <b>8.38</b> | <b>0.06</b>  | <b>4.51</b> | <b>7.38</b>     | <b>04/01/1987</b> |
| Target Allocation Index (CERS Haz I) | 4.67        | 4.67        | 9.90         | 12.16        | 5.63        | 7.62        | 4.57        | 8.15        | 0.96         | 5.67        | 7.78            |                   |
| Difference                           | -0.08       | -0.08       | 0.16         | -0.52        | -0.47       | -0.66       | -0.54       | 0.23        | -0.90        | -1.16       | -0.40           |                   |
| <b>SPRS (I)</b>                      | <b>4.58</b> | <b>4.58</b> | <b>10.05</b> | <b>11.60</b> | <b>5.09</b> | <b>6.94</b> | <b>4.02</b> | <b>8.30</b> | <b>0.02</b>  | <b>4.50</b> | <b>7.37</b>     | <b>04/01/1987</b> |
| Target Allocation Index (SPRS I)     | 4.67        | 4.67        | 9.90         | 12.16        | 5.63        | 7.62        | 4.57        | 8.15        | 0.96         | 5.67        | 7.78            |                   |
| Difference                           | -0.09       | -0.09       | 0.15         | -0.56        | -0.54       | -0.68       | -0.55       | 0.15        | -0.94        | -1.17       | -0.41           |                   |

Performance shown is net of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices.

Kentucky Retirement Systems - Insurance Plan  
Composite Comparative Performance

As of March 31, 2017

|  | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years   | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>U.S. Equity Composite</b>                           | <b>4.98</b> | <b>4.98</b> | <b>14.96</b> | <b>17.84</b> | <b>9.26</b>  | <b>12.68</b> | <b>14.66</b> | <b>-0.48</b> | <b>10.58</b> | <b>9.54</b>     | <b>07/01/1992</b> |
| Russell 3000 Index (I)*                                | 5.74        | 5.74        | 15.04        | 18.07        | 9.76         | 13.18        | 12.74        | 0.48         | 12.56        | N/A             |                   |
| Difference   | -0.76       | -0.76       | -0.08        | -0.23        | -0.50        | -0.50        | 1.92         | -0.96        | -1.98        | N/A             |                   |
| <b>Non-U.S. Equity Composite</b>                       | <b>7.92</b> | <b>7.92</b> | <b>13.32</b> | <b>11.54</b> | <b>1.11</b>  | <b>4.99</b>  | <b>3.97</b>  | <b>-3.46</b> | <b>-4.28</b> | <b>2.51</b>     | <b>04/01/2000</b> |
| MSCI ACW Ex US Investable Mkt Index (Gross) (I)*       | 8.10        | 8.10        | 14.06        | 13.55        | 1.03         | 4.84         | 4.91         | -5.25        | -3.44        | 2.08            |                   |
| Difference   | -0.18       | -0.18       | -0.74        | -2.01        | 0.08         | 0.15         | -0.94        | 1.79         | -0.84        | 0.43            |                   |
| <b>Fixed Income Composite</b>                          | <b>1.57</b> | <b>1.57</b> | <b>4.31</b>  | <b>7.19</b>  | <b>3.98</b>  | <b>4.11</b>  | <b>8.22</b>  | <b>0.53</b>  | <b>3.79</b>  | <b>6.53</b>     | <b>07/01/1992</b> |
| 50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (I)* | 1.90        | 1.90        | 4.73         | 8.95         | 5.36         | 4.24         | 10.38        | 0.43         | 5.56         | 6.50            |                   |
| Difference   | -0.33       | -0.33       | -0.42        | -1.76        | -1.38        | -0.13        | -2.16        | 0.10         | -1.77        | 0.03            |                   |
| <b>Real Return Composite</b>                           | <b>4.43</b> | <b>4.43</b> | <b>5.90</b>  | <b>11.56</b> | <b>2.65</b>  | <b>2.49</b>  | <b>9.69</b>  | <b>-6.13</b> | <b>3.78</b>  | <b>3.73</b>     | <b>07/01/2011</b> |
| Real Return Actual Allocation Index (I)*               | 2.53        | 2.53        | 2.90         | 7.60         | 2.30         | 2.88         | 6.87         | -3.56        | 3.15         | 3.02            |                   |
| Difference   | 1.90        | 1.90        | 3.00         | 3.96         | 0.35         | -0.39        | 2.82         | -2.57        | 0.63         | 0.71            |                   |
| <b>Real Estate Composite</b>                           | <b>3.14</b> | <b>3.14</b> | <b>8.05</b>  | <b>10.14</b> | <b>9.32</b>  | <b>9.01</b>  | <b>9.76</b>  | <b>8.99</b>  | <b>7.46</b>  | <b>8.99</b>     | <b>05/01/2009</b> |
| NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)              | 1.88        | 1.88        | 5.72         | 7.79         | 11.04        | 11.16        | 9.08         | 13.86        | 11.36        | 5.82            |                   |
| Difference   | 1.26        | 1.26        | 2.33         | 2.35         | -1.72        | -2.15        | 0.68         | -4.87        | -3.90        | 3.17            |                   |
| <b>Absolute Return Composite</b>                       | <b>1.50</b> | <b>1.50</b> | <b>4.88</b>  | <b>5.35</b>  | <b>1.53</b>  | <b>4.68</b>  | <b>-0.26</b> | <b>1.80</b>  | <b>4.80</b>  | <b>3.96</b>     | <b>04/01/2010</b> |
| HFRI FOF: Dvf'd Index (1 Mo Lag)                       | 2.78        | 2.78        | 4.18         | 5.29         | 1.41         | 3.20         | -1.34        | 0.79         | 4.72         | 2.72            |                   |
| Difference   | -1.28       | -1.28       | 0.70         | 0.06         | 0.12         | 1.48         | 1.08         | 1.01         | 0.08         | 1.24            |                   |
| <b>Private Equity Composite</b>                        | <b>2.84</b> | <b>2.84</b> | <b>6.54</b>  | <b>9.35</b>  | <b>12.06</b> | <b>14.11</b> | <b>8.73</b>  | <b>15.93</b> | <b>17.50</b> | <b>9.49</b>     | <b>07/01/2002</b> |
| Private Equity Benchmark (I) [Short Term]              | 2.84        | 2.84        | 6.54         | 9.35         | 12.06        | 14.11        | 8.73         | 15.93        | 17.50        | 9.49            |                   |
| Difference   | 0.00        | 0.00        | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00         | 0.00            |                   |
| Russell 3000 Index+3% (Qtr Lag) (I)* [Long Term]       | 7.07        | 7.07        | 16.63        | 18.83        | 12.75        | 18.88        | 17.96        | 3.51         | 21.76        | 10.24           |                   |
| Difference   | -4.23       | -4.23       | -10.09       | -9.48        | -0.69        | -4.77        | -9.23        | 12.42        | -4.26        | -0.75           |                   |
| <b>Cash Equivalent Composite</b>                       | <b>0.17</b> | <b>0.17</b> | <b>0.39</b>  | <b>0.51</b>  | <b>0.32</b>  | <b>0.34</b>  | <b>0.44</b>  | <b>0.21</b>  | <b>0.19</b>  | <b>2.70</b>     | <b>07/01/1992</b> |
| Citi 3 Mo T-Bill Index                                 | 0.12        | 0.12        | 0.27         | 0.34         | 0.15         | 0.12         | 0.27         | 0.03         | 0.02         | 2.57            |                   |
| Difference   | 0.05        | 0.05        | 0.12         | 0.17         | 0.17         | 0.22         | 0.17         | 0.18         | 0.17         | 0.13            |                   |

Performance shown is net of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices.

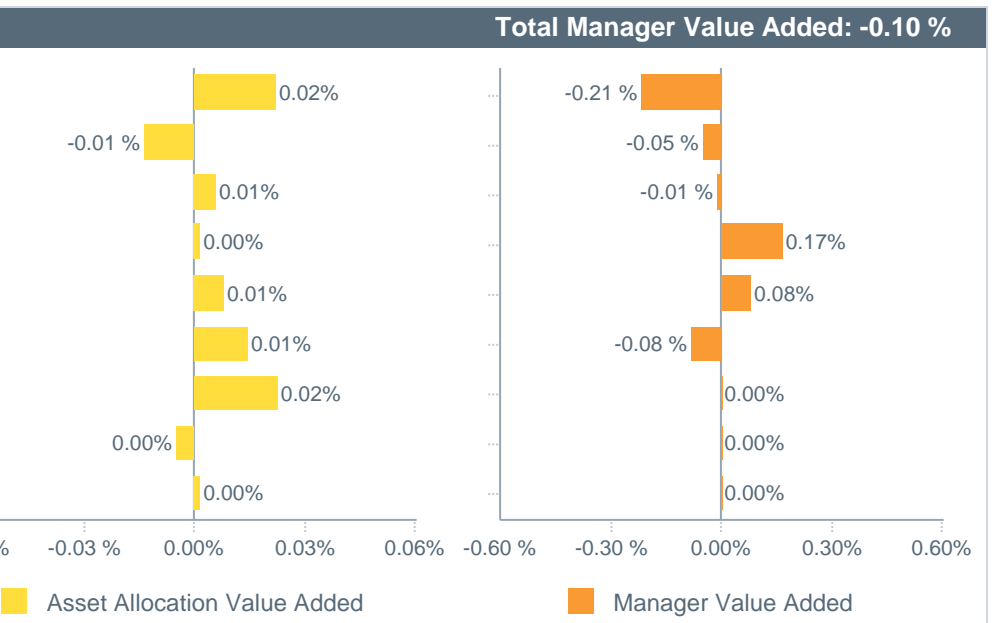
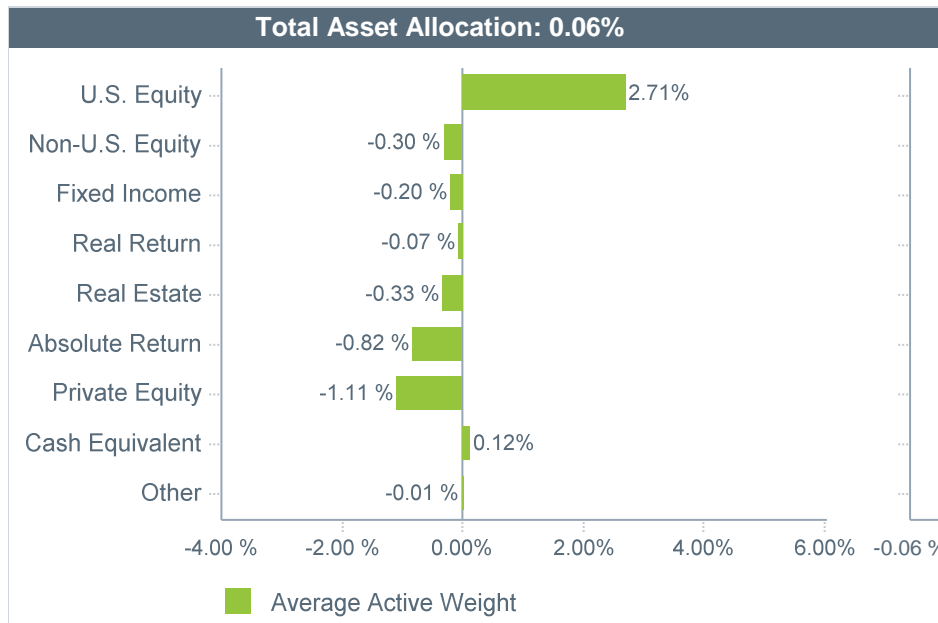
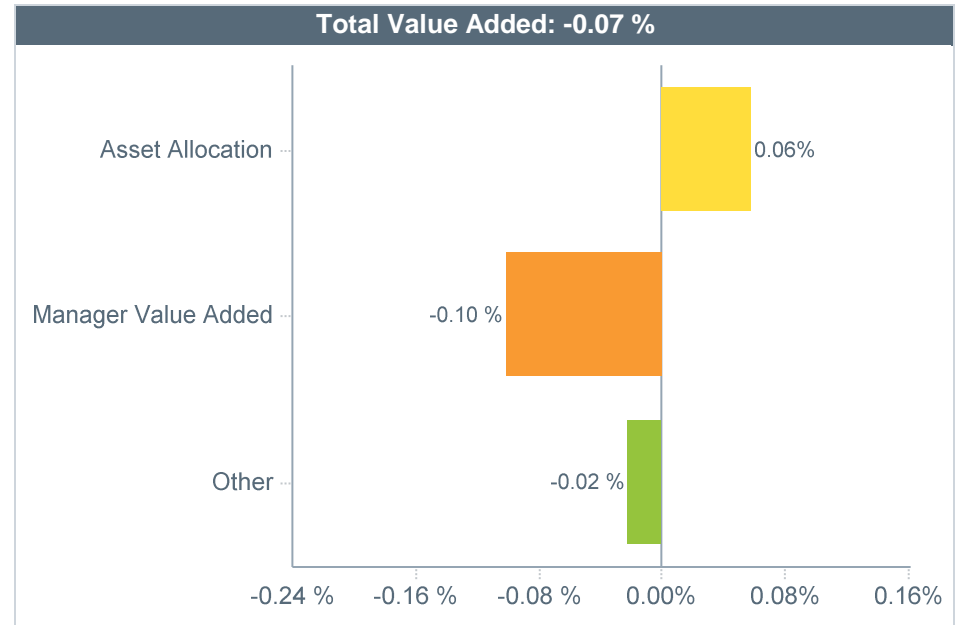
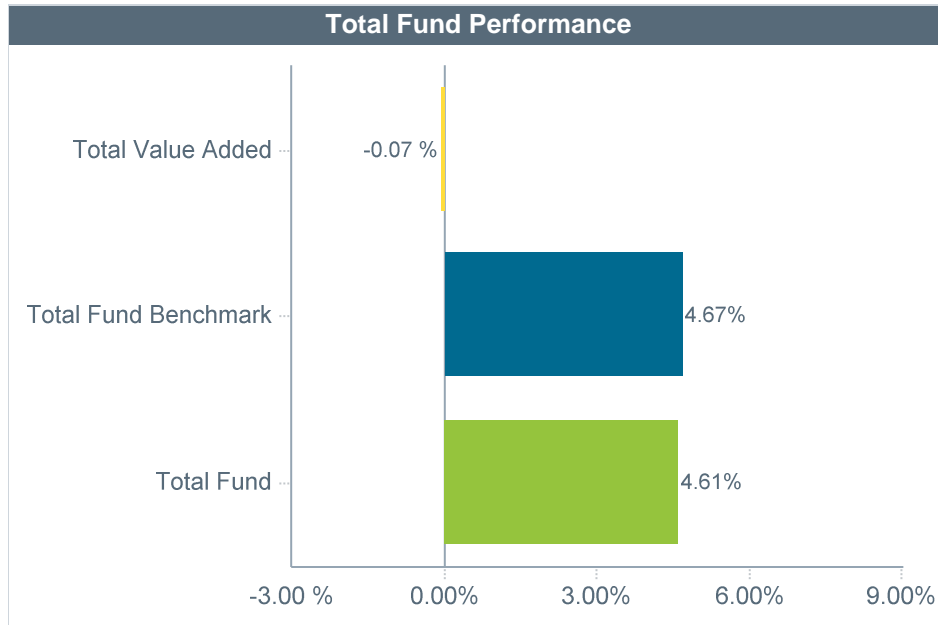


Kentucky Retirement Systems - Insurance Plan  
Composite Comparative Performance

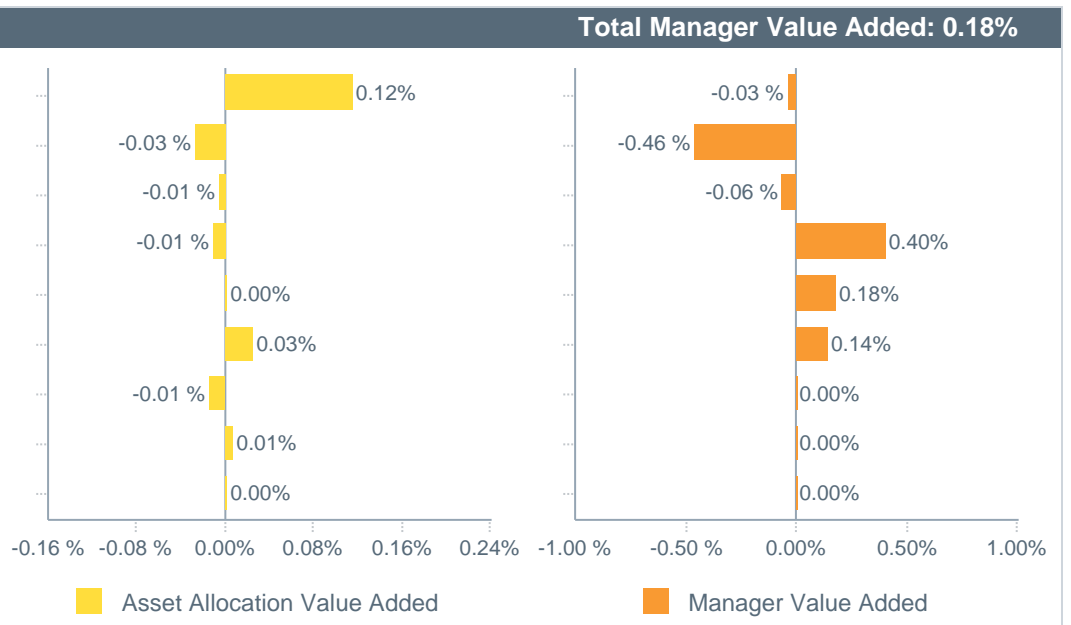
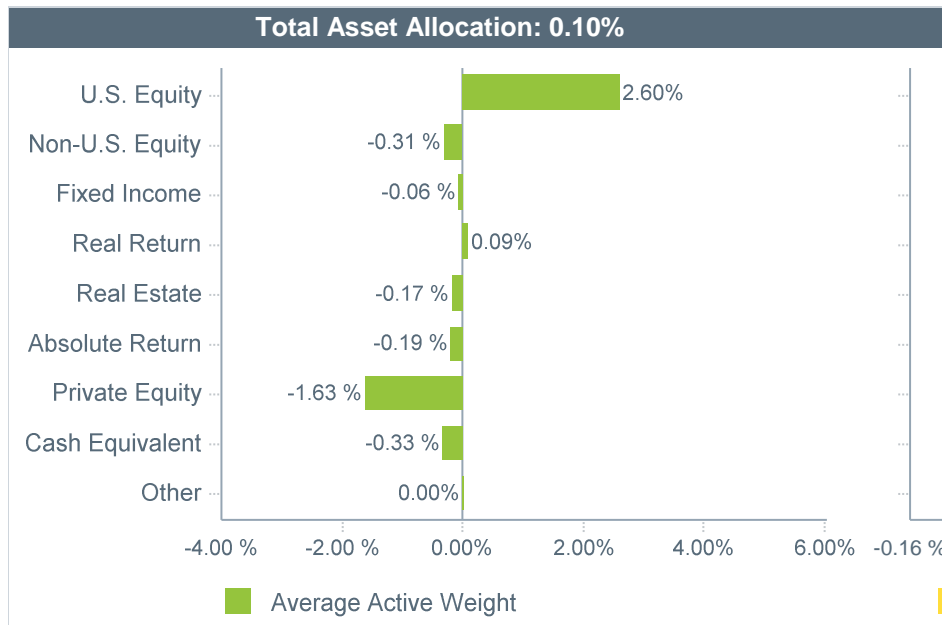
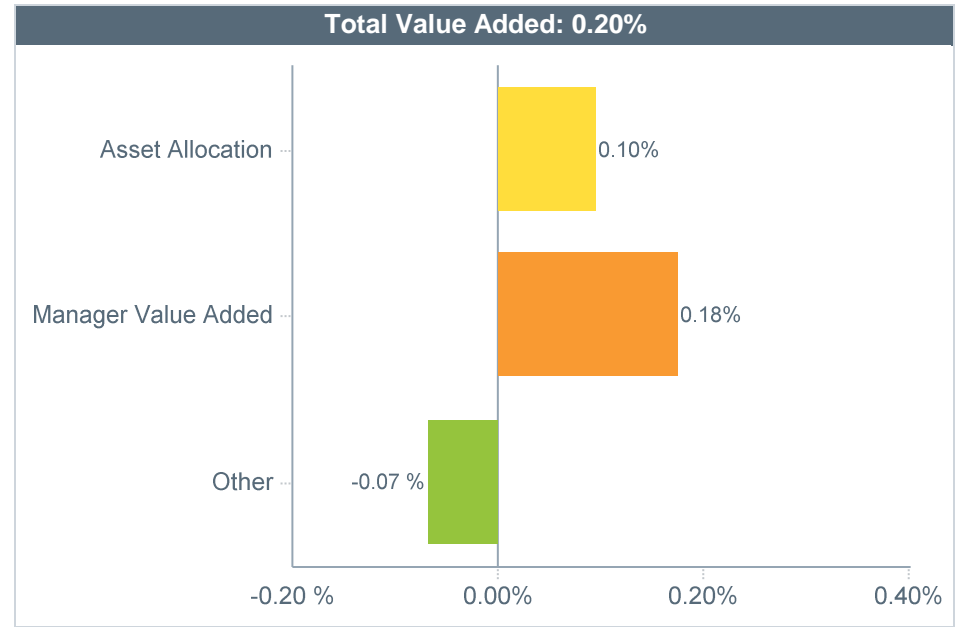
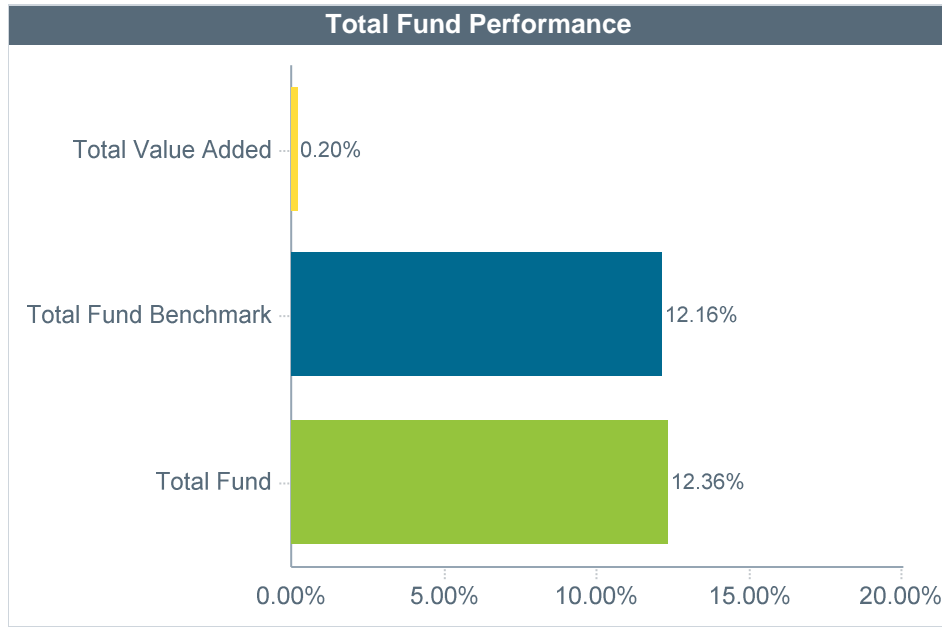
As of March 31, 2017

|  | 7<br>Years   | 10<br>Years | 12<br>Years | 15<br>Years | 20<br>Years | 25<br>Years |
|--|--------------|-------------|-------------|-------------|-------------|-------------|
| <b>U.S. Equity Composite</b>                           | <b>12.39</b> | <b>7.28</b> | <b>8.10</b> | <b>7.21</b> | <b>8.06</b> | <b>N/A</b>  |
| Russell 3000 Index (I)*                                | 12.83        | 7.54        | 8.29        | 7.30        | 8.15        | N/A         |
| Difference   | -0.44        | -0.26       | -0.19       | -0.09       | -0.09       | N/A         |
| <b>Non-U.S. Equity Composite</b>                       | <b>3.42</b>  | <b>1.64</b> | <b>4.85</b> | <b>6.22</b> | <b>N/A</b>  | <b>N/A</b>  |
| MSCI ACW Ex US Investable Mkt Index (Gross) (I)*       | 4.24         | 1.09        | 4.42        | 5.82        | N/A         | N/A         |
| Difference   | -0.82        | 0.55        | 0.43        | 0.40        | N/A         | N/A         |
| <b>Fixed Income Composite</b>                          | <b>5.24</b>  | <b>5.54</b> | <b>5.13</b> | <b>6.19</b> | <b>6.45</b> | <b>N/A</b>  |
| 50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (I)* | 5.38         | 5.57        | 5.16        | 6.18        | 6.42        | 6.60        |
| Difference   | -0.14        | -0.03       | -0.03       | 0.01        | 0.03        | N/A         |
| <b>Real Return Composite</b>                           | <b>N/A</b>   | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  |
| Real Return Actual Allocation Index (I)*               | N/A          | N/A         | N/A         | N/A         | N/A         | N/A         |
| Difference   | N/A          | N/A         | N/A         | N/A         | N/A         | N/A         |
| <b>Real Estate Composite</b>                           | <b>13.11</b> | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  |
| NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)              | 12.27        | 4.84        | 6.88        | 7.15        | 8.29        | 7.16        |
| Difference   | 0.84         | N/A         | N/A         | N/A         | N/A         | N/A         |
| <b>Absolute Return Composite</b>                       | <b>3.96</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  |
| HFRI FOF: Dvf'd Index (1 Mo Lag)                       | 2.72         | 1.36        | 2.62        | 3.46        | 4.23        | 5.55        |
| Difference   | 1.24         | N/A         | N/A         | N/A         | N/A         | N/A         |
| <b>Private Equity Composite</b>                        | <b>13.84</b> | <b>8.84</b> | <b>9.34</b> | <b>N/A</b>  | <b>N/A</b>  | <b>N/A</b>  |
| Private Equity Benchmark (I) [Short Term]              | 13.84        | 8.84        | 9.34        | N/A         | N/A         | N/A         |
| Difference   | 0.00         | 0.00        | 0.00        | N/A         | N/A         | N/A         |
| Russell 3000 Index+3% (Qtr Lag) (I)* [Long Term]       | 15.34        | 9.94        | 10.22       | 9.16        | 9.22        | N/A         |
| Difference   | -1.50        | -1.10       | -0.88       | N/A         | N/A         | N/A         |
| <b>Cash Equivalent Composite</b>                       | <b>0.31</b>  | <b>0.87</b> | <b>1.57</b> | <b>1.55</b> | <b>2.29</b> | <b>N/A</b>  |
| Citi 3 Mo T-Bill Index                                 | 0.11         | 0.61        | 1.20        | 1.24        | 2.13        | 2.59        |
| Difference   | 0.20         | 0.26        | 0.37        | 0.31        | 0.16        | N/A         |

Performance shown is net of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices.



Performance shown is gross of fees. Calculation is based on monthly periodicity. Allocation to "Other" is the contribution of other residual factors, including market timing and cash flows.



Performance shown is gross of fees. Calculation is based on monthly periodicity. Allocation to "Other" is the contribution of other residual factors, including market timing and cash flows.

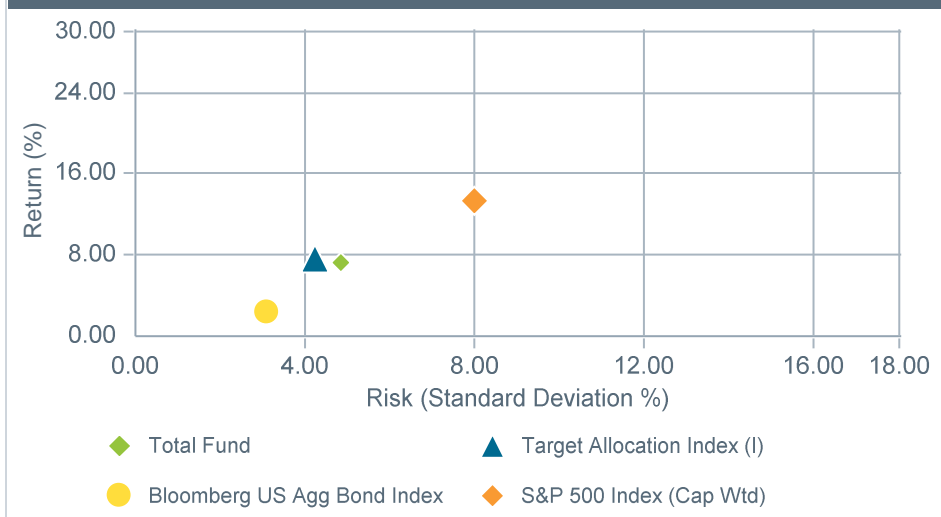
Historical Statistics - 5 Years

|                    | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|--------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Standard Deviation | 5.64       | 10.44                 | 12.58                     | 2.81                   | 5.36                  | 3.74                  | 3.12                      | 5.98                     | 0.22                      |
| Sharpe Ratio       | 1.19       | 1.19                  | 0.44                      | 1.41                   | 0.53                  | 2.30                  | 1.44                      | 2.22                     | 1.53                      |
| Downside Risk      | 3.25       | 5.77                  | 8.49                      | 1.71                   | 3.53                  | 0.75                  | 1.72                      | 0.18                     | 0.00                      |
| Excess Return      | 6.71       | 12.40                 | 5.54                      | 3.94                   | 2.85                  | 8.59                  | 4.49                      | 13.31                    | 0.33                      |

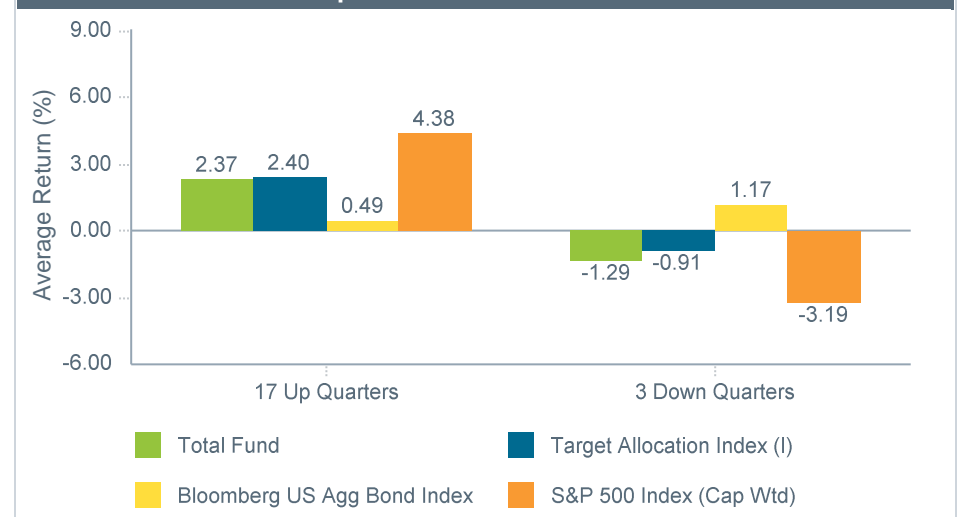
Correlation Matrix - 5 Years

|                           | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|---------------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Total Fund                | 1.00       |                       |                           |                        |                       |                       |                           |                          |                           |
| U.S. Equity Composite     | 0.89       | 1.00                  |                           |                        |                       |                       |                           |                          |                           |
| Non-U.S. Equity Composite | 0.95       | 0.79                  | 1.00                      |                        |                       |                       |                           |                          |                           |
| Fixed Income Composite    | 0.50       | 0.25                  | 0.45                      | 1.00                   |                       |                       |                           |                          |                           |
| Real Return Composite     | 0.63       | 0.36                  | 0.56                      | 0.80                   | 1.00                  |                       |                           |                          |                           |
| Real Estate Composite     | -0.08      | -0.14                 | -0.15                     | -0.22                  | -0.07                 | 1.00                  |                           |                          |                           |
| Absolute Return Composite | -0.09      | -0.13                 | -0.12                     | -0.28                  | -0.17                 | 0.10                  | 1.00                      |                          |                           |
| Private Equity Composite  | -0.04      | -0.13                 | -0.12                     | -0.20                  | -0.10                 | 0.59                  | 0.22                      | 1.00                     |                           |
| Cash Equivalent Composite | 0.17       | 0.08                  | 0.21                      | 0.13                   | 0.09                  | 0.02                  | -0.02                     | -0.07                    | 1.00                      |

Risk/Return - 5 Years



Up Down Market Bar Chart



Performance shown is net of fees, except where noted. Calculation is based on quarterly periodicity. Excess return is measured against the BofA ML 3 Mo US T-Bill Index.



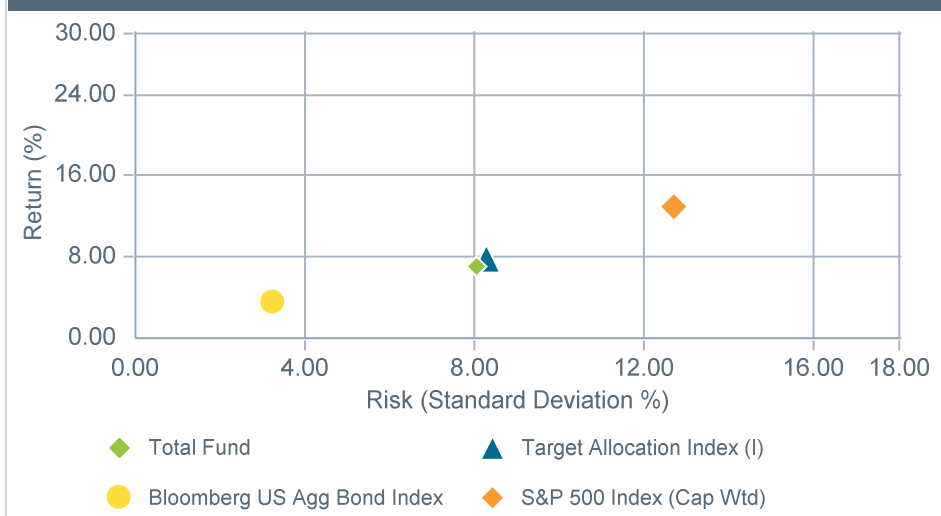
Historical Statistics - 7 Years

|                    | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|--------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Standard Deviation | 7.71       | 12.91                 | 14.28                     | 3.20                   | N/A                   | 7.31                  | 3.49                      | 5.71                     | 0.21                      |
| Sharpe Ratio       | 0.87       | 0.96                  | 0.30                      | 1.58                   | N/A                   | 1.71                  | 1.09                      | 2.29                     | 1.74                      |
| Downside Risk      | 4.63       | 7.52                  | 9.75                      | 1.74                   | N/A                   | 0.78                  | 2.12                      | 0.84                     | 0.00                      |
| Excess Return      | 6.74       | 12.44                 | 4.26                      | 5.04                   | N/A                   | 12.51                 | 3.82                      | 13.06                    | 0.36                      |

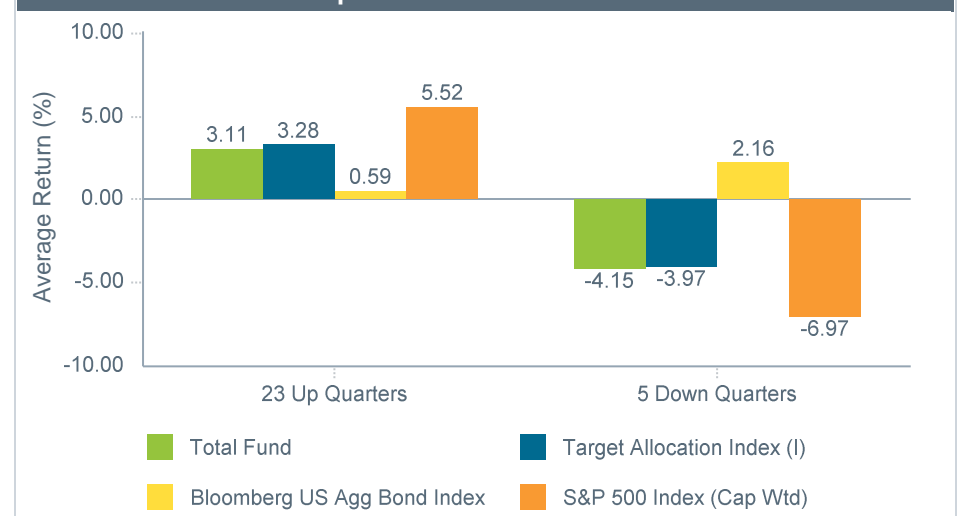
Correlation Matrix - 7 Years

|                           | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|---------------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Total Fund                | 1.00       |                       |                           |                        |                       |                       |                           |                          |                           |
| U.S. Equity Composite     | 0.92       | 1.00                  |                           |                        |                       |                       |                           |                          |                           |
| Non-U.S. Equity Composite | 0.93       | 0.85                  | 1.00                      |                        |                       |                       |                           |                          |                           |
| Fixed Income Composite    | 0.30       | 0.17                  | 0.35                      | 1.00                   |                       |                       |                           |                          |                           |
| Real Return Composite     | N/A        | N/A                   | N/A                       | N/A                    | N/A                   |                       |                           |                          |                           |
| Real Estate Composite     | -0.32      | -0.29                 | -0.26                     | -0.15                  | N/A                   | 1.00                  |                           |                          |                           |
| Absolute Return Composite | 0.08       | 0.02                  | -0.02                     | -0.29                  | N/A                   | 0.07                  | 1.00                      |                          |                           |
| Private Equity Composite  | 0.05       | -0.03                 | -0.08                     | -0.20                  | N/A                   | 0.29                  | 0.32                      | 1.00                     |                           |
| Cash Equivalent Composite | 0.09       | 0.03                  | 0.15                      | 0.10                   | N/A                   | -0.01                 | -0.02                     | -0.06                    | 1.00                      |

Risk/Return - 5 Years



Up Down Market Bar Chart



Performance shown is net of fees, except where noted. Calculation is based on quarterly periodicity. Excess return is measured against the BofA ML 3 Mo US T-Bill Index. Composites marked N/A have less history than the specified time period.

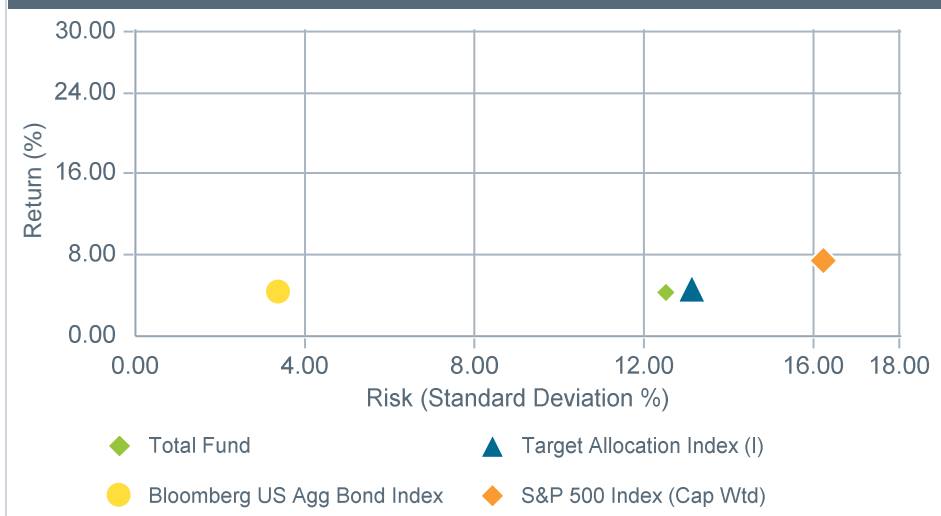
Historical Statistics - 10 Years

|                    | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|--------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Standard Deviation | 11.67      | 15.32                 | 17.89                     | 5.34                   | N/A                   | N/A                   | N/A                       | 7.73                     | 0.49                      |
| Sharpe Ratio       | 0.34       | 0.49                  | 0.14                      | 0.92                   | N/A                   | N/A                   | N/A                       | 1.04                     | 1.84                      |
| Downside Risk      | 8.56       | 10.57                 | 12.95                     | 3.34                   | N/A                   | N/A                   | N/A                       | 4.44                     | 0.00                      |
| Excess Return      | 3.94       | 7.55                  | 2.59                      | 4.87                   | N/A                   | N/A                   | N/A                       | 8.11                     | 0.48                      |

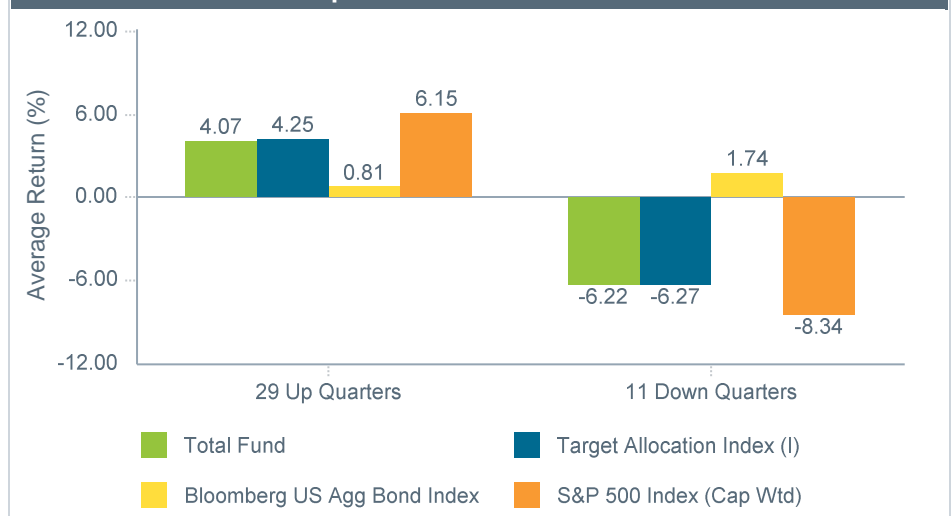
Correlation Matrix - 10 Years

|                           | Total Fund | U.S. Equity Composite | Non-U.S. Equity Composite | Fixed Income Composite | Real Return Composite | Real Estate Composite | Absolute Return Composite | Private Equity Composite | Cash Equivalent Composite |
|---------------------------|------------|-----------------------|---------------------------|------------------------|-----------------------|-----------------------|---------------------------|--------------------------|---------------------------|
| Total Fund                | 1.00       |                       |                           |                        |                       |                       |                           |                          |                           |
| U.S. Equity Composite     | 0.94       | 1.00                  |                           |                        |                       |                       |                           |                          |                           |
| Non-U.S. Equity Composite | 0.94       | 0.88                  | 1.00                      |                        |                       |                       |                           |                          |                           |
| Fixed Income Composite    | 0.36       | 0.25                  | 0.36                      | 1.00                   |                       |                       |                           |                          |                           |
| Real Return Composite     | N/A        | N/A                   | N/A                       | N/A                    | N/A                   |                       |                           |                          |                           |
| Real Estate Composite     | N/A        | N/A                   | N/A                       | N/A                    | N/A                   | N/A                   |                           |                          |                           |
| Absolute Return Composite | N/A        | N/A                   | N/A                       | N/A                    | N/A                   | N/A                   | N/A                       |                          |                           |
| Private Equity Composite  | 0.53       | 0.44                  | 0.36                      | 0.07                   | N/A                   | N/A                   | N/A                       | 1.00                     |                           |
| Cash Equivalent Composite | -0.09      | -0.11                 | -0.05                     | 0.12                   | N/A                   | N/A                   | N/A                       | -0.12                    | 1.00                      |

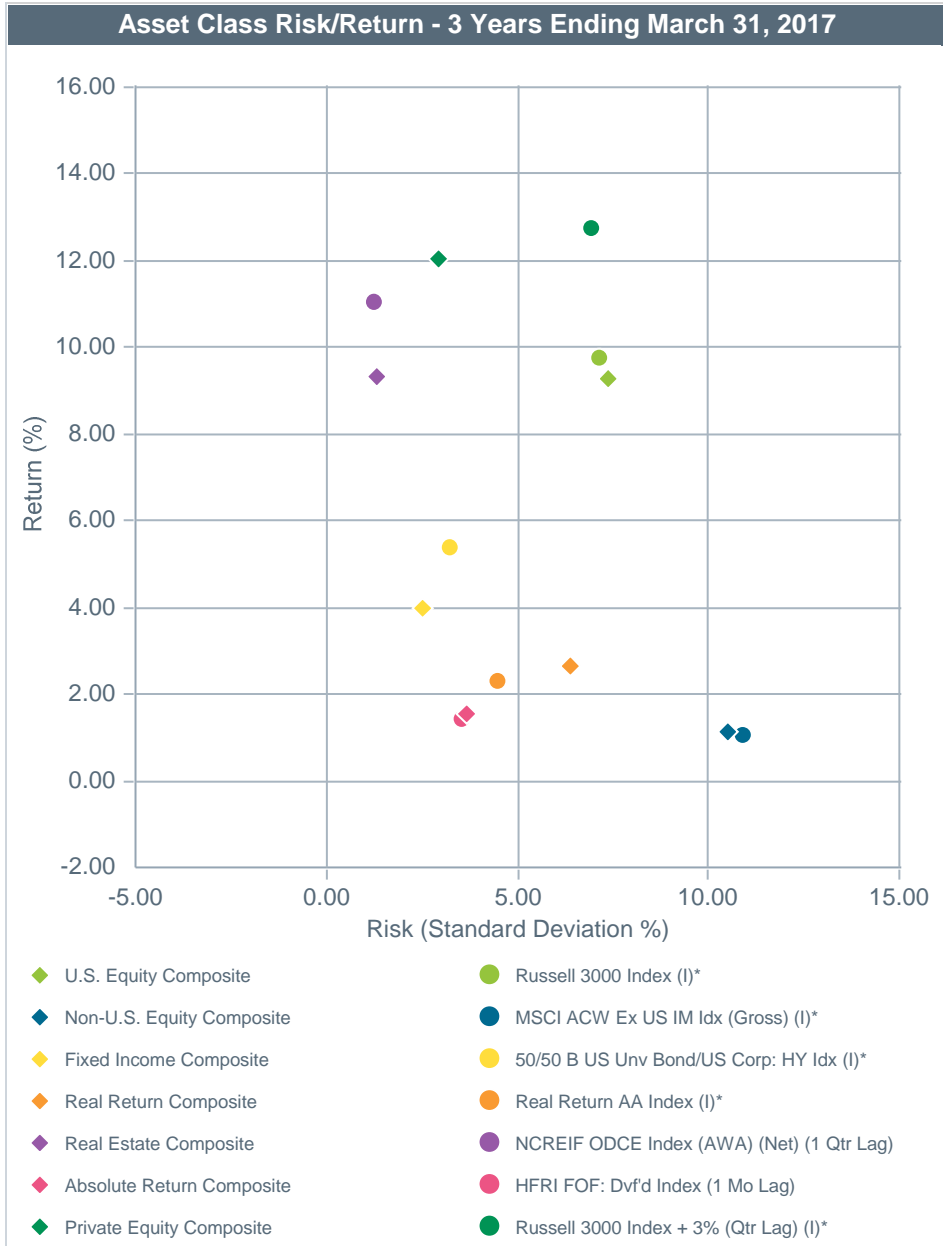
Risk/Return - 5 Years



Up Down Market Bar Chart

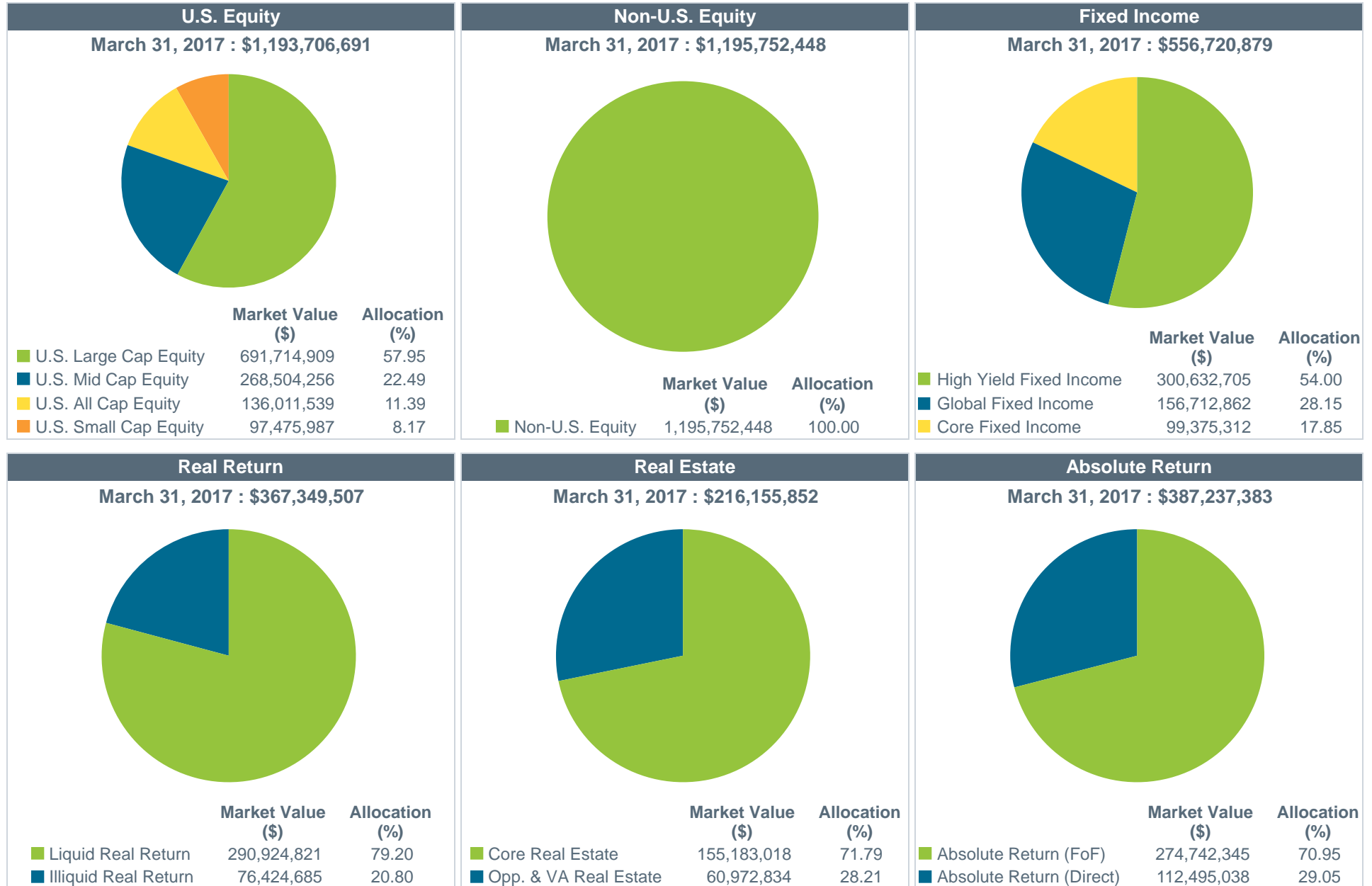


Performance shown is net of fees, except where noted. Calculation is based on quarterly periodicity. Excess return is measured against the BofA ML 3 Mo US T-Bill Index. Composites marked N/A have less history than the specified time period.



Performance shown is net of fees.





Allocations shown may not sum to 100% exactly due to rounding. Insurance Transition account is included in U.S. Large Cap Equity.



**Kentucky Retirement Systems - Insurance Plan  
Manager Comparative Performance (Net of Fees)**

As of March 31, 2017

|   | QTD          | CYTD         | FYTD         | 1<br>Year    | 3<br>Years   | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>River Road Asset Management (SA)</b> | <b>3.17</b>  | <b>3.17</b>  | <b>14.03</b> | <b>15.68</b> | <b>9.37</b>  | <b>12.51</b> | <b>20.81</b> | <b>-3.97</b> | <b>9.86</b>  | <b>12.01</b>    | <b>07/01/2011</b> |
| Russell 3000 Val Index                  | 2.99         | 2.99         | 14.73        | 19.97        | 8.58         | 13.08        | 18.40        | -4.13        | 12.70        | 12.23           |                   |
| Difference                              | 0.18         | 0.18         | -0.70        | -4.29        | 0.79         | -0.57        | 2.41         | 0.16         | -2.84        | -0.22           |                   |
| <b>River Road FAV (SA)</b>              | <b>2.68</b>  | <b>2.68</b>  | <b>21.59</b> | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>21.59</b>    | <b>07/01/2016</b> |
| Russell 3000 Val Index                  | 2.99         | 2.99         | 14.73        | 19.97        | 8.58         | 13.08        | 18.40        | -4.13        | 12.70        | 14.73           |                   |
| Difference                              | -0.31        | -0.31        | 6.86         | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | 6.86            |                   |
| <b>Westfield Capital (SA)</b>           | <b>10.47</b> | <b>10.47</b> | <b>17.38</b> | <b>15.54</b> | <b>6.95</b>  | <b>12.37</b> | <b>1.23</b>  | <b>-1.42</b> | <b>12.82</b> | <b>11.69</b>    | <b>07/01/2011</b> |
| Russell 3000 Grth Index                 | 8.63         | 8.63         | 15.35        | 16.27        | 10.90        | 13.22        | 7.39         | 5.09         | 12.44        | 13.16           |                   |
| Difference                              | 1.84         | 1.84         | 2.03         | -0.73        | -3.95        | -0.85        | -6.16        | -6.51        | 0.38         | -1.47           |                   |
| <b>U.S. All Cap Equity Composite</b>    | <b>5.70</b>  | <b>5.70</b>  | <b>16.08</b> | <b>16.91</b> | <b>7.67</b>  | <b>12.20</b> | <b>10.17</b> | <b>-2.26</b> | <b>11.13</b> | <b>11.29</b>    | <b>07/01/2011</b> |
| Russell 3000 Index                      | 5.74         | 5.74         | 15.04        | 18.07        | 9.76         | 13.18        | 12.74        | 0.48         | 12.56        | 12.72           |                   |
| Difference                              | -0.04        | -0.04        | 1.04         | -1.16        | -2.09        | -0.98        | -2.57        | -2.74        | -1.43        | -1.43           |                   |
| <b>Scientific Beta</b>                  | <b>5.40</b>  | <b>5.40</b>  | <b>9.47</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>9.47</b>     | <b>07/01/2016</b> |
| S&P 500 Index (Cap Wtd)                 | 6.07         | 6.07         | 14.36        | 17.17        | 10.37        | 13.30        | 11.96        | 1.38         | 13.69        | 14.36           |                   |
| Difference                              | -0.67        | -0.67        | -4.89        | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | -4.89           |                   |
| <b>Internal S&amp;P 500 Index (SA)</b>  | <b>6.23</b>  | <b>6.23</b>  | <b>14.41</b> | <b>17.13</b> | <b>10.35</b> | <b>13.26</b> | <b>11.65</b> | <b>1.46</b>  | <b>13.63</b> | <b>6.86</b>     | <b>07/01/2001</b> |
| S&P 500 Index (Cap Wtd)*                | 6.07         | 6.07         | 14.36        | 17.17        | 10.37        | 13.30        | 11.96        | 1.38         | 13.69        | 6.77            |                   |
| Difference                              | 0.16         | 0.16         | 0.05         | -0.04        | -0.02        | -0.04        | -0.31        | 0.08         | -0.06        | 0.09            |                   |
| <b>U.S. Large Cap Equity Composite</b>  | <b>6.00</b>  | <b>6.00</b>  | <b>13.79</b> | <b>16.46</b> | <b>10.41</b> | <b>N/A</b>   | <b>12.34</b> | <b>1.53</b>  | <b>13.29</b> | <b>13.22</b>    | <b>07/01/2013</b> |
| Russell 1000 Index                      | 6.03         | 6.03         | 14.52        | 17.43        | 9.99         | 13.26        | 12.05        | 0.92         | 13.24        | 13.10           |                   |
| Difference                              | -0.03        | -0.03        | -0.73        | -0.97        | 0.42         | N/A          | 0.29         | 0.61         | 0.05         | 0.12            |                   |

Performance shown is net of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



**Kentucky Retirement Systems - Insurance Plan  
Manager Comparative Performance (Net of Fees)**

As of March 31, 2017

|   | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|-------------|-------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>Internal US Mid Cap (SA)</b>             | <b>4.02</b> | <b>4.02</b> | <b>16.11</b> | <b>20.79</b> | <b>N/A</b>  | <b>N/A</b>   | <b>21.10</b> | <b>-2.39</b> | <b>N/A</b>   | <b>10.70</b>    | <b>08/01/2014</b> |
| S&P Mid Cap 400 Index (Cap Wtd)             | 3.94        | 3.94        | 16.28        | 20.92        | 9.36        | 13.32        | 20.74        | -2.18        | 9.77         | 10.64           |                   |
| Difference                                  | 0.08        | 0.08        | -0.17        | -0.13        | N/A         | N/A          | 0.36         | -0.21        | N/A          | 0.06            |                   |
| <b>Systematic Financial Management (SA)</b> | <b>1.32</b> | <b>1.32</b> | <b>18.45</b> | <b>20.79</b> | <b>5.77</b> | <b>N/A</b>   | <b>20.13</b> | <b>-5.14</b> | <b>5.09</b>  | <b>12.91</b>    | <b>07/01/2012</b> |
| Russell Mid Cap Val Index                   | 3.76        | 3.76        | 14.36        | 19.82        | 8.94        | 14.07        | 20.00        | -4.78        | 14.75        | 15.67           |                   |
| Difference                                  | -2.44       | -2.44       | 4.09         | 0.97         | -3.17       | N/A          | 0.13         | -0.36        | -9.66        | -2.76           |                   |
| <b>U.S. Mid Cap Equity Composite</b>        | <b>2.74</b> | <b>2.74</b> | <b>16.80</b> | <b>20.91</b> | <b>6.89</b> | <b>N/A</b>   | <b>21.95</b> | <b>-4.74</b> | <b>3.65</b>  | <b>10.84</b>    | <b>07/01/2013</b> |
| S&P Mid Cap 400 Index (Cap Wtd)             | 3.94        | 3.94        | 16.28        | 20.92        | 9.36        | 13.32        | 20.74        | -2.18        | 9.77         | 12.78           |                   |
| Difference                                  | -1.20       | -1.20       | 0.52         | -0.01        | -2.47       | N/A          | 1.21         | -2.56        | -6.12        | -1.94           |                   |
| <b>NT Structured Small Cap (SA)</b>         | <b>2.44</b> | <b>2.44</b> | <b>19.65</b> | <b>23.68</b> | <b>7.85</b> | <b>13.23</b> | <b>21.10</b> | <b>-3.27</b> | <b>5.80</b>  | <b>11.95</b>    | <b>07/01/2011</b> |
| Russell 2000 Index                          | 2.47        | 2.47        | 21.60        | 26.22        | 7.22        | 12.35        | 21.31        | -4.41        | 4.89         | 10.94           |                   |
| Difference                                  | -0.03       | -0.03       | -1.95        | -2.54        | 0.63        | 0.88         | -0.21        | 1.14         | 0.91         | 1.01            |                   |
| <b>U.S. Small Cap Equity Composite</b>      | <b>2.18</b> | <b>2.18</b> | <b>19.13</b> | <b>23.14</b> | <b>7.71</b> | <b>N/A</b>   | <b>20.87</b> | <b>-3.34</b> | <b>5.93</b>  | <b>11.85</b>    | <b>07/01/2013</b> |
| Russell 2000 Index                          | 2.47        | 2.47        | 21.60        | 26.22        | 7.22        | 12.35        | 21.31        | -4.41        | 4.89         | 11.29           |                   |
| Difference                                  | -0.29       | -0.29       | -2.47        | -3.08        | 0.49        | N/A          | -0.44        | 1.07         | 1.04         | 0.56            |                   |
| <b>U.S. Equity Composite</b>                | <b>4.98</b> | <b>4.98</b> | <b>14.96</b> | <b>17.84</b> | <b>9.26</b> | <b>12.68</b> | <b>14.66</b> | <b>-0.48</b> | <b>10.58</b> | <b>9.54</b>     | <b>07/01/1992</b> |
| Russell 3000 Index (I)*                     | 5.74        | 5.74        | 15.04        | 18.07        | 9.76        | 13.18        | 12.74        | 0.48         | 12.56        | N/A             |                   |
| Difference                                  | -0.76       | -0.76       | -0.08        | -0.23        | -0.50       | -0.50        | 1.92         | -0.96        | -1.98        | N/A             |                   |

Performance shown is net of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



**Kentucky Retirement Systems - Insurance Plan  
Manager Comparative Performance (Net of Fees)**

As of March 31, 2017

|   | QTD          | CYTD         | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years  | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|--------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>Lazard Int'l Strategic Equity (SA)</b>         | <b>6.26</b>  | <b>6.26</b>  | <b>7.07</b>  | <b>6.56</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>0.20</b>  | <b>-0.61</b> | <b>N/A</b>   | <b>-0.45</b>    | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | -1.72        | -1.72        | -7.09        | -7.14        | N/A         | N/A         | -4.81        | 4.64         | N/A          | 0.29            |                   |
| <b>LSV Int'l Concentrated Value Equity (SA)</b>   | <b>8.23</b>  | <b>8.23</b>  | <b>20.61</b> | <b>16.28</b> | <b>N/A</b>  | <b>N/A</b>  | <b>6.77</b>  | <b>-5.97</b> | <b>N/A</b>   | <b>-0.11</b>    | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | 0.25         | 0.25         | 6.45         | 2.58         | N/A         | N/A         | 1.76         | -0.72        | N/A          | 0.63            |                   |
| <b>BTC ACWI Ex US Fund (CF)</b>                   | <b>7.91</b>  | <b>7.91</b>  | <b>13.87</b> | <b>13.18</b> | <b>0.90</b> | <b>N/A</b>  | <b>5.44</b>  | <b>-5.62</b> | <b>-3.88</b> | <b>7.60</b>     | <b>06/01/2012</b> |
| MSCI ACW Ex US Index (USD) (Net)                  | 7.86         | 7.86         | 13.87        | 13.13        | 0.56        | 4.36        | 4.50         | -5.66        | -3.87        | 7.50            |                   |
| Difference  | 0.05         | 0.05         | 0.00         | 0.05         | 0.34        | N/A         | 0.94         | 0.04         | -0.01        | 0.10            |                   |
| <b>American Century Non-US Growth Equity (SA)</b> | <b>6.58</b>  | <b>6.58</b>  | <b>8.42</b>  | <b>5.07</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>-4.42</b> | <b>-0.89</b> | <b>N/A</b>   | <b>-1.92</b>    | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | -1.40        | -1.40        | -5.74        | -8.63        | N/A         | N/A         | -9.43        | 4.36         | N/A          | -1.18           |                   |
| <b>Franklin Templeton Non-US Equity (SA)</b>      | <b>11.76</b> | <b>11.76</b> | <b>15.22</b> | <b>12.66</b> | <b>N/A</b>  | <b>N/A</b>  | <b>1.12</b>  | <b>0.60</b>  | <b>N/A</b>   | <b>1.96</b>     | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | 3.78         | 3.78         | 1.06         | -1.04        | N/A         | N/A         | -3.89        | 5.85         | N/A          | 2.70            |                   |
| <b>BTC ACWI Ex US Small Cap Fund (CF)</b>         | <b>8.94</b>  | <b>8.94</b>  | <b>13.50</b> | <b>12.61</b> | <b>2.62</b> | <b>N/A</b>  | <b>3.75</b>  | <b>2.85</b>  | <b>-3.90</b> | <b>8.17</b>     | <b>07/01/2013</b> |
| MSCI ACW Ex US Sm Cap Index (USD) (Net)           | 8.78         | 8.78         | 13.25        | 12.26        | 2.46        | 6.68        | 3.91         | 2.60         | -4.03        | 7.43            |                   |
| Difference  | 0.16         | 0.16         | 0.25         | 0.35         | 0.16        | N/A         | -0.16        | 0.25         | 0.13         | 0.74            |                   |
| <b>Non-U.S. Equity Composite</b>                  | <b>7.92</b>  | <b>7.92</b>  | <b>13.32</b> | <b>11.54</b> | <b>1.11</b> | <b>4.99</b> | <b>3.97</b>  | <b>-3.46</b> | <b>-4.28</b> | <b>2.51</b>     | <b>04/01/2000</b> |
| MSCI ACW Ex US Investable Mkt Index (Gross) (I)*  | 8.10         | 8.10         | 14.06        | 13.55        | 1.03        | 4.84        | 4.91         | -5.25        | -3.44        | 2.08            |                   |
| Difference  | -0.18        | -0.18        | -0.74        | -2.01        | 0.08        | 0.15        | -0.94        | 1.79         | -0.84        | 0.43            |                   |

Performance shown is net of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



Kentucky Retirement Systems - Insurance Plan  
 Manager Comparative Performance (Net of Fees)

As of March 31, 2017

|   | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years  | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|-------------|-------------|--------------|--------------|-------------|-------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>NISA Core Agg Fixed Income (SA)</b>      | <b>0.84</b> | <b>0.84</b> | <b>-1.76</b> | <b>0.47</b>  | <b>2.91</b> | <b>2.49</b> | <b>2.96</b>  | <b>0.77</b>  | <b>6.16</b>  | <b>3.11</b>     | <b>07/01/2011</b> |
| Bloomberg US Agg Bond Index                 | 0.82        | 0.82        | -1.73        | 0.44         | 2.68        | 2.34        | 2.65         | 0.55         | 5.97         | 2.95            |                   |
| Difference                                  | 0.02        | 0.02        | -0.03        | 0.03         | 0.23        | 0.15        | 0.31         | 0.22         | 0.19         | 0.16            |                   |
| <b>Core Fixed Income Composite</b>          | <b>0.84</b> | <b>0.84</b> | <b>-1.76</b> | <b>0.43</b>  | <b>2.18</b> | <b>N/A</b>  | <b>3.15</b>  | <b>0.59</b>  | <b>3.63</b>  | <b>2.38</b>     | <b>07/01/2013</b> |
| Bloomberg US Agg Bond Index                 | 0.82        | 0.82        | -1.73        | 0.44         | 2.68        | 2.34        | 2.65         | 0.55         | 5.97         | 2.76            |                   |
| Difference                                  | 0.02        | 0.02        | -0.03        | -0.01        | -0.50       | N/A         | 0.50         | 0.04         | -2.34        | -0.38           |                   |
| <b>Cerberus KRS Levered Loan Opps, L.P.</b> | <b>2.41</b> | <b>2.41</b> | <b>6.37</b>  | <b>8.65</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>8.63</b>  | <b>9.29</b>  | <b>N/A</b>   | <b>8.34</b>     | <b>09/01/2014</b> |
| S&P-LSTA Lvg'd Loan Index                   | 1.15        | 1.15        | 6.61         | 9.72         | 3.57        | 4.58        | 10.16        | -0.69        | 1.60         | 3.55            |                   |
| Difference                                  | 1.26        | 1.26        | -0.24        | -1.07        | N/A         | N/A         | -1.53        | 9.98         | N/A          | 4.79            |                   |
| <b>Columbia HY Fixed Income (SA)</b>        | <b>2.17</b> | <b>2.17</b> | <b>7.73</b>  | <b>11.04</b> | <b>5.02</b> | <b>6.93</b> | <b>12.19</b> | <b>-0.17</b> | <b>4.45</b>  | <b>7.55</b>     | <b>11/01/2011</b> |
| Bloomberg US Corp: Hi Yld Index             | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82        | 17.13        | -4.47        | 2.45         | 7.39            |                   |
| Difference                                  | -0.53       | -0.53       | -2.57        | -5.35        | 0.46        | 0.11        | -4.94        | 4.30         | 2.00         | 0.16            |                   |
| <b>Marathon Bluegrass Credit Fund</b>       | <b>0.62</b> | <b>0.62</b> | <b>12.56</b> | <b>17.60</b> | <b>N/A</b>  | <b>N/A</b>  | <b>16.88</b> | <b>N/A</b>   | <b>N/A</b>   | <b>13.85</b>    | <b>01/01/2016</b> |
| Bloomberg US Corp: Hi Yld Index             | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82        | 17.13        | -4.47        | 2.45         | 15.93           |                   |
| Difference                                  | -2.08       | -2.08       | 2.26         | 1.21         | N/A         | N/A         | -0.25        | N/A          | N/A          | -2.08           |                   |
| <b>Shenkman Capital (SA)</b>                | <b>0.99</b> | <b>0.99</b> | <b>5.78</b>  | <b>7.75</b>  | <b>1.99</b> | <b>3.78</b> | <b>8.46</b>  | <b>-0.38</b> | <b>-1.32</b> | <b>4.10</b>     | <b>07/01/2011</b> |
| Shenkman Blended Index                      | 1.15        | 1.15        | 6.61         | 9.72         | 3.74        | 5.54        | 10.16        | -0.69        | 2.98         | 5.50            |                   |
| Difference                                  | -0.16       | -0.16       | -0.83        | -1.97        | -1.75       | -1.76       | -1.70        | 0.31         | -4.30        | -1.40           |                   |
| <b>Waterfall (SA)</b>                       | <b>4.67</b> | <b>4.67</b> | <b>8.36</b>  | <b>14.30</b> | <b>7.31</b> | <b>9.53</b> | <b>7.52</b>  | <b>2.82</b>  | <b>8.91</b>  | <b>10.26</b>    | <b>07/01/2011</b> |
| Opportunistic FI Blended Index              | 2.10        | 2.10        | 7.72         | 11.63        | 3.44        | 4.73        | 11.22        | -2.73        | 2.16         | 4.69            |                   |
| Difference                                  | 2.57        | 2.57        | 0.64         | 2.67         | 3.87        | 4.80        | -3.70        | 5.55         | 6.75         | 5.57            |                   |
| <b>High Yield Fixed Income Composite</b>    | <b>1.93</b> | <b>1.93</b> | <b>8.76</b>  | <b>12.65</b> | <b>5.16</b> | <b>N/A</b>  | <b>11.40</b> | <b>0.56</b>  | <b>4.74</b>  | <b>6.33</b>     | <b>07/01/2013</b> |
| Bloomberg US Corp: Hi Yld Index             | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82        | 17.13        | -4.47        | 2.45         | 6.07            |                   |
| Difference                                  | -0.77       | -0.77       | -1.54        | -3.74        | 0.60        | N/A         | -5.73        | 5.03         | 2.29         | 0.26            |                   |

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**Kentucky Retirement Systems - Insurance Plan  
Manager Comparative Performance (Net of Fees)**

As of March 31, 2017

|  | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016        | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| <b>Manulife Asset Mgmt (SA)</b>                        | <b>1.43</b> | <b>1.43</b> | <b>1.14</b> | <b>3.10</b> | <b>2.53</b> | <b>3.80</b> | <b>4.38</b> | <b>0.47</b> | <b>3.19</b> | <b>4.43</b>     | <b>12/01/2011</b> |
| Bloomberg US Unv Bond Index*                           | 1.09        | 1.09        | -0.60       | 1.92        | -0.12       | 0.70        | 3.91        | -3.29       | 0.48        | 1.00            |                   |
| Difference   | 0.34        | 0.34        | 1.74        | 1.18        | 2.65        | 3.10        | 0.47        | 3.76        | 2.71        | 3.43            |                   |
| <b>Global Fixed Income Composite</b>                   | <b>1.43</b> | <b>1.43</b> | <b>1.14</b> | <b>3.09</b> | <b>2.22</b> | <b>N/A</b>  | <b>4.37</b> | <b>0.69</b> | <b>2.64</b> | <b>2.86</b>     | <b>07/01/2013</b> |
| Bloomberg Gbl Agg Bond Index                           | 1.76        | 1.76        | -4.66       | -1.90       | -0.39       | 0.38        | 2.09        | -3.15       | 0.59        | 0.94            |                   |
| Difference   | -0.33       | -0.33       | 5.80        | 4.99        | 2.61        | N/A         | 2.28        | 3.84        | 2.05        | 1.92            |                   |
| <b>Fixed Income Composite</b>                          | <b>1.57</b> | <b>1.57</b> | <b>4.31</b> | <b>7.19</b> | <b>3.98</b> | <b>4.11</b> | <b>8.22</b> | <b>0.53</b> | <b>3.79</b> | <b>6.53</b>     | <b>07/01/1992</b> |
| 50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (I)* | 1.90        | 1.90        | 4.73        | 8.95        | 5.36        | 4.24        | 10.38       | 0.43        | 5.56        | 6.50            |                   |
| Difference   | -0.33       | -0.33       | -0.42       | -1.76       | -1.38       | -0.13       | -2.16       | 0.10        | -1.77       | 0.03            |                   |

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Kentucky Retirement Systems - Insurance Plan  
 Manager Comparative Performance (Net of Fees)

As of March 31, 2017

|   | QTD         | CYTD        | FYTD         | 1 Year        | 3 Years      | 5 Years      | 2016          | 2015          | 2014         | Since Incep.  | Inception Date    |
|---|-------------|-------------|--------------|---------------|--------------|--------------|---------------|---------------|--------------|---------------|-------------------|
| <b>Internal TIPS (SA)</b>                         | <b>1.06</b> | <b>1.06</b> | <b>0.27</b>  | <b>1.55</b>   | <b>2.16</b>  | <b>1.25</b>  | <b>4.14</b>   | <b>0.26</b>   | <b>3.02</b>  | <b>4.57</b>   | <b>10/01/2003</b> |
| Internal US TIPS Blend                            | 1.05        | 1.05        | 0.14         | 1.45          | 1.72         | 0.79         | 4.01          | -0.52         | 2.63         | 4.24          |                   |
| Difference  | 0.01        | 0.01        | 0.13         | 0.10          | 0.44         | 0.46         | 0.13          | 0.78          | 0.39         | 0.33          |                   |
| <b>Nuveen Real Asset Income (SA)</b>              | <b>4.82</b> | <b>4.82</b> | <b>4.55</b>  | <b>10.28</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>10.16</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>4.53</b>   | <b>02/01/2015</b> |
| Nuveen Real Asset Custom Index                    | 5.30        | 5.30        | 3.86         | 8.87          | N/A          | N/A          | 8.74          | N/A           | N/A          | 4.65          |                   |
| Difference  | -0.48       | -0.48       | 0.69         | 1.41          | N/A          | N/A          | 1.42          | N/A           | N/A          | -0.12         |                   |
| <b>PIMCO:All Asset;Inst (PAAIX)</b>               | <b>7.52</b> | <b>7.52</b> | <b>8.73</b>  | <b>13.14</b>  | <b>2.31</b>  | <b>3.73</b>  | <b>12.87</b>  | <b>-10.43</b> | <b>3.34</b>  | <b>4.76</b>   | <b>12/01/2011</b> |
| Bloomberg US Trsy Infl Notes: 1-10 Yr Index       | 1.05        | 1.05        | 0.14         | 1.45          | 1.46         | 0.62         | 4.01          | -0.52         | 0.91         | 0.82          |                   |
| Difference  | 6.47        | 6.47        | 8.59         | 11.69         | 0.85         | 3.11         | 8.86          | -9.91         | 2.43         | 3.94          |                   |
| <b>Tortoise Capital (CF)</b>                      | <b>5.08</b> | <b>5.08</b> | <b>10.72</b> | <b>29.52</b>  | <b>-1.82</b> | <b>8.34</b>  | <b>15.95</b>  | <b>-26.95</b> | <b>14.90</b> | <b>14.83</b>  | <b>08/01/2009</b> |
| Alerian MLP Index                                 | 3.95        | 3.95        | 7.21         | 28.32         | -5.17        | 2.64         | 18.31         | -32.59        | 4.80         | 10.33         |                   |
| Difference  | 1.13        | 1.13        | 3.51         | 1.20          | 3.35         | 5.70         | -2.36         | 5.64          | 10.10        | 4.50          |                   |
| <b>Amerra Ag Fund II (CF)</b>                     | <b>0.42</b> | <b>0.42</b> | <b>1.84</b>  | <b>5.78</b>   | <b>8.22</b>  | <b>N/A</b>   | <b>3.50</b>   | <b>14.34</b>  | <b>8.63</b>  | <b>6.08</b>   | <b>12/01/2012</b> |
| <b>Amerra-AGRI Holding (CF)</b>                   | <b>2.52</b> | <b>2.52</b> | <b>2.32</b>  | <b>3.26</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>0.72</b>   | <b>N/A</b>    | <b>N/A</b>   | <b>1.73</b>   | <b>08/01/2015</b> |
| <b>BTG Pactual Brazil Timberland Fund I, L.P.</b> | <b>0.96</b> | <b>0.96</b> | <b>10.86</b> | <b>10.89</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>-16.19</b> | <b>-17.41</b> | <b>N/A</b>   | <b>-14.24</b> | <b>12/01/2014</b> |
| <b>Magnetar MTP Energy Fund, L.P.</b>             | <b>2.64</b> | <b>2.64</b> | <b>11.40</b> | <b>30.59</b>  | <b>-0.61</b> | <b>N/A</b>   | <b>13.68</b>  | <b>-15.63</b> | <b>2.98</b>  | <b>1.17</b>   | <b>07/01/2013</b> |
| <b>Magnetar MTP EOF II, L.P.</b>                  | <b>0.74</b> | <b>0.74</b> | <b>16.04</b> | <b>15.39</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>-3.75</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>-1.83</b>  | <b>08/01/2015</b> |
| <b>Oberland Capital Healthcare, L.P.</b>          | <b>3.61</b> | <b>3.61</b> | <b>-5.87</b> | <b>59.25</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>53.70</b>  | <b>-27.53</b> | <b>N/A</b>   | <b>4.54</b>   | <b>10/01/2014</b> |
| <b>Taurus Mining Finance Fund</b>                 | <b>6.18</b> | <b>6.18</b> | <b>20.18</b> | <b>36.49</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>31.15</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>18.30</b>  | <b>04/01/2015</b> |
| <b>Tenaska Power Fund II (CF)</b>                 | <b>0.00</b> | <b>0.00</b> | <b>13.12</b> | <b>-23.28</b> | <b>-3.68</b> | <b>-5.00</b> | <b>-23.28</b> | <b>16.85</b>  | <b>-0.88</b> | <b>-4.43</b>  | <b>10/01/2008</b> |
| <b>Real Return Composite</b>                      | <b>4.43</b> | <b>4.43</b> | <b>5.90</b>  | <b>11.56</b>  | <b>2.65</b>  | <b>2.49</b>  | <b>9.69</b>   | <b>-6.13</b>  | <b>3.78</b>  | <b>3.73</b>   | <b>07/01/2011</b> |
| Real Return Actual Allocation Index (I)*          | 2.53        | 2.53        | 2.90         | 7.60          | 2.30         | 2.88         | 6.87          | -3.56         | 3.15         | 3.02          |                   |
| Difference  | 1.90        | 1.90        | 3.00         | 3.96          | 0.35         | -0.39        | 2.82          | -2.57         | 0.63         | 0.71          |                   |

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|  | QTD         | CYTD        | FYTD        | 1<br>Year    | 3<br>Years  | 5<br>Years  | 2016        | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| H/2 Credit Partners (CF)                   | 2.93        | 2.93        | 10.47       | 12.00        | 5.79        | 6.64        | 9.16        | 2.11        | 6.57        | 6.43            | 07/01/2011        |
| Harrison Street Core (CF)                  | 2.72        | 2.72        | 6.95        | 10.12        | 9.52        | N/A         | 10.09       | 7.00        | 12.03       | 7.92            | 05/01/2012        |
| Mesa West Core Lending, L.P.               | 1.82        | 1.82        | 6.43        | 7.63         | 6.86        | N/A         | 7.91        | 7.29        | 4.68        | 6.25            | 05/01/2013        |
| Prologis Targeted U.S. Logistics Fund (CF) | 6.51        | 6.51        | 13.19       | 15.40        | N/A         | N/A         | 13.34       | 13.54       | N/A         | 13.44           | 10/01/2014        |
| Stockbridge SmtMkts, L.P.                  | 2.56        | 2.56        | 6.96        | 9.41         | N/A         | N/A         | 9.73        | 11.30       | N/A         | 9.98            | 05/01/2014        |
| DivcoWest Fund IV, L.P.                    | 6.12        | 6.12        | 26.57       | 35.97        | 25.51       | N/A         | 38.32       | 28.79       | N/A         | 24.26           | 03/01/2014        |
| Greenfield Acquisition Partners VI, L.P.   | 4.88        | 4.88        | 1.25        | 2.48         | 10.80       | N/A         | 0.93        | 18.77       | 16.59       | 11.97           | 12/01/2012        |
| Greenfield Acquisition Partners VII, L.P.  | 5.36        | 5.36        | 10.04       | 11.07        | N/A         | N/A         | 12.78       | 15.29       | N/A         | 11.23           | 07/01/2014        |
| Lubert Adler Real Estate Fund VII, L.P.    | 1.68        | 1.68        | 5.60        | 5.94         | N/A         | N/A         | 4.19        | -0.33       | N/A         | -7.42           | 07/01/2014        |
| Mesa West IV, L.P.                         | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | N/A         | N/A         | N/A         | 0.00            | 03/01/2017        |
| Patron Capital V, L.P.                     | 3.29        | 3.29        | N/A         | N/A          | N/A         | N/A         | N/A         | N/A         | N/A         | -28.37          | 08/01/2016        |
| Rubenstein Properties Fund II, L.P.        | 1.12        | 1.12        | 2.37        | 4.48         | 16.27       | N/A         | 1.34        | 11.17       | 44.51       | 13.14           | 07/01/2013        |
| Walton Street Real Estate Fund VI, L.P.    | 0.86        | 0.86        | -5.46       | -6.89        | 6.89        | 8.95        | -3.80       | 12.99       | 16.41       | -21.81          | 05/01/2009        |
| Walton Street Real Estate Fund VII, L.P.   | 2.69        | 2.69        | 8.67        | 10.99        | 14.73       | N/A         | 12.32       | 16.78       | 15.13       | 14.08           | 07/01/2013        |
| <b>Real Estate Composite</b>               | <b>3.14</b> | <b>3.14</b> | <b>8.05</b> | <b>10.14</b> | <b>9.32</b> | <b>9.01</b> | <b>9.76</b> | <b>8.99</b> | <b>7.46</b> | <b>8.99</b>     | <b>05/01/2009</b> |
| NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)  | 1.88        | 1.88        | 5.72        | 7.79         | 11.04       | 11.16       | 9.08        | 13.86       | 11.36       | 5.82            |                   |
| Difference                                 | 1.26        | 1.26        | 2.33        | 2.35         | -1.72       | -2.15       | 0.68        | -4.87       | -3.90       | 3.17            |                   |

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|                                    | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016         | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|-----------------|-------------------|
| BAAM (SA)                          | 0.11        | 0.11        | 3.88        | 4.40        | 3.73        | 6.22        | 0.72         | 6.11        | 7.91        | 6.13            | 09/01/2011        |
| Davidson-Kemper, L.P.              | 2.04        | 2.04        | 6.32        | 9.48        | N/A         | N/A         | N/A          | N/A         | N/A         | 7.87            | 02/01/2016        |
| PAAMCO (SA)                        | 0.00        | 0.00        | -0.01       | 1.60        | -1.41       | 3.39        | -1.84        | -2.05       | 3.81        | 3.47            | 09/01/2011        |
| Prisma Capital Partners (SA)       | 1.03        | 1.03        | 4.65        | 4.78        | 1.22        | 3.86        | -0.82        | 2.54        | 3.18        | 3.64            | 09/01/2011        |
| Senator Investment Group, L.P.     | 3.36        | 3.36        | N/A         | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 3.84            | 09/01/2016        |
| Tourbillon Global Master Fund, Ltd | -0.92       | -0.92       | 6.29        | 0.39        | N/A         | N/A         | -9.75        | N/A         | N/A         | -7.13           | 11/01/2015        |
| Anchorage Capital                  | 3.37        | 3.37        | N/A         | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 5.43            | 08/01/2016        |
| Blackrock GAO Fund, Ltd (CF)       | 3.56        | 3.56        | N/A         | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | -2.26           | 08/01/2016        |
| Coatue Qualified Partners, L.P.    | 9.24        | 9.24        | 13.62       | 13.84       | N/A         | N/A         | 4.18         | N/A         | N/A         | 11.27           | 07/01/2015        |
| DSAM Fund, L.P.                    | 4.00        | 4.00        | 2.20        | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 2.09            | 05/01/2016        |
| Finisterre Global Op               | 0.34        | 0.34        | N/A         | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 2.76            | 08/01/2016        |
| Glenview Capital (CF)              | 9.76        | 9.76        | 20.04       | 26.28       | N/A         | N/A         | -3.28        | N/A         | N/A         | 1.82            | 11/01/2015        |
| HBK II (CF)                        | 1.57        | 1.57        | 5.45        | 9.60        | 2.52        | N/A         | 5.35         | -1.46       | 3.93        | 3.08            | 12/01/2013        |
| Knighthead Capital (CF)            | 2.47        | 2.47        | 12.82       | 15.24       | -0.08       | N/A         | 8.51         | -10.22      | 5.59        | 1.63            | 01/01/2014        |
| LibreMax Capital (CF)              | 1.20        | 1.20        | 6.12        | 7.03        | N/A         | N/A         | 2.56         | -0.16       | N/A         | 2.51            | 08/01/2014        |
| Liquidalts H2O Force (CF)          | -0.83       | -0.83       | N/A         | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 8.26            | 08/01/2016        |
| Luxor Capital (CF)                 | 10.67       | 10.67       | 29.88       | 25.64       | -4.32       | N/A         | 0.85         | -16.70      | N/A         | -4.32           | 04/01/2014        |
| Myriad Opportunities               | 0.99        | 0.99        | 4.60        | N/A         | N/A         | N/A         | N/A          | N/A         | N/A         | 6.15            | 05/01/2016        |
| Pine River (CF)                    | -0.47       | -0.47       | 4.29        | 6.43        | N/A         | N/A         | 0.63         | 0.09        | N/A         | 0.26            | 05/01/2014        |
| QMS Diversified Global Macro (CF)  | 1.23        | 1.23        | -10.50      | -14.19      | N/A         | N/A         | -10.69       | N/A         | N/A         | -6.36           | 11/01/2015        |
| Scopia PX, LLC                     | -0.87       | -0.87       | 5.18        | -1.65       | N/A         | N/A         | -4.56        | 0.92        | N/A         | -0.13           | 11/01/2014        |
| <b>Absolute Return Composite</b>   | <b>1.50</b> | <b>1.50</b> | <b>4.88</b> | <b>5.35</b> | <b>1.53</b> | <b>4.68</b> | <b>-0.26</b> | <b>1.80</b> | <b>4.80</b> | <b>3.96</b>     | <b>04/01/2010</b> |
| HFRI FOF: Dv'f'd Index (1 Mo Lag)  | 2.78        | 2.78        | 4.18        | 5.29        | 1.41        | 3.20        | -1.34        | 0.79        | 4.72        | 2.72            |                   |
| Difference                         | -1.28       | -1.28       | 0.70        | 0.06        | 0.12        | 1.48        | 1.08         | 1.01        | 0.08        | 1.24            |                   |

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**Kentucky Retirement Systems - Insurance Plan  
Manager Comparative Performance (Net of Fees)**

As of March 31, 2017

|                              | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016        | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| <b>Cash Equivalents (SA)</b> | <b>0.17</b> | <b>0.17</b> | <b>0.39</b> | <b>0.51</b> | <b>0.32</b> | <b>0.34</b> | <b>0.44</b> | <b>0.21</b> | <b>0.19</b> | <b>2.70</b>     | <b>07/01/1992</b> |
| Citi 3 Mo T-Bill Index       | 0.12        | 0.12        | 0.27        | 0.34        | 0.15        | 0.12        | 0.27        | 0.03        | 0.02        | 2.57            |                   |
| Difference                   | 0.05        | 0.05        | 0.12        | 0.17        | 0.17        | 0.22        | 0.17        | 0.18        | 0.17        | 0.13            |                   |

Performance for Absolute Return managers and the HFRI FOF Diversified Index is lagged by one month.

Performance for the NCREIF ODCE Index (Net) (AWA) is lagged by one quarter and available quarterly; interim month returns assume a 0.00% return.

Kentucky Retirement Systems - Insurance Plan  
 Manager Comparative Performance (Gross of Fees)

As of March 31, 2017

|   | QTD          | CYTD         | FYTD         | 1<br>Year    | 3<br>Years   | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>River Road Asset Management (SA)</b>       | <b>3.28</b>  | <b>3.28</b>  | <b>14.38</b> | <b>16.11</b> | <b>9.91</b>  | <b>13.12</b> | <b>21.30</b> | <b>-3.47</b> | <b>10.60</b> | <b>12.59</b>    | <b>07/01/2011</b> |
| Russell 3000 Val Index                        | 2.99         | 2.99         | 14.73        | 19.97        | 8.58         | 13.08        | 18.40        | -4.13        | 12.70        | 12.23           |                   |
| Difference                                    | 0.29         | 0.29         | -0.35        | -3.86        | 1.33         | 0.04         | 2.90         | 0.66         | -2.10        | 0.36            |                   |
| IM U.S. All Cap Value Equity (SA+CF) Median   | 4.36         | 4.36         | 16.55        | 19.11        | 8.40         | 12.86        | 16.50        | -3.50        | 10.06        | 11.85           |                   |
| Rank  | 70           | 70           | 67           | 84           | 24           | 42           | 18           | 50           | 47           | 36              |                   |
| <b>River Road FAV (SA)</b>                    | <b>2.83</b>  | <b>2.83</b>  | <b>21.93</b> | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>21.93</b>    | <b>07/01/2016</b> |
| Russell 3000 Val Index                        | 2.99         | 2.99         | 14.73        | 19.97        | 8.58         | 13.08        | 18.40        | -4.13        | 12.70        | 14.73           |                   |
| Difference                                    | -0.16        | -0.16        | 7.20         | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | 7.20            |                   |
| IM U.S. All Cap Value Equity (SA+CF) Median   | 4.36         | 4.36         | 16.55        | 19.11        | 8.40         | 12.86        | 16.50        | -3.50        | 10.06        | 16.55           |                   |
| Rank  | 81           | 81           | 11           | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | 11              |                   |
| <b>Westfield Capital (SA)</b>                 | <b>10.61</b> | <b>10.61</b> | <b>17.79</b> | <b>16.12</b> | <b>7.52</b>  | <b>13.02</b> | <b>1.77</b>  | <b>-0.97</b> | <b>13.62</b> | <b>12.30</b>    | <b>07/01/2011</b> |
| Russell 3000 Grth Index                       | 8.63         | 8.63         | 15.35        | 16.27        | 10.90        | 13.22        | 7.39         | 5.09         | 12.44        | 13.16           |                   |
| Difference                                    | 1.98         | 1.98         | 2.44         | -0.15        | -3.38        | -0.20        | -5.62        | -6.06        | 1.18         | -0.86           |                   |
| IM U.S. All Cap Growth Equity (SA+CF) Median  | 8.03         | 8.03         | 14.08        | 16.07        | 7.71         | 11.32        | 3.73         | 3.32         | 8.88         | 11.11           |                   |
| Rank  | 16           | 16           | 14           | 50           | 55           | 20           | 57           | 86           | 21           | 25              |                   |
| <b>U.S. All Cap Equity Composite</b>          | <b>5.81</b>  | <b>5.81</b>  | <b>16.46</b> | <b>17.46</b> | <b>8.23</b>  | <b>12.80</b> | <b>10.73</b> | <b>-1.82</b> | <b>11.86</b> | <b>11.86</b>    | <b>07/01/2011</b> |
| Russell 3000 Index                            | 5.74         | 5.74         | 15.04        | 18.07        | 9.76         | 13.18        | 12.74        | 0.48         | 12.56        | 12.72           |                   |
| Difference                                    | 0.07         | 0.07         | 1.42         | -0.61        | -1.53        | -0.38        | -2.01        | -2.30        | -0.70        | -0.86           |                   |
| <b>Scientific Beta</b>                        | <b>5.40</b>  | <b>5.40</b>  | <b>9.47</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>9.47</b>     | <b>07/01/2016</b> |
| S&P 500 Index (Cap Wtd)                       | 6.07         | 6.07         | 14.36        | 17.17        | 10.37        | 13.30        | 11.96        | 1.38         | 13.69        | 14.36           |                   |
| Difference                                    | -0.67        | -0.67        | -4.89        | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | -4.89           |                   |
| IM U.S. Large Cap Index Equity (SA+CF) Median | 6.01         | 6.01         | 14.49        | 17.35        | 10.20        | 13.27        | 12.03        | 0.94         | 13.28        | 14.49           |                   |
| Rank  | 78           | 78           | 100          | N/A          | N/A          | N/A          | N/A          | N/A          | N/A          | 100             |                   |
| <b>Internal S&amp;P 500 Index (SA)</b>        | <b>6.23</b>  | <b>6.23</b>  | <b>14.41</b> | <b>17.13</b> | <b>10.35</b> | <b>13.26</b> | <b>11.65</b> | <b>1.46</b>  | <b>13.64</b> | <b>6.87</b>     | <b>07/01/2001</b> |
| S&P 500 Index (Cap Wtd)*                      | 6.07         | 6.07         | 14.36        | 17.17        | 10.37        | 13.30        | 11.96        | 1.38         | 13.69        | 6.77            |                   |
| Difference                                    | 0.16         | 0.16         | 0.05         | -0.04        | -0.02        | -0.04        | -0.31        | 0.08         | -0.05        | 0.10            |                   |
| IM U.S. Large Cap Index Equity (SA+CF) Median | 6.01         | 6.01         | 14.49        | 17.35        | 10.20        | 13.27        | 12.03        | 0.94         | 13.28        | 6.48            |                   |
| Rank  | 19           | 19           | 56           | 74           | 39           | 54           | 78           | 22           | 36           | 19              |                   |
| <b>U.S. Large Cap Equity Composite</b>        | <b>6.00</b>  | <b>6.00</b>  | <b>13.79</b> | <b>16.46</b> | <b>10.41</b> | <b>N/A</b>   | <b>12.34</b> | <b>1.53</b>  | <b>13.29</b> | <b>13.22</b>    | <b>07/01/2013</b> |
| Russell 1000 Index                            | 6.03         | 6.03         | 14.52        | 17.43        | 9.99         | 13.26        | 12.05        | 0.92         | 13.24        | 13.10           |                   |
| Difference                                    | -0.03        | -0.03        | -0.73        | -0.97        | 0.42         | N/A          | 0.29         | 0.61         | 0.05         | 0.12            |                   |

Performance shown is gross of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



Kentucky Retirement Systems - Insurance Plan  
 Manager Comparative Performance (Gross of Fees)

As of March 31, 2017

|  | QTD         | CYTD        | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years   | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>Internal US Mid Cap (SA)</b>              | <b>4.02</b> | <b>4.02</b> | <b>16.11</b> | <b>20.79</b> | <b>N/A</b>  | <b>N/A</b>   | <b>21.10</b> | <b>-2.39</b> | <b>N/A</b>   | <b>10.70</b>    | <b>08/01/2014</b> |
| S&P Mid Cap 400 Index (Cap Wtd)              | 3.94        | 3.94        | 16.28        | 20.92        | 9.36        | 13.32        | 20.74        | -2.18        | 9.77         | 10.64           |                   |
| Difference                                   | 0.08        | 0.08        | -0.17        | -0.13        | N/A         | N/A          | 0.36         | -0.21        | N/A          | 0.06            |                   |
| IM U.S. Mid Cap Equity (SA+CF) Median        | 5.78        | 5.78        | 15.59        | 17.83        | 8.44        | 12.99        | 12.23        | -1.26        | 9.78         | 9.14            |                   |
| Rank   | 77          | 77          | 46           | 32           | N/A         | N/A          | 15           | 65           | N/A          | 24              |                   |
| <b>Systematic Financial Management (SA)</b>  | <b>1.40</b> | <b>1.40</b> | <b>18.70</b> | <b>21.17</b> | <b>6.14</b> | <b>N/A</b>   | <b>20.55</b> | <b>-4.97</b> | <b>5.69</b>  | <b>13.33</b>    | <b>07/01/2012</b> |
| Russell Mid Cap Val Index                    | 3.76        | 3.76        | 14.36        | 19.82        | 8.94        | 14.07        | 20.00        | -4.78        | 14.75        | 15.67           |                   |
| Difference                                   | -2.36       | -2.36       | 4.34         | 1.35         | -2.80       | N/A          | 0.55         | -0.19        | -9.06        | -2.34           |                   |
| IM U.S. Mid Cap Value Equity (SA+CF) Median  | 4.19        | 4.19        | 17.15        | 20.88        | 8.92        | 13.81        | 18.23        | -3.47        | 11.86        | 15.68           |                   |
| Rank   | 98          | 98          | 40           | 46           | 83          | N/A          | 41           | 67           | 87           | 90              |                   |
| <b>U.S. Mid Cap Equity Composite</b>         | <b>2.79</b> | <b>2.79</b> | <b>16.93</b> | <b>21.10</b> | <b>7.11</b> | <b>N/A</b>   | <b>22.14</b> | <b>-4.64</b> | <b>4.11</b>  | <b>11.13</b>    | <b>07/01/2013</b> |
| S&P Mid Cap 400 Index (Cap Wtd)              | 3.94        | 3.94        | 16.28        | 20.92        | 9.36        | 13.32        | 20.74        | -2.18        | 9.77         | 12.78           |                   |
| Difference                                   | -1.15       | -1.15       | 0.65         | 0.18         | -2.25       | N/A          | 1.40         | -2.46        | -5.66        | -1.65           |                   |
| <b>NT Structured Small Cap (SA)</b>          | <b>2.51</b> | <b>2.51</b> | <b>19.77</b> | <b>23.84</b> | <b>7.99</b> | <b>13.37</b> | <b>21.22</b> | <b>-3.15</b> | <b>5.92</b>  | <b>12.08</b>    | <b>07/01/2011</b> |
| Russell 2000 Index                           | 2.47        | 2.47        | 21.60        | 26.22        | 7.22        | 12.35        | 21.31        | -4.41        | 4.89         | 10.94           |                   |
| Difference                                   | 0.04        | 0.04        | -1.83        | -2.38        | 0.77        | 1.02         | -0.09        | 1.26         | 1.03         | 1.14            |                   |
| IM U.S. Small Cap Core Equity (SA+CF) Median | 2.93        | 2.93        | 21.09        | 24.15        | 8.75        | 13.90        | 20.61        | -1.36        | 6.55         | 12.60           |                   |
| Rank   | 57          | 57          | 66           | 55           | 63          | 61           | 46           | 72           | 56           | 60              |                   |
| <b>U.S. Small Cap Equity Composite</b>       | <b>2.25</b> | <b>2.25</b> | <b>19.25</b> | <b>23.30</b> | <b>7.85</b> | <b>N/A</b>   | <b>21.00</b> | <b>-3.22</b> | <b>6.04</b>  | <b>11.98</b>    | <b>07/01/2013</b> |
| Russell 2000 Index                           | 2.47        | 2.47        | 21.60        | 26.22        | 7.22        | 12.35        | 21.31        | -4.41        | 4.89         | 11.29           |                   |
| Difference                                   | -0.22       | -0.22       | -2.35        | -2.92        | 0.63        | N/A          | -0.31        | 1.19         | 1.15         | 0.69            |                   |
| <b>U.S. Equity Composite</b>                 | <b>5.01</b> | <b>5.01</b> | <b>15.03</b> | <b>17.94</b> | <b>9.37</b> | <b>12.82</b> | <b>14.76</b> | <b>-0.40</b> | <b>10.75</b> | <b>9.57</b>     | <b>07/01/1992</b> |
| Russell 3000 Index (I)*                      | 5.74        | 5.74        | 15.04        | 18.07        | 9.76        | 13.18        | 12.74        | 0.48         | 12.56        | N/A             |                   |
| Difference                                   | -0.73       | -0.73       | -0.01        | -0.13        | -0.39       | -0.36        | 2.02         | -0.88        | -1.81        | N/A             |                   |

Performance shown is gross of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



**Kentucky Retirement Systems - Insurance Plan  
Manager Comparative Performance (Gross of Fees)**

As of March 31, 2017

|   | QTD          | CYTD         | FYTD         | 1<br>Year    | 3<br>Years  | 5<br>Years  | 2016         | 2015         | 2014         | Since<br>Incep. | Inception<br>Date |
|---|--------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|--------------|-----------------|-------------------|
| <b>Lazard Int'l Strategic Equity (SA)</b>         | <b>6.33</b>  | <b>6.33</b>  | <b>7.27</b>  | <b>6.84</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>0.44</b>  | <b>-0.42</b> | <b>N/A</b>   | <b>-0.14</b>    | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | -1.65        | -1.65        | -6.89        | -6.86        | N/A         | N/A         | -4.57        | 4.83         | N/A          | 0.60            |                   |
| IM International Value Equity (SA+CF) Median      | 7.73         | 7.73         | 15.48        | 13.15        | 1.85        | 7.00        | 3.78         | -1.00        | -4.25        | 0.45            |                   |
| Rank  | 88           | 88           | 95           | 94           | N/A         | N/A         | 83           | 44           | N/A          | 62              |                   |
| <b>LSV Int'l Concentrated Value Equity (SA)</b>   | <b>8.27</b>  | <b>8.27</b>  | <b>21.01</b> | <b>16.81</b> | <b>N/A</b>  | <b>N/A</b>  | <b>7.32</b>  | <b>-5.50</b> | <b>N/A</b>   | <b>0.45</b>     | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | 0.29         | 0.29         | 6.85         | 3.11         | N/A         | N/A         | 2.31         | -0.25        | N/A          | 1.19            |                   |
| IM International Value Equity (SA+CF) Median      | 7.73         | 7.73         | 15.48        | 13.15        | 1.85        | 7.00        | 3.78         | -1.00        | -4.25        | 0.45            |                   |
| Rank  | 35           | 35           | 12           | 18           | N/A         | N/A         | 22           | 88           | N/A          | 51              |                   |
| <b>BTC ACWI Ex US Fund (CF)</b>                   | <b>7.87</b>  | <b>7.87</b>  | <b>13.88</b> | <b>13.20</b> | <b>0.92</b> | <b>N/A</b>  | <b>5.51</b>  | <b>-5.63</b> | <b>-3.83</b> | <b>7.63</b>     | <b>06/01/2012</b> |
| MSCI ACW Ex US Index (USD) (Net)                  | 7.86         | 7.86         | 13.87        | 13.13        | 0.56        | 4.36        | 4.50         | -5.66        | -3.87        | 7.50            |                   |
| Difference  | 0.01         | 0.01         | 0.01         | 0.07         | 0.36        | N/A         | 1.01         | 0.03         | 0.04         | 0.13            |                   |
| IM International Core Equity (SA+CF) Median       | 8.04         | 8.04         | 13.37        | 11.64        | 1.92        | 7.19        | 1.39         | 1.13         | -3.51        | 10.40           |                   |
| Rank  | 55           | 55           | 44           | 32           | 77          | N/A         | 15           | 94           | 55           | 92              |                   |
| <b>American Century Non-US Growth Equity (SA)</b> | <b>6.73</b>  | <b>6.73</b>  | <b>8.81</b>  | <b>5.55</b>  | <b>N/A</b>  | <b>N/A</b>  | <b>-4.01</b> | <b>-0.56</b> | <b>N/A</b>   | <b>-1.50</b>    | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | -1.25        | -1.25        | -5.35        | -8.15        | N/A         | N/A         | -9.02        | 4.69         | N/A          | -0.76           |                   |
| IM International Growth Equity (SA+CF) Median     | 8.68         | 8.68         | 10.80        | 10.04        | 2.34        | 6.67        | -0.32        | 3.26         | -3.37        | 1.46            |                   |
| Rank  | 87           | 87           | 70           | 89           | N/A         | N/A         | 79           | 84           | N/A          | 90              |                   |
| <b>Franklin Templeton Non-US Equity (SA)</b>      | <b>11.53</b> | <b>11.53</b> | <b>15.27</b> | <b>12.83</b> | <b>N/A</b>  | <b>N/A</b>  | <b>1.59</b>  | <b>0.95</b>  | <b>N/A</b>   | <b>2.30</b>     | <b>07/01/2014</b> |
| MSCI ACW Ex US Index (USD) (Gross)                | 7.98         | 7.98         | 14.16        | 13.70        | 1.03        | 4.84        | 5.01         | -5.25        | -3.44        | -0.74           |                   |
| Difference  | 3.55         | 3.55         | 1.11         | -0.87        | N/A         | N/A         | -3.42        | 6.20         | N/A          | 3.04            |                   |
| IM International Growth Equity (SA+CF) Median     | 8.68         | 8.68         | 10.80        | 10.04        | 2.34        | 6.67        | -0.32        | 3.26         | -3.37        | 1.46            |                   |
| Rank  | 9            | 9            | 20           | 27           | N/A         | N/A         | 29           | 73           | N/A          | 33              |                   |
| <b>BTC ACWI Ex US Small Cap Fund (CF)</b>         | <b>8.86</b>  | <b>8.86</b>  | <b>13.51</b> | <b>12.65</b> | <b>2.72</b> | <b>N/A</b>  | <b>3.90</b>  | <b>2.97</b>  | <b>-3.79</b> | <b>8.28</b>     | <b>07/01/2013</b> |
| MSCI ACW Ex US Sm Cap Index (USD) (Net)           | 8.78         | 8.78         | 13.25        | 12.26        | 2.46        | 6.68        | 3.91         | 2.60         | -4.03        | 7.43            |                   |
| Difference  | 0.08         | 0.08         | 0.26         | 0.39         | 0.26        | N/A         | -0.01        | 0.37         | 0.24         | 0.85            |                   |
| IM International Small Cap Equity (SA+CF) Median  | 8.71         | 8.71         | 13.87        | 11.47        | 4.35        | 10.53       | 1.19         | 10.39        | -3.38        | 9.83            |                   |
| Rank  | 46           | 46           | 53           | 42           | 78          | N/A         | 34           | 88           | 56           | 70              |                   |
| <b>Non-U.S. Equity Composite</b>                  | <b>7.92</b>  | <b>7.92</b>  | <b>13.46</b> | <b>11.75</b> | <b>1.34</b> | <b>5.24</b> | <b>4.25</b>  | <b>-3.27</b> | <b>-4.02</b> | <b>2.58</b>     | <b>04/01/2000</b> |
| MSCI ACW Ex US Investable Mkt Index (Gross) (I)*  | 8.10         | 8.10         | 14.06        | 13.55        | 1.03        | 4.84        | 4.91         | -5.25        | -3.44        | 2.08            |                   |
| Difference  | -0.18        | -0.18        | -0.60        | -1.80        | 0.31        | 0.40        | -0.66        | 1.98         | -0.58        | 0.50            |                   |

Performance shown is gross of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



Kentucky Retirement Systems - Insurance Plan  
 Manager Comparative Performance (Gross of Fees)

As of March 31, 2017

|   | QTD         | CYTD        | FYTD         | 1 Year       | 3 Years     | 5 Years      | 2016         | 2015         | 2014         | Since Incep. | Inception Date    |
|---|-------------|-------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|-------------------|
| <b>NISA Core Agg Fixed Income (SA)</b>                | <b>0.88</b> | <b>0.88</b> | <b>-1.64</b> | <b>0.65</b>  | <b>3.10</b> | <b>2.67</b>  | <b>3.27</b>  | <b>0.83</b>  | <b>6.38</b>  | <b>3.28</b>  | <b>07/01/2011</b> |
| Bloomberg US Agg Bond Index                           | 0.82        | 0.82        | -1.73        | 0.44         | 2.68        | 2.34         | 2.65         | 0.55         | 5.97         | 2.95         |                   |
| Difference  | 0.06        | 0.06        | 0.09         | 0.21         | 0.42        | 0.33         | 0.62         | 0.28         | 0.41         | 0.33         |                   |
| IM U.S. Broad Market Core Fixed Income (SA+CF) Median | 0.92        | 0.92        | -1.30        | 1.01         | 2.97        | 2.81         | 3.10         | 0.82         | 6.14         | 3.42         |                   |
| Rank  | 58          | 58          | 69           | 66           | 38          | 63           | 45           | 49           | 37           | 61           |                   |
| <b>Core Fixed Income Composite</b>                    | <b>0.88</b> | <b>0.88</b> | <b>-1.64</b> | <b>0.62</b>  | <b>2.34</b> | <b>N/A</b>   | <b>3.29</b>  | <b>0.68</b>  | <b>3.91</b>  | <b>2.56</b>  | <b>07/01/2013</b> |
| Bloomberg US Agg Bond Index                           | 0.82        | 0.82        | -1.73        | 0.44         | 2.68        | 2.34         | 2.65         | 0.55         | 5.97         | 2.76         |                   |
| Difference  | 0.06        | 0.06        | 0.09         | 0.18         | -0.34       | N/A          | 0.64         | 0.13         | -2.06        | -0.20        |                   |
| <b>Cerberus KRS Levered Loan Opps, L.P.</b>           | <b>3.31</b> | <b>3.31</b> | <b>9.06</b>  | <b>12.35</b> | <b>N/A</b>  | <b>N/A</b>   | <b>12.01</b> | <b>13.09</b> | <b>N/A</b>   | <b>11.48</b> | <b>09/01/2014</b> |
| S&P-LSTA Lvg'd Loan Index                             | 1.15        | 1.15        | 6.61         | 9.72         | 3.57        | 4.58         | 10.16        | -0.69        | 1.60         | 3.55         |                   |
| Difference  | 2.16        | 2.16        | 2.45         | 2.63         | N/A         | N/A          | 1.85         | 13.78        | N/A          | 7.93         |                   |
| IM U.S. High Yield Bonds (SA+CF) Median               | 2.44        | 2.44        | 9.34         | 14.16        | 4.29        | 6.57         | 14.04        | -2.16        | 2.55         | 3.90         |                   |
| Rank  | 9           | 9           | 56           | 67           | N/A         | N/A          | 70           | 1            | N/A          | 1            |                   |
| <b>Columbia HY Fixed Income (SA)</b>                  | <b>2.30</b> | <b>2.30</b> | <b>8.05</b>  | <b>11.46</b> | <b>5.45</b> | <b>7.36</b>  | <b>12.59</b> | <b>0.16</b>  | <b>4.84</b>  | <b>7.96</b>  | <b>11/01/2011</b> |
| Bloomberg US Corp: Hi Yld Index                       | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82         | 17.13        | -4.47        | 2.45         | 7.39         |                   |
| Difference  | -0.40       | -0.40       | -2.25        | -4.93        | 0.89        | 0.54         | -4.54        | 4.63         | 2.39         | 0.57         |                   |
| IM U.S. High Yield Bonds (SA+CF) Median               | 2.44        | 2.44        | 9.34         | 14.16        | 4.29        | 6.57         | 14.04        | -2.16        | 2.55         | 7.22         |                   |
| Rank  | 60          | 60          | 71           | 72           | 16          | 23           | 66           | 17           | 9            | 23           |                   |
| <b>Marathon Bluegrass Credit Fund</b>                 | <b>1.31</b> | <b>1.31</b> | <b>16.04</b> | <b>22.36</b> | <b>N/A</b>  | <b>N/A</b>   | <b>20.78</b> | <b>N/A</b>   | <b>N/A</b>   | <b>17.52</b> | <b>01/01/2016</b> |
| Bloomberg US Corp: Hi Yld Index                       | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82         | 17.13        | -4.47        | 2.45         | 15.93        |                   |
| Difference  | -1.39       | -1.39       | 5.74         | 5.97         | N/A         | N/A          | 3.65         | N/A          | N/A          | 1.59         |                   |
| IM U.S. High Yield Bonds (SA+CF) Median               | 2.44        | 2.44        | 9.34         | 14.16        | 4.29        | 6.57         | 14.04        | -2.16        | 2.55         | 13.42        |                   |
| Rank  | 92          | 92          | 2            | 3            | N/A         | N/A          | 3            | N/A          | N/A          | 7            |                   |
| <b>Shenkman Capital (SA)</b>                          | <b>1.12</b> | <b>1.12</b> | <b>6.18</b>  | <b>8.29</b>  | <b>2.50</b> | <b>4.29</b>  | <b>9.00</b>  | <b>0.12</b>  | <b>-0.83</b> | <b>4.59</b>  | <b>07/01/2011</b> |
| Shenkman Blended Index                                | 1.15        | 1.15        | 6.61         | 9.72         | 3.74        | 5.54         | 10.16        | -0.69        | 2.98         | 5.50         |                   |
| Difference  | -0.03       | -0.03       | -0.43        | -1.43        | -1.24       | -1.25        | -1.16        | 0.81         | -3.81        | -0.91        |                   |
| <b>Waterfall (SA)</b>                                 | <b>4.81</b> | <b>4.81</b> | <b>8.81</b>  | <b>14.92</b> | <b>8.05</b> | <b>10.86</b> | <b>8.11</b>  | <b>3.82</b>  | <b>10.73</b> | <b>11.48</b> | <b>07/01/2011</b> |
| Opportunistic FI Blended Index                        | 2.10        | 2.10        | 7.72         | 11.63        | 3.44        | 4.73         | 11.22        | -2.73        | 2.16         | 4.69         |                   |
| Difference  | 2.71        | 2.71        | 1.09         | 3.29         | 4.61        | 6.13         | -3.11        | 6.55         | 8.57         | 6.79         |                   |
| <b>High Yield Fixed Income Composite</b>              | <b>2.36</b> | <b>2.36</b> | <b>10.46</b> | <b>14.94</b> | <b>6.40</b> | <b>N/A</b>   | <b>13.39</b> | <b>1.54</b>  | <b>5.48</b>  | <b>7.51</b>  | <b>07/01/2013</b> |
| Bloomberg US Corp: Hi Yld Index                       | 2.70        | 2.70        | 10.30        | 16.39        | 4.56        | 6.82         | 17.13        | -4.47        | 2.45         | 6.07         |                   |
| Difference  | -0.34       | -0.34       | 0.16         | -1.45        | 1.84        | N/A          | -3.74        | 6.01         | 3.03         | 1.44         |                   |

Performance shown is gross of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



**Kentucky Retirement Systems - Insurance Plan  
Manager Comparative Performance (Gross of Fees)**

As of March 31, 2017

|  | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016        | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| <b>Manulife Asset Mgmt (SA)</b>                        | <b>1.49</b> | <b>1.49</b> | <b>1.33</b> | <b>3.35</b> | <b>2.81</b> | <b>4.11</b> | <b>4.63</b> | <b>0.73</b> | <b>3.51</b> | <b>4.72</b>     | <b>12/01/2011</b> |
| Bloomberg US Unv Bond Index*                           | 1.09        | 1.09        | -0.60       | 1.92        | -0.12       | 0.70        | 3.91        | -3.29       | 0.48        | 1.00            |                   |
| Difference   | 0.40        | 0.40        | 1.93        | 1.43        | 2.93        | 3.41        | 0.72        | 4.02        | 3.03        | 3.72            |                   |
| <b>Global Fixed Income Composite</b>                   | <b>1.49</b> | <b>1.49</b> | <b>1.32</b> | <b>3.34</b> | <b>2.43</b> | <b>N/A</b>  | <b>4.62</b> | <b>0.90</b> | <b>2.83</b> | <b>3.08</b>     | <b>07/01/2013</b> |
| Bloomberg Gbl Agg Bond Index                           | 1.76        | 1.76        | -4.66       | -1.90       | -0.39       | 0.38        | 2.09        | -3.15       | 0.59        | 0.94            |                   |
| Difference   | -0.27       | -0.27       | 5.98        | 5.24        | 2.82        | N/A         | 2.53        | 4.05        | 2.24        | 2.14            |                   |
| <b>Fixed Income Composite</b>                          | <b>1.82</b> | <b>1.82</b> | <b>5.19</b> | <b>8.37</b> | <b>4.59</b> | <b>4.64</b> | <b>9.24</b> | <b>0.88</b> | <b>4.18</b> | <b>6.66</b>     | <b>07/01/1992</b> |
| 50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (I)* | 1.90        | 1.90        | 4.73        | 8.95        | 5.36        | 4.24        | 10.38       | 0.43        | 5.56        | 6.50            |                   |
| Difference   | -0.08       | -0.08       | 0.46        | -0.58       | -0.77       | 0.40        | -1.14       | 0.45        | -1.38       | 0.16            |                   |

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Kentucky Retirement Systems - Insurance Plan  
 Manager Comparative Performance (Gross of Fees)

As of March 31, 2017

|   | QTD          | CYTD         | FYTD         | 1<br>Year     | 3<br>Years   | 5<br>Years   | 2016          | 2015          | 2014         | Since<br>Incep. | Inception<br>Date |
|---|--------------|--------------|--------------|---------------|--------------|--------------|---------------|---------------|--------------|-----------------|-------------------|
| <b>Internal TIPS (SA)</b>                         | <b>1.06</b>  | <b>1.06</b>  | <b>0.27</b>  | <b>1.55</b>   | <b>2.17</b>  | <b>1.27</b>  | <b>4.14</b>   | <b>0.26</b>   | <b>3.08</b>  | <b>4.58</b>     | <b>10/01/2003</b> |
| Internal US TIPS Blend                            | 1.05         | 1.05         | 0.14         | 1.45          | 1.72         | 0.79         | 4.01          | -0.52         | 2.63         | 4.24            |                   |
| Difference  | 0.01         | 0.01         | 0.13         | 0.10          | 0.45         | 0.48         | 0.13          | 0.78          | 0.45         | 0.34            |                   |
| IM U.S. TIPS (SA+CF) Median                       | 1.27         | 1.27         | -0.08        | 1.56          | 2.03         | 1.01         | 4.65          | -1.41         | 3.54         | 4.38            |                   |
| Rank  | 86           | 86           | 29           | 54            | 27           | 18           | 80            | 1             | 66           | 22              |                   |
| <b>Nuveen Real Asset Income (SA)</b>              | <b>5.00</b>  | <b>5.00</b>  | <b>5.12</b>  | <b>11.01</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>10.90</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>5.25</b>     | <b>02/01/2015</b> |
| Nuveen Real Asset Custom Index                    | 5.30         | 5.30         | 3.86         | 8.87          | N/A          | N/A          | 8.74          | N/A           | N/A          | 4.65            |                   |
| Difference  | -0.30        | -0.30        | 1.26         | 2.14          | N/A          | N/A          | 2.16          | N/A           | N/A          | 0.60            |                   |
| <b>PIMCO:All Asset;Inst (PAAIX)</b>               | <b>7.52</b>  | <b>7.52</b>  | <b>8.73</b>  | <b>13.14</b>  | <b>2.31</b>  | <b>3.73</b>  | <b>12.87</b>  | <b>-10.43</b> | <b>3.34</b>  | <b>4.76</b>     | <b>12/01/2011</b> |
| Bloomberg US Trsy Infl Notes: 1-10 Yr Index       | 1.05         | 1.05         | 0.14         | 1.45          | 1.46         | 0.62         | 4.01          | -0.52         | 0.91         | 0.82            |                   |
| Difference  | 6.47         | 6.47         | 8.59         | 11.69         | 0.85         | 3.11         | 8.86          | -9.91         | 2.43         | 3.94            |                   |
| <b>Tortoise Capital (CF)</b>                      | <b>5.24</b>  | <b>5.24</b>  | <b>11.24</b> | <b>30.32</b>  | <b>-1.20</b> | <b>9.08</b>  | <b>16.67</b>  | <b>-26.68</b> | <b>15.93</b> | <b>15.41</b>    | <b>08/01/2009</b> |
| Alerian MLP Index                                 | 3.95         | 3.95         | 7.21         | 28.32         | -5.17        | 2.64         | 18.31         | -32.59        | 4.80         | 10.33           |                   |
| Difference  | 1.29         | 1.29         | 4.03         | 2.00          | 3.97         | 6.44         | -1.64         | 5.91          | 11.13        | 5.08            |                   |
| <b>Amerra Ag Fund II (CF)</b>                     | <b>0.97</b>  | <b>0.97</b>  | <b>3.53</b>  | <b>8.85</b>   | <b>11.85</b> | <b>N/A</b>   | <b>5.92</b>   | <b>21.01</b>  | <b>10.65</b> | <b>8.92</b>     | <b>12/01/2012</b> |
| <b>Amerra-AGRI Holding (CF)</b>                   | <b>3.26</b>  | <b>3.26</b>  | <b>4.71</b>  | <b>7.40</b>   | <b>N/A</b>   | <b>N/A</b>   | <b>4.01</b>   | <b>N/A</b>    | <b>N/A</b>   | <b>4.65</b>     | <b>08/01/2015</b> |
| <b>BTG Pactual Brazil Timberland Fund I, L.P.</b> | <b>1.88</b>  | <b>1.88</b>  | <b>14.78</b> | <b>18.63</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>-10.08</b> | <b>-11.97</b> | <b>N/A</b>   | <b>-8.81</b>    | <b>12/01/2014</b> |
| <b>Magnetar MTP Energy Fund, L.P.</b>             | <b>3.03</b>  | <b>3.03</b>  | <b>12.67</b> | <b>32.59</b>  | <b>-0.02</b> | <b>N/A</b>   | <b>15.27</b>  | <b>-15.63</b> | <b>2.98</b>  | <b>1.65</b>     | <b>07/01/2013</b> |
| <b>Magnetar MTP EOF II, L.P.</b>                  | <b>1.02</b>  | <b>1.02</b>  | <b>17.04</b> | <b>16.38</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>-2.78</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>-1.07</b>    | <b>08/01/2015</b> |
| <b>Oberland Capital Healthcare, L.P.</b>          | <b>27.20</b> | <b>27.20</b> | <b>24.60</b> | <b>146.31</b> | <b>N/A</b>   | <b>N/A</b>   | <b>93.64</b>  | <b>14.09</b>  | <b>N/A</b>   | <b>49.23</b>    | <b>10/01/2014</b> |
| <b>Taurus Mining Finance Fund</b>                 | <b>7.41</b>  | <b>7.41</b>  | <b>25.61</b> | <b>45.55</b>  | <b>N/A</b>   | <b>N/A</b>   | <b>41.30</b>  | <b>N/A</b>    | <b>N/A</b>   | <b>25.61</b>    | <b>04/01/2015</b> |
| <b>Tenaska Power Fund II (CF)</b>                 | <b>0.00</b>  | <b>0.00</b>  | <b>13.38</b> | <b>-21.75</b> | <b>-2.62</b> | <b>-4.20</b> | <b>-21.75</b> | <b>18.41</b>  | <b>-0.69</b> | <b>-3.10</b>    | <b>10/01/2008</b> |
| <b>Real Return Composite</b>                      | <b>4.64</b>  | <b>4.64</b>  | <b>6.51</b>  | <b>12.51</b>  | <b>3.23</b>  | <b>2.88</b>  | <b>10.51</b>  | <b>-5.53</b>  | <b>3.94</b>  | <b>4.07</b>     | <b>07/01/2011</b> |
| Real Return Actual Allocation Index (I)*          | 2.53         | 2.53         | 2.90         | 7.60          | 2.30         | 2.88         | 6.87          | -3.56         | 3.15         | 3.02            |                   |
| Difference  | 2.11         | 2.11         | 3.61         | 4.91          | 0.93         | 0.00         | 3.64          | -1.97         | 0.79         | 1.05            |                   |

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Kentucky Retirement Systems - Insurance Plan  
 Manager Comparative Performance (Gross of Fees)

As of March 31, 2017

|  | QTD         | CYTD        | FYTD        | 1<br>Year    | 3<br>Years   | 5<br>Years  | 2016         | 2015         | 2014        | Since<br>Incep. | Inception<br>Date |
|--|-------------|-------------|-------------|--------------|--------------|-------------|--------------|--------------|-------------|-----------------|-------------------|
| H/2 Credit Partners (CF)                   | 2.93        | 2.93        | 10.47       | 12.00        | 5.79         | 6.64        | 9.16         | 2.11         | 6.57        | 6.43            | 07/01/2011        |
| Harrison Street Core (CF)                  | 2.92        | 2.92        | 7.57        | 10.97        | 10.10        | N/A         | 10.98        | 7.61         | 12.03       | 8.27            | 05/01/2012        |
| Mesa West Core Lending, L.P.               | 2.01        | 2.01        | 7.07        | 8.49         | 7.68         | N/A         | 8.79         | 8.10         | 5.45        | 6.98            | 05/01/2013        |
| Mesa West IV, L.P.                         | N/A         | N/A         | N/A         | N/A          | N/A          | N/A         | N/A          | N/A          | N/A         | 0.00            | 03/01/2017        |
| Prologis Targeted U.S. Logistics Fund (CF) | 7.45        | 7.45        | 14.56       | 16.76        | N/A          | N/A         | 14.35        | 14.32        | N/A         | 14.56           | 10/01/2014        |
| Stockbridge SmtMkts, L.P.                  | 2.78        | 2.78        | 7.66        | 10.37        | N/A          | N/A         | 10.69        | 11.78        | N/A         | 10.56           | 05/01/2014        |
| DivcoWest Fund IV, L.P.                    | 7.07        | 7.07        | 33.92       | 46.14        | 33.30        | N/A         | 49.87        | 38.42        | N/A         | 31.75           | 03/01/2014        |
| Greenfield Acquisition Partners VI, L.P.   | 6.43        | 6.43        | 2.34        | 2.56         | 13.45        | N/A         | 0.43         | 24.88        | 18.30       | 14.10           | 12/01/2012        |
| Greenfield Acquisition Partners VII, L.P.  | 6.91        | 6.91        | 13.27       | 14.85        | N/A          | N/A         | 17.17        | 19.62        | N/A         | 15.71           | 07/01/2014        |
| Lubert Adler Real Estate Fund VII, L.P.    | 1.90        | 1.90        | 6.70        | 8.39         | N/A          | N/A         | 6.37         | 4.60         | N/A         | -0.64           | 07/01/2014        |
| Patron Capital V, L.P.                     | 3.29        | 3.29        | N/A         | N/A          | N/A          | N/A         | N/A          | N/A          | N/A         | -28.37          | 08/01/2016        |
| Rubenstein Properties Fund II, L.P.        | 1.25        | 1.25        | 3.75        | 6.36         | 22.04        | N/A         | 7.61         | 16.23        | 50.33       | 17.61           | 07/01/2013        |
| Walton Street Real Estate Fund VI, L.P.    | 1.19        | 1.19        | -4.51       | -5.67        | 8.32         | 10.05       | -2.54        | 14.49        | 18.01       | -21.30          | 05/01/2009        |
| Walton Street Real Estate Fund VII, L.P.   | 3.14        | 3.14        | 10.15       | 12.95        | 16.51        | N/A         | 14.25        | 18.34        | 16.89       | 15.89           | 07/01/2013        |
| <b>Real Estate Composite</b>               | <b>3.54</b> | <b>3.54</b> | <b>9.10</b> | <b>11.47</b> | <b>10.63</b> | <b>9.85</b> | <b>11.25</b> | <b>10.49</b> | <b>8.07</b> | <b>9.52</b>     | <b>05/01/2009</b> |
| NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)  | 1.88        | 1.88        | 5.72        | 7.79         | 11.04        | 11.16       | 9.08         | 13.86        | 11.36       | 5.82            |                   |
| Difference                                 | 1.66        | 1.66        | 3.38        | 3.68         | -0.41        | -1.31       | 2.17         | -3.37        | -3.29       | 3.70            |                   |

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Kentucky Retirement Systems - Insurance Plan  
 Manager Comparative Performance (Gross of Fees)

As of March 31, 2017

|                                    | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016        | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| BAAM (SA)                          | 0.19        | 0.19        | 4.27        | 4.92        | 4.02        | 6.39        | 1.28        | 6.30        | 7.91        | 6.29            | 09/01/2011        |
| Davidson-Kemper, L.P.              | 3.00        | 3.00        | 9.06        | 13.79       | N/A         | N/A         | N/A         | N/A         | N/A         | 11.73           | 02/01/2016        |
| PAAMCO (SA)                        | 0.00        | 0.00        | -0.01       | 1.60        | -1.41       | 3.39        | -1.84       | -2.05       | 3.81        | 3.47            | 09/01/2011        |
| Prisma Capital Partners (SA)       | 1.21        | 1.21        | 5.18        | 5.50        | 1.39        | 3.97        | -0.30       | 2.32        | 3.18        | 3.73            | 09/01/2011        |
| Senator Investment Group, L.P.     | 4.62        | 4.62        | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 5.76            | 09/01/2016        |
| Tourbillon Global Master Fund, Ltd | -0.48       | -0.48       | 7.67        | 2.18        | N/A         | N/A         | -8.30       | N/A         | N/A         | -5.57           | 11/01/2015        |
| Anchorage Capital                  | 4.76        | 4.76        | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 8.09            | 08/01/2016        |
| Blackrock GAO Fund, Ltd (CF)       | 3.69        | 3.69        | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | -1.85           | 08/01/2016        |
| Coatue Qualified Partners, L.P.    | 11.29       | 11.29       | 16.62       | 17.29       | N/A         | N/A         | 7.09        | N/A         | N/A         | 14.98           | 07/01/2015        |
| DSAM Fund, L.P.                    | 4.87        | 4.87        | 3.80        | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 4.04            | 05/01/2016        |
| Finisterre Global Op               | 0.76        | 0.76        | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 4.75            | 08/01/2016        |
| Glenview Capital (CF)              | 10.28       | 10.28       | 21.80       | 28.79       | N/A         | N/A         | -1.30       | N/A         | N/A         | 3.88            | 11/01/2015        |
| HBK II (CF)                        | 2.23        | 2.23        | 8.07        | 13.00       | 3.73        | N/A         | 8.33        | -1.38       | 3.93        | 4.17            | 12/01/2013        |
| Knighthead Capital (CF)            | 3.02        | 3.02        | 14.56       | 17.60       | 0.71        | N/A         | 10.50       | -10.22      | 5.59        | 2.37            | 01/01/2014        |
| LibreMax Capital (CF)              | 2.29        | 2.29        | 8.87        | 10.36       | N/A         | N/A         | 5.62        | -0.16       | N/A         | 4.06            | 08/01/2014        |
| Liquidalts H2O Force (CF)          | -0.58       | -0.58       | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 10.30           | 08/01/2016        |
| Luxor Capital (CF)                 | 10.95       | 10.95       | 30.97       | 27.18       | -3.54       | N/A         | 2.22        | -15.99      | N/A         | -3.54           | 04/01/2014        |
| Myriad Opportunities               | 2.95        | 2.95        | 11.91       | N/A         | N/A         | N/A         | N/A         | N/A         | N/A         | 14.54           | 05/01/2016        |
| Pine River (CF)                    | -0.07       | -0.07       | 5.50        | 8.07        | N/A         | N/A         | 2.02        | 0.88        | N/A         | 1.14            | 05/01/2014        |
| QMS Diversified Global Macro (CF)  | 1.48        | 1.48        | -9.56       | -14.33      | N/A         | N/A         | -9.63       | N/A         | N/A         | -5.17           | 11/01/2015        |
| Scopia PX, LLC                     | -0.34       | -0.34       | 6.51        | 0.12        | N/A         | N/A         | -3.00       | 1.74        | N/A         | 1.10            | 11/01/2014        |
| <b>Absolute Return Composite</b>   | <b>1.91</b> | <b>1.91</b> | <b>5.97</b> | <b>6.64</b> | <b>2.01</b> | <b>4.97</b> | <b>0.70</b> | <b>1.84</b> | <b>4.80</b> | <b>4.17</b>     | <b>04/01/2010</b> |
| HFRI FOF: Dvf'd Index (1 Mo Lag)   | 2.78        | 2.78        | 4.18        | 5.29        | 1.41        | 3.20        | -1.34       | 0.79        | 4.72        | 2.72            |                   |
| Difference                         | -0.87       | -0.87       | 1.79        | 1.35        | 0.60        | 1.77        | 2.04        | 1.05        | 0.08        | 1.45            |                   |

Performance shown is gross of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (\*) represents the current benchmark. See the Addendum for the complete historical composition of custom indices. Manager inception dates shown represent the first full month following initial funding.



**Kentucky Retirement Systems - Insurance Plan  
Manager Comparative Performance (Gross of Fees)**

As of March 31, 2017

|                              | QTD         | CYTD        | FYTD        | 1<br>Year   | 3<br>Years  | 5<br>Years  | 2016        | 2015        | 2014        | Since<br>Incep. | Inception<br>Date |
|------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----------------|-------------------|
| <b>Cash Equivalents (SA)</b> | <b>0.17</b> | <b>0.17</b> | <b>0.39</b> | <b>0.51</b> | <b>0.32</b> | <b>0.34</b> | <b>0.44</b> | <b>0.21</b> | <b>0.19</b> | <b>2.70</b>     | <b>07/01/1992</b> |
| Citi 3 Mo T-Bill Index       | 0.12        | 0.12        | 0.27        | 0.34        | 0.15        | 0.12        | 0.27        | 0.03        | 0.02        | 2.57            |                   |
| Difference                   | 0.05        | 0.05        | 0.12        | 0.17        | 0.17        | 0.22        | 0.17        | 0.18        | 0.17        | 0.13            |                   |

Performance for Absolute Return managers and the HFRI FOF Diversified Index is lagged by one month.

Performance for the NCREIF ODCE Index (Net) (AWA) is lagged by one quarter and available quarterly; interim month returns assume a 0.00% return.

First Quarter Review

**Broad Market**

The first quarter was marked by strong S&P earnings growth and continued muted volatility. Specifically, the year-over-year earnings growth rate for the S&P 500 was estimated at 9.2% by FactSet, which would mark the highest growth rate since 2011. Combining this with lower levels of stock correlation and investor comfort with market risks led to an environment where active manager performance generally improved over the quarter.

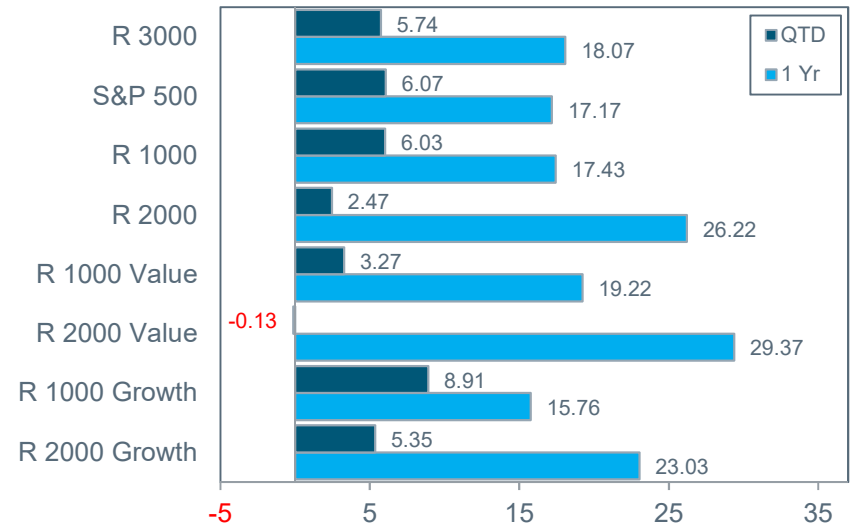
**Market Cap**

Large cap stocks outpaced small cap stocks this quarter, with the Russell 1000 Index returning 6.0% while the Russell 2000 Index returned 2.5%.

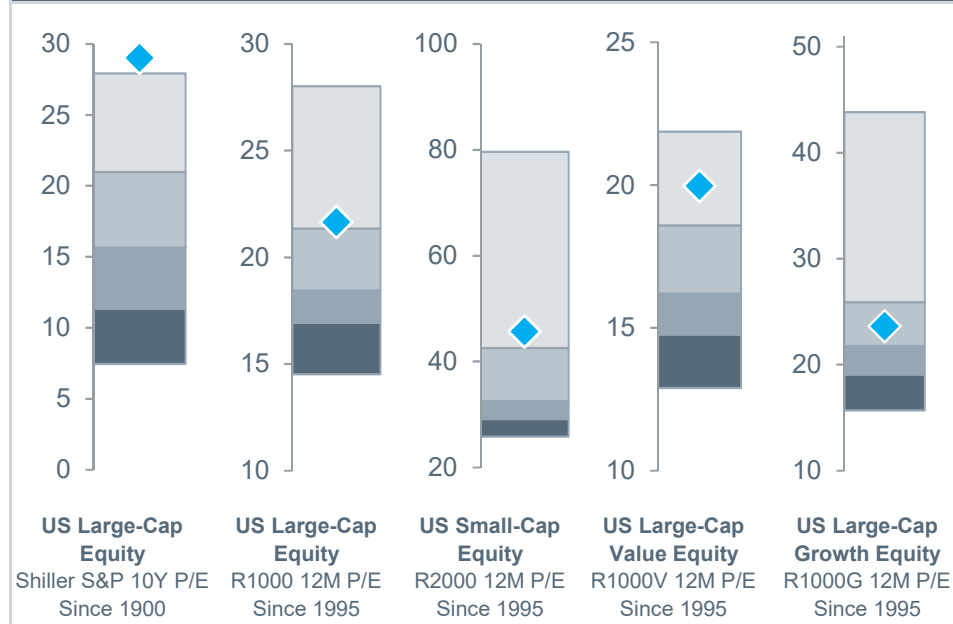
**Style and Sector**

In the first quarter of 2017, growth significantly outperformed value while the technology and consumer discretionary were the top performing sectors.

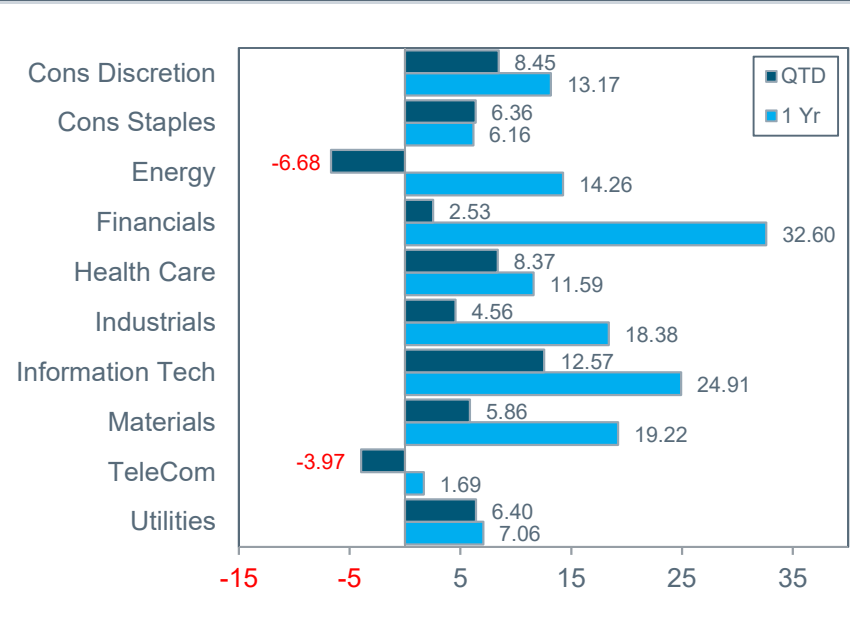
Style and Capitalization Market Performance (%)



Valuations



S&P 500 Index Sector Performance (%)



Valuation data courtesy of Bloomberg Professional Service and Robert J. Shiller, Irrational Exuberance, Second Edition. P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers.

**First Quarter Review**

**Broad Market**

Underpinning the positive international equity performance was the expectation, supported by improving economic fundamentals, that the global economy is on more stable footing than previously believed. This was especially true in the UK, where recent economic data showed a steady expansion in the face of potentially leaving the EU Common Market.

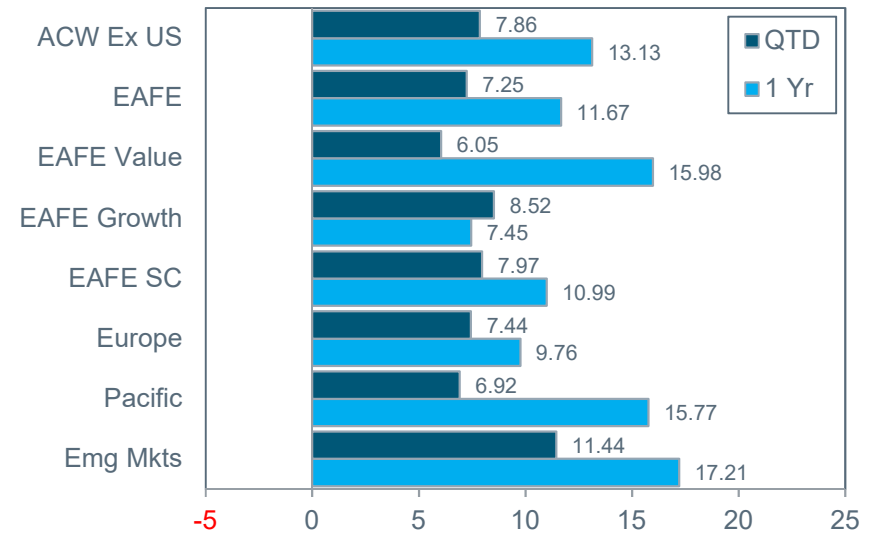
**Region**

From a regional standpoint, emerging markets outperformed developed markets with India, Korea, and Mexico all posting mid-teen returns for the quarter. Conversely, commodity sensitive economies such as Canada and Norway lagged notably, posting slightly positive returns for the quarter.

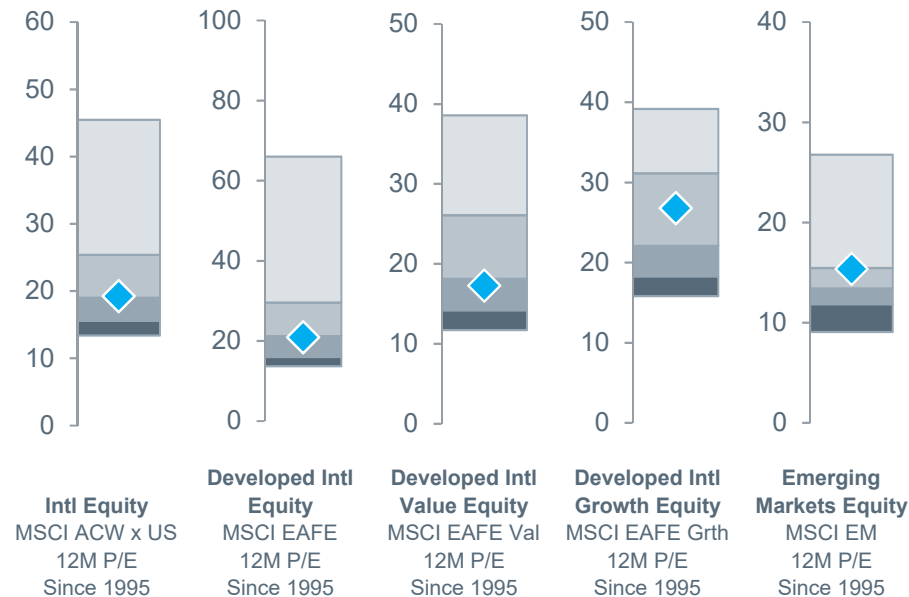
**Market Cap & Style**

In developed markets, small cap modestly outperformed large cap (8.0% vs. 7.3%) while growth outpaced value, with the EAFE Growth Index returning 8.5% vs. 6.1% for the EAFE Value Index.

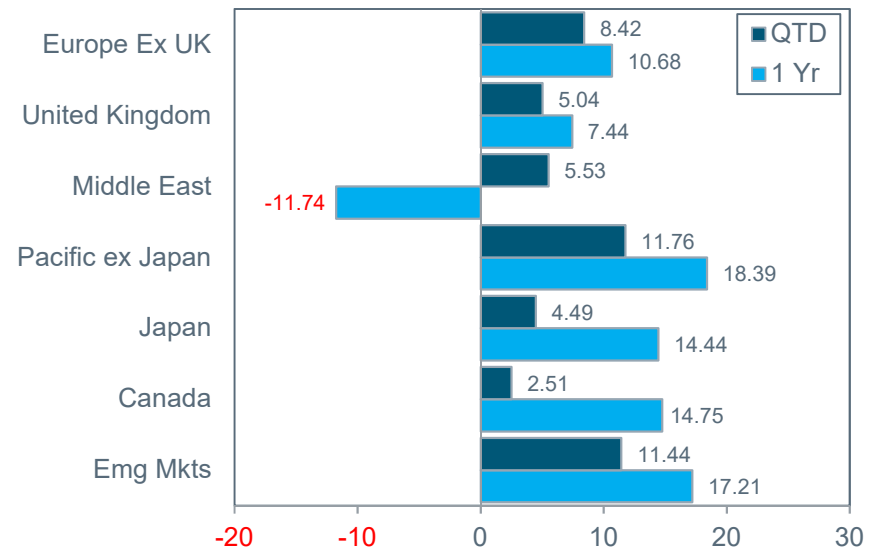
**MSCI Style and Capitalization Market Performance (%)**



**Valuations**



**MSCI Region Performance (%)**



Valuation data courtesy of Bloomberg Professional Service.

P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers. All returns are shown net of foreign taxes on dividends.

First Quarter Review

**Broad Market**

Short-dated global rates continued to be impacted by global central bank policy actions, while longer-dated rates reacted to broader economic developments and expectations for continued, albeit modest, improvements in global growth.

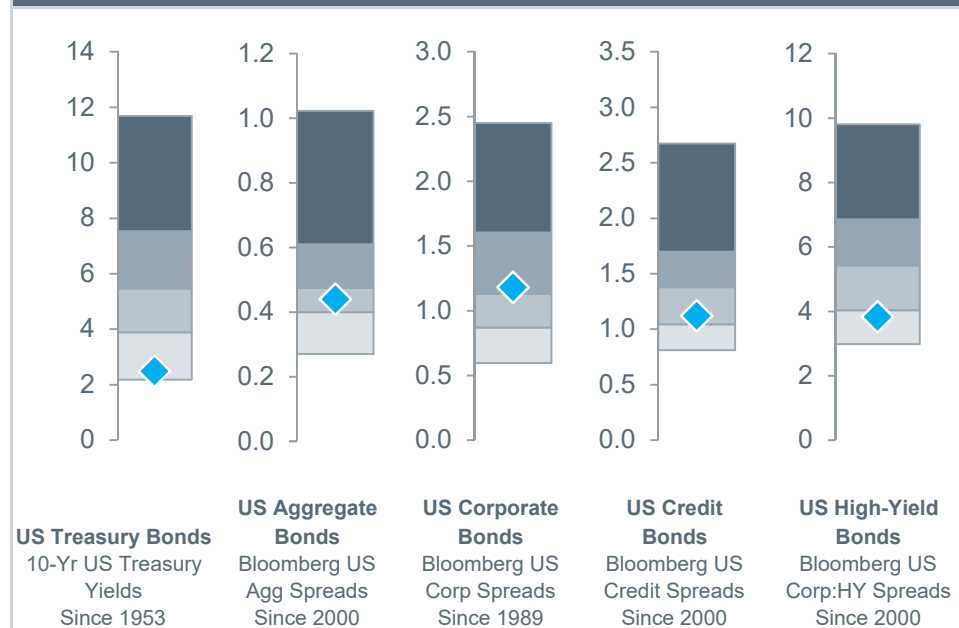
**Credit Market**

US credit markets outpaced US treasuries, returning 1.2% vs. 0.7% during the first quarter.

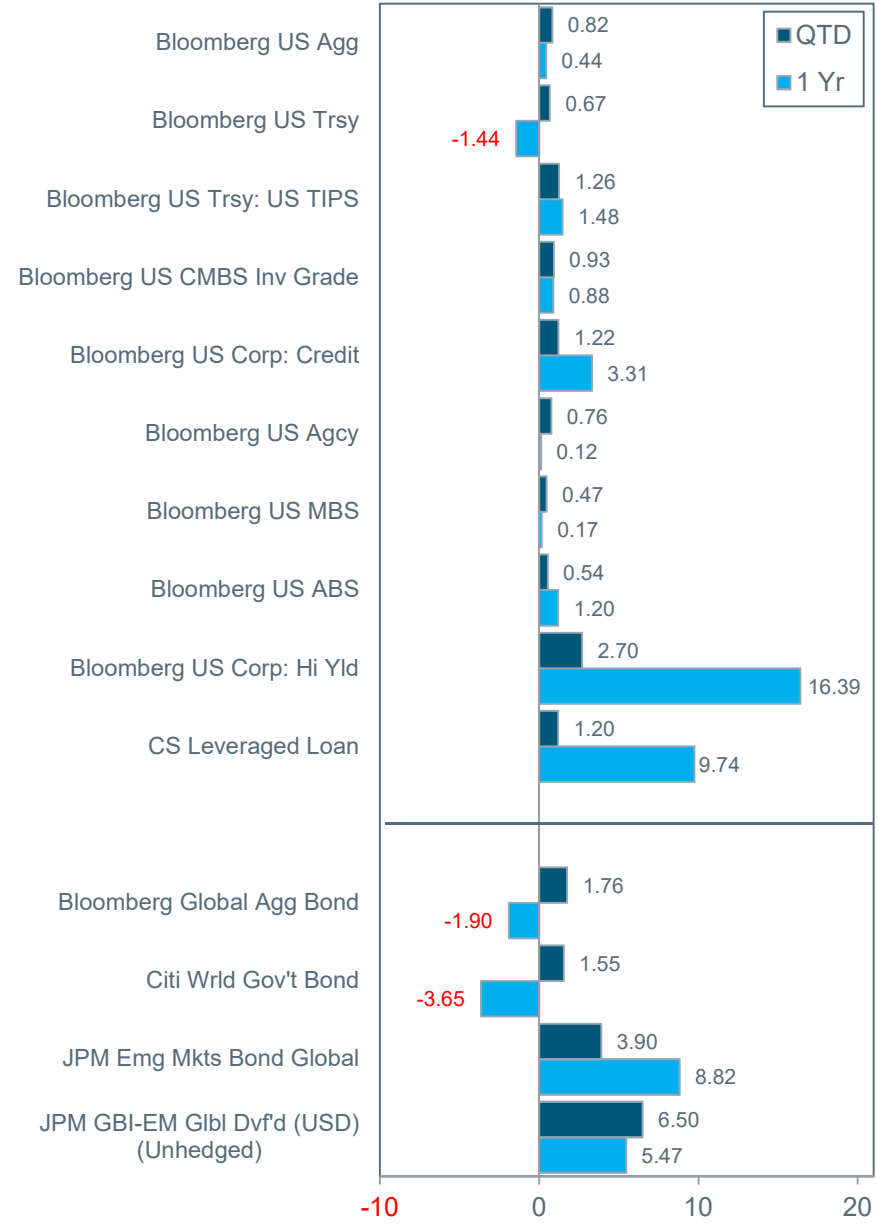
**International**

Upcoming elections in several European countries drove an uptick in volatility for rates markets, despite the steady improvement in economic data. The Citigroup World Government Bond Index (Unhedged) returned 1.6% for the quarter, while the hedged version of the index finished the quarter flat. The JPMorgan EMBI Global Diversified Index, which measures hard currency emerging markets debt, returned 3.9%.

Valuations



Fixed Income Performance (%)



Valuation data courtesy of Bloomberg Professional Service. Valuations shown represent the 5th through 95th percentiles to minimize the effect of outliers.

**First Quarter Review - Absolute Return**

**General Market - Hedge Funds**

Hedge fund strategies provided solid returns during the quarter, as most managers benefitted from lower correlations, less direct monetary policy involvement amidst no measureable changes in fiscal policy, and continued strong equity and credit performance as a result of positive investor sentiment. Generally, risk appetite appears to be improving across the broader hedge fund industry, as evidenced by rising levels of gross exposure across long/short equity, multi-strategy, and macro hedge fund strategies.

**General Market - Global Tactical Asset Allocation (GTAA)**

Most GTAA managers outperformed an undiversified and static 60/40 portfolio of US large cap equity and US fixed income. Managers that held to disciplined value-oriented processes, especially those with fewer constraints on emerging market allocations, outperformed peers. US-oriented strategies, especially those with biases toward income-oriented exposures, moderately underperformed both traditional long-oriented GTAA managers and a static 60/40 allocation.

**First Quarter Review - Real Assets**

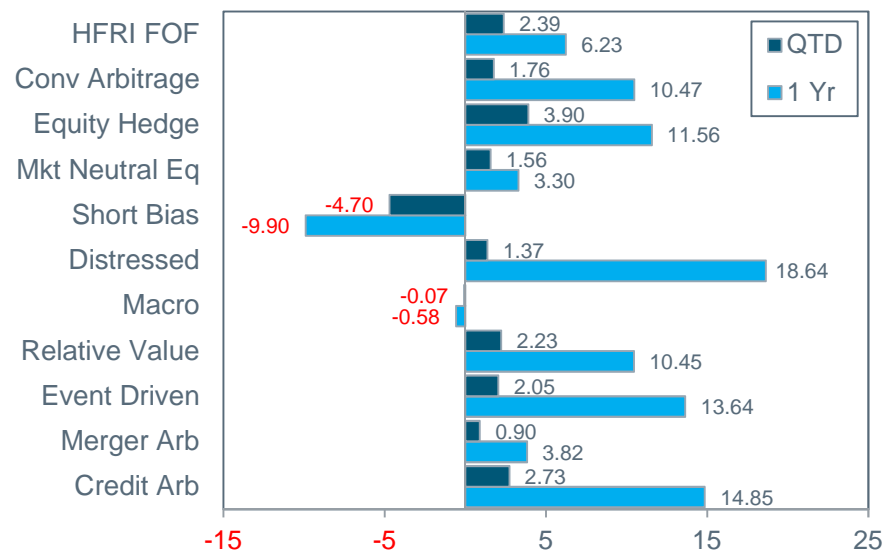
**General Market - Diversified Inflation Strategies (DIS)**

Inflation sensitive markets provided divergent performance in a quarter characterized by little change to long-term inflation expectations. This was evidenced by the breakeven inflation markets, as measured by the difference between nominal Treasuries and TIPS, ending the quarter largely unchanged.

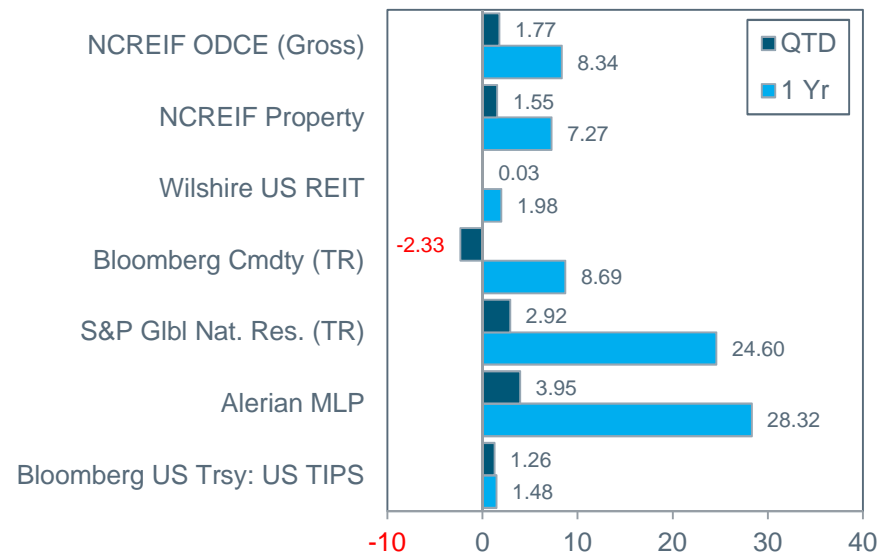
**General Market - Real Estate**

Despite a few modest signs of softening in the market, such as more favorable lease terms and concessions, the residential and commercial real estate markets continued to be supported by a generally positive outlook for US economic growth. Core real estate investors entered 2017 with continued expectations that income returns would represent the majority of the total return, as opposed to prior years where capital appreciation returns were the primary driver. As evidence, the Core index, NCREIF-ODCE, returned 1.8% during the quarter with income returns accounting for 1.1%.

**HFRI Hedge Fund Performance (%)**



**Real Asset Performance (%)**



Annual Asset Class Performance

As of March 31, 2017

|       | 2003                   | 2004                  | 2005                         | 2006                          | 2007                           | 2008                       | 2009                             | 2010                            | 2011                              | 2012                              | 2013                     | 2014                      | 2015                           | 2016                             | YTD   |
|-------|------------------------|-----------------------|------------------------------|-------------------------------|--------------------------------|----------------------------|----------------------------------|---------------------------------|-----------------------------------|-----------------------------------|--------------------------|---------------------------|--------------------------------|----------------------------------|-------|
| Best  | 61.34                  | 33.16                 | 34.00                        | 35.97                         | 39.38                          | 8.44                       | 78.51                            | 28.60                           | 22.49                             | 20.00                             | 38.82                    | 31.78                     | 15.02                          | 21.31                            | 11.44 |
|       | 55.81                  | 31.45                 | 26.19                        | 32.18                         | 16.23                          | 5.24                       | 58.21                            | 26.85                           | 15.99                             | 18.23                             | 32.39                    | 19.31                     | 9.59                           | 17.13                            | 7.97  |
|       | 47.25                  | 25.55                 | 21.39                        | 26.34                         | 15.97                          | 2.06                       | 46.78                            | 22.04                           | 13.56                             | 17.59                             | 29.30                    | 13.69                     | 4.23                           | 11.96                            | 7.25  |
|       | 38.59                  | 20.25                 | 21.36                        | 19.31                         | 11.63                          | -2.35                      | 31.78                            | 18.88                           | 9.24                              | 17.32                             | 22.78                    | 12.50                     | 1.38                           | 11.74                            | 6.07  |
|       | 36.18                  | 18.33                 | 13.82                        | 18.37                         | 11.17                          | -10.01                     | 28.60                            | 16.83                           | 7.84                              | 16.35                             | 13.94                    | 5.97                      | 0.55                           | 11.19                            | 2.70  |
|       | 28.96                  | 13.06                 | 13.54                        | 16.32                         | 10.25                          | -21.37                     | 27.17                            | 16.36                           | 4.98                              | 16.00                             | 8.96                     | 4.89                      | 0.05                           | 8.77                             | 2.47  |
|       | 28.68                  | 11.14                 | 7.49                         | 15.79                         | 6.97                           | -26.16                     | 26.46                            | 15.12                           | 2.11                              | 15.81                             | 7.44                     | 3.64                      | -0.27                          | 7.24                             | 2.39  |
|       | 23.93                  | 10.88                 | 5.34                         | 11.86                         | 6.60                           | -33.79                     | 18.91                            | 15.06                           | 0.10                              | 10.94                             | 1.86                     | 3.37                      | -0.31                          | 6.67                             | 1.77  |
|       | 11.61                  | 9.15                  | 4.91                         | 10.39                         | 5.49                           | -35.65                     | 11.47                            | 10.16                           | -4.18                             | 8.78                              | 0.07                     | 2.45                      | -1.44                          | 4.68                             | 1.58  |
|       | 9.28                   | 8.56                  | 4.55                         | 4.85                          | 5.00                           | -37.00                     | 11.41                            | 7.75                            | -5.72                             | 6.98                              | -2.02                    | 0.04                      | -3.30                          | 2.65                             | 1.26  |
|       | 8.39                   | 8.46                  | 3.07                         | 4.34                          | 1.87                           | -39.20                     | 5.93                             | 6.54                            | -12.14                            | 4.79                              | -2.60                    | -2.19                     | -4.41                          | 2.18                             | 0.82  |
|       | 5.88                   | 6.86                  | 2.84                         | 2.72                          | 1.45                           | -43.38                     | 1.92                             | 6.31                            | -13.32                            | 4.21                              | -8.61                    | -4.90                     | -4.47                          | 1.00                             | 0.10  |
|       | 4.11                   | 4.34                  | 2.74                         | 2.07                          | -1.57                          | -47.01                     | 0.21                             | 5.70                            | -15.94                            | 0.11                              | -8.83                    | -4.95                     | -14.92                         | 0.51                             | 0.03  |
| Worst | 1.15                   | 1.33                  | 2.43                         | 0.49                          | -17.55                         | -53.33                     | -29.76                           | 0.13                            | -18.42                            | -1.06                             | -9.52                    | -17.01                    | -24.66                         | 0.33                             | -2.33 |
|       | S&P 500 - US Large Cap | R 2000 - US Small Cap | MSCI EAFE (Net) - Int'l Dev. | MSCI EAFE SC (Net) - Int'l SC | MSCI EM (Net) - Int'l Emg Mkts | Bloomberg US Agg Bond - FI | Bloomberg US Corp: Hi Yield - FI | Bloomberg US Trsy: US TIPS - FI | Bloomberg US Gov/Credit: Lng - FI | NCREIF ODCE (Gross) - Real Estate | Wilshire US REIT - REITs | HFRI FOF Comp Index - ARS | Bloomberg Cmdty (TR) - Commod. | BofA ML 3 Mo T-Bill - Cash Equiv |       |

NCREIF ODCE (Gross) performance is reported quarterly; performance is shown N/A in interim-quarter months.



**Performance Comments**

- Performance shown is net of fees, except where noted.
- Indices show N/A for Since Inception returns when the fund contains more history than the corresponding benchmark.
- All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon.
- Real Estate and Private Equity valuations are as of the most recent date available.

**Asset Allocation Comments**

- The Private Equity Composite includes Internal Alternative Assets.
- Market values shown include fee accruals.

**Manager Transition Comments**

- International Account (SA) (Pension) and Arrowhawk Durable Alpha Fund L.P. were liquidated in December 2012.
- Equitization Assets Program (Pension) and Equitization Assets Program (Insurance) were fully liquidated in January 2013.
- Amerra Ag Fund II (CF) (Pension and Insurance) and Greenfield Acquisition Partners VI (CF) (Pension and Insurance) were funded in January 2013.
- Internal Mid Cap (SA) (Pension and Insurance) and International Account (Insurance) were fully liquidated in March 2013.
- Mesa West Core Lending, L.P. (Pension and Insurance) was funded in May 2013.
- BTC Emerging Markets (CF) (Pension and Insurance) and Walton Street Real Estate Fund VII, L.P. (Pension and Insurance) were funded in June 2013.
- Magnetar MTP Energy Fund, L.P. (Pension and Insurance) and Rubenstein Properties Fund II, L.P., (Pension and Insurance) were funded in July 2013.
- H/2 Core Real Estate Debt Fund, L.P. (Pension and Insurance) was funded in October 2013.
- MKP Opportunity Fund (CF) (Pension and Insurance) was funded in October 2013.
- HBK II (CF) (Pension and Insurance) was funded in November 2013.
- Knighthead Capital (CF) (Pension and Insurance) was funded in December 2013.
- Luxor Capital (CF) (Pension and Insurance) was funded in February 2014.
- DivcoWest Fund IV, L.P. (Pension and Insurance) was funded in March 2014.
- Pine River (CF) (Pension and Insurance) was funded in March 2014.
- Stockbridge SmtMkts, L.P. (Pension and Insurance) was funded in May 2014.
- American Century Non-US Growth Equity (SA) (Pension and Insurance) was funded in June 2014.
- Franklin Templeton Non-US Equity (SA) (Pension and Insurance) was funded in June 2014.
- Lazard Int'l Strategic Equity (SA) (Pension and Insurance) was funded in June 2014.
- LSV Int'l Concentrated Value Equity (SA) (Pension and Insurance) was funded in June 2014.
- Geneva Capital Management (SA) (Pension and Insurance) was liquidated in July 2014.
- Internal US Mid Cap (SA) (Pension and Insurance) was funded in July 2014.
- Greenfield Acquisition Partners VII, L.P. (Pension and Insurance) was funded in July 2014.
- Lubert Adler Real Estate Fund VII, L.P. (Pension and Insurance) was funded in July 2014.
- Jana Partners (CF) (Pension and Insurance) was funded in July 2014.
- LibreMax Capital (CF) (Pension and Insurance) was funded in July 2014.
- Cerberus KRS Levered Loan Opps, L.P. (Pension and Insurance) was funded in September 2014.
- Scopia PX, LLC (Pension and Insurance) was funded in September 2014.
- Oberland Capital Healthcare, L.P. (Pension and Insurance) was funded in October 2014.
- Prologis Targeted U.S. Logistics Fund (CF) (Pension and Insurance) was funded in October 2014.
- MKP Opportunity Fund (CF) (Pension and Insurance) was liquidated in October 2014.
- BTG Pactual Brazil Timberland Fund I, L.P. (Pension and Insurance) was funded in December 2014.
- Nuveen Real Asset Income (SA) (Pension and Insurance) was funded in January 2015.
- Weaver Barksdale TIPS (SA) (Pension) was liquidated in March 2015.



## Kentucky Retirement Systems Addendum

As of March 31, 2017

- Taurus Mining Finance Fund (Pension and Insurance) was funded in April 2015.
- Coatue Qualified Partners, L.P. (Pension and Insurance) was funded in June 2015.
- Magnetar MTP EOF II, L.P. (Pension and Insurance) was funded in August 2015.
- Amerra-AGRI Holding (CF) (Pension and Insurance) was funded in August 2015.
- Glenview Capital (CF) (Pension and Insurance) was funded in September 2015.
- QMS Diversified Global Macro (CF) (Pension and Insurance) was funded in September 2015.
- Tourbillon Global Master Fund, Ltd (Pension and Insurance) was funded in October 2015.
- The Boston Co. Non-US Value (SA) (Pension and Insurance) was liquidated in November 2015.
- Aberdeen Emg Mkts Equity (CF) (Pension and Insurance) was liquidated in December 2015.
- Stone Harbor (SA) (Pension and Insurance) was liquidated in December 2015.
- Mesa West Real Estate Income Fund II L.P. (Pension and Insurance) was liquidated in December 2015.
- Davidson-Kemper, L.P. (Pension and Insurance) was funded in December 2015.
- Wellington Emg Mkts Equity (CF) (Pension and Insurance) was liquidated in January 2016.
- BTC Emg Mkts Equity (CF) (Pension and Insurance) was liquidated in January 2016.
- Loomis Sayles HY Fixed Income (SA) (Pension and Insurance) was liquidated in January 2016.
- Prima Mortgage Invest Trust, LLC (Pension and Insurance) was liquidated in January 2016.
- Marathon Bluegrass Credit Fund (Pension and Insurance) was funded in January 2016.
- DSAM Fund, L.P. (Pension and Insurance) was funded in March 2016.
- Myriad Opportunities (Pension and Insurance) was funded in March 2016.
- Anchorage Capital (Pension and Insurance) was funded in June 2016.
- BlackRock GAO Fund, Ltd (CF) (Pension and Insurance) was funded in June 2016.
- Finisterre Global Op (Pension and Insurance) was funded in June 2016.
- Liquidalts H2O Force (CF) (Pension and Insurance) was funded in June 2016.
- River Road FAV (SA) (Pension and Insurance) was funded in June 2016.
- Westwood Management (SA) (Pension and Insurance) was liquidated in July 2016.
- INVESCO Struct'd Core Equity (SA) (Pension and Insurance) was liquidated in July 2016.
- Sasco Capital Inc. (SA) (Pension and Insurance) was liquidated in July 2016.
- Patron Capital V, L.P. (Pension and Insurance) was funded in July 2016.
- Senator Investment Group, L.P. (Pension and Insurance) was funded in July 2016.
- Jana Partners (CF) (Pension and Insurance) was liquidated in October 2016.
- H/2 Core Real Estate Debt Fund, L.P. (Pension and Insurance) was liquidated in November 2016.
- Mesa West IV, L.P. (Pension and Insurance) was funded in March 2017.

**Investment Manager Fees**

***U.S. Equity***

**River Road Asset Management (SA)** - 0.650% on the first \$25 million, 0.500% on the next \$50 million, and 0.450% on next \$50 million, and 0.350% thereafter.

**River Road FAV (SA)** - 0.350% on first \$50 million, 0.300% on next \$50 million, and 0.250% thereafter.

**Westfield Capital (SA)** - 0.750% on the first \$25 million, 0.650% on the next \$50 million, and 0.500% thereafter.

**Systematic Financial Management (SA)** - 0.750% on the first \$25 million, 0.500% on the next \$50 million, and 0.400% thereafter.

**NT Structured Small Cap (SA)** - 0.120% on the first \$500 million, and 0.100% thereafter.

***Non-U.S. Equity***

**Lazard Int'l Strategic Equity (SA)** - 0.700% on the first \$100 million, 0.550% on next \$150 million, 0.450% over \$250 million.

**LSV Int'l Concentrated Value Equity (SA)** - 1.000% on the first \$25 million, 0.800% on next \$25 million, 0.700% on next \$50 million, 0.600% over \$100 million.

**BTC ACWI Ex US Fund (CF)** - 0.055%.

**American Century Non-US Growth Equity (SA)** - 0.495% on the first \$50 million, 0.450% on next \$50 million, 0.405% on next \$400 million, 0.360% over \$500 million.

**Franklin Templeton Non-US Equity (SA)** - 0.700% on the first \$25 million, 0.550% on next \$25 million, 0.500% on next \$50 million, 0.400% over \$100 million.

**NT Int'l Sm Cap Eq Index (SA)** - 0.100% on the first \$100 million, and 0.050% thereafter.

**BTC ACWI Ex US Small Cap Fund (CF)** - 0.120% on the first \$50 million, and 0.100% thereafter.

***Fixed Income***

**NISA Core Agg Fixed Income (SA)** - If account value is greater than \$1 billion, 0.125% on the first \$1.5 billion, 0.105% on next \$1.0 billion, 0.085% on the balance. If account value is less than \$1 billion, 0.165% on the first \$500 million, 0.125% thereafter.

**Cerberus KRS Levered Loan Opps, L.P.** - During the investment period, 1.000% of the greater of (a) aggregate capital commitments and (b) assets under management. After the investment period, 1.000% of assets under management. Performance fee of 15.000%.

**Columbia HY Fixed Income (SA)** - 0.500% on the first \$50 million, 0.400% on the next \$50 million, and 0.350% on all assets over \$100 million.

**Marathon Bluegrass Credit Fund** - 0.850% of NAV and a 15.000% incentive fee over a hurdle rate of 4.000%.

**Shenkman Capital (SA)** - 0.500%.

**Waterfall (SA)** - 0.550% of the fair market value of assets, billed quarterly in arrears, plus a 20% performance fee over an 8.00% hurdle rate.

**Manulife Asset Mgmt (SA)** - 0.350% on the first \$75 million, 0.300% on next \$75 million, and 0.250% thereafter.

***Real Return***

**Nuveen Real Asset Income (SA)** - 0.800% on first \$50 million, 0.750% on next \$50 million, 0.650% on next \$150 million, 0.600% over \$250 million.

**PIMCO:All Asset;Inst (PAAIX)** - 0.865%. Management fee of 0.225% per annum, total annual fee/fund expenses up to 0.905% per annum.

**Tenaska Power Fund II (CF)** - 1.500% of committed capital during the commitment period and 1.500% of invested capital thereafter.

**Tortoise Capital (CF)** - 1.000% management fee on capital balance annually; fees payable quarterly.

**Amerra Ag Fund II (CF)** - 1.500% per annum management fee of fund commitments.

**Amerra-AGRI Holding (CF)** - 1.500% per annum management fee of fund commitments.

**BTG Pactual Brazil Timberland Fund I, L.P.** - 0.750% of committed capital during the commitment period and 1.500% of invested capital thereafter. Performance fee of 20.000%.

**Magnetar MTP Energy Fund, L.P.** - 1.500% of NAV and a 20.000% incentive fee over a 13 week T-bill hurdle. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Oberland Capital Healthcare, L.P.** - 2.000% of committed capital on first \$350 million, 1.750% of committed capital on next \$75 million, 1.500% of committed capital over \$425 million.

**Taurus Mining Finance Fund** - 1.250% paid quarterly in advance with 20.000% carried interest and 8.000% preferred.

**Real Estate**

**H/2 Credit Partners (CF)** - 1.000% of NAV and a performance fee of 10.000%.

**Harrison Street Core (CF)** - 0.750% of NAV.

**Mesa West Core Lending, L.P.** - 0.75% through March 31, 2015 and 0.800% thereafter.

**Prologis Targeted U.S. Logistics Fund (CF)** - 7.500% of net operating income.

**Stockbridge SmtMkts, L.P.** - 0.850% of NAV.

**DivCoWest IV, L.P.** - Management fee: 0.75% of partners' unfunded commitment; 1.50% on funded equity. A blended rate with the effect of lowering the fee occurs if the fund exceeds its target fund raise of \$750 million. The fund is capped at \$880 million. Carried Interest/Preferred Return: First, 6.00% preferred compound return on total contributions. Second, 100% return of capital contributions. Thereafter, 80% to limited partners and 20% to the general partner.

**Greenfield Acquisition Partners VI, L.P.** - During the commitment period, 1.0% of capital commitments and .5% of the weighted average capital contributions of the limited partners. After the commitment period, 1.5% of the weighted average of capital contributions excluding investments that have been sold or otherwise disposed of.

**Greenfield Acquisition Partners VII, L.P.** - During the commitment period, 1.0% of capital commitments and .5% of the weighted average capital contributions of the limited partners. After the commitment period, 1.5% of the weighted average of capital contributions excluding investments that have been sold or otherwise disposed of.

**Lubert Adler Real Estate Fund VII, L.P.** - Annual asset management fee equal to 1.500% of committed capital.

**Patron Capital** - During the commitment period, 1.75% of capital commitments. After the commitment period, 1.50% management fee on the aggregate cost of any unrealized investment for the remaining term of the fund. Additionally, there is a 20.00% performance fee over a 9.00% preferred return with a 50.00% catch-up provision.

**Rubenstein Properties Fund II, L.P.** - 1.500% on committed capital and 20.000% promote over 9.000% preferred.

**Walton Street Real Estate Fund VI, L.P.** - The General Partner will receive an Acquisition Fee of 1.000% of the gross asset cost of each Fund investment. Subject to certain exceptions, the General Partner will receive a Management Fee equal to, on a cumulative aggregate annual basis, 1.500% of the net invested capital for the investments held by the Fund.

**Walton Street Real Estate Fund VII, L.P.** - The General Partner will receive an Acquisition Fee of 1.000% of the gross asset cost of each Fund investment. Subject to certain exceptions, the General Partner will receive a Management Fee equal to, on a cumulative aggregate annual basis, 1.500% of the net invested capital for the investments held by the Fund.

**Absolute Return**

**BAAM (SA)** - 0.500% of NAV and a 10.00% incentive fee over a LIBOR hurdle. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Davidson-Kemper, L.P.** - 1.500% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**PAAMCO (SA)** - 0.750% of NAV and a 5.00% incentive fee over a LIBOR hurdle. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Prisma Capital Partners (SA)** - 0.700% of NAV and a 5.00% incentive fee over a 13 week T-bill hurdle. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Senator Investment Group, L.P.** - 1.500% of NAV and a 20.000% incentive fee. Standard high water mark applies.

**Tourbillon Global Master Fund, Ltd** - 1.750% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Anchorage Capital** - 1.500% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**BlackRock GAO Fund, Ltd (CF)** - 0.500% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Coatue Qualified partners, L.P.** - 1.500% of NAV and a 17.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**DSAM Fund, L.P.** - 2.000% of NAV and a 18.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Finisterre Global Op** - 1.500% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Glenview Capital (CF)** - 2.000% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**HBK II (CF)** - 1.500% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Knighthood Capital (CF)** - 2.000% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**LibreMax Capital (CF)** - 2.000% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Liquidalts H2O Force (CF)** - 1.500% of NAV and a 17.500% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Luxor Capital (CF)** - 1.750% of NAV and a 17.500% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Myriad Opportunities** - 2.000% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Pine River (CF)** - 1.500% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**QMS Diversified Global Macro (CF)** - 2.000% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Scopia PX, LLC** - 1.500% of NAV and a 20.000% incentive fee. Standard high water mark applies; hurdle is non-cumulative since account inception.

**Kentucky Retirement Systems  
Custom & Blended Index Composition**

**As of March 31, 2017**

| <u>Composite/Manager</u>               | <u>Benchmark</u>   | <u>Since</u> |
|--|--|--------------|
| Total Fund Target Allocation Index (P) | RVK, Inc. began calculating the custom index as of September 1, 2008.<br>The custom index is calculated monthly and consists of: |              |
|  | 6.00% S&P 500 Index (Cap Wtd)  |              |
|  | 27.20% S&P 1500 Composite Index  |              |
|  | 4.00% R 2000 Index   |              |
|  | 18.00% MSCI EAFE Index (Gross)   |              |
|  | 2.00% MSCI Emerging Markets Index (Gross)  |              |
|  | 25.00% Barclays US Aggregate Bond Index  |              |
|  | 10.00% Barclays US Treasury: US TIPS Index   |              |
|  | 4.80% Barclays US Corporate: High Yield Index  |              |
|  | 3.00% Citigroup 3 Mo T-Bill Index  | 9/1/2008     |
|  | 6.00% S&P 500 Index (Cap Wtd)  |              |
|  | 27.20% S&P 1500 Composite Index  |              |
|  | 4.00% R 2000 Index   |              |
|  | 12.00% MSCI World Ex US Index (Gross)  |              |
|  | 4.00% MSCI ACW Ex US Index (Gross)   |              |
|  | 2.00% MSCI ACW Ex US Small Cap Index (Gross)   |              |
|  | 2.00% MSCI Emerging Markets Index (Gross)  |              |
|  | 25.00% Barclays US Aggregate Bond Index  |              |
|  | 10.00% Barclays US Treasury: US TIPS Index   |              |
|  | 4.80% Barclays US Corporate: High Yield Index  |              |
|  | 3.00% Citigroup 3 Mo T-Bill Index  | 7/1/2009     |
|  | 20.00% R 3000 Index  |              |
|  | 20.00% MSCI ACW Ex US Index (Gross)  |              |
|  | 4.00% MSCI Emerging Markets Index (Gross)  |              |
|  | 20.00% Barclays US Unv Index   |              |
|  | 10.00% Consumer Price Index + 3%   |              |
|  | 5.00% NCREIF ODCE Index (Gross) (AWA)  |              |
|  | 10.05% HFRI FOF Div Index (Lagged)   |              |
|  | 9.93% R 3000 Index +4% (Qtr Lag)   |              |
|  | 1.02% Citi 3 Mo T-Bill Index   | 7/1/2011     |
|  | 20.50% R 3000 Index  |              |
|  | 20.00% MSCI ACW Ex US Index (Gross)  |              |
|  | 2.90% MSCI Emerging Markets Index (Gross)  |              |
|  | 19.30% Barclays Universal Bond Index   |              |
|  | 10.00% Consumer Price Index + 3%   |              |
|  | 4.50% NCREIF ODCE Index (Gross) (AWA)  |              |
|  | 10.00% HFRI FOF Div Index (Month Lag)  |              |
|  | 10.00% R 3000 Index +4% (Qtr Lag)  |              |
|  | 2.80% Citi 3 Mo T-Bill Index   | 1/1/2013     |

**Kentucky Retirement Systems  
Custom & Blended Index Composition**

As of March 31, 2017

| <u>Composite/Manager</u>                                     | <u>Benchmark</u>                              | <u>Since</u> |
|--|---|--------------|
| Total Fund Target Allocation Index (P) (Cont.)               | 20.50% R 3000 Index                           | 7/1/2013     |
|  | 20.00% MSCI ACW Ex US Index (Gross)           |              |
|  | 2.90% MSCI Emerging Markets Index (Gross)     |              |
|  | 19.30% Barclays Universal Bond Index          |              |
|  | 10.00% Consumer Price Index + 3%              |              |
|  | 4.50% NCREIF ODCE Index (Net) (AWA) (Qtr Lag) |              |
|  | 10.00% HFRI FOF Div Index (Month Lag)         |              |
|  | 10.00% Private Equity Composite               |              |
|  | 2.80% Citi 3 Mo T-Bill Index                  |              |
|  | 20.50% R 3000 Index                           |              |
| 20.00% MSCI ACW Ex US Index (Gross)                          |   |              |
| 2.90% MSCI Emerging Markets Index (Gross)                    |   |              |
| 19.30% Barclays Universal Bond Index                         |   |              |
| 10.00% Real Return Actual Allocation Index                   |   |              |
| 4.50% NCREIF ODCE Index (Net) (AWA) (Qtr Lag)                |   |              |
| 10.00% HFRI FOF Div Index (Month Lag)                        |   |              |
| 10.00% Private Equity Composite                              |   |              |
| 2.80% Citi 3 Mo T-Bill Index                                 |   |              |
| <b>25.60% Russell 3000 Index</b>                             | <b>1/1/2016</b>                               |              |
| <b>25.20% MSCI ACW Ex US Investable Market Index (Gross)</b> |   |              |
| <b>6.80% Bloomberg US Univ Bond Index</b>                    |   |              |
| <b>7.20% Bloomberg US Corp HY Index</b>                      |   |              |
| <b>8.00% Real Return Actual Allocation Index</b>             |   |              |
| <b>5.00% NCREIF ODCE Index (Net) (AWA) (Qtr Lag)</b>         |   |              |
| <b>10.00% HFRI FOF Div Index (Month Lag)</b>                 |   |              |
| <b>10.00% Private Equity Composite</b>                       |   |              |
| <b>2.20% Citi 3 Mo T-Bill Index</b>                          |   |              |

**Kentucky Retirement Systems  
Custom & Blended Index Composition**

**As of March 31, 2017**

| <u>Composite/Manager</u>               | <u>Benchmark</u>  | <u>Since</u> |
|--|---|--------------|
| Total Fund Target Allocation Index (I) | The custom index is calculated monthly and consists of: |              |
|  | 27.50% S&P 500 Index (Cap Wtd)                          |              |
|  | 62.50% Barclays US Gov't/Credit Bond index              |              |
|  | 10.00% Citigroup 3 Mo T-Bill Index                      | Inception    |
|  | 50.00% S&P 500 Index (Cap Wtd)                          |              |
|  | 20.00% S&P SmallCap 600 Index (Cap Wtd)                 |              |
|  | 25.00% Barclays US Gov't/Credit Bond index              |              |
|  | 5.00% Citigroup 3 Mo T-Bill Index                       | 8/1/1996     |
|  | 35.00% S&P 500 Index (Cap Wtd)                          |              |
|  | 20.00% S&P SmallCap 600 Index (Cap Wtd)                 |              |
|  | 25.00% Barclays US Gov't/Credit Bond index              |              |
|  | 15.00% BNY Mellon ADR Index                             |              |
|  | 5.00% Citigroup 3 Mo T-Bill Index                       | 7/1/2000     |
|  | 60.00% S&P 1500 Composite Index                         |              |
|  | 15.00% MSCI EAFE Index (Gross)                          |              |
|  | 10.00% Barclays US Treasury: US TIPS Index              |              |
|  | 5.00% R 3000 Index + 4% (Qtr Lag) (I)*                  |              |
|  | 5.00% BNY Mellon ADR Index                              |              |
|  | 5.00% Citigroup 3 Mo T-Bill Index                       | 7/1/2001     |
|  | 60.00% S&P 1500 Composite Index                         |              |
|  | 15.00% MSCI EAFE Index (Gross)                          |              |
|  | 10.00% Barclays US Treasury: US TIPS Index              |              |
|  | 5.00% R 3000 Index + 4% (Qtr Lag) (I)*                  |              |
|  | 5.00% S&P American Depositary Receipt Index             |              |
|  | 5.00% Citigroup 3 Mo T-Bill Index                       | 7/1/2002     |
|  | 60.00% S&P 1500 Composite Index                         |              |
|  | 16.00% MSCI EAFE Index (Gross)                          |              |
|  | 10.00% Barclays US Treasury: US TIPS Index              |              |
|  | 5.00% R 3000 Index + 4% (Qtr Lag) (I)*                  |              |
|  | 4.00% S&P American Depositary Receipt Index             |              |
|  | 5.00% Citigroup 3 Mo T-Bill Index                       | 7/1/2003     |
|  | 60.00% S&P 1500 Composite Index                         |              |
|  | 20.00% MSCI EAFE Index (Gross)                          |              |
|  | 10.00% Barclays US Treasury: US TIPS Index              |              |
|  | 5.00% R 3000 Index + 4% (Qtr Lag) (I)*                  |              |
|  | 5.00% Citigroup 3 Mo T-Bill Index                       | 4/1/2004     |
|  | 40.00% S&P 1500 Composite Index                         |              |
|  | 30.00% MSCI EAFE Index (Gross)                          |              |
|  | 12.00% Barclays US Treasury: US TIPS Index              |              |
|  | 15.00% R 3000 Index + 4% (Qtr Lag) (I)*                 |              |
|  | 3.00% Citigroup 3 Mo T-Bill Index                       | 7/1/2007     |



**Kentucky Retirement Systems  
Custom & Blended Index Composition**

**As of March 31, 2017**

| <u>Composite/Manager</u>                       | <u>Benchmark</u>  | <u>Since</u> |
|--|---|--------------|
| Total Fund Target Allocation Index (I) (Cont.) | 40.00% S&P 1500 Composite Index   | 5/1/2008     |
|  | 27.00% MSCI EAFE Index (Gross)  |              |
|  | 3.00% MSCI Emerging Markets Index (Gross)   |              |
|  | 12.00% Barclays US Treasury: US TIPS Index  |              |
|  | 15.00% R 3000 Index + 4% (Qtr Lag) (I)*   |              |
| 3.00% Citigroup 3 Mo T-Bill Index              |   |              |
|  | 40.00% S&P 1500 Composite Index   | 7/1/2009     |
|  | 24.00% MSCI World Ex US Index (Gross)   |              |
|  | 3.00% MSCI ACW Ex US Index (Gross)  |              |
|  | 3.00% MSCI Emerging Markets Index (Gross)   |              |
|  | 12.00% 70% Barclays US Treasury: US TIPS Index/30% Barclays US Aggregate Bond Index |              |
|  | 15.00% R 3000 Index + 4% (Qtr Lag) (I)*   |              |
|  | 3.00% Citigroup 3 Mo T-Bill Index   |              |
|  | 21.11% R 3000 Index   | 7/1/2011     |
|  | 20.97% MSCI ACW Ex US Index (Gross)   |              |
|  | 3.45% MSCI Emerging Markets Index (Gross)   |              |
|  | 19.30% Barclays US Unv Index  |              |
|  | 11.39% Consumer Price Index + 3%  |              |
|  | 4.31% NCREIF ODCE Index (Gross) (AWA)   |              |
|  | 10.21% HFRI FOF Div Index (Lagged)  |              |
|  | 8.30% R 3000 Index +4% (Qtr Lag)  |              |
|  | 0.96% Citi 3 Mo T-Bill Index  |              |
|  |   |              |
|  | 20.00% R 3000 Index   | 1/1/2013     |
|  | 20.00% MSCI ACW Ex US Index (Gross)   |              |
|  | 4.00% MSCI Emerging Markets Index (Gross)   |              |
|  | 20.00% Barclays Universal Bond Index  |              |
|  | 10.00% Consumer Price Index + 3%  |              |
|  | 5.00% NCREIF ODCE Index (Gross) (AWA)   |              |
|  | 10.00% HFRI FOF Div Index (Month Lag)   |              |
|  | 10.00% R 3000 Index +4% (Qtr Lag)   |              |
|  | 1.00% Citi 3 Mo T-Bill Index  |              |
|  | 20.00% R 3000 Index   | 7/1/2013     |
|  | 20.00% MSCI ACW Ex US Index (Gross)   |              |
|  | 4.00% MSCI Emerging Markets Index (Gross)   |              |
|  | 20.00% Barclays Universal Bond Index  |              |
|  | 10.00% Consumer Price Index + 3%  |              |
|  | 5.00% NCREIF ODCE Index (Net) (AWA) (Qtr Lag)                                       |              |
|  | 10.00% HFRI FOF Div Index (Month Lag)   |              |
|  | 10.00% Private Equity Composite   |              |
| 1.00% Citi 3 Mo T-Bill Index                   |   |              |



**Kentucky Retirement Systems  
Custom & Blended Index Composition**

**As of March 31, 2017**

| <u>Composite/Manager</u>                             | <u>Benchmark</u>   | <u>Since</u> |
|--|--|--------------|
| Total Fund Target Allocation Index (I) (Cont.)       | 20.00% R 3000 Index  |              |
|  | 20.00% MSCI ACW Ex US Index (Gross)                          |              |
|  | 4.00% MSCI Emerging Markets Index (Gross)                    |              |
|  | 20.00% Barclays Universal Bond Index                         |              |
|  | 10.00% Real Return Actual Allocation Index                   |              |
|  | 5.00% NCREIF ODCE Index (Net) (AWA) (Qtr Lag)                |              |
|  | 10.00% HFRI FOF Div Index (Month Lag)                        |              |
|  | 10.00% Private Equity Composite                              |              |
|  | 1.00% Citi 3 Mo T-Bill Index                                 | 11/1/2013    |
|  | <b>26.50% Russell 3000 Index</b>                             |              |
|  | <b>26.50% MSCI ACW Ex US Investable Market Index (Gross)</b> |              |
|  | <b>6.00% Bloomberg US Univ Bond Index</b>                    |              |
|  | <b>6.00% Bloomberg US Corp HY Index</b>                      |              |
|  | <b>8.00% Real Return Actual Allocation Index</b>             |              |
| <b>5.00% NCREIF ODCE Index (Net) (AWA) (Qtr Lag)</b> |  |              |
| <b>10.00% HFRI FOF Div Index (Month Lag)</b>         |  |              |
| <b>10.00% Private Equity Composite</b>               |  |              |
| <b>2.00% Citi 3 Mo T-Bill Index</b>                  | 1/1/2016   |              |



**Kentucky Retirement Systems  
Custom & Blended Index Composition**

**As of March 31, 2017**

| <u>Composite/Manager</u>  | <u>Benchmark</u>   | <u>Since</u>    |
|---------------------------|--|-----------------|
| U.S. Equity Composite (P) | The custom index is calculated monthly and consists of:  |                 |
|                           | 90.00% S&P 500 Index (Cap Wtd)<br>10.00% R 2000 Index  | Inception       |
|                           | 85.00% S&P 500 Index (Cap Wtd)<br>15.00% R 2000 Index  | 8/1/1996        |
|                           | 80.52% S&P 500 Index (Cap Wtd)<br>19.48% R 2000 Index  | 7/1/2000        |
|                           | 41.10% S&P 500 Index (Cap Wtd)<br>42.46% S&P 1500 Composite Index<br>16.44% R 2000 Index                               | 7/1/2001        |
|                           | 36.98% S&P 500 Index (Cap Wtd)<br>42.47% S&P 1500 Composite Index<br>12.33% R 2000 Index<br>8.22% R 2500 Growth Index  | 7/1/2003        |
|                           | 27.50% S&P 500 Index (Cap Wtd)<br>50.00% S&P 1500 Composite Index<br>12.50% R 2000 Index<br>10.00% R 2500 Growth Index | 11/1/2003       |
|                           | 12.50% S&P 500 Index (Cap Wtd)<br>65.00% S&P 1500 Composite Index<br>12.50% R 2000 Index<br>10.00% R 2500 Growth Index | 8/1/2005        |
|                           | 16.50% S&P 500 Index (Cap Wtd)<br>71.00% S&P 1500 Composite Index<br>12.50% R 2000 Index                               | 3/1/2006        |
|                           | 20.00% S&P 500 Index (Cap Wtd)<br>66.67% S&P 1500 Composite Index<br>13.33% R 2000 Index                               | 7/1/2007        |
|                           | <b>100.00% Russell 3000 Index</b>  | <b>7/1/2011</b> |
| U.S. Equity Composite (I) | The custom index is calculated monthly and consists of:  |                 |
|                           | 100.00% S&P 1500 Composite Index   | Inception       |
|                           | <b>100.00% Russell 3000 Index</b>  | <b>7/1/2011</b> |

**Kentucky Retirement Systems  
Custom & Blended Index Composition**

**As of March 31, 2017**

| <u>Composite/Manager</u>      | <u>Benchmark</u>  | <u>Since</u>    |
|-------------------------------|---|-----------------|
| Non-U.S. Equity Composite (P) | The custom index is calculated monthly and consists of:       |                 |
|                               | 100.00% BNY Mellon ADR Index                                  | Inception       |
|                               | 33.00% BNY Mellon ADR Index                                   |                 |
|                               | 67.00% MSCI EAFE Index (Gross)                                | 8/1/2001        |
|                               | 33.00% S&P American Depositary Receipt Index                  |                 |
|                               | 67.00% MSCI EAFE Index (Gross)                                | 7/1/2002        |
|                               | 27.00% S&P American Depositary Receipt Index                  |                 |
|                               | 73.00% MSCI EAFE Index (Gross)                                | 7/1/2003        |
|                               | 100.00% MSCI EAFE Index (Gross)                               | 4/1/2004        |
|                               | 90.00% MSCI EAFE Index (Gross)                                |                 |
|                               | 10.00% MSCI Emerging Markets Index (Gross)                    | 5/1/2008        |
|                               | 80.00% MSCI EAFE Index (Gross)                                |                 |
|                               | 10.00% MSCI Emerging Markets Index (Gross)                    |                 |
|                               | 10.00% MSCI ACW Ex US Small Cap Index (Gross)                 | 1/1/2009        |
|                               | 60.00% MSCI World Ex US Index (Gross)                         |                 |
|                               | 20.00% MSCI ACW Ex US Index (Gross)                           |                 |
|                               | 10.00% MSCI Emerging Markets Index (Gross)                    |                 |
|                               | 10.00% MSCI ACW Ex US Small Cap Index (Gross)                 | 7/1/2009        |
|                               | 100.00% MSCI ACW Ex US Index (Gross)                          | 7/1/2011        |
|                               | <b>100.00% MSCI ACW Ex US Investable Market Index (Gross)</b> | <b>1/1/2016</b> |
| Non-U.S. Equity Composite (I) | The custom index is calculated monthly and consists of:       |                 |
|                               | 100.00% BNY Mellon ADR Index                                  | Inception       |
|                               | 25.00% BNY Mellon ADR Index                                   |                 |
|                               | 75.00% MSCI EAFE Index (Gross)                                | 7/1/2001        |
|                               | 25.00% S&P American Depositary Receipt Index                  |                 |
|                               | 75.00% MSCI EAFE Index (Gross)                                | 7/1/2002        |
|                               | 20.00% S&P American Depositary Receipt Index                  |                 |
|                               | 80.00% MSCI EAFE Index (Gross)                                | 7/1/2003        |
|                               | 100.00% MSCI EAFE Index (Gross)                               | 4/1/2004        |
|                               | 90.00% MSCI EAFE Index (Gross)                                |                 |
|                               | 10.00% MSCI Emerging Markets Index (Gross)                    | 5/1/2008        |
|                               | 80.00% MSCI World Ex US Index (Gross)                         |                 |
|                               | 10.00% MSCI ACW Ex US Index (Gross)                           |                 |
|                               | 10.00% MSCI Emerging Markets Index (Gross)                    | 7/1/2009        |



**Kentucky Retirement Systems  
Custom & Blended Index Composition**

**As of March 31, 2017**

| <u>Composite/Manager</u>   | <u>Benchmark</u>  | <u>Since</u>     |
|--|---|------------------|
| Non-U.S. Equity Composite (I) (Cont.)  | 100.00% MSCI ACW Ex US Index (Gross)                          | 7/1/2011         |
|  | <b>100.00% MSCI ACW Ex US Investable Market Index (Gross)</b> | <b>1/1/2016</b>  |
| Fixed Income Composite (P)   | The custom index is calculated monthly and consists of:       |                  |
|  | 80.00% Barclays US Govt/Credit Bond Index                     |                  |
|  | 20.00% BofA ML 1-3 Year US Treasury Index                     | Inception        |
|  | 54.00% Barclays US Govt/Credit Bond Index                     |                  |
|  | 27.00% Barclays US Tsry: US TIPS Index                        |                  |
|  | 19.00% Barclays US Agg Bond Index                             | 7/1/2001         |
|  | 38.00% Barclays US Agg Bond Index                             |                  |
|  | 35.00% Barclays US Govt/Credit Bond Index                     |                  |
|  | 27.00% Barclays US Tsry: US TIPS Index                        | 7/1/2003         |
|  | 71.43% Barclays US Agg Bond Index                             |                  |
|  | 28.57% Barclays US Tsry: US TIPS Index                        | 7/1/2007         |
|  | 100.00% Barclays US Unv Bond Index                            | 7/1/2011         |
|  | <b>50.00% Bloomberg US Unv Bond Index</b>                     |                  |
|  | <b>50.00% Bloomberg US Corp: Hi Yld Index</b>                 | <b>1/1/2016</b>  |
| Fixed Income Composite (I)   | The custom index is calculated monthly and consists of:       |                  |
|  | 100.00% Barclays US Govt/Credit Bond Index                    | Inception        |
|  | 100.00% Barclays US Tsry: US TIPS Index                       | 7/1/2001         |
|  | 70.00% Barclays US Tsry: US TIPS Index                        |                  |
|  | 30.00% Barclays US Agg Bond Index                             | 4/1/2011         |
|  | 100.00% Barclays US Unv Bond Index                            | 7/1/2011         |
|  | <b>50.00% Bloomberg US Unv Bond Index</b>                     |                  |
|  | <b>50.00% Bloomberg US Corp: Hi Yld Index</b>                 | <b>1/1/2016</b>  |
| Real Estate Composite (P)<br>& Real Estate Composite (I)                             | The custom index is calculated monthly and consists of:       |                  |
|  | <b>100.00% NCREIF ODCE Index (AWA) (Net) (Qtr Lag)</b>        | <b>Inception</b> |
| Real Return Actual Allocation Index (P)<br>& Real Return Actual Allocation Index (I) | The custom index is calculated monthly and consists of:       |                  |
|  | 100.00% Consumer Price Index + 3%                             | Inception        |
|  | <b>100.00% Real Return Actual Allocation Index</b>            | <b>11/1/2013</b> |



**Kentucky Retirement Systems  
Custom & Blended Index Composition**

As of March 31, 2017

| <u>Composite/Manager</u>                  | <u>Benchmark</u>   | <u>Since</u>                                     |
|---|--|--|
| Private Equity Composite (P) [Long Term]  | The custom index is calculated monthly and consists of:<br><br>60.00% S&P 1500 Composite Index<br>40.00% Barclays US Corp: High Yield Index<br><br>100.00% R 3000 Index+4% (Qtr Lag)<br><br><b>100.00% Russell 3000 Index+3% (Qtr Lag)</b>   | Inception<br><br>7/1/2011<br><br><b>1/1/2016</b> |
| Private Equity Composite (P) [Short Term] | The custom index is calculated monthly and consists of:<br><br><b>100.00% Pension Private Equity Composite</b>   | <b>Inception</b>                                 |
| Private Equity Composite (I) [Long Term]  | The custom index is calculated monthly and consists of:<br><br>80.00% S&P 1500 Composite Index<br>20.00% Barclays US Corp: High Yield Index<br><br>100.00% R 3000 Index + 4% (Qtr Lag)<br><br><b>100.00% Russell 3000 Index+3% (Qtr Lag)</b> | Inception<br><br>7/1/2011<br><br><b>1/1/2016</b> |
| Private Equity Composite (I) [Short Term] | The custom index is calculated monthly and consists of:<br><br><b>100.00% Insurance Private Equity Composite</b>   | <b>Inception</b>                                 |



**Kentucky Retirement Systems  
Custom & Blended Index Composition**

As of March 31, 2017

| <u>Composite/Manager</u>   | <u>Benchmark</u>  | <u>Since</u>                      |
|--|---|-----------------------------------|
| Internal S&P 500 Index (SA)  | The custom index is calculated monthly and consists of:<br><br>100.00% S&P 1500 Composite Index<br><br><b>100.00% S&amp;P 500 Index (Cap Wtd)</b>   | Inception<br><br><b>7/1/2011</b>  |
| Waterfall (SA)<br><i>Opportunistic FI Blended Index</i>                | The blended index is calculated monthly and consists of:<br><br><b>60.00% Bloomberg US Corp: High Yield Index</b><br><b>40.00% Bloomberg US ABS Floating Rate Index</b>   | <b>Inception</b>                  |
| Shenkman Capital (SA)<br><i>Shenkman Blended Index</i>                 | The blended index is calculated monthly and consists of:<br><br>50.00% Barclays US Corp: High Yield Index<br>50.00% Barclays US High Yield Loans Index<br><br><b>100.00% S&amp;P/LSTA Leveraged Loan Index</b>  | Inception<br><br><b>7/1/2014</b>  |
| Internal TIPS (SA)<br><i>Internal US TIPS Blend</i>                    | The blended index is calculated monthly and consists of:<br><br>100.00% Barclays US Trsy: US TIPS Index<br><br><b>100.00% Bloomberg Global Investors US IL 1-10 Years Index</b>   | Inception<br><br><b>10/1/2014</b> |
| Nuveen Real Asset Income (SA)<br><i>Nuveen Real Asset Custom Index</i> | The blended index is calculated monthly and consists of:<br><br><b>33.00% S&amp;P Global Infrastructure Index</b><br><b>20.00% Bloomberg US Corp: High Yield Index</b><br><b>20.00% BofA Merrill Lynch REIT Preferred Index</b><br><b>15.00% MSCI US REIT Index</b><br><b>12.00% BofA Merrill Lynch Preferred Stock, Fixed Rate Index</b> | <b>Inception</b>                  |
| Manulife Asset Mgmt (SA)   | The blended index is calculated monthly and consists of:<br><br>100.00% Barclays Multiverse Index<br><br><b>100.00% Bloomberg US Unv Bond Index</b>   | Inception<br><br><b>1/1/2016</b>  |

**Kentucky Retirement Systems  
Custom & Blended Index Composition**

**As of March 31, 2017**

| <u>Composite/Manager</u>   | <u>Benchmark</u>   | <u>Since</u>    |
|--|--|-----------------|
| KERS (P) Target Allocation Index   | The blended index is calculated monthly and consists of:   |                 |
|  | Total Fund Target Allocation Index (P)   | Inception       |
|  | 22.00% R 3000 Index<br>20.00% MSCI ACW Ex US Index (Gross)<br>10.00% Barclays US Agg Bond Index<br>5.00% Barclays US Corp: Hi Yld Index<br>5.00% Barclays Global Agg Bond Index<br>10.00% Consumer Price Index + 3%<br>3.00% NCREIF ODCE (Net) (Qtr Lag)<br>10.00% HFRI FOF Diversified (Mth Lag)<br>10.00% Private Equity Composite<br>5.00% Citi 3 Mo T-Bill Index   | 7/1/2013        |
|  | 22.00% R 3000 Index<br>20.00% MSCI ACW Ex US Index (Gross)<br>10.00% Barclays US Agg Bond Index<br>5.00% Barclays US Corp: Hi Yld Index<br>5.00% Barclays Global Agg Bond Index<br>10.00% Real Return Actual Allocation Index<br>3.00% NCREIF ODCE (Net) (Qtr Lag)<br>10.00% HFRI FOF Diversified (Mth Lag)<br>10.00% Private Equity Composite<br>5.00% Citi 3 Mo T-Bill Index   | 11/1/2013       |
|  | <b>22.00% Russell 3000 Index</b><br><b>20.00% MSCI ACW Ex US Investable Market Index (Gross)</b><br><b>10.00% Bloomberg US Univ Bond Index</b><br><b>12.00% Bloomberg US Corp: Hi Yld Index</b><br><b>8.00% Real Return Actual Allocation Index</b><br><b>5.00% NCREIF ODCE (Net) (Qtr Lag)</b><br><b>10.00% HFRI FOF Diversified (Mth Lag)</b><br><b>10.00% Private Equity Composite</b><br><b>3.00% Citi 3 Mo T-Bill Index</b> | <b>1/1/2016</b> |
| KERS Haz (P) Target Allocation Index,<br>CERS (P) Target Allocation Index, &<br>CERS Haz (P) Target Allocation Index | The blended index is calculated monthly and consists of:   |                 |
|  | Total Fund Target Allocation Index (P)   | Inception       |
|  | 20.00% R 3000 Index<br>20.00% MSCI ACW Ex US Index (Gross)<br>4.00% MSCI Emg Mkts Index (Gross)<br>9.00% Barclays US Agg Bond Index<br>5.00% Barclays US Corp: Hi Yld Index<br>5.00% Barclays Global Agg Bond Index<br>10.00% Consumer Price Index + 3%<br>5.00% NCREIF ODCE (Net) (Qtr Lag)<br>10.00% HFRI FOF Diversified (Mth Lag)<br>10.00% Private Equity Composite<br>2.00% Citi 3 Mo T-Bill Index                         | 7/1/2013        |



**Kentucky Retirement Systems  
Custom & Blended Index Composition**

As of March 31, 2017

| <u>Composite/Manager</u>   | <u>Benchmark</u>   | <u>Since</u> |           |
|--|--|--------------|-----------|
| KERS Haz (P) Target Allocation Index,<br>CERS (P) Target Allocation Index, &<br>CERS Haz (P) Target Allocation Index (Cont.) | 20.00% R 3000 Index  | 11/1/2013    |           |
|  | 20.00% MSCI ACW Ex US Index (Gross)                          |              |           |
|  | 4.00% MSCI Emg Mkts Index (Gross)                            |              |           |
|  | 9.00% Barclays US Agg Bond Index                             |              |           |
|  | 5.00% Barclays US Corp: Hi Yld Index                         |              |           |
|  | 5.00% Barclays Global Agg Bond Index                         |              |           |
|  | 10.00% Real Return Actual Allocation Index                   |              |           |
|  | 5.00% NCREIF ODCE (Net) (Qtr Lag)                            |              |           |
|  | 10.00% HFRI FOF Diversified (Mth Lag)                        |              |           |
|  | 10.00% Private Equity Composite                              |              |           |
|  | 2.00% Citi 3 Mo T-Bill Index                                 |              |           |
|  | <b>26.50% Russell 3000 Index</b>                             |              | 1/1/2016  |
|  | <b>26.50% MSCI ACW Ex US Investable Market Index (Gross)</b> |              |           |
|  | <b>6.00% Bloomberg US Univ Bond Index</b>                    |              |           |
| <b>6.00% Bloomberg US Corp: Hi Yld Index</b>   |  |              |           |
| <b>8.00% Real Return Actual Allocation Index</b>   |  |              |           |
| <b>5.00% NCREIF ODCE (Net) (Qtr Lag)</b>   |  |              |           |
| <b>10.00% HFRI FOF Diversified (Mth Lag)</b>   |  |              |           |
| <b>10.00% Private Equity Composite</b>   |  |              |           |
| <b>2.00% Citi 3 Mo T-Bill Index</b>  |  |              |           |
| SPRS (P) Target Allocation Index   | The blended index is calculated monthly and consists of:     |              |           |
|  | Total Fund Target Allocation Index (P)                       | Inception    |           |
|  | 20.00% R 3000 Index  | 7/1/2013     |           |
|  | 20.00% MSCI ACW Ex US Index (Gross)                          |              |           |
|  | 4.00% MSCI Emg Mkts Index (Gross)                            |              |           |
|  | 8.00% Barclays US Agg Bond Index                             |              |           |
|  | 5.00% Barclays US Corp: Hi Yld Index                         |              |           |
|  | 5.00% Barclays Global Agg Bond Index                         |              |           |
|  | 10.00% Consumer Price Index + 3%                             |              |           |
|  | 5.00% NCREIF ODCE (Net) (Qtr Lag)                            |              |           |
|  | 10.00% HFRI FOF Diversified (Mth Lag)                        |              |           |
|  | 10.00% Private Equity Composite                              |              |           |
|  | 3.00% Citi 3 Mo T-Bill Index                                 |              |           |
|  | 20.00% R 3000 Index  |              | 11/1/2013 |
|  | 20.00% MSCI ACW Ex US Index (Gross)                          |              |           |
|  | 4.00% MSCI Emg Mkts Index (Gross)                            |              |           |
|  | 8.00% Barclays US Agg Bond Index                             |              |           |
|  | 5.00% Barclays US Corp: Hi Yld Index                         |              |           |
|  | 5.00% Barclays Global Agg Bond Index                         |              |           |
|  | 10.00% Real Return Actual Allocation Index                   |              |           |
|  | 5.00% NCREIF ODCE (Net) (Qtr Lag)                            |              |           |
|  | 10.00% HFRI FOF Diversified (Mth Lag)                        |              |           |
|  | 10.00% Private Equity Composite                              |              |           |
|  | 3.00% Citi 3 Mo T-Bill Index                                 |              |           |



**Kentucky Retirement Systems  
Custom & Blended Index Composition**

**As of March 31, 2017**

| <u>Composite/Manager</u>                 | <u>Benchmark</u>   | <u>Since</u> |
|--|--|--------------|
| SPRS (P) Target Allocation Index (Cont.) | <b>23.00%</b> Russell 3000 Index<br><b>23.00%</b> MSCI ACW Ex US Investable Market Index (Gross)<br><b>9.00%</b> Bloomberg US Univ Bond Index<br><b>9.00%</b> Bloomberg US Corp: Hi Yld Index<br><b>8.00%</b> Real Return Actual Allocation Index<br><b>5.00%</b> NCREIF ODCE (Net) (Qtr Lag)<br><b>10.00%</b> HFRI FOF Diversified (Mth Lag)<br><b>10.00%</b> Private Equity Composite<br><b>3.00%</b> Citi 3 Mo T-Bill Index   | 1/1/2016     |
| KERS (I) Target Allocation Index         | The blended index is calculated monthly and consists of:<br><br>Total Fund Target Allocation Index (I)   | Inception    |
|  | <b>20.00%</b> R 3000 Index<br><b>20.00%</b> MSCI ACW Ex US Index (Gross)<br><b>4.00%</b> MSCI Emg Mkts Index (Gross)<br><b>10.00%</b> Barclays US Agg Bond Index<br><b>5.00%</b> Barclays US Corp: Hi Yld Index<br><b>5.00%</b> Barclays Global Agg Bond Index<br><b>10.00%</b> Consumer Price Index + 2.5%<br><b>5.00%</b> NCREIF ODCE (Net) (Qtr Lag)<br><b>10.00%</b> HFRI FOF Diversified (Mth Lag)<br><b>10.00%</b> Private Equity Composite<br><b>1.00%</b> Citi 3 Mo T-Bill Index         | 7/1/2013     |
|  | <b>20.00%</b> R 3000 Index<br><b>20.00%</b> MSCI ACW Ex US Index (Gross)<br><b>4.00%</b> MSCI Emg Mkts Index (Gross)<br><b>10.00%</b> Barclays US Agg Bond Index<br><b>5.00%</b> Barclays US Corp: Hi Yld Index<br><b>5.00%</b> Barclays Global Agg Bond Index<br><b>10.00%</b> Real Return Actual Allocation Index<br><b>5.00%</b> NCREIF ODCE (Net) (Qtr Lag)<br><b>10.00%</b> HFRI FOF Diversified (Mth Lag)<br><b>10.00%</b> Private Equity Composite<br><b>1.00%</b> Citi 3 Mo T-Bill Index | 11/1/2013    |
|  | <b>26.50%</b> Russell 3000 Index<br><b>26.50%</b> MSCI ACW Ex US Investable Market Index (Gross)<br><b>6.00%</b> Bloomberg US Univ Bond Index<br><b>6.00%</b> Bloomberg US Corp: Hi Yld Index<br><b>8.00%</b> Real Return Actual Allocation Index<br><b>5.00%</b> NCREIF ODCE (Net) (Qtr Lag)<br><b>10.00%</b> HFRI FOF Diversified (Mth Lag)<br><b>10.00%</b> Private Equity Composite<br><b>2.00%</b> Citi 3 Mo T-Bill Index   | 1/1/2016     |



**Kentucky Retirement Systems  
Custom & Blended Index Composition**

As of March 31, 2017

| <u>Composite/Manager</u>   | <u>Benchmark</u>   | <u>Since</u> |
|--|--|--------------|
| KERS Haz (I) Target Allocation Index,<br>CERS (I) Target Allocation Index,<br>CERS Haz (I) Target Allocation Index , &<br>SPRS (I) Target Allocation Index | The blended index is calculated monthly and consists of:<br><br>Total Fund Target Allocation Index (I) | Inception    |
|  | 20.00% R 3000 Index  |              |
|  | 20.00% MSCI ACW Ex US Index (Gross)  |              |
|  | 4.00% MSCI Emg Mkts Index (Gross)  |              |
|  | 10.00% Barclays US Agg Bond Index  |              |
|  | 5.00% Barclays US Corp: Hi Yld Index   |              |
|  | 5.00% Barclays Global Agg Bond Index   |              |
|  | 10.00% Consumer Price Index + 3%   |              |
|  | 5.00% NCREIF ODCE (Net) (Qtr Lag)  |              |
|  | 10.00% HFRI FOF Diversified (Mth Lag)  |              |
|  | 10.00% Private Equity Composite  |              |
|  | 1.00% Citi 3 Mo T-Bill Index   | 7/1/2013     |
|  | 20.00% R 3000 Index  |              |
|  | 20.00% MSCI ACW Ex US Index (Gross)  |              |
|  | 4.00% MSCI Emg Mkts Index (Gross)  |              |
|  | 10.00% Barclays US Agg Bond Index  |              |
|  | 5.00% Barclays US Corp: Hi Yld Index   |              |
|  | 5.00% Barclays Global Agg Bond Index   |              |
|  | 10.00% Real Return Actual Allocation Index   |              |
|  | 5.00% NCREIF ODCE (Net) (Qtr Lag)  |              |
|  | 10.00% HFRI FOF Diversified (Mth Lag)  |              |
|  | 10.00% Private Equity Composite  |              |
|  | 1.00% Citi 3 Mo T-Bill Index   | 11/1/2013    |
|  | <b>26.50% Russell 3000 Index</b>   |              |
|  | <b>26.50% MSCI ACW Ex US Investable Market Index (Gross)</b>   |              |
|  | <b>6.00% Bloomberg US Univ Bond Index</b>  |              |
|  | <b>6.00% Bloomberg US Corp: Hi Yld Index</b>   |              |
|  | <b>8.00% Real Return Actual Allocation Index</b>   |              |
|  | <b>5.00% NCREIF ODCE (Net) (Qtr Lag)</b>   |              |
|  | <b>10.00% HFRI FOF Diversified (Mth Lag)</b>   |              |
|  | <b>10.00% Private Equity Composite</b>   |              |
|  | <b>2.00% Citi 3 Mo T-Bill Index</b>  | 1/1/2016     |



## Glossary

**Active Share** - Measures the degree to which the holdings of a fund differ from the holdings of the benchmark. Active share is calculated by taking the sum of the absolute value of the differences of the weight of each holding in the fund versus the weight of each holding in the benchmark and dividing by two.

**Alpha** - A measure of the difference between a portfolio's actual returns and its expected performance, given its level of risk as measured by beta. It is a measure of the portfolio's historical performance not explained by movements of the market or a portfolio's non-systematic return.

**Alpha Ratio** - A measure of a portfolio's non-systematic return per unit of downside risk. It is measured by dividing the alpha of a portfolio by the downside risk. The non-systematic return is a measure of a portfolio's historical performance not explained by movements of the market.

**Average Quality** - Bond quality ratings are reported using the investment managers' and the index providers' preferred rating agency. *Average Quality for managers unable to provide this statistic is instead provided by Morningstar; if unavailable on Morningstar, it has been estimated using a credit quality distribution provided by the manager.* There are two primary rating agencies in the US. *Moody's* assigns ratings on a system that employs up to four symbols (consisting of letters and numbers) such as, Aaa, Aa2, etc., with Aaa being the highest or safest rating. *Standard & Poor's (S&P)* employs a system that uses + and - along with letters such as AAA, AA+, etc. The two rating agencies' systems are summarized below:

| <u>S&amp;P</u>                                  | <u>Moody's</u> | <u>Explanation</u>           | <u>S&amp;P</u>                                       | <u>Moody's</u> | <u>Explanation</u>              |
|---|----------------|------------------------------|--|----------------|---------------------------------|
| <b>Higher Credit Quality – Investment Grade</b> |                |                              | <b>Lower Credit Quality – Below Investment Grade</b> |                |                                 |
| AAA   | Aaa            | Prime/Highest credit quality | BB+  | Ba1            | Speculative/Low credit quality  |
| AA+   | Aa1            | High credit quality          | BB   | Ba2            |                                 |
| AA  | Aa2            |                              | BB-  | Ba3            |                                 |
| AA-   | Aa3            |                              | B+   | B1             | Highly speculative              |
| A+  | A1             | Upper-medium credit quality  | B  | B2             |                                 |
| A   | A2             |                              | B-   | B3             |                                 |
| A-  | A3             |                              | CCC+   | Caa1           | Substantial credit/default risk |
| BBB+  | Baa1           | Lower-medium credit quality  | CCC  | Caa2           | Extremely speculative           |
| BBB   | Baa2           |                              | CCC-   | Caa3           |                                 |
| BBB-  | Baa3           |                              | CC   | Ca             | Vulnerable to default           |
|   |                |                              | C  | Ca             |                                 |
|   |                |                              | D  | C              | In default                      |

**Beta** - A measure of the sensitivity of a portfolio to the movements in the market. It is a measure of a portfolio's non-diversifiable or systematic risk.

**Box Plots** - A graphical representation of the distribution of observations. From top to bottom, the four boxes represent the spread between the maximum value and the minimum value in each quartile. A quartile represents the values that divide the observations into four quarters (i.e., 1<sup>st</sup> quartile, 2<sup>nd</sup> quartile, 3<sup>rd</sup> quartile, and 4<sup>th</sup> quartile). The median observation is where the 2<sup>nd</sup> quartile and 3<sup>rd</sup> quartile meet.

**Buy and Hold Attribution** - At the beginning of the time period under analysis, the manager and benchmark portfolios are broken down into segments (i.e., styles, sectors, countries, and regions) based on the desired type of attribution. The formula assumes zero turn-over to the manager and benchmark portfolios throughout the period and calculates the segment returns ("buy and hold returns") to arrive at performance attribution. Due to portfolio turnover, buy and hold attribution may not accurately represent quarterly performance relative to the benchmark. Country, region, sector, and style allocations are as of the date one quarter prior to the reporting date, and the returns shown are for those segments throughout the quarter reported. Due to disclosure guidelines set by each investment manager, equity characteristics shown are as of the most recent date available. The following is the methodology for segment classification:

**Sector** - Attribution is calculated using the Global Industry Classification Standard (GICS) which is a detailed and comprehensive structure for sector and industry analysis. Stocks are classified by their primary sector, as defined by S&P Capital IQ data.

**Country/Region** - Attribution is calculated using the Morgan Stanley Capital International (MSCI) region standards. Stocks are classified by their domicile country/region, as defined by S&P Capital IQ data.

**Style** - Stocks are classified into the following style boxes: large/mid/small vs. growth/neutral/value. Stocks are classified along large/mid/small categories at the time of the Russell index rebalancing, using the index market cap boundaries as cutoff points. Stocks are classified along growth/neutral/value categories at the time of the Russell index rebalancing, using the price/book ratio as supplied by S&P Capital IQ. Stocks in the Russell 3000 Index portfolio are sorted by price/book ratio; names with the highest price/book ratio that make up 1/3 of the total market capitalization are assigned to the growth category, names that make up the subsequent 1/3 of the total market capitalization are assigned to the neutral category, while the balance of the names are assigned to the value category.

Portfolio Characteristics and Buy and Hold Attribution reports utilize product-specific data for all mutual funds and commingled funds.

### Capital Markets Review -

**Breakeven Inflation** - Measures the expected inflation rate at each stated maturity by taking the difference between the real yield of the inflation-linked maturity curve and the yield of the closest nominal Treasury maturity.

**Consumer Confidence** - Measures domestic consumer confidence as defined by the degree of optimism on the state of the economy that consumers express through saving and spending.

**Consumer Price Index (CPI)** - Measures the change in the price level of consumer goods and services.

**Federal Funds Rate** - The interest rate at which a depository institution lends funds maintained at the Federal Reserve to another depository institution overnight. It is one of the most influential interest rates in the US economy, since it affects monetary and financial conditions, which in turn have a bearing on key aspects of the broad economy including employment, growth and inflation.

**Option-Adjusted Spread** - Measures the flat spread of an index or bond to the Treasury yield curve after removing the effect of any embedded options.

**Purchasing Managers Index (PMI)** - Measures economic activity by surveying purchasing managers on a monthly basis as to whether business conditions have improved, worsened, or stayed the same.

**Real Gross Domestic Product (Real GDP)** - An inflation-adjusted measure that reflects the value of all goods and services produced by an economy in a given year.

**US Dollar Total Weighted Index** - Measures the value of the US Dollar relative to a basket of other world currencies. It is calculated as the weighted geometric mean of the dollar's value versus the EUR, GBP, CAD, SEK, CHF, and JPY.



## Glossary

- Unemployment Rate** - The percentage of the total labor force that is unemployed but actively seeking employment.
- VIX** - Measures the implied volatility of S&P 500 Index options by looking at the market's expectation of the S&P 500 Index volatility over the next 30 day period. Commonly referred to as the "fear index" or the "fear gauge."
- Consistency** - The percentage of quarters that a product achieved a rate of return higher than that of its benchmark. The higher the consistency figure, the more value a manager has contributed to the product's performance.
- Convexity** - A measure of the shape of the curve that describes the relationship between bond prices and bond yields.
- Correlation** - A statistical measure of the relationship between asset class returns. A value of 1.00 is a perfect correlation; that is, the asset classes always move in the same direction. A value of -1.00 indicates a perfect negative correlation, in which the asset classes always move in opposite directions of each other. A value of 0 indicates there is no relationship between the direction of returns of the two asset classes. Correlation calculations only consider the direction of changes relative to two variables and not the magnitude of those changes.
- Coupon Rate** - The percentage rate of interest paid on a bond or fixed income security; it is typically paid twice per year.
- Current Yield** - The annual income of a security divided by the security's current price.
- Down Market Capture** - Down market by definition is negative benchmark return and down market capture represents the ratio in % terms of the average portfolios return over the benchmark during the down market period. The lower the value of the down market capture the better the product's performance.
- Downside Risk** - A measure similar to standard deviation, but focuses only on the negative movements of the return series. It is calculated by taking the standard deviation of the negative monthly returns. The higher the factor, the riskier the product.
- Earnings Per Share** - It is backward looking, calculated using the one year current EPS divided by the one year EPS five years ago.
- Effective Duration** - The approximate percentage change in a bond's price for a 100 basis point change in yield.
- Excess Return vs. Market** - Average of the monthly arithmetic difference between the manager's return and the benchmark return over a specified time period, shown on an annualized basis.
- Excess Return vs. Risk Free** - Average of the monthly arithmetic difference between the manager's return and the risk-free return (i.e., BofA ML 3 Mo US T-Bill Index unless specified otherwise) over a specified time period, shown on an annualized basis.
- Excess Risk** - A measure of the standard deviation of a portfolio's performance relative to the risk free return.
- Expense Ratios** - Morningstar is the source for mutual fund expense ratios.
- Gain/Loss** - The net increase or decrease in the market value of a portfolio excluding its Net Cash Flow for a given period.
- Indices** - All indices and related information are considered intellectual property and are licensed by each index provider. The indices may not be copied, used or distributed without the index provider's prior written approval. Index providers make no warranties and bear no liability with respect to the indices, any related data, their quality, accuracy, suitability and/or completeness.
- Information Ratio** - Measured by dividing the active rate of return by the tracking error. The higher the information ratio, the more value-added contribution by the manager.
- Liability Driven Investing (LDI)** - A method to optimally structure asset investments relative to liabilities. The change in liabilities is estimated by the Ryan Labs Generic PPA Index of appropriate duration for that Plan. This benchmark is based on generic data and is therefore an approximation. RVK is not an actuarial firm, and does not have actuarial expertise.
- Estimated Funded Status** - The estimated ratio of a Plan's assets relative to its future liabilities. This is calculated by dividing the Plan's asset market value by the estimated present value of its liabilities. The higher the estimated funded status, the better the Plan's ability to cover its projected benefit obligations. An estimated funded status of 100% indicates a Plan that is fully funded.
- Estimated PV of Liabilities** - An estimate of a Plan's future liabilities in present value terms. The beginning of the period liability is provided by the Plan's actuary. The period-end present value liability estimate provided in this report is derived by applying the estimated percentage change generated using the Ryan Labs Generic PPA Index with duration similar to that reported on the most recent actuarial valuation report.
- Duration of Liabilities** - The sensitivity of the value of a Plan's liabilities to changes in interest rates, as calculated by the Plan's actuary.
- Duration of Assets** - The dollar-weighted average duration of all the individual Plan assets.
- Estimated Plan Hedge Ratio** - The estimate of how well a Plan's investment portfolio is hedged against changes in interest rates - a primary driver of funded status movements. This is calculated by dividing the dollar-weighted values of both the Plan asset duration by the liability duration and multiplying by the estimated funded status. An estimated plan hedge ratio of zero indicates that the Plan's liabilities have not been hedged, whereas a value of one indicates fully hedged.
- Modified Duration** - The approximate percentage change in a bond's price for a 100 basis point change in yield, assuming the bonds' expected cash flows do not change.
- Mutual Fund Performance** - Whenever possible, manager performance is extended for any share class that does not have 10 years of history. Using Morningstar's methodology, a single ticker within the same fund family (often the oldest share class) is chosen to append historical performance.
- Net Cash Flow** - The sum, in dollars, of a portfolio's contributions and withdrawals. This includes all management fees and expenses only when performance shown is gross of fees.

## Glossary

### Peer Groups -

**Plan Sponsor Peer Groups** - RVK utilizes the Mellon Analytical Solutions Trust Universe along with the Investment Metrics Plan Sponsor Universe. The combined Mellon Analytical Solutions Trust Universe and Investment Metrics Plan Sponsor Universe is used for comparison of total fund composite results and utilizes actual client returns compiled from consultant and custodial data. The Plan Sponsor Peer Group database includes performance and other quantitative data for over 2,100 plans which include corporate, endowment, foundation, public, and Taft Hartley plans. Plan Sponsor Peer Groups are gross of fees.

**Institutional Peer Groups (Separate Account and Commingled Fund)** - RVK utilizes the Investment Metrics Separate Account and Commingled Fund Manager Peer Groups for peer comparison and rankings. The Separate Account and Commingled Fund Peer Group database includes performance and other quantitative data for over 1,000 investment management firms, 6,400 investment products, across 100 standard peer groups. Separate Account and Commingled Fund Peer Groups are gross of fees.

**Mutual Fund (MF) Peer Groups** - RVK utilizes the Lipper Mutual Fund Manager Peer Groups for peer comparison and rankings. The Lipper Manager Peer Group database includes performance and other quantitative data for over 700 investment management firms and 24,500 investment products, across more than 140 standard peer groups. Mutual Fund Peer Groups are net of fees.

For more information on Peer Groups, visit <https://www.invmetrics.com/style-peer-groups>.

**Percentile Rankings** - Percentile rank compares an individual fund's performance with those of other funds within a defined peer group of managers possessing a similar investment style. Percentile rank identifies the percentage of a fund's peer group that has a higher return (or other comparative measurement) than the fund being ranked. Conversely, 100 minus the individual fund's ranking will identify the percentage of funds within the peer group that have a lower return than the fund being ranked.

1 - Highest Statistical Value                      100 - Lowest Statistical Value

*Example: American Funds AMCP;R-4 (RAFEX) is ranked in the 4<sup>th</sup> percentile within the IM US Equity Large-Cap Growth Funds (MF) Peer Group for the Sharpe Ratio. Within the IM US Equity Large-Cap Growth Funds peer group, 4% of the other funds performed better than American Funds AMCP;R-4 (RAFEX), while 96% of the funds performed worse.*

**Performance Methodology** - RVK calculates performance for investment managers and composites using different methodologies.

**Investment Managers** - Performance is calculated for interim periods between all large external cash flows for a given month and geometrically linked to calculate period returns. An external cash flow is defined as cash, securities, or assets that enter or exit a portfolio. RVK defines a "large cash flow" as a net aggregate cash flow of  $\geq 10\%$  of the beginning-period portfolio market value or any cash flow that causes RVK calculated performance to deviate from manager/custodian reported performance in excess of 5 basis points for a given month.

**Composites** - The Modified Dietz methodology is utilized to calculate asset class, sub-asset class, and total fund composite performance. The Modified Dietz method calculates a time-weighted total rate of return that considers the timing of external cash flows; however, it does not utilize interim period performance to mitigate the impact of significant cash in- and outflows to the composite.

RVK calculates performance beginning with the first full month following inception. Since inception performance may vary from manager reported performance due to RVK using the first full month of returns as the inception date. Performance for both managers and composites is annualized for periods greater than one year.

**Portfolio Characteristics** - Due to disclosure guidelines set by each investment manager, portfolio characteristics shown are as of the most recent date available.

**Price to Earnings Ratio** - The ratio of a company's share price to its per-share earnings

**Private Equity Quartile Ranks** - Private Equity quartile ranks are generated using vintage year peer group data provided by Thomson Reuters, and are based on each fund's annualized, since inception internal rate of return (IRR). Three Private Equity peer groups are available via Thomson Reuters: Buyout, Venture, and All Private Equity. Ranks are available quarterly, at a one-quarter lag.

**Return** - Compounded rate of return for the period.

**% Return** - The time-weighted rate of return of a portfolio for a given period.

**R-Squared** - The percentage of a portfolio's performance explained by the behavior of the appropriate benchmark. High R-Squared means a higher correlation of the portfolio's performance to the appropriate benchmark.

**Risk Free Benchmark** - BofA ML 3 Mo US T-Bill Index unless specified otherwise.

## Glossary

**RVK Liquidity Rating** - A qualitative method for determining the relative amount of liquidity in a portfolio. The characteristics considered when determining relative liquidity include trading volume, gates for redemption, leverage, nature of transactions, and pricing mechanisms. The RVK Liquidity Rating is calculated using beginning of month investment weights applied to each corresponding asset class liquidity rating.

| <u>Asset Class</u>                  | <u>RVK Liquidity Rating</u> | <u>Asset Class</u>                   | <u>RVK Liquidity Rating</u> |
|-------------------------------------|-----------------------------|--------------------------------------|-----------------------------|
| <u>Liquid Investments</u>           |                             | <u>Less Liquid Investments</u>       |                             |
| T-Bills and Treasuries              | 100                         | Fixed Income Plus Sector             | 50                          |
| Cash Equivalents                    | 98                          | Bank Loans                           | 50                          |
| TIPS                                | 95                          | Stable Value (Plan Sponsor Directed) | 50                          |
| US Large Cap Equity                 | 95                          | Absolute Return Strategies           | 35                          |
| Diversified Real Return             | 93                          |                                      |                             |
| Stable Value (Participant Directed) | 91                          |                                      |                             |
| Non-US Large Cap Equity             | 90                          | <u>Not Liquid Investments</u>        |                             |
| Global Tactical Asset Allocation    | 88                          | Core Real Estate                     | 25                          |
| US Small Cap Equity                 | 85                          | Core Plus Real Estate                | 15                          |
| REITS                               | 85                          | Non-Core Real Estate                 | 5                           |
| Non-US Small Cap Equity             | 85                          | Private Equity Funds of Funds        | 5                           |
| Emerging Markets Equity             | 85                          |                                      |                             |
| Core Fixed Income                   | 85                          |                                      |                             |
| Core Plus Fixed Income              | 80                          |                                      |                             |

**Sector Allocation** - Negative fixed income sector allocation reflects manager's use of derivatives, short selling, or interest rate swaps.

**Sharpe Ratio** - Represents the excess rate of return over the risk-free return (i.e., BofA ML 3 Mo US T-Bill Index unless specified otherwise), divided by the standard deviation of the excess return to the risk free asset. The result is the absolute rate of return per unit of risk. The higher the value, the better the product's historical risk-adjusted performance.

**Simple Alpha** - The difference between the manager's return and the benchmark's return.

**Spread Duration** - The approximate percentage change in a bond's price for a 100 basis point change in its spread over a Treasury of the same maturity.

**Standard Deviation** - A statistical measure of the range of a portfolio's performance. The variability of a return around its average return over a specified time period.

**Time Period Abbreviations** - **QTD** - Quarter-to-Date. **CYTD** - Calendar Year-to-Date. **FYTD** - Fiscal Year-to-Date. **YOY** - Year Over Year.

**Thematic Classification** - Represents dedicated manager allocations; as such, thematic allocations are approximations. RVK categorizes the following asset classes as Alpha, Capital Appreciation, Capital Preservation, and Inflation:

| <u>Alpha</u>               | <u>Capital Appreciation</u>  | <u>Capital Preservation</u>          | <u>Inflation</u> |
|----------------------------|------------------------------|--------------------------------------|------------------|
| Absolute Return Strategies | Public Equity                | Core Fixed Income                    | TIPS             |
| Currency Overlay           | Private Equity               | CMBS Fixed Income                    | Bank Loans       |
|                            | Preferred Securities         | Asset Backed Fixed Income            | Core Real Estate |
|                            | High Yield                   | Domestic Core Plus Fixed Income      | Real Return      |
|                            | Convertible Fixed Income     | Mortgage Backed Fixed Income         | Inflation Hedges |
|                            | TALF Funds                   | International Developed Fixed Income | REITS            |
|                            | Distressed Debt              | Cash Equivalents                     | Commodities      |
|                            | Emerging Market Fixed Income | Stable Value                         |                  |
|                            | Value Added Real Estate      |                                      |                  |
|                            | Opportunistic Real Estate    |                                      |                  |

**Total Fund Attribution** - The Investment Decision Process (IDP) model provides an approach to evaluating investment performance that applies to all asset classes and investment styles. The IDP model is based on a top-down hierarchy framework of investment decisions, with each decision contributing to the overall profit or loss. The IDP approach starts from the strategic asset allocation and follows the flow of the investments down to the manager's skill.

**Strategic Asset Allocation (SAA)** - The percentage return gained or lost from the long-term strategic asset allocation decision, the most significant determinant of long-term performance. SAA is the product of the target asset allocation multiplied by the corresponding benchmark returns.

**Tactical Asset Allocation (TAA)** - The percentage return gained or lost from not having been precisely allocated at the target asset allocation mix, whether by deviations that are tactical in nature or a by-product of moving towards the target mix. TAA is the product of the actual asset allocation multiplied by the broad asset class benchmarks, less the SAA.

**Style Selection (SS)** - The percentage return gained or lost from intentional style biases within each asset class (e.g. value rather than core or overweight to emerging markets relative to benchmark). SS is the product of the actual manager allocation within each asset class multiplied by their specific benchmark, less TAA.

**Manager's Skill (MS)** - The percentage return gained or lost from manager value added relative to their specific benchmark. MS is the product of the actual manager allocation multiplied by their achieved excess return.

**Total Fund Beta** - Total Fund Beta is calculated using the S&P 500 as the benchmark. It represents a measure of the sensitivity of the total fund to movements in the S&P 500 and is a measure of the Total Fund's non-diversifiable or systematic risk.

**Tracking Error** - A measure of the standard deviation of a portfolio's performance relative to the performance of an appropriate market benchmark.

## Glossary

**Treynor Ratio** - Similar to Sharpe ratio, but focuses on beta rather than excess risk (standard deviation). Treynor ratio represents the excess rate of return over the risk-free rate (i.e., BofA ML 3 Mo US T-Bill Index unless specified otherwise) divided by the beta. The result is the absolute rate of return per unit of risk. The higher the value, the better historical risk-adjusted performance.

**Unit Value** - The dollar value of a portfolio, assuming an initial nominal investment of \$100, growing at the compounded rate of %Return for a given period.

**Up Market Capture** - Up market by definition is positive benchmark return and up market capture represents the ratio in % terms of the average portfolios return over the benchmark during the up market period. The higher the value of the up market capture the better the product's performance.

**Yield to Maturity** - The rate of return achieved on a bond or other fixed income security assuming the security is bought and held to maturity and that the coupon interest paid over the life of the bond will be reinvested at the same rate of return. The 30-Day SEC Yield is similar to the Yield to Maturity and is reported for mutual funds.

**Yield to Worst** - The bond yield calculated by using the worst possible yield taking into consideration all call, put, and optional sink dates.

PORTLAND

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