



RVK

Kentucky Retirement Systems

Investment Performance Analysis

Period Ended: December 31, 2016



Fourth Quarter Economic Environment

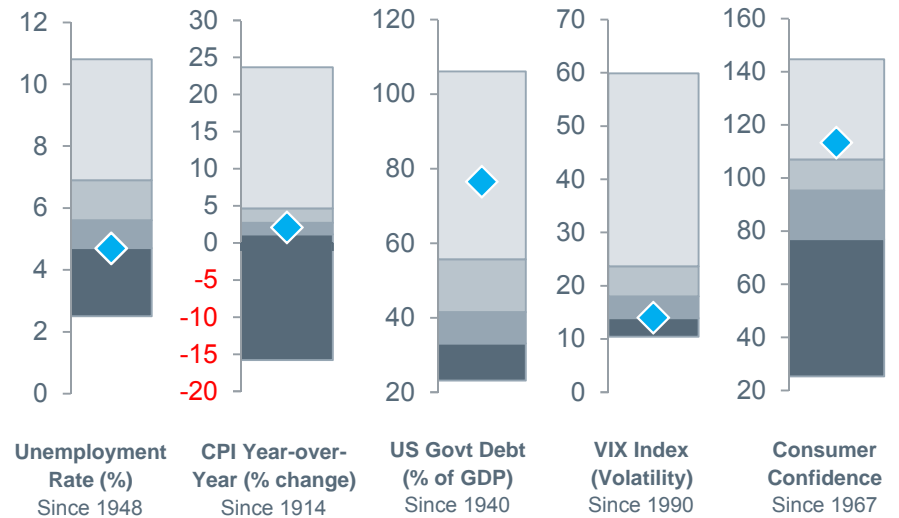
Key Economic Indicators

The surprising result of the United States presidential election produced an initial market shock, as US equity futures traded off nearly 5% during the night of November 8th. By morning however, the volatility and uncertainty gave way to renewed optimism for risk assets as markets contemplated the policy objectives and corresponding economic impact of the Trump administration's agenda. The bullish sentiment in the US cleared the path for the Federal Reserve Open Market Committee to raise the benchmark federal funds rate by 25 basis points during its December meeting. The move was widely anticipated, as economic data supported the Fed tightening at this point in the economic cycle. On November 30, 2016, OPEC announced a deal to cut oil production by 1.2 million barrels per day, the first cut since 2008, which drove the price of oil up nearly 10% on the day of the announcement. In Europe, the European Central Bank announced a moderation in the pace of asset purchases from €80 billion per month to €60 billion, but also extended the duration of the purchase program.

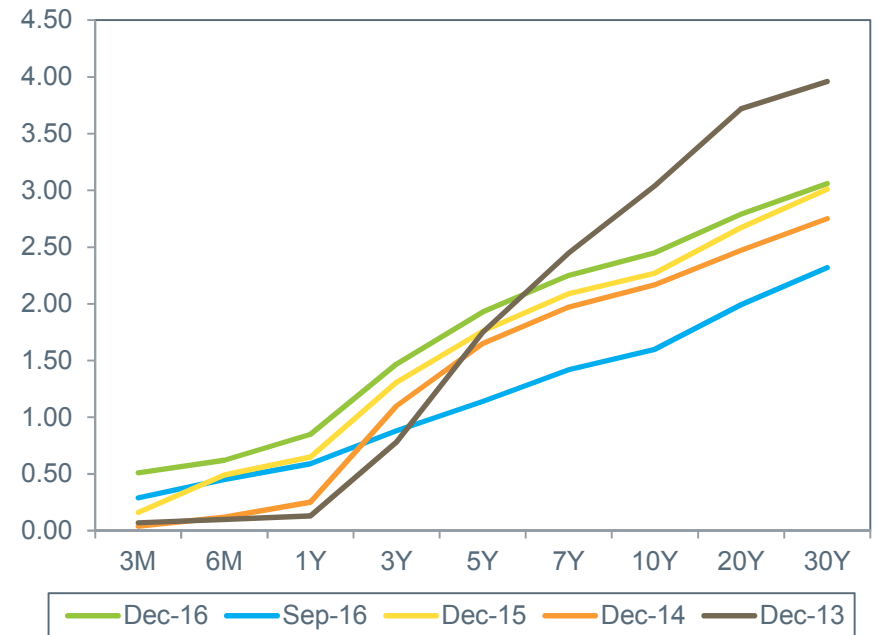
Economic Indicators	Dec-16	Sep-16	Dec-15	Dec-13	20 Yr
Federal Funds Rate (%)	0.55 ▲	0.29	0.20	0.07	2.35
Breakeven Infl. - 1 Yr (%)	1.27 ▲	0.95	0.85	1.50	N/A
Breakeven Infl. - 10 Yr (%)	1.97 ▲	1.61	1.58	2.23	N/A
CPI YoY (Headline) (%)	2.1 ▲	1.5	0.7	1.5	2.2
Unemployment Rate (%)	4.7 ▼	4.9	5.0	6.7	6.0
Real GDP YoY (%)	1.9 ▲	1.7	1.9	2.7	2.3
PMI - Manufacturing	54.50 ▲	51.70	47.90	56.00	52.20
USD Total Wtd Idx	95.76 ▲	90.01	94.25	76.15	86.86
WTI Crude Oil per Barrel (\$)	53.7 ▲	48.2	37.0	98.4	56.0
Gold Spot per Oz (\$)	1,152.3 ▼	1,315.8	1,061.4	1,205.7	784.3

Market Performance (%)	QTD	CYTD	1 Yr	5 Yr	10 Yr
S&P 500 (Cap Wtd)	3.82	11.96	11.96	14.66	6.95
Russell 2000	8.83	21.31	21.31	14.46	7.07
MSCI EAFE (Net)	-0.71	1.00	1.00	6.53	0.75
MSCI EAFE SC (Net)	-2.86	2.18	2.18	10.56	2.95
MSCI Emg Mkts (Net)	-4.16	11.19	11.19	1.28	1.84
Bloomberg US Agg Bond	-2.98	2.65	2.65	2.23	4.34
BofA ML 3 Mo US T-Bill	0.08	0.33	0.33	0.12	0.80
NCREIF ODCE (Gross)	2.11	8.77	8.77	12.21	5.82
Wilshire US REIT	-2.28	7.24	7.24	12.02	4.80
HFRI FOF Comp	0.88	0.53	0.53	3.42	1.31
Bloomberg Cmddy (TR)	2.66	11.74	11.74	-8.96	-5.58

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

Table of Contents

Pension Plan	Page 3
Insurance Plan	Page 33
Capital Markets	Page 62
Addendum & Glossary	Page 67

Kentucky Retirement Systems - Pension Plan
Asset Allocation & Performance

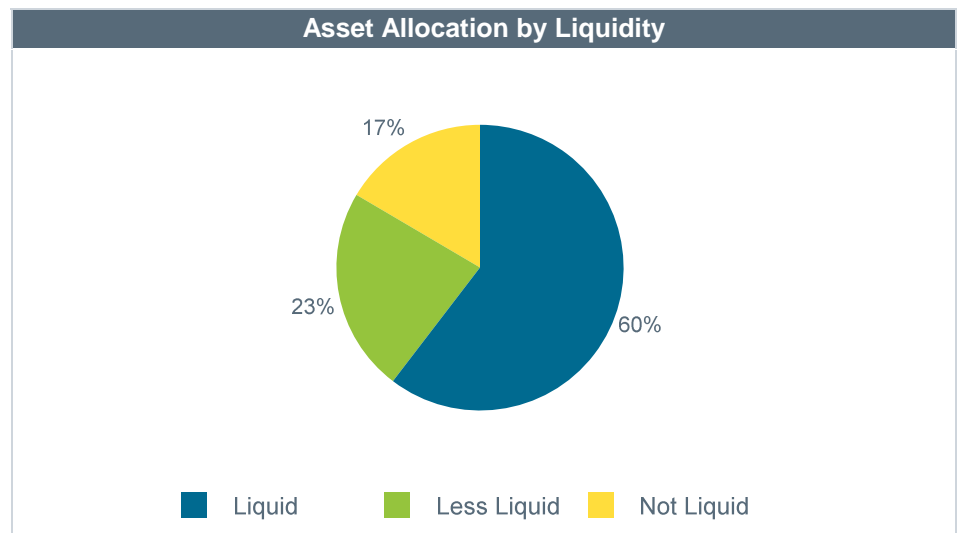
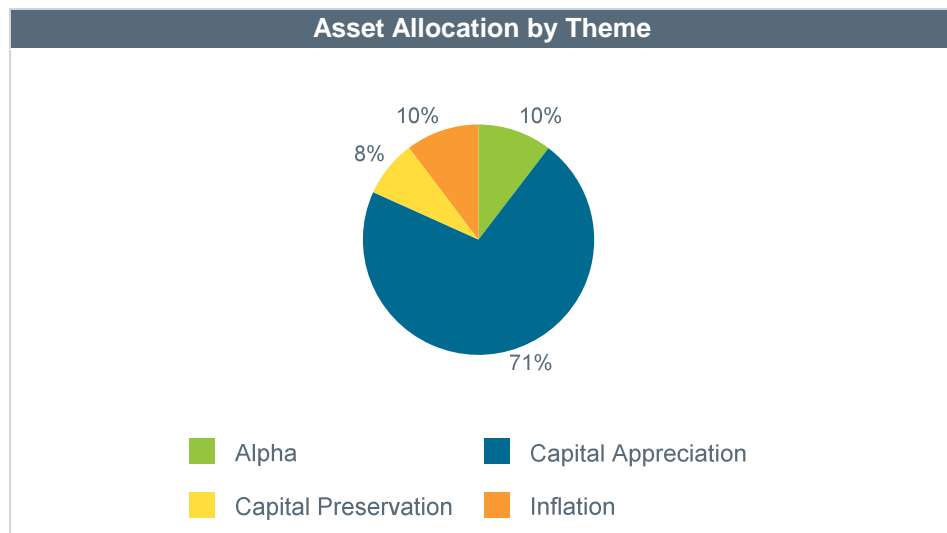
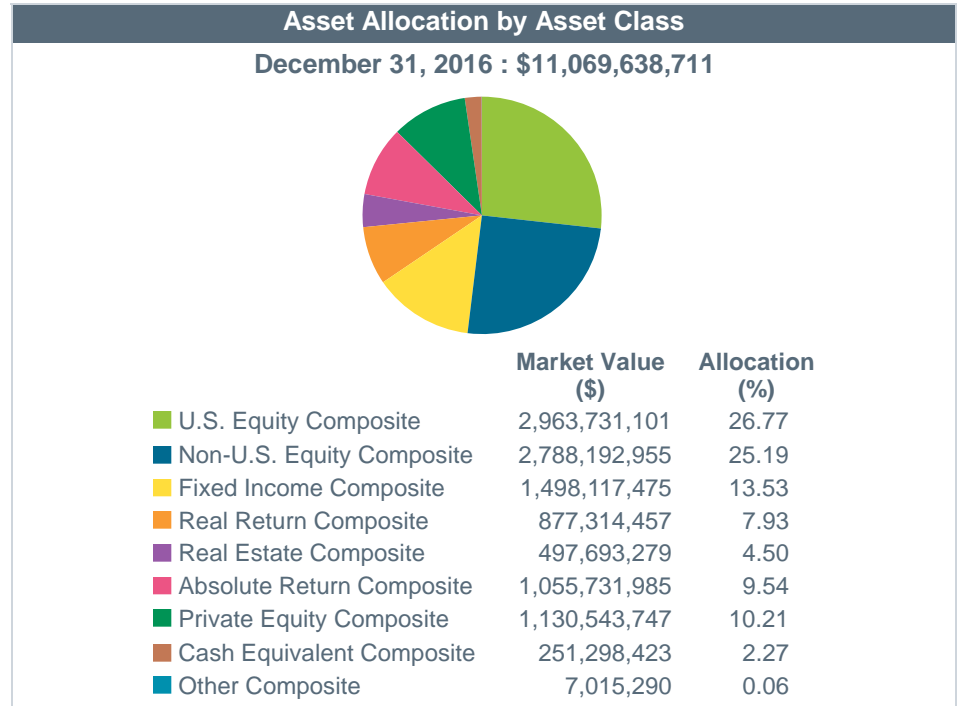
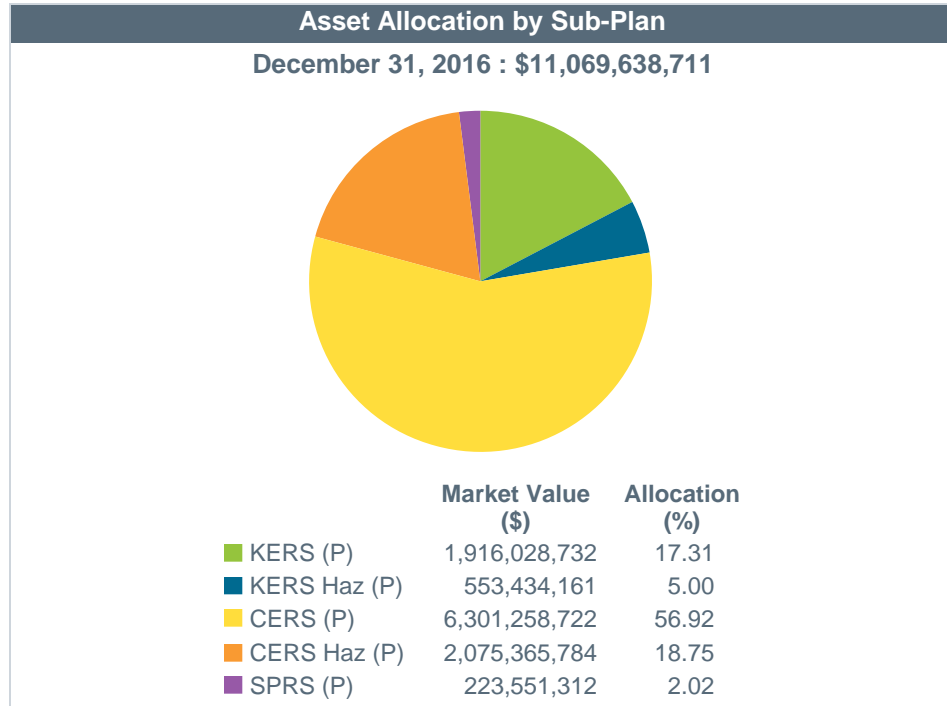
As of December 31, 2016

Asset Allocation & Performance			
	Allocation		Performance (%)
	Market Value (\$)	%	FYTD
Total Fund	11,069,638,711	100.00	5.20
U.S. Equity Composite	2,963,731,101	26.77	9.49
River Road Asset Management (SA)	123,701,023	1.12	10.54
River Road FAV (SA)	91,568,431	0.83	18.47
Westfield Capital (SA)	148,373,384	1.34	6.16
Scientific Beta	339,968,156	3.07	5.33
Internal S&P 500 Index (SA)	1,403,516,537	12.68	7.75
Internal US Mid Cap (SA)	301,791,732	2.73	11.75
Systematic Financial Management (SA)	285,460,929	2.58	16.86
NT Structured Small Cap (SA)	269,302,268	2.43	16.85
Pension Transition	15,651	0.00	4.29
Non-U.S. Equity Composite	2,788,192,955	25.19	4.77
Lazard Int'l Strategic Equity (SA)	473,119,839	4.27	0.77
LSV Int'l Concentrated Value Equity (SA)	430,666,511	3.89	11.12
BTC ACWI Ex US Fund (CF)	1,147,812,125	10.37	5.63
American Century Non-US Growth Equity (SA)	332,885,516	3.01	1.72
Franklin Templeton Non-US Equity (SA)	231,248,330	2.09	3.04
NT Int'l Sm Cap Eq Index (SA)	166,378,002	1.50	4.25
Non-US Transition Account	1,726,254	0.02	-8.25
Fixed Income Composite	1,498,117,475	13.53	3.15
NISA Core Agg Fixed Income (SA)	294,110,380	2.66	-2.44
Cerberus KRS Levered Loan Opps, L.P.	93,745,823	0.85	3.87
Columbia HY Fixed Income (SA)	253,885,154	2.29	5.54
Marathon Bluegrass Credit Fund	213,054,238	1.92	11.77
Shenkman Capital (SA)	87,350,845	0.79	5.07
Waterfall (SA)	140,058,434	1.27	8.32
Manulife Asset Mgmt (SA)	415,423,296	3.75	-0.24
Real Return Composite	877,314,457	7.93	1.84
Internal TIPS (SA)	93,392,424	0.84	-0.47
Nuveen Real Asset Income (SA)	208,517,319	1.88	-0.16
PIMCO:All Asset;Inst (PAAIX)	319,873,798	2.89	1.13
Tortoise Capital (CF)	78,176,342	0.71	5.38
Amerra Ag Fund II (CF)	29,660,510	0.27	1.41
Amerra-AGRI Holding (CF)	34,022,991	0.31	-0.19
BTG Pactual Brazil Timberland Fund I, L.P.	8,426,492	0.08	9.81
Magnetar MTP Energy Fund, L.P.	77,329,173	0.70	8.53
Magnetar MTP EOF II, L.P.	15,087,033	0.14	15.19
Oberland Capital Healthcare, L.P.	1,223,055	0.01	-9.16
Taurus Mining Finance Fund	10,405,291	0.09	13.19
Tenaska Power Fund II (CF)	1,200,030	0.01	13.12

Asset Allocation & Performance			
	Allocation		Performance (%)
	Market Value (\$)	%	FYTD
Real Estate Composite	497,693,279	4.50	4.35
H/2 Credit Partners (CF)	78,343,092	0.71	7.32
Harrison Street Core (CF)	74,352,904	0.67	4.09
Mesa West Core Lending, L.P.	58,247,360	0.53	4.72
Prologis Targeted U.S. Logistics Fund (CF)	59,530,679	0.54	5.13
Stockbridge SmtMkts, L.P.	79,927,212	0.72	4.33
DivcoWest Fund IV, L.P.	10,755,936	0.10	19.27
Greenfield Acquisition Partners VI, L.P.	18,664,627	0.17	-3.46
Greenfield Acquisition Partners VII, L.P.	24,419,350	0.22	4.44
Lubert Adler Real Estate Fund VII, L.P.	29,613,695	0.27	3.86
Patron Capital V, L.P.	3,598,799	0.03	N/A
Rubenstein Properties Fund II, L.P.	12,613,607	0.11	1.23
Walton Street Real Estate Fund VI, L.P.	16,683,810	0.15	-6.27
Walton Street Real Estate Fund VII, L.P.	29,287,588	0.26	5.82
Absolute Return Composite	1,055,731,985	9.54	3.36
BAAM (SA)	126,852,035	1.15	3.76
Davidson-Kemper, L.P.	45,400,697	0.41	4.12
PAAMCO (SA)	9,236,034	0.08	-0.01
Prisma Capital Partners (SA)	526,474,121	4.76	3.54
Senator Investment Group, L.P.	21,948,804	0.20	N/A
Tourbillon Global Master Fund, Ltd	27,264,174	0.25	7.28
Anchorage Capital	25,631,133	0.23	N/A
Blackrock GAO Fund, Ltd (CF)	27,422,733	0.25	N/A
Coatue Qualified Partners, L.P.	16,553,464	0.15	4.01
DSAM Fund, L.P.	14,724,503	0.13	-1.73
Finisterre Global Op	19,196,638	0.17	N/A
Glenview Capital (CF)	17,161,918	0.16	9.37
HBK II (CF)	43,583,663	0.39	3.86
Knighthead Capital (CF)	13,539,510	0.12	10.11
LibreMax Capital (CF)	7,971,067	0.07	4.83
Liquidalts H2O Force (CF)	15,297,768	0.14	N/A
Luxor Capital (CF)	11,871,171	0.11	17.36
Myriad Opportunities	30,728,503	0.28	3.80
Pine River (CF)	15,184,591	0.14	4.78
QMS Diversified Global Macro (CF)	17,113,945	0.15	-11.25
Scopia PX, LLC	21,875,093	0.20	6.15
Private Equity Composite	1,130,543,747	10.21	3.97
Cash Equivalent Composite	251,298,423	2.27	0.58
Cash Equivalents (SA)	251,298,423	2.27	0.58
Other Composite	7,015,290	0.06	N/A

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.



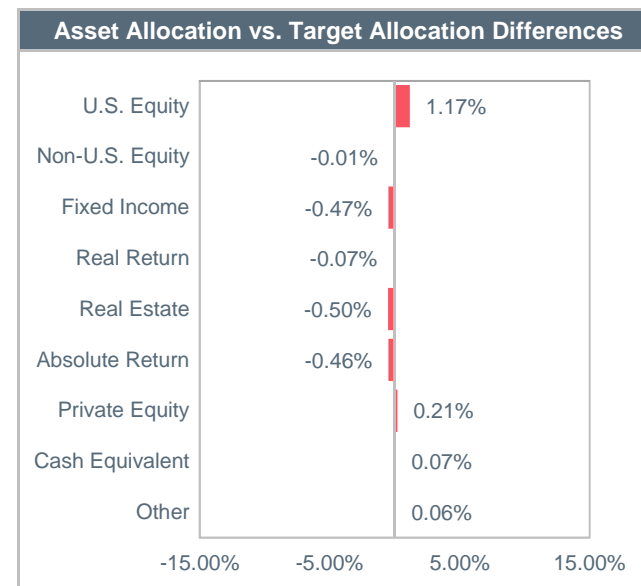


Allocations shown may not sum up to 100% exactly due to rounding. Totals shown may not match due to differences between BNY Mellon's performance and accounting departments. Other Composite consists of Perimeter Park (SA) and BNY fee accruals.

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

As of December 31, 2016

Asset Allocation vs. Target Allocation					
	Asset Allocation (\$)	Asset Allocation (%)	Minimum Allocation (%)	Target Allocation (%)	Maximum Allocation (%)
Total Fund	11,069,638,711	100.00	-	100.00	-
U.S. Equity Composite	2,963,731,101	26.77	20.60	25.60	30.60
Non-U.S. Equity Composite	2,788,192,955	25.19	20.20	25.20	30.20
Fixed Income Composite	1,498,117,475	13.53	10.00	14.00	18.00
Real Return Composite	877,314,457	7.93	6.00	8.00	10.00
Real Estate Composite	497,693,279	4.50	3.00	5.00	7.00
Absolute Return Composite	1,055,731,985	9.54	8.00	10.00	12.00
Private Equity Composite	1,130,543,747	10.21	7.00	10.00	13.00
Cash Equivalent Composite	251,298,423	2.27	0.20	2.20	4.20
Other Composite	7,015,290	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	In Range
Private Equity Composite	Over Max	In Range	In Range	In Range	In Range
Cash Equivalent Composite	In Range	In Range	In Range	In Range	In Range
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 0.93%. This is an illiquid asset class and may take additional time to bring back into target range.



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

As of December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	10 Years	2015	2014	2013	Since Incep.	Inception Date
Total Fund	1.13	5.20	7.84	7.84	4.27	7.56	4.59	-0.02	5.14	12.70	9.05	04/01/1984
Target Allocation Index (P)	0.96	5.05	7.97	7.97	4.81	8.18	5.08	0.75	5.84	13.34	9.21	
Difference	0.17	0.15	-0.13	-0.13	-0.54	-0.62	-0.49	-0.77	-0.70	-0.64	-0.16	
KERS (P)	0.97	4.71	6.49	6.49	4.32	7.49	4.56	0.61	5.98	12.16	9.04	04/01/1984
Target Allocation Index (KERS P)	0.89	4.74	8.18	8.18	4.73	8.17	5.08	0.58	5.57	13.53	9.21	
Difference	0.08	-0.03	-1.69	-1.69	-0.41	-0.68	-0.52	0.03	0.41	-1.37	-0.17	
KERS Haz (P)	1.17	5.06	8.01	8.01	4.26	7.58	4.60	0.03	4.90	12.84	9.05	04/01/1984
Target Allocation Index (KERS Haz P)	0.98	5.13	7.92	7.92	4.47	8.03	5.01	0.22	5.43	13.67	9.18	
Difference	0.19	-0.07	0.09	0.09	-0.21	-0.45	-0.41	-0.19	-0.53	-0.83	-0.13	
CERS (P)	1.17	5.33	8.16	8.16	4.23	7.56	4.59	-0.20	4.91	12.85	9.05	04/01/1984
Target Allocation Index (CERS P)	0.98	5.13	7.92	7.92	4.47	8.03	5.01	0.22	5.43	13.67	9.18	
Difference	0.19	0.20	0.24	0.24	-0.24	-0.47	-0.42	-0.42	-0.52	-0.82	-0.13	
CERS Haz (P)	1.15	5.29	8.19	8.19	4.28	7.58	4.60	-0.10	4.92	12.80	9.06	04/01/1984
Target Allocation Index (CERS Haz P)	0.98	5.13	7.92	7.92	4.47	8.03	5.01	0.22	5.43	13.67	9.18	
Difference	0.17	0.16	0.27	0.27	-0.19	-0.45	-0.41	-0.32	-0.51	-0.87	-0.12	
SPRS (P)	1.18	4.80	6.75	6.75	3.72	7.25	4.44	-0.41	4.96	12.86	9.00	04/01/1984
Target Allocation Index (SPRS P)	0.86	4.79	7.92	7.92	4.45	8.02	5.00	0.21	5.37	13.67	9.18	
Difference	0.32	0.01	-1.17	-1.17	-0.73	-0.77	-0.56	-0.62	-0.41	-0.81	-0.18	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
U.S. Equity Composite	5.06	9.49	14.10	14.10	7.78	14.15	-0.95	10.78	33.73	11.20	04/01/1984
Russell 3000 Index (P)*	4.21	8.79	12.74	12.74	8.43	14.67	0.48	12.56	33.55	11.17	
Difference	0.85	0.70	1.36	1.36	-0.65	-0.52	-1.43	-1.78	0.18	0.03	
Non-U.S. Equity Composite	-2.11	4.77	3.93	3.93	-1.25	5.77	-3.34	-4.12	18.34	2.07	07/01/2000
MSCI ACW Ex US Investable Mkt Index (Gross) (P)*	-1.52	5.51	4.91	4.91	-1.36	5.46	-5.25	-3.44	15.78	2.54	
Difference	-0.59	-0.74	-0.98	-0.98	0.11	0.31	1.91	-0.68	2.56	-0.47	
Fixed Income Composite	0.65	3.15	8.45	8.45	4.73	4.77	0.48	5.42	-0.04	7.70	04/01/1984
50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (P)*	-0.44	2.78	10.38	10.38	5.38	4.03	0.43	5.56	-1.35	7.51	
Difference	1.09	0.37	-1.93	-1.93	-0.65	0.74	0.05	-0.14	1.31	0.19	
Real Return Composite	-1.32	1.84	10.46	10.46	2.35	2.34	-5.96	3.20	-4.37	3.35	07/01/2011
Real Return Actual Allocation Index (P)*	-0.91	0.61	7.22	7.22	1.92	2.57	-4.07	2.95	2.33	2.63	
Difference	-0.41	1.23	3.24	3.24	0.43	-0.23	-1.89	0.25	-6.70	0.72	
Real Estate Composite	2.13	4.35	9.44	9.44	9.06	9.31	8.89	8.85	9.17	5.88	07/01/1984
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)	1.83	3.77	9.08	9.08	11.42	11.34	13.86	11.36	11.97	6.43	
Difference	0.30	0.58	0.36	0.36	-2.36	-2.03	-4.97	-2.51	-2.80	-0.55	
Absolute Return Composite	0.96	3.36	-0.25	-0.25	2.07	5.00	1.70	4.84	12.08	3.96	04/01/2010
HFRI FOF: Dvf'd Index (1 Mo Lag)	0.08	1.33	-1.37	-1.37	1.35	3.12	0.79	4.72	8.61	2.41	
Difference	0.88	2.03	1.12	1.12	0.72	1.88	0.91	0.12	3.47	1.55	
Private Equity Composite	1.93	3.97	5.74	5.74	10.95	12.33	11.15	16.20	15.11	10.73	07/01/2002
Private Equity Benchmark (P) [Short Term]	1.93	3.97	5.74	5.74	10.95	12.33	11.15	16.20	15.11	10.73	
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]	5.16	8.93	17.96	17.96	14.13	20.17	3.51	21.76	25.61	10.54	
Difference	-3.23	-4.96	-12.22	-12.22	-3.18	-7.84	7.64	-5.56	-10.50	0.19	
Cash Equivalent Composite	0.46	0.58	0.93	0.93	0.43	0.44	0.20	0.17	0.64	3.70	01/01/1988
Citi 3 Mo T-Bill Index	0.08	0.15	0.27	0.27	0.11	0.09	0.03	0.02	0.06	3.25	
Difference	0.38	0.43	0.66	0.66	0.32	0.35	0.17	0.15	0.58	0.45	

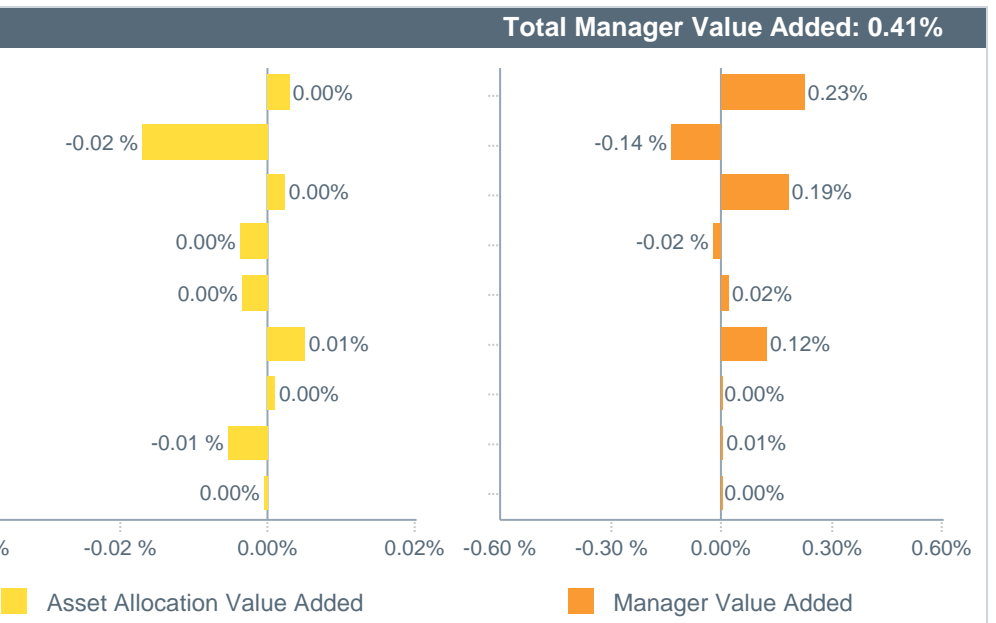
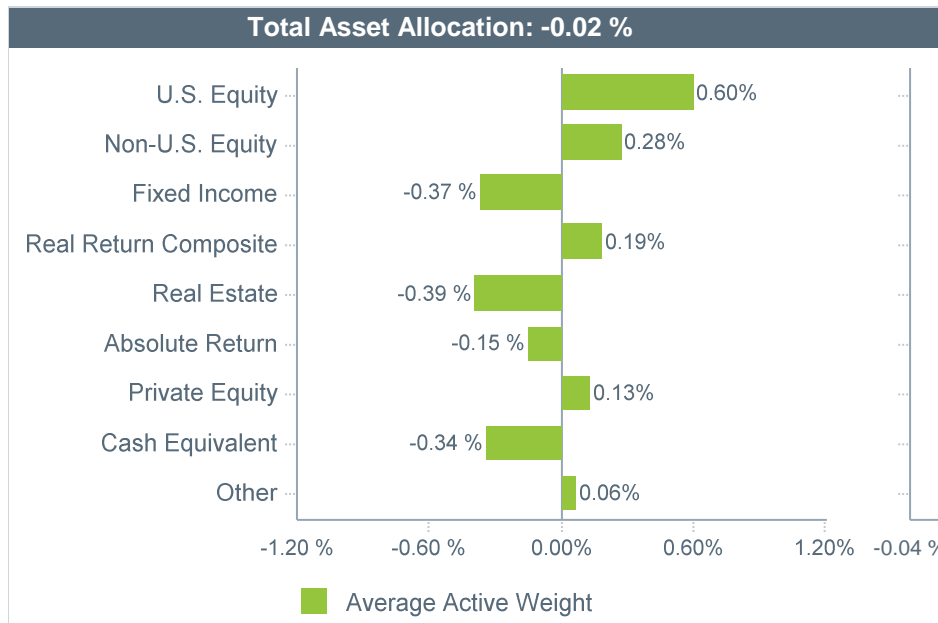
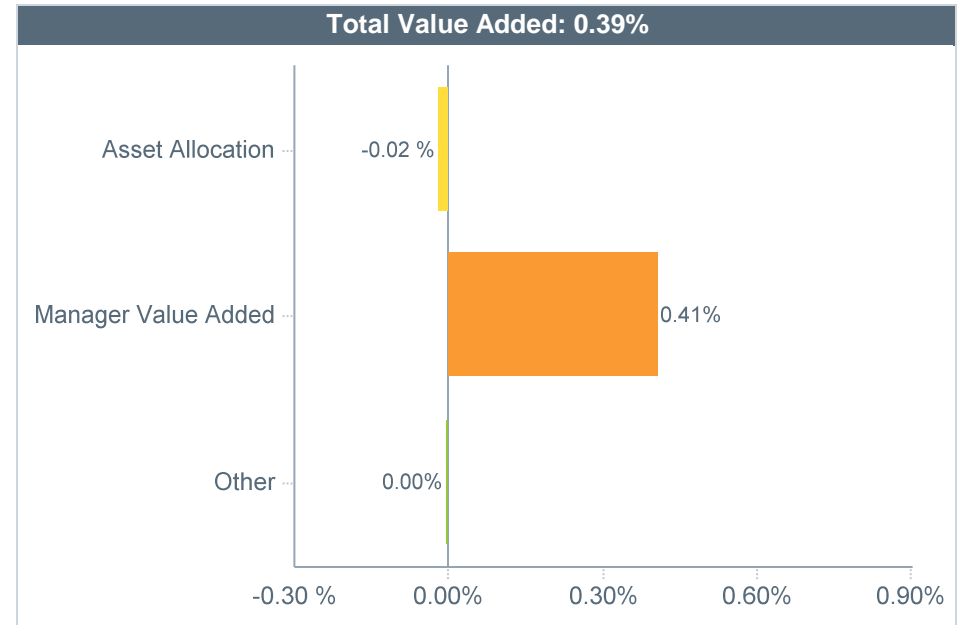
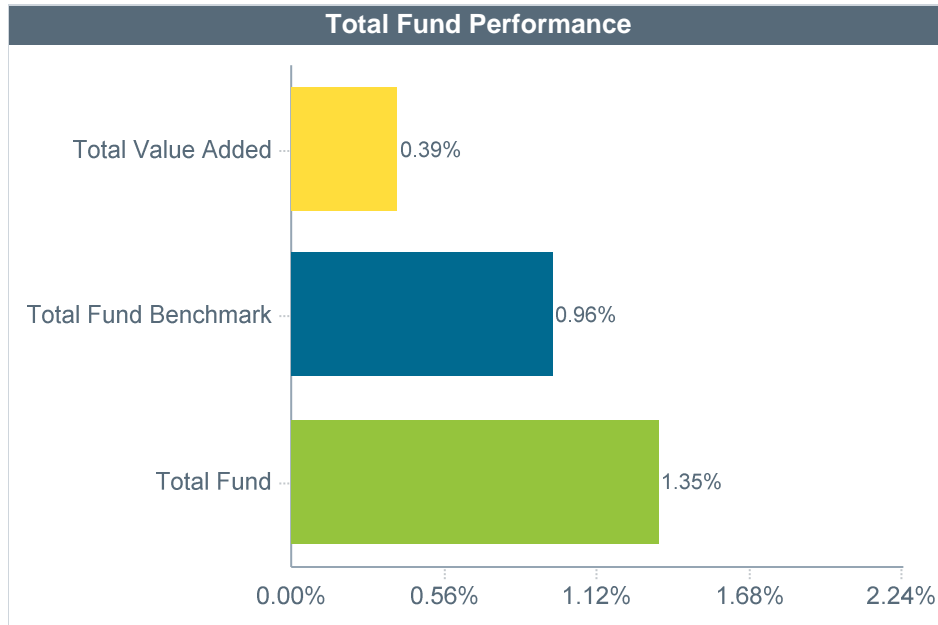
Performance shown is net of fees, except where noted. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (*) represents the current benchmark. See the Addendum for the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

Kentucky Retirement Systems - Pension Plan
Composite Comparative Performance

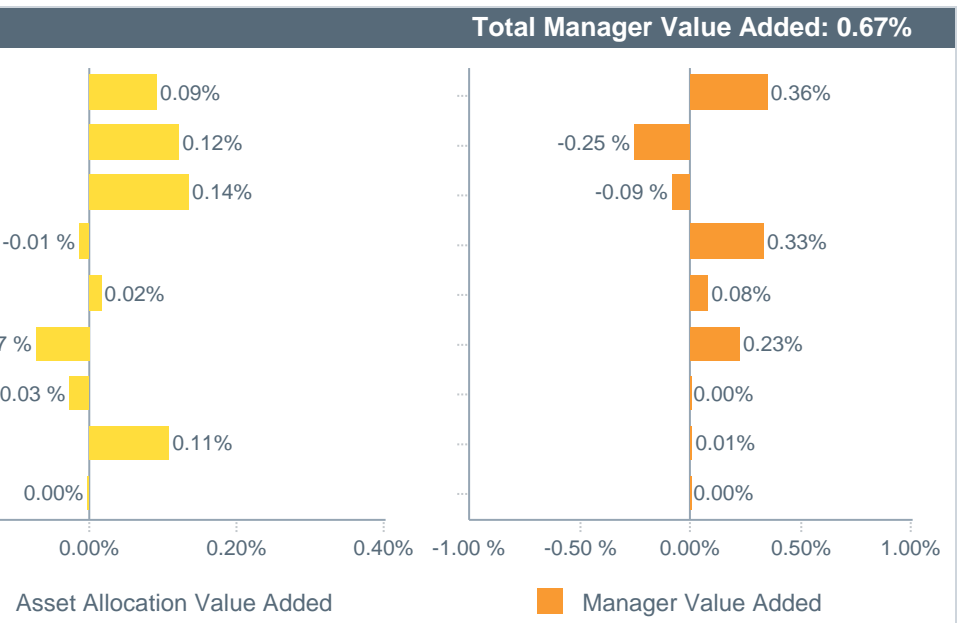
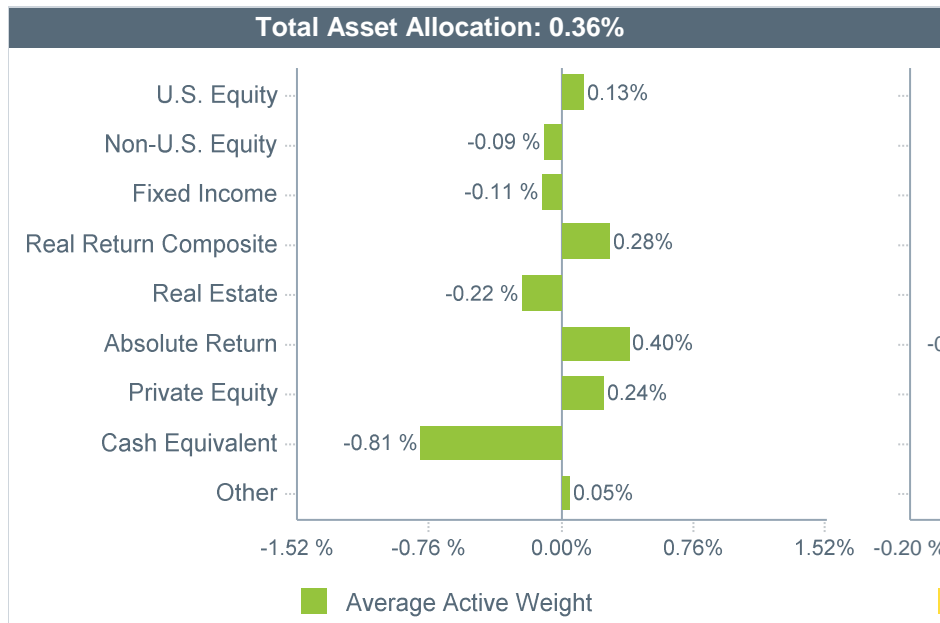
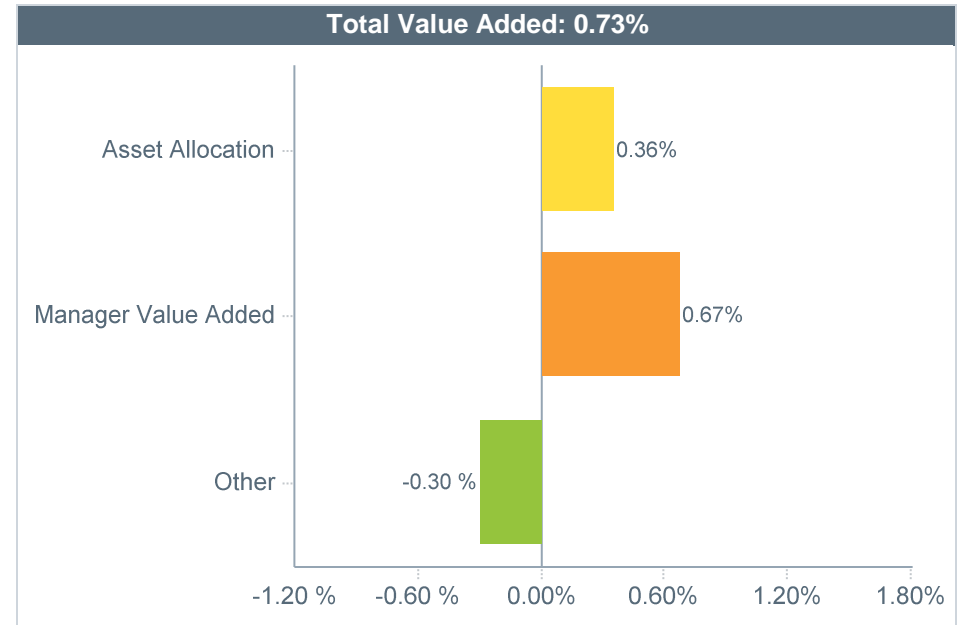
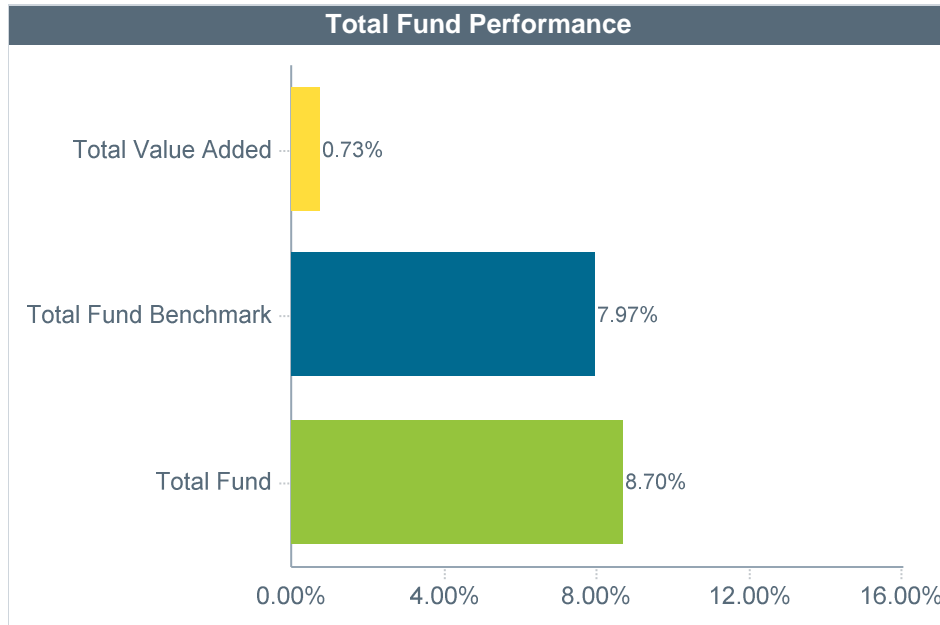
As of December 31, 2016

	7 Years	10 Years	12 Years	15 Years	20 Years	25 Years
U.S. Equity Composite	12.54	6.90	7.61	6.93	8.13	9.59
Russell 3000 Index (P)*	12.99	7.12	7.73	7.26	8.09	9.50
Difference	-0.45	-0.22	-0.12	-0.33	0.04	0.09
Non-U.S. Equity Composite	3.10	1.18	3.98	5.16	N/A	N/A
MSCI ACW Ex US Investable Mkt Index (Gross) (P)*	3.49	1.06	4.04	5.51	N/A	N/A
Difference	-0.39	0.12	-0.06	-0.35	N/A	N/A
Fixed Income Composite	5.48	5.36	4.95	5.47	5.86	6.08
50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (P)*	4.95	5.35	4.92	5.48	5.87	6.07
Difference	0.53	0.01	0.03	-0.01	-0.01	0.01
Real Return Composite	N/A	N/A	N/A	N/A	N/A	N/A
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
Real Estate Composite	10.64	6.69	6.68	6.79	5.83	5.02
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)	11.37	5.05	7.02	7.03	8.32	6.92
Difference	-0.73	1.64	-0.34	-0.24	-2.49	-1.90
Absolute Return Composite	N/A	N/A	N/A	N/A	N/A	N/A
HFRI FOF: Dvf'd Index (1 Mo Lag)	2.44	1.47	2.63	3.37	4.44	5.73
Difference	N/A	N/A	N/A	N/A	N/A	N/A
Private Equity Composite	12.77	6.74	8.84	N/A	N/A	N/A
Private Equity Benchmark (P) [Short Term]	12.77	6.74	8.84	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]	15.05	10.07	9.91	9.47	9.11	N/A
Difference	-2.28	-3.33	-1.07	N/A	N/A	N/A
Cash Equivalent Composite	0.49	1.31	1.79	1.76	2.66	3.06
Citi 3 Mo T-Bill Index	0.09	0.72	1.24	1.26	2.19	2.62
Difference	0.40	0.59	0.55	0.50	0.47	0.44

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.



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.

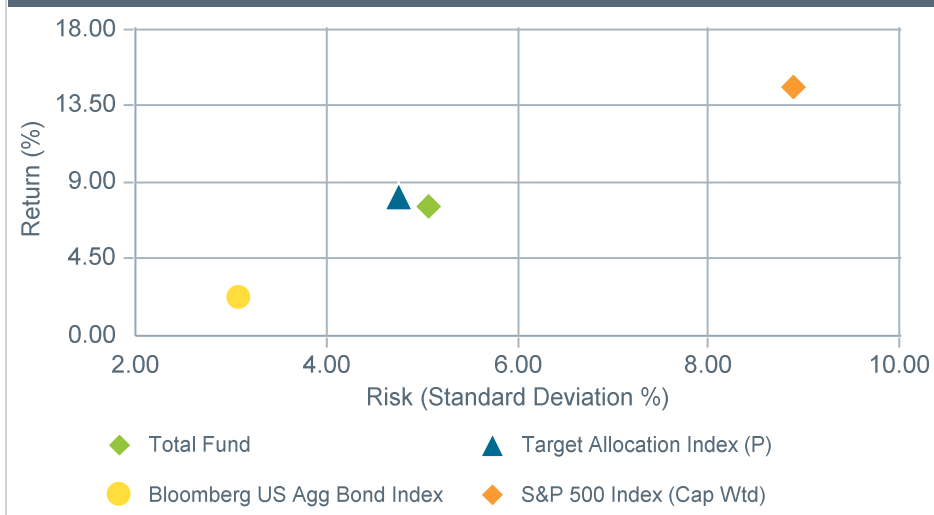
Historical Statistics - 5 Years

	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	5.58	10.74	12.96	2.96	5.45	3.19	3.20	5.79	0.22
Sharpe Ratio	1.32	1.28	0.49	1.55	0.44	2.78	1.50	2.03	1.49
Downside Risk	3.07	5.88	8.45	1.65	3.56	0.07	1.75	0.15	0.00
Excess Return	7.34	13.76	6.35	4.59	2.41	8.86	4.82	11.73	0.32

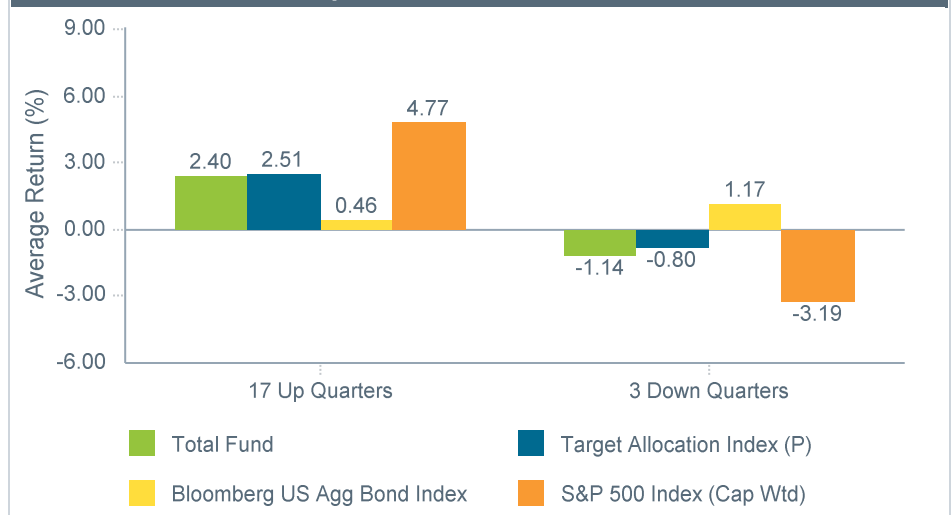
Correlation Matrix - 5 Years

	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	0.90	1.00							
Non-U.S. Equity Composite	0.95	0.81	1.00						
Fixed Income Composite	0.55	0.32	0.51	1.00					
Real Return Composite	0.66	0.41	0.60	0.80	1.00				
Real Estate Composite	0.01	-0.09	-0.09	-0.15	0.00	1.00			
Absolute Return Composite	-0.05	-0.10	-0.11	-0.26	-0.18	0.15	1.00		
Private Equity Composite	-0.01	-0.10	-0.13	-0.23	-0.14	0.65	0.27	1.00	
Cash Equivalent Composite	0.04	0.04	0.07	0.08	0.09	-0.16	-0.14	-0.14	1.00

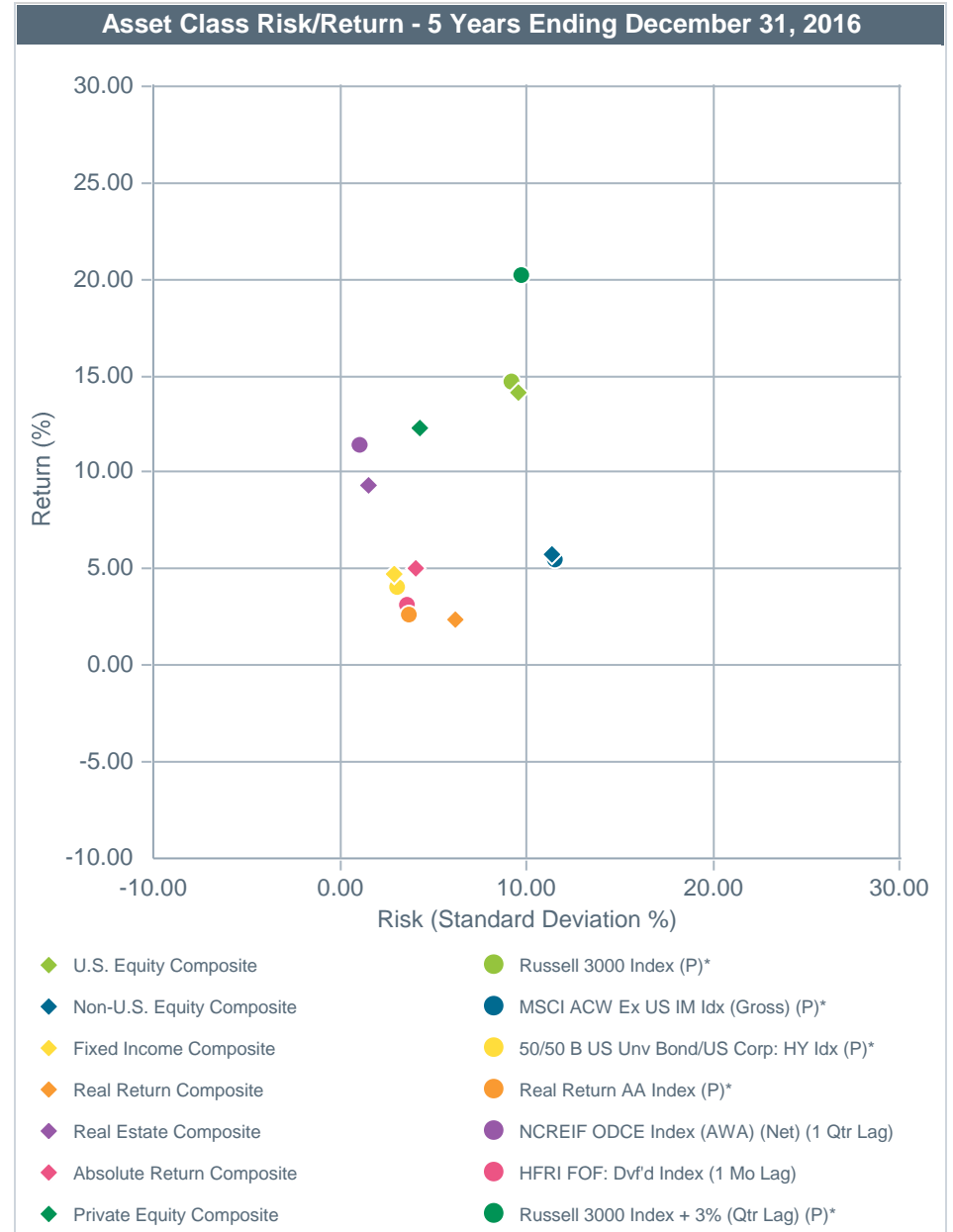
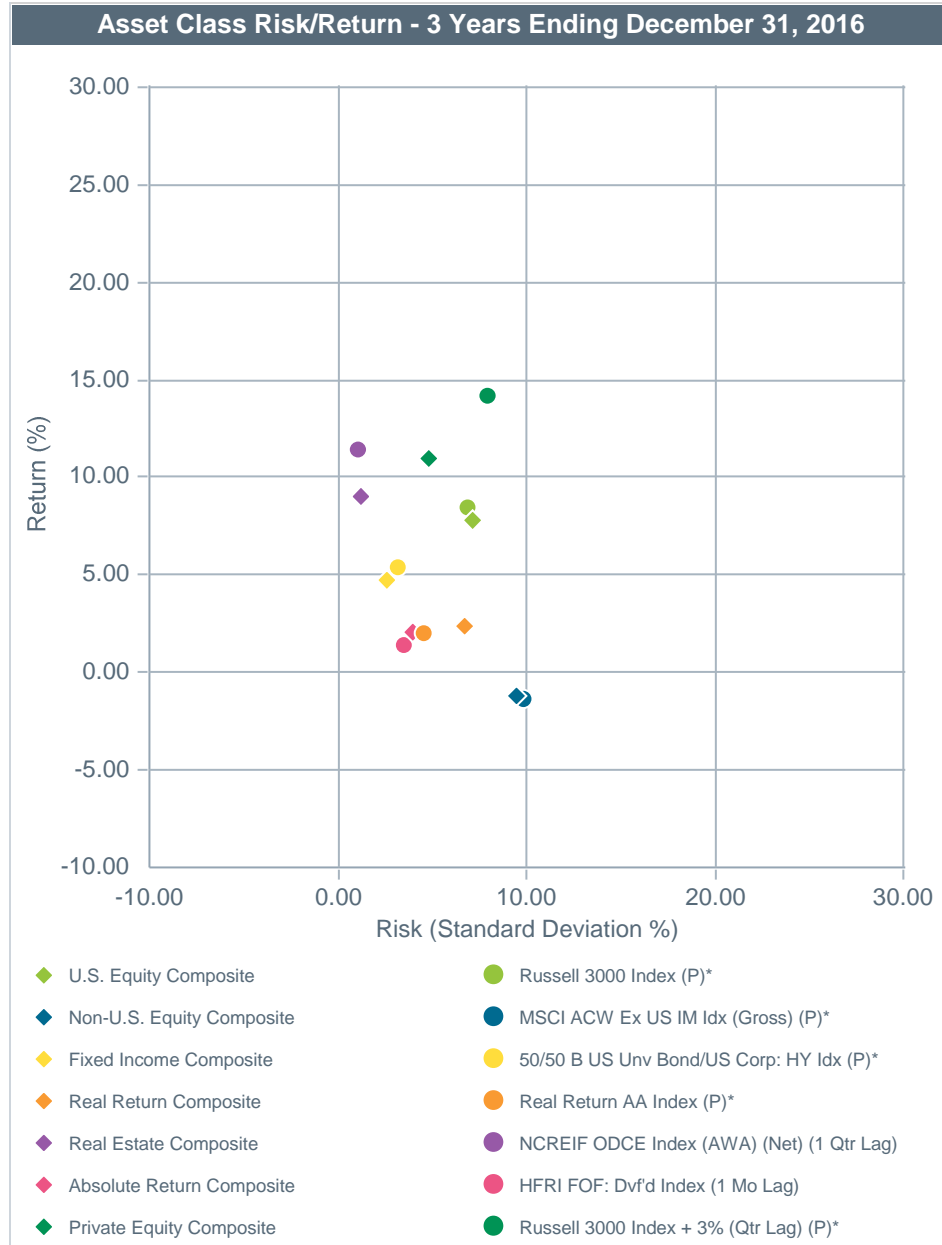
Risk/Return - 5 Years



Up Down Market Bar Chart

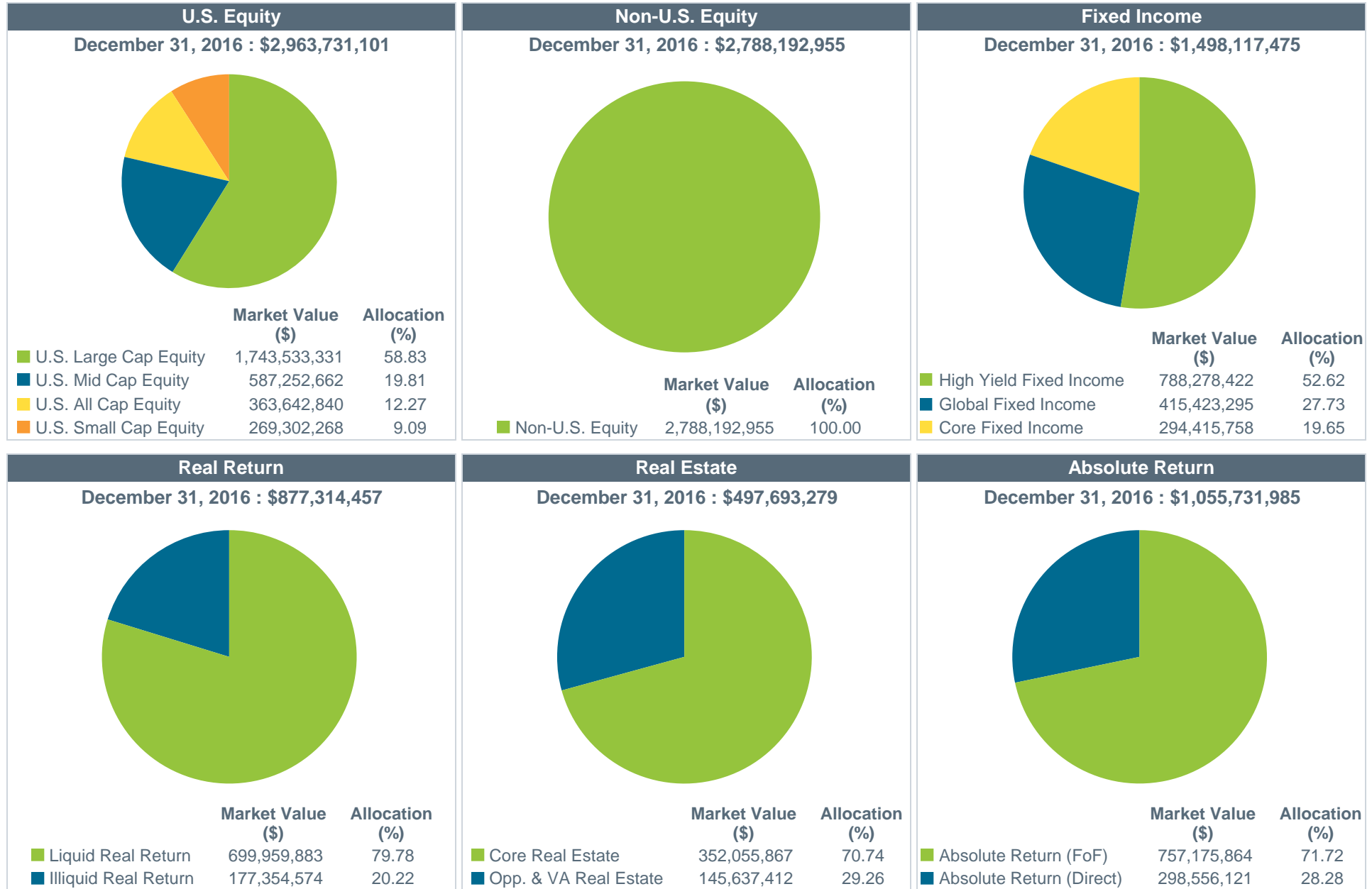


Performance shown is net of fees. Calculation is based on quarterly periodicity. Excess return is measured against the BofA ML 3 Mo US T-Bill Index.



Performance shown is net of fees. Composites with less history than the specified time period will not appear in the chart.





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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
River Road Asset Management (SA)	6.79	10.54	20.99	20.99	8.51	13.16	-3.83	9.82	32.55	11.96	07/01/2011
Russell 3000 Val Index	7.24	11.40	18.40	18.40	8.55	14.81	-4.13	12.70	32.69	12.22	
Difference	-0.45	-0.86	2.59	2.59	-0.04	-1.65	0.30	-2.88	-0.14	-0.26	
River Road FAV (SA)	9.15	18.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18.47	07/01/2016
Russell 3000 Val Index	7.24	11.40	18.40	18.40	8.55	14.81	-4.13	12.70	32.69	11.40	
Difference	1.91	7.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.07	
Westfield Capital (SA)	-0.37	6.16	1.17	1.17	3.88	13.70	-1.37	12.34	38.88	10.11	07/01/2011
Russell 3000 Grth Index	1.20	6.18	7.39	7.39	8.27	14.44	5.09	12.44	34.23	12.10	
Difference	-1.57	-0.02	-6.22	-6.22	-4.39	-0.74	-6.46	-0.10	4.65	-1.99	
U.S. All Cap Equity Composite	4.22	9.72	10.02	10.02	6.16	13.75	-2.31	11.30	36.05	10.67	07/01/2011
Russell 3000 Index	4.21	8.79	12.74	12.74	8.43	14.67	0.48	12.56	33.55	12.19	
Difference	0.01	0.93	-2.72	-2.72	-2.27	-0.92	-2.79	-1.26	2.50	-1.52	
Scientific Beta	2.75	5.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.33	07/01/2016
S&P 500 Index (Cap Wtd)	3.82	7.82	11.96	11.96	8.87	14.66	1.38	13.69	32.39	7.82	
Difference	-1.07	-2.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-2.49	
Internal S&P 500 Index (SA)	3.77	7.75	11.71	11.71	8.76	14.55	1.37	13.61	32.34	6.51	07/01/2001
S&P 500 Index (Cap Wtd)*	3.82	7.82	11.96	11.96	8.87	14.66	1.38	13.69	32.39	6.47	
Difference	-0.05	-0.07	-0.25	-0.25	-0.11	-0.11	-0.01	-0.08	-0.05	0.04	
U.S. Large Cap Equity Composite	3.65	7.41	11.87	11.87	8.47	N/A	0.77	13.20	N/A	11.98	07/01/2013
Russell 1000 Index	3.83	8.01	12.05	12.05	8.59	14.69	0.92	13.24	33.11	12.21	
Difference	-0.18	-0.60	-0.18	-0.18	-0.12	N/A	-0.15	-0.04	N/A	-0.23	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Internal US Mid Cap (SA)	7.44	11.75	20.60	20.60	N/A	N/A	-2.37	N/A	N/A	9.87	08/01/2014
S&P Mid Cap 400 Index (Cap Wtd)	7.42	11.87	20.74	20.74	9.04	15.33	-2.18	9.77	33.50	10.03	
Difference	0.02	-0.12	-0.14	-0.14	N/A	N/A	-0.19	N/A	N/A	-0.16	
Systematic Financial Management (SA)	10.40	16.86	20.12	20.12	6.24	N/A	-5.24	5.34	34.69	13.38	07/01/2012
Russell Mid Cap Val Index	5.52	10.22	20.00	20.00	9.45	15.70	-4.78	14.75	33.46	15.65	
Difference	4.88	6.64	0.12	0.12	-3.21	N/A	-0.46	-9.41	1.23	-2.27	
U.S. Mid Cap Equity Composite	8.71	13.91	21.74	21.74	6.33	N/A	-4.79	3.72	N/A	10.75	07/01/2013
S&P Mid Cap 400 Index (Cap Wtd)	7.42	11.87	20.74	20.74	9.04	15.33	-2.18	9.77	33.50	12.51	
Difference	1.29	2.04	1.00	1.00	-2.71	N/A	-2.61	-6.05	N/A	-1.76	
NT Structured Small Cap (SA)	8.97	16.85	21.09	21.09	7.70	15.56	-3.18	6.55	39.27	10.15	10/01/1999
Russell 2000 Index	8.83	18.68	21.31	21.31	6.74	14.46	-4.41	4.89	38.82	8.36	
Difference	0.14	-1.83	-0.22	-0.22	0.96	1.10	1.23	1.66	0.45	1.79	
U.S. Small Cap Equity Composite	8.63	16.43	20.64	20.64	7.53	N/A	-3.26	6.55	N/A	12.24	07/01/2013
Russell 2000 Index	8.83	18.68	21.31	21.31	6.74	14.46	-4.41	4.89	38.82	11.36	
Difference	-0.20	-2.25	-0.67	-0.67	0.79	N/A	1.15	1.66	N/A	0.88	
U.S. Equity Composite	5.06	9.49	14.10	14.10	7.78	14.15	-0.95	10.78	33.73	11.20	04/01/1984
Russell 3000 Index (P)*	4.21	8.79	12.74	12.74	8.43	14.67	0.48	12.56	33.55	11.17	
Difference	0.85	0.70	1.36	1.36	-0.65	-0.52	-1.43	-1.78	0.18	0.03	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Lazard Int'l Strategic Equity (SA)	-3.69	0.77	0.36	0.36	N/A	N/A	-0.62	N/A	N/A	-2.79	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-2.49	-4.95	-4.65	-4.65	N/A	N/A	4.63	N/A	N/A	1.03	
LSV Int'l Concentrated Value Equity (SA)	1.90	11.12	7.07	7.07	N/A	N/A	-5.96	N/A	N/A	-2.96	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	3.10	5.40	2.06	2.06	N/A	N/A	-0.71	N/A	N/A	0.86	
BTC ACWI Ex US Fund (CF)	-1.24	5.63	4.83	4.83	-1.58	5.23	-5.42	-3.85	15.55	5.95	07/01/2009
MSCI ACW Ex US Index (USD) (Net)	-1.25	5.57	4.50	4.50	-1.78	5.00	-5.66	-3.87	15.29	5.74	
Difference	0.01	0.06	0.33	0.33	0.20	0.23	0.24	0.02	0.26	0.21	
American Century Non-US Growth Equity (SA)	-5.42	1.72	-4.26	-4.26	N/A	N/A	-0.88	N/A	N/A	-4.50	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-4.22	-4.00	-9.27	-9.27	N/A	N/A	4.37	N/A	N/A	-0.68	
Franklin Templeton Non-US Equity (SA)	-4.28	3.04	1.31	1.31	N/A	N/A	1.00	N/A	N/A	-2.11	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-3.08	-2.68	-3.70	-3.70	N/A	N/A	6.25	N/A	N/A	1.71	
NT Int'l Sm Cap Eq Index (SA)	-3.40	4.25	4.13	4.13	1.02	7.98	2.87	-3.76	20.73	12.15	12/01/2008
MSCI ACW Ex US Sm Cap Index (USD) (Net)	-3.52	4.11	3.91	3.91	0.77	7.74	2.60	-4.03	19.73	12.56	
Difference	0.12	0.14	0.22	0.22	0.25	0.24	0.27	0.27	1.00	-0.41	
Non-U.S. Equity Composite	-2.11	4.77	3.93	3.93	-1.25	5.77	-3.34	-4.12	18.34	2.07	07/01/2000
MSCI ACW Ex US Investable Mkt Index (Gross) (P)*	-1.52	5.51	4.91	4.91	-1.36	5.46	-5.25	-3.44	15.78	2.54	
Difference	-0.59	-0.74	-0.98	-0.98	0.11	0.31	1.91	-0.68	2.56	-0.47	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
NISA Core Agg Fixed Income (SA)	-2.92	-2.44	3.08	3.08	3.38	2.43	0.87	6.27	-2.19	4.29	02/01/2009
Bloomberg US Agg Bond Index	-2.98	-2.53	2.65	2.65	3.03	2.23	0.55	5.97	-2.02	4.07	
Difference	0.06	0.09	0.43	0.43	0.35	0.20	0.32	0.30	-0.17	0.22	
Core Fixed Income Composite	-2.92	-2.45	3.14	3.14	3.12	N/A	0.61	5.67	N/A	2.92	07/01/2013
Bloomberg US Agg Bond Index	-2.98	-2.53	2.65	2.65	3.03	2.23	0.55	5.97	-2.02	2.72	
Difference	0.06	0.08	0.49	0.49	0.09	N/A	0.06	-0.30	N/A	0.20	
Cerberus KRS Levered Loan Opps, L.P.	2.28	3.87	8.63	8.63	N/A	N/A	9.29	N/A	N/A	8.17	09/01/2014
S&P-LSTA Lvg'd Loan Index	2.26	5.41	10.16	10.16	3.58	5.11	-0.69	1.60	5.29	3.43	
Difference	0.02	-1.54	-1.53	-1.53	N/A	N/A	9.98	N/A	N/A	4.74	
Columbia HY Fixed Income (SA)	0.81	5.54	11.65	11.65	5.15	7.50	-0.25	4.38	6.45	7.44	11/01/2011
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	7.21	
Difference	-0.94	-1.86	-5.48	-5.48	0.49	0.14	4.22	1.93	-0.99	0.23	
Marathon Bluegrass Credit Fund	6.32	11.77	16.38	16.38	N/A	N/A	N/A	N/A	N/A	16.38	01/01/2016
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	17.13	
Difference	4.57	4.37	-0.75	-0.75	N/A	N/A	N/A	N/A	N/A	-0.75	
Shenkman Capital (SA)	1.88	5.07	8.95	8.95	3.25	5.07	-0.61	1.64	5.67	5.00	10/01/2010
Shenkman Blended Index	2.26	5.41	10.16	10.16	4.05	6.26	-0.69	2.98	6.42	6.03	
Difference	-0.38	-0.34	-1.21	-1.21	-0.80	-1.19	0.08	-1.34	-0.75	-1.03	
Waterfall (SA)	4.09	8.32	9.84	9.84	7.86	9.92	3.17	10.71	12.84	11.90	02/01/2010
Opportunistic FI Blended Index	1.78	5.50	11.22	11.22	3.39	4.99	-2.73	2.16	5.06	5.37	
Difference	2.31	2.82	-1.38	-1.38	4.47	4.93	5.90	8.55	7.78	6.53	
High Yield Fixed Income Composite	3.12	7.41	11.80	11.80	5.76	N/A	0.20	5.61	N/A	6.57	07/01/2013
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	5.71	
Difference	1.37	0.01	-5.33	-5.33	1.10	N/A	4.67	3.16	N/A	0.86	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Manulife Asset Mgmt (SA)	-1.25	-0.24	4.46	4.46	2.99	4.41	0.59	3.95	1.57	4.38	12/01/2011
Bloomberg US Unv Bond Index*	-2.61	-1.68	3.91	3.91	0.32	0.70	-3.29	0.48	-2.19	0.83	
Difference	1.36	1.44	0.55	0.55	2.67	3.71	3.88	3.47	3.76	3.55	
Global Fixed Income Composite	-1.25	-0.24	4.43	4.43	3.00	N/A	0.98	3.63	N/A	2.82	07/01/2013
Bloomberg Gbl Agg Bond Index	-7.07	-6.31	2.09	2.09	-0.19	0.21	-3.15	0.59	-2.60	0.50	
Difference	5.82	6.07	2.34	2.34	3.19	N/A	4.13	3.04	N/A	2.32	
Fixed Income Composite	0.65	3.15	8.45	8.45	4.73	4.77	0.48	5.42	-0.04	7.70	04/01/1984
50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (P)*	-0.44	2.78	10.38	10.38	5.38	4.03	0.43	5.56	-1.35	7.51	
Difference	1.09	0.37	-1.93	-1.93	-0.65	0.74	0.05	-0.14	1.31	0.19	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Internal TIPS (SA)	-1.40	-0.47	4.56	4.56	2.59	1.16	0.22	3.03	-8.45	5.22	05/01/2002
Internal US TIPS Blend	-1.47	-0.91	4.01	4.01	2.02	0.75	-0.52	2.63	-8.61	5.08	
Difference	0.07	0.44	0.55	0.55	0.57	0.41	0.74	0.40	0.16	0.14	
Nuveen Real Asset Income (SA)	-3.47	-0.16	10.19	10.19	N/A	N/A	N/A	N/A	N/A	2.59	02/01/2015
Nuveen Real Asset Custom Index	-3.22	-1.36	8.74	8.74	N/A	N/A	N/A	N/A	N/A	2.47	
Difference	-0.25	1.20	1.45	1.45	N/A	N/A	N/A	N/A	N/A	0.12	
PIMCO:All Asset;Inst (PAAIX)	-2.62	1.13	12.87	12.87	1.49	4.27	-7.87	0.52	-1.66	3.52	12/01/2011
Bloomberg US Trsy Infl Notes: 1-10 Yr Index	-1.47	-0.91	4.01	4.01	1.45	0.70	-0.52	0.91	-5.58	0.65	
Difference	-1.15	2.04	8.86	8.86	0.04	3.57	-7.35	-0.39	3.92	2.87	
Tortoise Capital (CF)	2.89	5.38	16.10	16.10	-0.71	7.52	-27.04	15.54	36.72	14.40	08/01/2009
Alerian MLP Index	2.04	3.13	18.31	18.31	-5.80	2.25	-32.59	4.80	27.58	10.12	
Difference	0.85	2.25	-2.21	-2.21	5.09	5.27	5.55	10.74	9.14	4.28	
Amerra Ag Fund II (CF)	-0.29	1.41	3.50	3.50	8.73	N/A	14.34	8.63	0.06	6.36	12/01/2012
Amerra-AGRI Holding (CF)	-0.45	-0.19	0.72	0.72	N/A	N/A	N/A	N/A	N/A	0.26	08/01/2015
BTG Pactual Brazil Timberland Fund I, L.P.	0.56	9.81	-16.19	-16.19	N/A	N/A	-17.41	N/A	N/A	-16.19	12/01/2014
Magnetar MTP Energy Fund, L.P.	3.42	8.53	13.68	13.68	-0.41	N/A	-15.63	2.98	N/A	0.51	07/01/2013
Magnetar MTP EOF II, L.P.	1.66	15.19	-3.75	-3.75	N/A	N/A	N/A	N/A	N/A	-2.66	08/01/2015
Oberland Capital Healthcare, L.P.	-10.88	-9.16	53.70	53.70	N/A	N/A	-27.53	N/A	N/A	3.41	10/01/2014
Taurus Mining Finance Fund	10.04	13.19	31.15	31.15	N/A	N/A	N/A	N/A	N/A	17.09	04/01/2015
Tenaska Power Fund II (CF)	1.96	13.12	-23.28	-23.28	-3.86	-5.37	16.85	-0.88	-16.55	-4.56	10/01/2008
Real Return Composite	-1.32	1.84	10.46	10.46	2.35	2.34	-5.96	3.20	-4.37	3.35	07/01/2011
Real Return Actual Allocation Index (P)*	-0.91	0.61	7.22	7.22	1.92	2.57	-4.07	2.95	2.33	2.63	
Difference	-0.41	1.23	3.24	3.24	0.43	-0.23	-1.89	0.25	-6.70	0.72	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
H/2 Credit Partners (CF)	5.08	7.32	9.29	9.29	5.95	6.95	2.11	6.57	4.52	6.22	07/01/2011
Harrison Street Core (CF)	1.42	4.09	10.18	10.18	9.94	N/A	9.53	10.12	9.69	8.52	05/01/2012
Mesa West Core Lending, L.P.	3.16	4.72	8.22	8.22	6.86	N/A	7.56	4.84	N/A	6.37	05/01/2013
Prologis Targeted U.S. Logistics Fund (CF)	2.90	5.13	13.39	13.39	N/A	N/A	14.74	N/A	N/A	12.41	10/01/2014
Stockbridge SmtMkts, L.P.	2.71	4.33	9.82	9.82	N/A	N/A	12.00	N/A	N/A	9.93	05/01/2014
DivcoWest Fund IV, L.P.	7.13	19.27	38.32	38.32	N/A	N/A	28.79	N/A	N/A	24.04	03/01/2014
Greenfield Acquisition Partners VI, L.P.	0.76	-3.46	0.93	0.93	11.81	N/A	18.77	16.59	11.34	11.44	12/01/2012
Greenfield Acquisition Partners VII, L.P.	0.51	4.44	12.78	12.78	N/A	N/A	15.29	N/A	N/A	10.09	07/01/2014
Lubert Adler Real Estate Fund VII, L.P.	0.00	3.86	4.19	4.19	N/A	N/A	-0.33	N/A	N/A	-8.74	07/01/2014
Patron Capital V, L.P.	-30.09	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-30.34	08/01/2016
Rubenstein Properties Fund II, L.P.	1.11	1.23	1.34	1.34	17.64	N/A	11.17	44.51	N/A	13.78	07/01/2013
Walton Street Real Estate Fund VI, L.P.	-6.51	-6.27	-3.80	-3.80	8.16	9.50	12.99	16.41	15.24	-22.52	05/01/2009
Walton Street Real Estate Fund VII, L.P.	3.42	5.82	12.32	12.32	14.73	N/A	16.78	15.13	N/A	14.29	07/01/2013
Real Estate Composite	2.13	4.35	9.44	9.44	9.06	9.31	8.89	8.85	9.17	5.88	07/01/1984
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)	1.83	3.77	9.08	9.08	11.42	11.34	13.86	11.36	11.97	6.43	
Difference	0.30	0.58	0.36	0.36	-2.36	-2.03	-4.97	-2.51	-2.80	-0.55	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
BAAM (SA)	0.69	3.76	0.71	0.71	4.88	6.78	6.10	7.97	11.54	6.39	09/01/2011
Davidson-Kemper, L.P.	1.43	4.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.98	02/01/2016
PAAMCO (SA)	0.00	-0.01	-1.85	-1.85	-0.05	4.03	-2.01	3.83	15.09	3.63	09/01/2011
Prisma Capital Partners (SA)	1.10	3.54	-0.87	-0.87	1.63	4.43	2.52	3.30	9.78	3.59	09/01/2011
Senator Investment Group, L.P.	-0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.47	09/01/2016
Tourbillon Global Master Fund, Ltd	-1.87	7.28	-9.76	-9.76	N/A	N/A	N/A	N/A	N/A	-7.87	11/01/2015
Anchorage Capital	1.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.99	08/01/2016
Blackrock GAO Fund, Ltd (CF)	-5.48	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-5.63	08/01/2016
Coatue Qualified Partners, L.P.	-0.79	4.01	4.26	4.26	N/A	N/A	N/A	N/A	N/A	6.79	07/01/2015
DSAM Fund, L.P.	-2.00	-1.73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-1.84	05/01/2016
Finisterre Global Op	1.30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.41	08/01/2016
Glenview Capital (CF)	2.99	9.37	-3.28	-3.28	N/A	N/A	N/A	N/A	N/A	-5.63	11/01/2015
HBK II (CF)	2.40	3.86	5.39	5.39	2.58	N/A	-1.46	3.93	N/A	2.83	12/01/2013
Knighthood Capital (CF)	7.99	10.11	8.51	8.51	0.95	N/A	-10.22	5.59	N/A	0.95	01/01/2014
LibreMax Capital (CF)	1.55	4.83	2.53	2.53	N/A	N/A	-0.16	N/A	N/A	2.25	08/01/2014
Liquidalts H2O Force (CF)	6.85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.16	08/01/2016
Luxor Capital (CF)	12.83	17.36	0.85	0.85	N/A	N/A	-16.70	N/A	N/A	-8.16	04/01/2014
Myriad Opportunities	1.57	3.80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.33	05/01/2016
Pine River (CF)	1.42	4.78	0.63	0.63	N/A	N/A	0.09	N/A	N/A	0.46	05/01/2014
QMS Diversified Global Macro (CF)	-9.73	-11.25	-10.36	-10.36	N/A	N/A	N/A	N/A	N/A	-8.34	11/01/2015
Scopia PX, LLC	4.08	6.15	-4.46	-4.46	N/A	N/A	0.92	N/A	N/A	0.30	11/01/2014
Absolute Return Composite	0.96	3.36	-0.25	-0.25	2.07	5.00	1.70	4.84	12.08	3.96	04/01/2010
HFRI FOF: Dv'f'd Index (1 Mo Lag)	0.08	1.33	-1.37	-1.37	1.35	3.12	0.79	4.72	8.61	2.41	
Difference	0.88	2.03	1.12	1.12	0.72	1.88	0.91	0.12	3.47	1.55	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Cash Equivalents (SA)	0.46	0.58	0.94	0.94	0.44	0.45	0.21	0.17	0.64	3.70	01/01/1988
Citi 3 Mo T-Bill Index	0.08	0.15	0.27	0.27	0.11	0.09	0.03	0.02	0.06	3.25	
Difference	0.38	0.43	0.67	0.67	0.33	0.36	0.18	0.15	0.58	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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
River Road Asset Management (SA)	6.90	10.75	21.47	21.47	9.09	13.80	-3.27	10.50	33.33	12.57	07/01/2011
Russell 3000 Val Index	7.24	11.40	18.40	18.40	8.55	14.81	-4.13	12.70	32.69	12.22	
Difference	-0.34	-0.65	3.07	3.07	0.54	-1.01	0.86	-2.20	0.64	0.35	
IM U.S. All Cap Value Equity (SA+CF) Median	6.38	11.15	16.27	16.27	7.55	13.82	-3.37	10.01	34.71	11.15	
Rank	42	54	17	17	23	51	50	47	62	26	
River Road FAV (SA)	9.22	18.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18.62	07/01/2016
Russell 3000 Val Index	7.24	11.40	18.40	18.40	8.55	14.81	-4.13	12.70	32.69	11.40	
Difference	1.98	7.22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.22	
IM U.S. All Cap Value Equity (SA+CF) Median	6.38	11.15	16.27	16.27	7.55	13.82	-3.37	10.01	34.71	11.15	
Rank	15	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5	
Westfield Capital (SA)	-0.27	6.40	1.72	1.72	4.47	14.37	-0.81	13.03	39.68	10.72	07/01/2011
Russell 3000 Grth Index	1.20	6.18	7.39	7.39	8.27	14.44	5.09	12.44	34.23	12.10	
Difference	-1.47	0.22	-5.67	-5.67	-3.80	-0.07	-5.90	0.59	5.45	-1.38	
IM U.S. All Cap Growth Equity (SA+CF) Median	-0.37	5.28	3.73	3.73	5.29	12.89	3.32	8.88	35.88	10.03	
Rank	48	35	57	57	64	21	85	23	24	36	
U.S. All Cap Equity Composite	4.34	9.96	10.59	10.59	6.72	14.37	-1.81	11.93	36.78	11.25	07/01/2011
Russell 3000 Index	4.21	8.79	12.74	12.74	8.43	14.67	0.48	12.56	33.55	12.19	
Difference	0.13	1.17	-2.15	-2.15	-1.71	-0.30	-2.29	-0.63	3.23	-0.94	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Scientific Beta	2.75	5.33	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.33	07/01/2016
S&P 500 Index (Cap Wtd)	3.82	7.82	11.96	11.96	8.87	14.66	1.38	13.69	32.39	7.82	
Difference	-1.07	-2.49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-2.49	
IM U.S. Large Cap Index Equity (SA+CF) Median	3.84	8.03	12.02	12.02	8.64	14.65	0.95	13.29	32.56	8.03	
Rank	81	91	N/A	N/A	N/A	N/A	N/A	N/A	N/A	91	
Internal S&P 500 Index (SA)	3.77	7.75	11.71	11.71	8.76	14.55	1.37	13.61	32.34	6.51	07/01/2001
S&P 500 Index (Cap Wtd)*	3.82	7.82	11.96	11.96	8.87	14.66	1.38	13.69	32.39	6.47	
Difference	-0.05	-0.07	-0.25	-0.25	-0.11	-0.11	-0.01	-0.08	-0.05	0.04	
IM U.S. Large Cap Index Equity (SA+CF) Median	3.84	8.03	12.02	12.02	8.64	14.65	0.95	13.29	32.56	6.20	
Rank	75	80	74	74	42	73	40	38	74	33	
U.S. Large Cap Equity Composite	3.65	7.41	11.88	11.88	8.48	N/A	0.79	13.22	N/A	12.00	07/01/2013
Russell 1000 Index	3.83	8.01	12.05	12.05	8.59	14.69	0.92	13.24	33.11	12.21	
Difference	-0.18	-0.60	-0.17	-0.17	-0.11	N/A	-0.13	-0.02	N/A	-0.21	
Internal US Mid Cap (SA)	7.44	11.75	20.71	20.71	N/A	N/A	-2.37	N/A	N/A	9.91	08/01/2014
S&P Mid Cap 400 Index (Cap Wtd)	7.42	11.87	20.74	20.74	9.04	15.33	-2.18	9.77	33.50	10.03	
Difference	0.02	-0.12	-0.03	-0.03	N/A	N/A	-0.19	N/A	N/A	-0.12	
IM U.S. Mid Cap Equity (SA+CF) Median	3.90	8.75	12.12	12.12	7.13	14.61	-1.19	9.78	36.40	7.20	
Rank	22	33	19	19	N/A	N/A	65	N/A	N/A	23	
Systematic Financial Management (SA)	10.49	17.03	20.54	20.54	6.64	N/A	-4.86	5.73	35.26	13.79	07/01/2012
Russell Mid Cap Val Index	5.52	10.22	20.00	20.00	9.45	15.70	-4.78	14.75	33.46	15.65	
Difference	4.97	6.81	0.54	0.54	-2.81	N/A	-0.08	-9.02	1.80	-1.86	
IM U.S. Mid Cap Value Equity (SA+CF) Median	6.62	12.11	18.22	18.22	8.71	15.58	-3.47	11.86	36.24	15.58	
Rank	13	15	40	40	71	N/A	63	87	58	81	
U.S. Mid Cap Equity Composite	8.76	14.00	21.96	21.96	6.59	N/A	-4.58	4.08	N/A	11.05	07/01/2013
S&P Mid Cap 400 Index (Cap Wtd)	7.42	11.87	20.74	20.74	9.04	15.33	-2.18	9.77	33.50	12.51	
Difference	1.34	2.13	1.22	1.22	-2.45	N/A	-2.40	-5.69	N/A	-1.46	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
NT Structured Small Cap (SA)	8.96	16.88	21.21	21.21	7.81	15.70	-3.05	6.65	39.39	10.19	10/01/1999
Russell 2000 Index	8.83	18.68	21.31	21.31	6.74	14.46	-4.41	4.89	38.82	8.36	
Difference	0.13	-1.80	-0.10	-0.10	1.07	1.24	1.36	1.76	0.57	1.83	
IM U.S. Small Cap Core Equity (SA+CF) Median	9.70	17.92	20.73	20.73	8.51	16.17	-1.39	6.54	41.28	10.90	
Rank	61	61	47	47	62	57	71	48	67	74	
U.S. Small Cap Equity Composite	8.63	16.47	20.76	20.76	7.65	N/A	-3.14	6.65	N/A	12.35	07/01/2013
Russell 2000 Index	8.83	18.68	21.31	21.31	6.74	14.46	-4.41	4.89	38.82	11.36	
Difference	-0.20	-2.21	-0.55	-0.55	0.91	N/A	1.27	1.76	N/A	0.99	
U.S. Equity Composite	5.09	9.54	14.21	14.21	7.90	14.30	-0.84	10.93	33.95	11.22	04/01/1984
Russell 3000 Index (P)*	4.21	8.79	12.74	12.74	8.43	14.67	0.48	12.56	33.55	11.17	
Difference	0.88	0.75	1.47	1.47	-0.53	-0.37	-1.32	-1.63	0.40	0.05	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Lazard Int'l Strategic Equity (SA)	-3.63	0.90	0.60	0.60	N/A	N/A	-0.39	N/A	N/A	-2.49	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-2.43	-4.82	-4.41	-4.41	N/A	N/A	4.86	N/A	N/A	1.33	
IM International Value Equity (SA+CF) Median	-0.36	7.13	3.92	3.92	-0.10	7.68	-1.00	-4.25	23.80	-2.30	
Rank	87	88	83	83	N/A	N/A	44	N/A	N/A	53	
LSV Int'l Concentrated Value Equity (SA)	2.06	11.45	7.67	7.67	N/A	N/A	-5.43	N/A	N/A	-2.38	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	3.26	5.73	2.66	2.66	N/A	N/A	-0.18	N/A	N/A	1.44	
IM International Value Equity (SA+CF) Median	-0.36	7.13	3.92	3.92	-0.10	7.68	-1.00	-4.25	23.80	-2.30	
Rank	15	14	21	21	N/A	N/A	88	N/A	N/A	52	
BTC ACWI Ex US Fund (CF)	-1.21	5.67	4.89	4.89	-1.55	5.26	-5.43	-3.80	15.61	5.97	07/01/2009
MSCI ACW Ex US Index (USD) (Net)	-1.25	5.57	4.50	4.50	-1.78	5.00	-5.66	-3.87	15.29	5.74	
Difference	0.04	0.10	0.39	0.39	0.23	0.26	0.23	0.07	0.32	0.23	
IM International Core Equity (SA+CF) Median	-2.21	5.03	1.35	1.35	-0.24	7.97	1.14	-3.53	23.99	8.03	
Rank	36	41	17	17	74	94	94	54	95	97	
American Century Non-US Growth Equity (SA)	-5.31	1.94	-3.85	-3.85	N/A	N/A	-0.53	N/A	N/A	-4.11	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-4.11	-3.78	-8.86	-8.86	N/A	N/A	4.72	N/A	N/A	-0.29	
IM International Growth Equity (SA+CF) Median	-4.35	2.14	-0.39	-0.39	-0.02	7.51	3.24	-3.37	22.89	-1.83	
Rank	66	53	76	76	N/A	N/A	83	N/A	N/A	87	
Franklin Templeton Non-US Equity (SA)	-4.17	3.26	1.76	1.76	N/A	N/A	1.39	N/A	N/A	-1.68	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-2.97	-2.46	-3.25	-3.25	N/A	N/A	6.64	N/A	N/A	2.14	
IM International Growth Equity (SA+CF) Median	-4.35	2.14	-0.39	-0.39	-0.02	7.51	3.24	-3.37	22.89	-1.83	
Rank	48	37	26	26	N/A	N/A	67	N/A	N/A	47	
NT Int'l Sm Cap Eq Index (SA)	-3.38	4.30	4.23	4.23	1.13	8.11	2.95	-3.62	20.87	12.23	12/01/2008
MSCI ACW Ex US Sm Cap Index (USD) (Gross)	-3.47	4.25	4.29	4.29	1.12	8.12	2.95	-3.69	20.13	12.95	
Difference	0.09	0.05	-0.06	-0.06	0.01	-0.01	0.00	0.07	0.74	-0.72	
IM International Small Cap Equity (SA+CF) Median	-3.76	4.50	1.19	1.19	2.50	11.54	10.39	-3.38	31.13	14.54	
Rank	45	54	34	34	73	92	88	56	96	87	
Non-U.S. Equity Composite	-2.04	4.91	4.20	4.20	-1.01	6.02	-3.12	-3.90	18.58	2.15	07/01/2000
MSCI ACW Ex US Investable Mkt Index (Gross) (P)*	-1.52	5.51	4.91	4.91	-1.36	5.46	-5.25	-3.44	15.78	2.54	
Difference	-0.52	-0.60	-0.71	-0.71	0.35	0.56	2.13	-0.46	2.80	-0.39	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
NISA Core Agg Fixed Income (SA)	-2.87	-2.36	3.34	3.34	3.56	2.60	0.97	6.44	-2.03	4.40	02/01/2009
Bloomberg US Agg Bond Index	-2.98	-2.53	2.65	2.65	3.03	2.23	0.55	5.97	-2.02	4.07	
Difference	0.11	0.17	0.69	0.69	0.53	0.37	0.42	0.47	-0.01	0.33	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-2.81	-2.19	3.10	3.10	3.34	2.82	0.82	6.14	-1.56	4.98	
Rank	64	63	42	42	33	68	32	35	73	78	
Core Fixed Income Composite	-2.88	-2.37	3.30	3.30	3.30	N/A	0.73	5.92	N/A	3.11	07/01/2013
Bloomberg US Agg Bond Index	-2.98	-2.53	2.65	2.65	3.03	2.23	0.55	5.97	-2.02	2.72	
Difference	0.10	0.16	0.65	0.65	0.27	N/A	0.18	-0.05	N/A	0.39	
Cerberus KRS Levered Loan Opps, L.P.	3.17	5.56	12.02	12.02	N/A	N/A	13.09	N/A	N/A	11.22	09/01/2014
S&P-LSTA Lvg'd Loan Index	2.26	5.41	10.16	10.16	3.58	5.11	-0.69	1.60	5.29	3.43	
Difference	0.91	0.15	1.86	1.86	N/A	N/A	13.78	N/A	N/A	7.79	
IM U.S. High Yield Bonds (SA+CF) Median	1.58	6.59	14.06	14.06	4.45	7.13	-2.21	2.61	7.50	3.28	
Rank	10	73	71	71	N/A	N/A	1	N/A	N/A	1	
Columbia HY Fixed Income (SA)	0.90	5.73	12.01	12.01	5.55	7.91	0.14	4.82	6.87	7.83	11/01/2011
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	7.21	
Difference	-0.85	-1.67	-5.12	-5.12	0.89	0.55	4.61	2.37	-0.57	0.62	
IM U.S. High Yield Bonds (SA+CF) Median	1.58	6.59	14.06	14.06	4.45	7.13	-2.21	2.61	7.50	7.10	
Rank	87	68	71	71	18	26	17	10	65	22	
Marathon Bluegrass Credit Fund	7.93	14.42	20.16	20.16	N/A	N/A	N/A	N/A	N/A	20.16	01/01/2016
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	17.13	
Difference	6.18	7.02	3.03	3.03	N/A	N/A	N/A	N/A	N/A	3.03	
IM U.S. High Yield Bonds (SA+CF) Median	1.58	6.59	14.06	14.06	4.45	7.13	-2.21	2.61	7.50	14.06	
Rank	2	3	4	4	N/A	N/A	N/A	N/A	N/A	4	
Shenkman Capital (SA)	2.00	5.34	9.52	9.52	3.78	5.60	-0.10	2.16	6.20	5.45	10/01/2010
Shenkman Blended Index	2.26	5.41	10.16	10.16	4.05	6.26	-0.69	2.98	6.42	6.03	
Difference	-0.26	-0.07	-0.64	-0.64	-0.27	-0.66	0.59	-0.82	-0.22	-0.58	
Waterfall (SA)	4.23	8.62	10.44	10.44	9.14	11.29	4.57	12.58	15.13	12.91	02/01/2010
Opportunistic FI Blended Index	1.78	5.50	11.22	11.22	3.39	4.99	-2.73	2.16	5.06	5.37	
Difference	2.45	3.12	-0.78	-0.78	5.75	6.30	7.30	10.42	10.07	7.54	
High Yield Fixed Income Composite	3.71	8.42	13.42	13.42	6.88	N/A	1.21	6.36	N/A	7.61	07/01/2013
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	5.71	
Difference	1.96	1.02	-3.71	-3.71	2.22	N/A	5.68	3.91	N/A	1.90	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Manulife Asset Mgmt (SA)	-1.19	-0.12	4.71	4.71	3.27	4.71	0.85	4.30	1.90	4.68	12/01/2011
Bloomberg US Unv Bond Index*	-2.61	-1.68	3.91	3.91	0.32	0.70	-3.29	0.48	-2.19	0.83	
Difference	1.42	1.56	0.80	0.80	2.95	4.01	4.14	3.82	4.09	3.85	
Global Fixed Income Composite	-1.19	-0.12	4.67	4.67	3.34	N/A	1.28	4.09	N/A	3.17	07/01/2013
Bloomberg Gbl Agg Bond Index	-7.07	-6.31	2.09	2.09	-0.19	0.21	-3.15	0.59	-2.60	0.50	
Difference	5.88	6.19	2.58	2.58	3.53	N/A	4.43	3.50	N/A	2.67	
Fixed Income Composite	0.97	3.71	9.34	9.34	5.30	5.26	0.90	5.83	0.38	7.77	04/01/1984
50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (P)*	-0.44	2.78	10.38	10.38	5.38	4.03	0.43	5.56	-1.35	7.51	
Difference	1.41	0.93	-1.04	-1.04	-0.08	1.23	0.47	0.27	1.73	0.26	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Internal TIPS (SA)	-1.40	-0.47	4.56	4.56	2.61	1.18	0.22	3.09	-8.40	5.23	05/01/2002
Internal US TIPS Blend	-1.47	-0.91	4.01	4.01	2.02	0.75	-0.52	2.63	-8.61	5.08	
Difference	0.07	0.44	0.55	0.55	0.59	0.43	0.74	0.46	0.21	0.15	
IM U.S. TIPS (SA+CF) Median	-2.38	-1.35	4.67	4.67	2.26	0.93	-1.40	3.57	-8.24	5.21	
Rank	13	13	56	56	9	25	1	67	53	45	
Nuveen Real Asset Income (SA)	-3.29	0.19	10.92	10.92	N/A	N/A	N/A	N/A	N/A	3.28	02/01/2015
Nuveen Real Asset Custom Index	-3.22	-1.36	8.74	8.74	N/A	N/A	N/A	N/A	N/A	2.47	
Difference	-0.07	1.55	2.18	2.18	N/A	N/A	N/A	N/A	N/A	0.81	
PIMCO:All Asset;Inst (PAAIX)	-2.62	1.13	12.87	12.87	1.49	4.27	-7.87	0.52	-1.66	3.52	12/01/2011
Bloomberg US Trsy Infl Notes: 1-10 Yr Index	-1.47	-0.91	4.01	4.01	1.45	0.70	-0.52	0.91	-5.58	0.65	
Difference	-1.15	2.04	8.86	8.86	0.04	3.57	-7.35	-0.39	3.92	2.87	
Tortoise Capital (CF)	3.04	5.71	16.81	16.81	-0.09	8.29	-26.63	16.37	37.97	14.99	08/01/2009
Alerian MLP Index	2.04	3.13	18.31	18.31	-5.80	2.25	-32.59	4.80	27.58	10.12	
Difference	1.00	2.58	-1.50	-1.50	5.71	6.04	5.96	11.57	10.39	4.87	
Amerra Ag Fund II (CF)	0.06	2.53	5.92	5.92	12.36	N/A	21.02	10.65	1.14	9.24	12/01/2012
Amerra-AGRI Holding (CF)	0.50	1.41	4.01	4.01	N/A	N/A	N/A	N/A	N/A	3.13	08/01/2015
BTG Pactual Brazil Timberland Fund I, L.P.	1.59	12.67	-10.08	-10.08	N/A	N/A	-11.97	N/A	N/A	-10.61	12/01/2014
Magnetar MTP Energy Fund, L.P.	3.81	9.35	15.40	15.40	0.09	N/A	-15.63	2.98	N/A	0.94	07/01/2013
Magnetar MTP EOF II, L.P.	1.95	15.86	-2.43	-2.43	N/A	N/A	N/A	N/A	N/A	-1.72	08/01/2015
Oberland Capital Healthcare, L.P.	-8.46	-2.05	93.64	93.64	N/A	N/A	-15.28	N/A	N/A	22.83	10/01/2014
Taurus Mining Finance Fund	11.71	16.95	41.30	41.30	N/A	N/A	N/A	N/A	N/A	24.58	04/01/2015
Tenaska Power Fund II (CF)	2.07	13.38	-21.75	-21.75	-2.73	-4.57	18.41	-0.69	-15.95	-3.19	10/01/2008
Real Return Composite	-1.15	2.19	11.25	11.25	2.84	2.67	-5.42	3.36	-4.23	3.66	07/01/2011
Real Return Actual Allocation Index (P)*	-0.91	0.61	7.22	7.22	1.92	2.57	-4.07	2.95	2.33	2.63	
Difference	-0.24	1.58	4.03	4.03	0.92	0.10	-1.35	0.41	-6.56	1.03	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
H/2 Credit Partners (CF)	5.08	7.32	9.29	9.29	5.95	6.95	2.11	6.57	4.52	6.22	07/01/2011
Harrison Street Core (CF)	1.61	4.49	11.08	11.08	10.52	N/A	10.16	10.33	9.69	8.89	05/01/2012
Mesa West Core Lending, L.P.	3.38	5.16	9.12	9.12	7.71	N/A	8.40	5.63	N/A	7.11	05/01/2013
Prologis Targeted U.S. Logistics Fund (CF)	3.04	5.48	14.39	14.39	N/A	N/A	15.53	N/A	N/A	13.19	10/01/2014
Stockbridge SmtMkts, L.P.	2.94	4.79	10.80	10.80	N/A	N/A	12.50	N/A	N/A	10.48	05/01/2014
DivcoWest Fund IV, L.P.	7.13	22.62	46.94	46.94	N/A	N/A	38.42	N/A	N/A	30.88	03/01/2014
Greenfield Acquisition Partners VI, L.P.	1.19	-3.85	1.90	1.90	14.48	N/A	24.47	18.30	12.16	13.60	12/01/2012
Greenfield Acquisition Partners VII, L.P.	0.78	5.95	13.76	13.76	N/A	N/A	13.86	N/A	N/A	10.76	07/01/2014
Lubert Adler Real Estate Fund VII, L.P.	0.36	4.72	6.37	6.37	N/A	N/A	4.60	N/A	N/A	-1.45	07/01/2014
Patron Capital V, L.P.	-30.09	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-30.34	08/01/2016
Rubenstein Properties Fund II, L.P.	1.72	2.47	7.61	7.61	23.43	N/A	16.23	50.33	N/A	18.56	07/01/2013
Walton Street Real Estate Fund VI, L.P.	-6.17	-5.63	-2.54	-2.54	9.61	10.54	14.49	18.01	16.08	-22.03	05/01/2009
Walton Street Real Estate Fund VII, L.P.	3.90	6.79	14.25	14.25	16.48	N/A	18.34	16.89	N/A	16.08	07/01/2013
Real Estate Composite	2.35	4.90	10.79	10.79	10.26	10.07	10.45	9.53	9.38	5.99	07/01/1984
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)	1.83	3.77	9.08	9.08	11.42	11.34	13.86	11.36	11.97	6.43	
Difference	0.52	1.13	1.71	1.71	-1.16	-1.27	-3.41	-1.83	-2.59	-0.44	

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 - Pension Plan
 Manager Comparative Performance (Gross of Fees)

As of December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
BAAM (SA)	1.17	4.07	1.28	1.28	5.14	6.94	6.30	7.97	11.54	6.54	09/01/2011
Davidson-Kemper, L.P.	1.74	5.84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.46	02/01/2016
PAAMCO (SA)	0.00	-0.01	-1.85	-1.85	-0.05	4.03	-2.01	3.83	15.09	3.63	09/01/2011
Prisma Capital Partners (SA)	1.24	3.87	-0.26	-0.26	1.77	4.51	2.30	3.30	9.78	3.67	09/01/2011
Senator Investment Group, L.P.	0.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.09	09/01/2016
Tourbillon Global Master Fund, Ltd	-1.46	8.19	-8.33	-8.33	N/A	N/A	N/A	N/A	N/A	-6.37	11/01/2015
Anchorage Capital	2.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.18	08/01/2016
Blackrock GAO Fund, Ltd (CF)	-5.60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-5.34	08/01/2016
Coatue Qualified Partners, L.P.	-0.42	4.79	7.09	7.09	N/A	N/A	N/A	N/A	N/A	9.59	07/01/2015
DSAM Fund, L.P.	-1.79	-1.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.80	05/01/2016
Finisterre Global Op	2.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.96	08/01/2016
Glenview Capital (CF)	3.33	10.44	-1.29	-1.29	N/A	N/A	N/A	N/A	N/A	-3.70	11/01/2015
HBK II (CF)	3.40	5.78	8.38	8.38	3.57	N/A	-1.38	3.93	N/A	3.79	12/01/2013
Knighthead Capital (CF)	8.51	11.20	10.69	10.69	1.62	N/A	-10.22	5.59	N/A	1.62	01/01/2014
LibreMax Capital (CF)	2.57	6.40	5.76	5.76	N/A	N/A	-0.16	N/A	N/A	3.58	08/01/2014
Liquidalts H2O Force (CF)	8.71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.93	08/01/2016
Luxor Capital (CF)	13.13	18.04	2.22	2.22	N/A	N/A	-15.99	N/A	N/A	-7.42	04/01/2014
Myriad Opportunities	3.76	8.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.72	05/01/2016
Pine River (CF)	1.80	5.57	2.15	2.15	N/A	N/A	0.88	N/A	N/A	1.32	05/01/2014
QMS Diversified Global Macro (CF)	-9.87	-10.66	-9.41	-9.41	N/A	N/A	N/A	N/A	N/A	-7.22	11/01/2015
Scopia PX, LLC	4.46	6.93	-2.95	-2.95	N/A	N/A	1.74	N/A	N/A	1.42	11/01/2014
Absolute Return Composite	1.33	4.05	0.77	0.77	2.44	5.22	1.74	4.84	12.08	4.12	04/01/2010
HFRI FOF: Dv'd Index (1 Mo Lag)	0.11	1.37	-1.34	-1.34	1.36	3.13	0.79	4.72	8.61	2.41	
Difference	1.22	2.68	2.11	2.11	1.08	2.09	0.95	0.12	3.47	1.71	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Cash Equivalents (SA)	0.46	0.58	0.94	0.94	0.44	0.45	0.21	0.17	0.64	3.70	01/01/1988
Citi 3 Mo T-Bill Index	0.08	0.15	0.27	0.27	0.11	0.09	0.03	0.02	0.06	3.25	
Difference	0.38	0.43	0.67	0.67	0.33	0.36	0.18	0.15	0.58	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

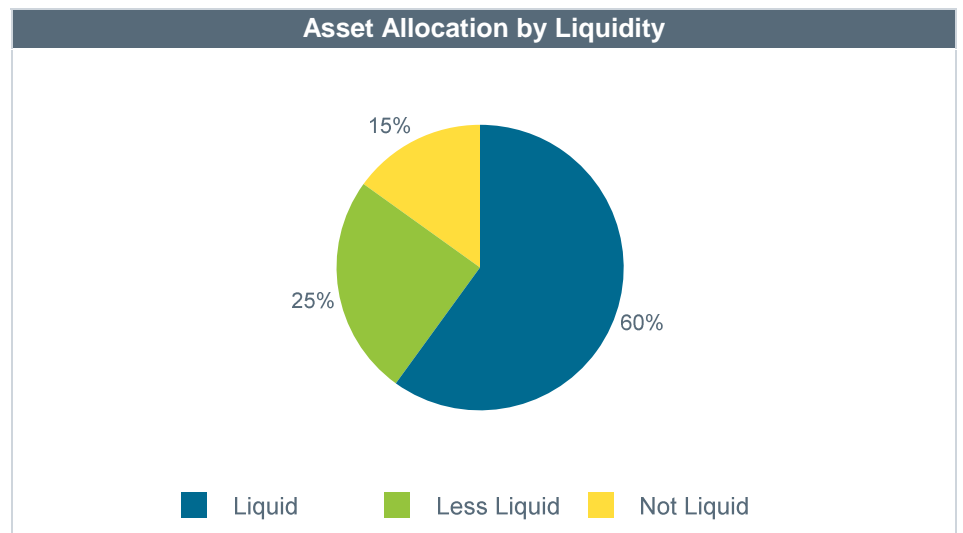
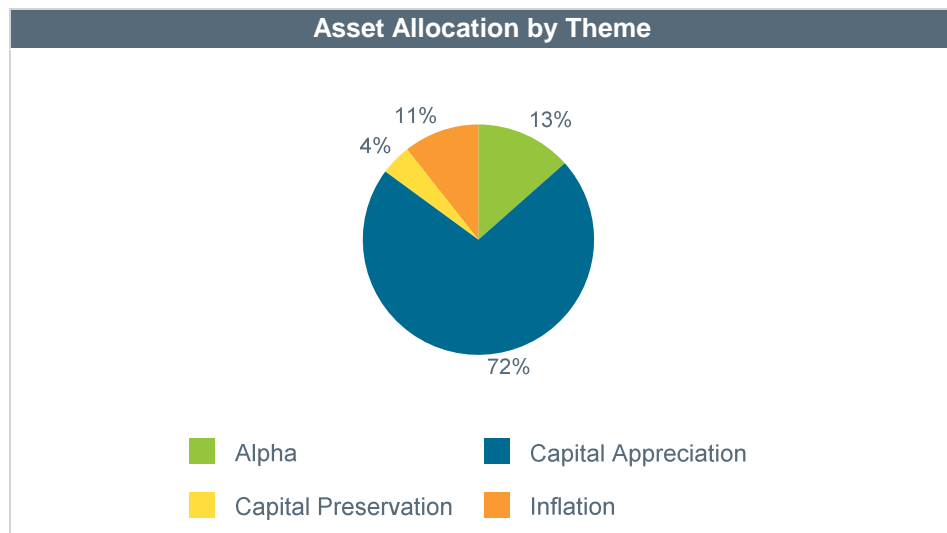
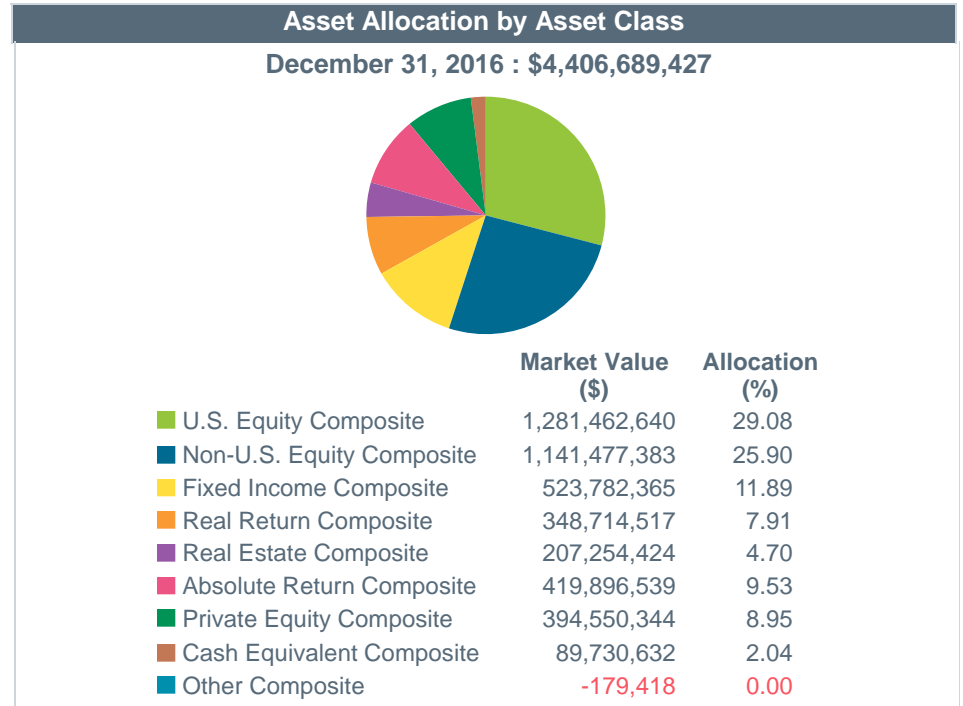
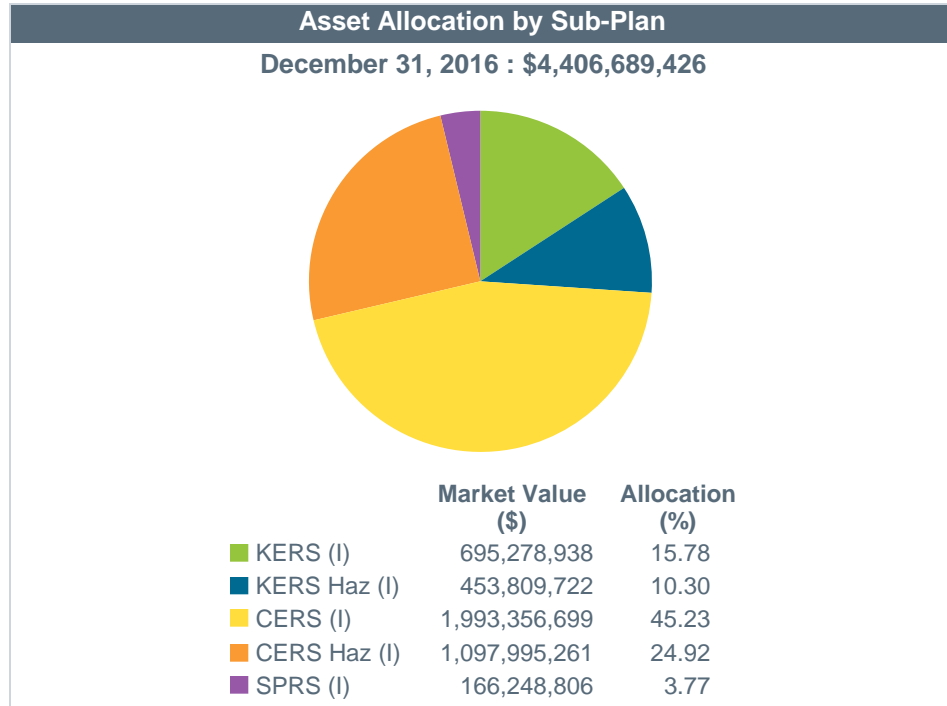
As of December 31, 2016

Asset Allocation & Performance			
	Allocation		Performance (%)
	Market Value (\$)	%	FYTD
Total Fund	4,406,689,427	100.00	5.31
U.S. Equity Composite	1,281,462,640	29.08	9.50
River Road Asset Management (SA)	57,423,908	1.30	10.53
River Road FAV (SA)	41,206,491	0.94	18.42
Westfield Capital (SA)	59,301,482	1.35	6.25
Scientific Beta	129,997,955	2.95	3.86
Internal S&P 500 Index (SA)	625,369,570	14.19	7.70
Internal US Mid Cap (SA)	146,971,688	3.34	11.62
Systematic Financial Management (SA)	115,607,300	2.62	16.90
NT Structured Small Cap (SA)	105,577,599	2.40	16.80
Non-U.S. Equity Composite	1,141,477,383	25.90	5.00
Lazard Int'l Strategic Equity (SA)	169,138,464	3.84	0.76
LSV Int'l Concentrated Value Equity (SA)	192,445,766	4.37	11.44
BTC ACWI Ex US Fund (CF)	498,946,120	11.32	5.53
American Century Non-US Growth Equity (SA)	133,397,958	3.03	1.73
Franklin Templeton Non-US Equity (SA)	85,732,165	1.95	3.10
BTC ACWI Ex US Small Cap Fund (CF)	60,165,457	1.37	4.18
Non-US Transition Account	563,928	0.01	-8.47
Fixed Income Composite	523,782,365	11.89	2.69
NISA Core Agg Fixed Income (SA)	99,151,930	2.25	-2.57
Cerberus KRS Levered Loan Opps, L.P.	40,176,781	0.91	3.87
Columbia HY Fixed Income (SA)	51,138,908	1.16	5.44
Marathon Bluegrass Credit Fund	87,314,979	1.98	11.87
Shenkman Capital (SA)	40,653,327	0.92	4.74
Waterfall (SA)	48,470,713	1.10	3.53
Manulife Asset Mgmt (SA)	156,741,106	3.56	-0.28
Real Return Composite	348,714,517	7.91	1.41
Internal TIPS (SA)	66,902,907	1.52	-0.77
Nuveen Real Asset Income (SA)	85,246,216	1.93	-0.25
PIMCO:All Asset;Inst (PAAIX)	104,721,056	2.38	1.13
Tortoise Capital (CF)	23,592,168	0.54	5.37
Amerra Ag Fund II (CF)	11,962,122	0.27	1.41
Amerra-AGRI Holding (CF)	18,320,072	0.42	-0.19
BTG Pactual Brazil Timberland Fund I, L.P.	3,785,815	0.09	9.81
Magnetar MTP Energy Fund, L.P.	23,881,074	0.54	8.53
Magnetar MTP EOF II, L.P.	5,029,011	0.11	15.19
Oberland Capital Healthcare, L.P.	549,489	0.01	-9.16
Taurus Mining Finance Fund	4,591,250	0.10	13.19
Tenaska Power Fund II (CF)	133,337	0.00	13.12

Asset Allocation & Performance			
	Allocation		Performance (%)
	Market Value (\$)	%	FYTD
Real Estate Composite	207,254,424	4.70	4.76
H/2 Credit Partners (CF)	30,466,758	0.69	7.32
Harrison Street Core (CF)	29,983,018	0.68	4.11
Mesa West Core Lending, L.P.	31,440,106	0.71	4.53
Prologis Targeted U.S. Logistics Fund (CF)	23,349,741	0.53	6.27
Stockbridge SmtMkts, L.P.	32,936,591	0.75	4.29
DivcoWest Fund IV, L.P.	4,757,433	0.11	19.27
Greenfield Acquisition Partners VI, L.P.	8,203,720	0.19	-3.46
Greenfield Acquisition Partners VII, L.P.	10,716,405	0.24	4.44
Lubert Adler Real Estate Fund VII, L.P.	12,995,937	0.29	3.86
Patron Capital V, L.P.	1,399,576	0.03	N/A
Rubenstein Properties Fund II, L.P.	5,579,095	0.13	1.23
Walton Street Real Estate Fund VI, L.P.	1,853,757	0.04	-6.27
Walton Street Real Estate Fund VII, L.P.	12,872,863	0.29	5.82
Absolute Return Composite	419,896,539	9.53	3.32
BAAM (SA)	49,986,187	1.13	3.76
Davidson-Kemper, L.P.	17,865,954	0.41	4.19
PAAMCO (SA)	2,497,992	0.06	-0.01
Prisma Capital Partners (SA)	218,671,154	4.96	3.59
Senator Investment Group, L.P.	9,044,868	0.21	N/A
Tourbillon Global Master Fund, Ltd	9,088,058	0.21	7.28
Anchorage Capital	10,233,032	0.23	N/A
Blackrock GAO Fund, Ltd (CF)	10,709,900	0.24	N/A
Coatue Qualified Partners, L.P.	5,517,821	0.13	4.01
DSAM Fund, L.P.	4,908,168	0.11	-1.73
Finisterre Global Op	6,398,880	0.15	N/A
Glenview Capital (CF)	7,029,710	0.16	9.37
HBK II (CF)	17,185,630	0.39	3.82
Knighthead Capital (CF)	4,513,170	0.10	10.11
LibreMax Capital (CF)	2,657,023	0.06	4.86
Liquidalts H2O Force (CF)	6,426,560	0.15	N/A
Luxor Capital (CF)	3,957,056	0.09	17.36
Myriad Opportunities	12,013,308	0.27	3.58
Pine River (CF)	5,061,531	0.11	4.78
QMS Diversified Global Macro (CF)	6,954,862	0.16	-11.58
Scopia PX, LLC	8,942,202	0.20	6.10
Private Equity Composite	394,550,344	8.95	3.59
Cash Equivalent Composite	89,730,632	2.04	0.22
Cash Equivalents (SA)	89,730,632	2.04	0.22
Other Composite	-179,418	0.00	N/A

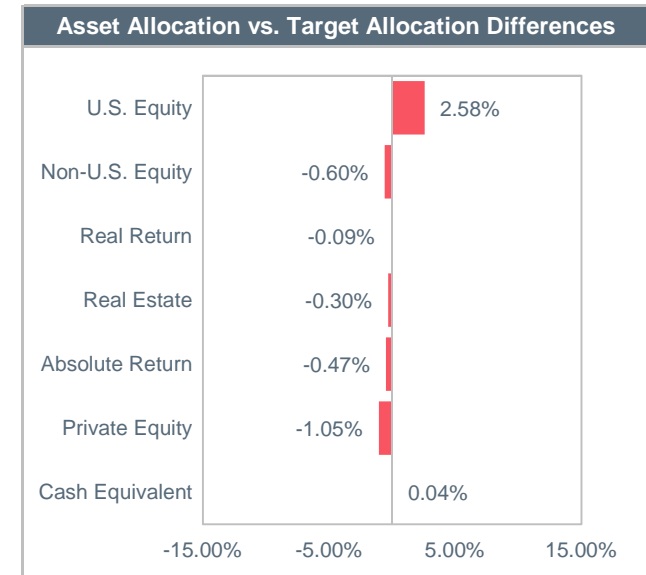
Performance shown is net of fees. Fiscal year ends June 30th. Allocations shown may not sum up to 100% exactly due to rounding. Other Composite consists of BNY fee accruals. Real Estate and Private Equity valuations shown are as of the most recent date available. Market value shown for Emerging Mkts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





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.

Asset Allocation vs. Target Allocation					
	Asset Allocation (\$)	Asset Allocation (%)	Minimum Allocation (%)	Target Allocation (%)	Maximum Allocation (%)
Total Fund	4,406,689,427	100.00	-	100.00	-
U.S. Equity Composite	1,281,462,640	29.08	21.50	26.50	31.50
Non-U.S. Equity Composite	1,141,477,383	25.90	21.50	26.50	31.50
Fixed Income Composite	523,782,365	11.89	8.00	12.00	16.00
Real Return Composite	348,714,517	7.91	6.00	8.00	10.00
Real Estate Composite	207,254,424	4.70	3.00	5.00	7.00
Absolute Return Composite	419,896,539	9.53	8.00	10.00	12.00
Private Equity Composite	394,550,344	8.95	7.00	10.00	13.00
Cash Equivalent Composite	89,730,632	2.04	-	2.00	4.00



Individual Plan Asset Allocation Monitor					
	KERS	KERS Haz	CERS	CERS Haz	SPRS
U.S. Equity Composite	Over Max	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	In Range	In Range	In Range	In Range	In Range

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 U.S. Equity Composite is over the maximum allocation by 1.78%
KERS Private Equity Composite is under the minimum allocation by 2.25%. This is an illiquid asset class and may take additional time to bring back into target range.

Kentucky Retirement Systems - Insurance Plan
Plan Comparative Performance

As of December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	10 Years	2015	2014	2013	Since Incep.	Inception Date
Total Fund	1.27	5.31	8.36	8.36	4.17	7.29	3.72	-0.12	4.46	12.30	7.27	04/01/1987
Target Allocation Index (I)	0.93	4.99	8.15	8.15	5.15	8.30	4.35	1.38	6.05	13.23	7.70	
Difference	0.34	0.32	0.21	0.21	-0.98	-1.01	-0.63	-1.50	-1.59	-0.93	-0.43	
KERS (I)	1.38	5.55	8.41	8.41	3.93	7.06	3.61	-0.68	4.27	11.87	7.23	04/01/1987
Target Allocation Index (KERS I)	0.93	4.99	8.15	8.15	4.88	8.19	4.29	0.96	5.67	13.50	7.68	
Difference	0.45	0.56	0.26	0.26	-0.95	-1.13	-0.68	-1.64	-1.40	-1.63	-0.45	
KERS Haz (I)	1.32	5.35	8.31	8.31	4.13	7.30	3.73	-0.24	4.51	12.50	7.27	04/01/1987
Target Allocation Index (KERS Haz I)	0.93	4.99	8.15	8.15	4.88	8.19	4.29	0.96	5.67	13.52	7.68	
Difference	0.39	0.36	0.16	0.16	-0.75	-0.89	-0.56	-1.20	-1.16	-1.02	-0.41	
CERS (I)	1.24	5.24	8.31	8.31	4.21	7.33	3.74	-0.01	4.51	12.40	7.27	04/01/1987
Target Allocation Index (CERS I)	0.93	4.99	8.15	8.15	4.88	8.19	4.29	0.96	5.67	13.52	7.68	
Difference	0.31	0.25	0.16	0.16	-0.67	-0.86	-0.55	-0.97	-1.16	-1.12	-0.41	
CERS Haz (I)	1.23	5.23	8.38	8.38	4.26	7.36	3.75	0.06	4.51	12.35	7.28	04/01/1987
Target Allocation Index (CERS Haz I)	0.93	4.99	8.15	8.15	4.88	8.19	4.29	0.96	5.67	13.52	7.68	
Difference	0.30	0.24	0.23	0.23	-0.62	-0.83	-0.54	-0.90	-1.16	-1.17	-0.40	
SPRS (I)	1.22	5.24	8.30	8.30	4.22	7.33	3.74	0.02	4.50	12.38	7.27	04/01/1987
Target Allocation Index (SPRS I)	0.93	4.99	8.15	8.15	4.88	8.19	4.29	0.96	5.67	13.52	7.68	
Difference	0.29	0.25	0.15	0.15	-0.66	-0.86	-0.55	-0.94	-1.17	-1.14	-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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
U.S. Equity Composite	5.11	9.50	14.66	14.66	8.06	14.29	-0.48	10.58	33.56	9.43	07/01/1992
Russell 3000 Index (I)*	4.21	8.79	12.74	12.74	8.43	14.67	0.48	12.56	33.55	N/A	
Difference	0.90	0.71	1.92	1.92	-0.37	-0.38	-0.96	-1.98	0.01	N/A	
Non-U.S. Equity Composite	-1.94	5.00	3.97	3.97	-1.32	5.57	-3.46	-4.28	17.94	2.08	04/01/2000
MSCI ACW Ex US Investable Mkt Index (Gross) (I)*	-1.52	5.51	4.91	4.91	-1.36	5.46	-5.25	-3.44	15.78	1.64	
Difference	-0.42	-0.51	-0.94	-0.94	0.04	0.11	1.79	-0.84	2.16	0.44	
Fixed Income Composite	0.65	2.69	8.22	8.22	4.14	4.31	0.53	3.79	-0.33	6.53	07/01/1992
50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (I)*	-0.44	2.78	10.38	10.38	5.38	4.03	0.43	5.56	-1.35	6.48	
Difference	1.09	-0.09	-2.16	-2.16	-1.24	0.28	0.10	-1.77	1.02	0.05	
Real Return Composite	-1.44	1.41	9.69	9.69	2.24	2.06	-6.13	3.78	-4.92	3.08	07/01/2011
Real Return Actual Allocation Index (I)*	-1.08	0.37	6.87	6.87	2.06	2.64	-3.56	3.15	2.29	2.70	
Difference	-0.36	1.04	2.82	2.82	0.18	-0.58	-2.57	0.63	-7.21	0.38	
Real Estate Composite	2.38	4.76	9.76	9.76	8.73	9.05	8.99	7.46	8.85	8.85	05/01/2009
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)	1.83	3.77	9.08	9.08	11.42	11.34	13.86	11.36	11.97	5.76	
Difference	0.55	0.99	0.68	0.68	-2.69	-2.29	-4.87	-3.90	-3.12	3.09	
Absolute Return Composite	0.96	3.32	-0.26	-0.26	2.09	5.01	1.80	4.80	11.99	3.88	04/01/2010
HFRI FOF: Dvf'd Index (1 Mo Lag)	0.08	1.33	-1.37	-1.37	1.35	3.12	0.79	4.72	8.61	2.41	
Difference	0.88	1.99	1.11	1.11	0.74	1.89	1.01	0.08	3.38	1.47	
Private Equity Composite	2.11	3.59	8.73	8.73	13.99	14.13	15.93	17.50	16.32	9.45	07/01/2002
Private Equity Benchmark (I) [Short Term]	2.11	3.59	8.73	8.73	13.99	14.13	15.93	17.50	16.32	9.45	
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]	5.16	8.93	17.96	17.96	14.13	20.17	3.51	21.76	25.61	9.91	
Difference	-3.05	-5.34	-9.23	-9.23	-0.14	-6.04	12.42	-4.26	-9.29	-0.46	
Cash Equivalent Composite	0.13	0.22	0.44	0.44	0.28	0.31	0.21	0.19	0.27	2.72	07/01/1992
Citi 3 Mo T-Bill Index	0.08	0.15	0.27	0.27	0.11	0.09	0.03	0.02	0.06	2.59	
Difference	0.05	0.07	0.17	0.17	0.17	0.22	0.18	0.17	0.21	0.13	

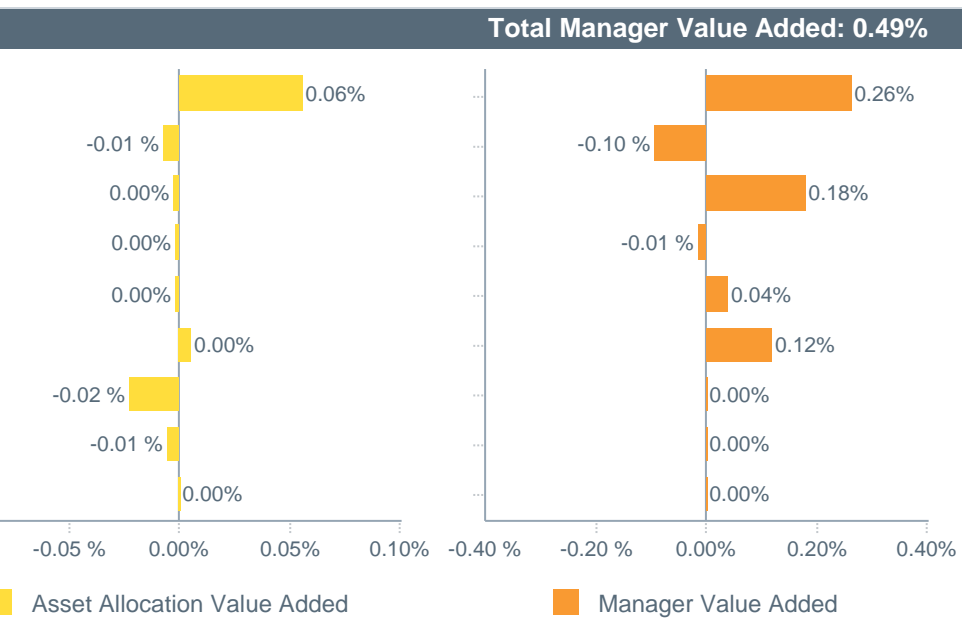
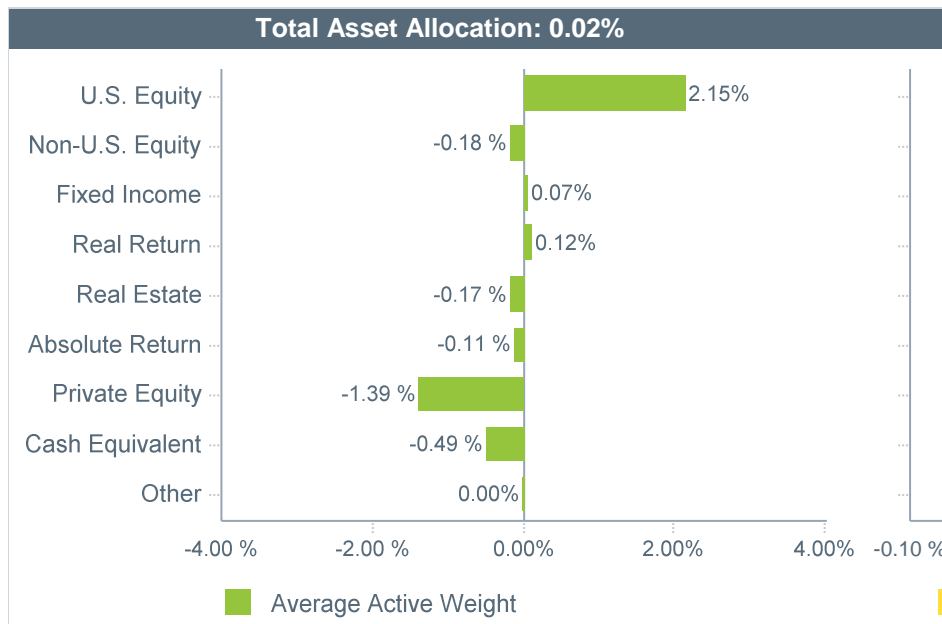
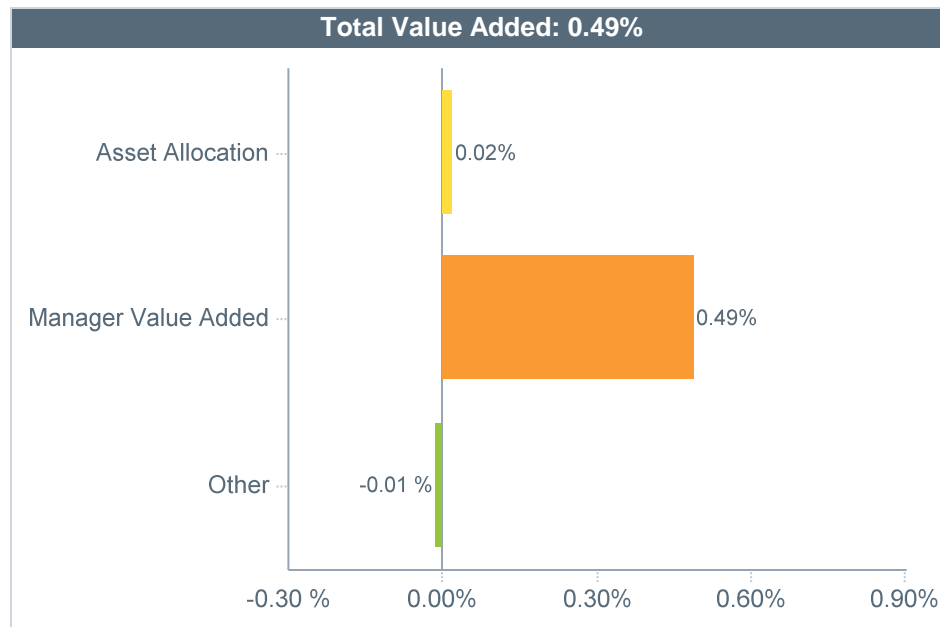
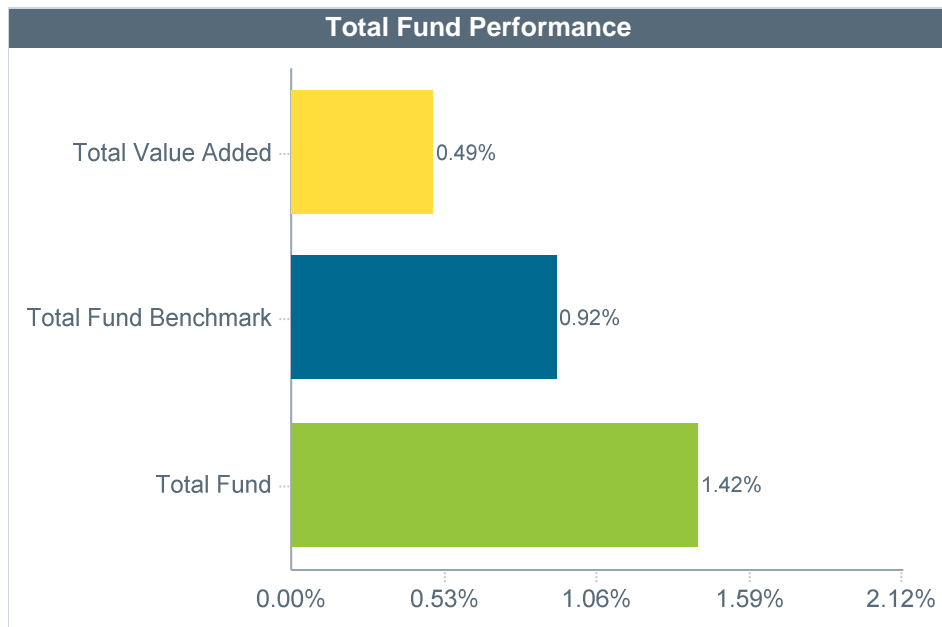
Performance shown is net of fees. All data reported for Kentucky Retirement Systems, including manager and composite performance, is provided by BNY Mellon. Fiscal year ends June 30th. An index marked with an asterisk (*) represents the current benchmark. See the Addendum for the complete historical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

Kentucky Retirement Systems - Insurance Plan
Composite Comparative Performance

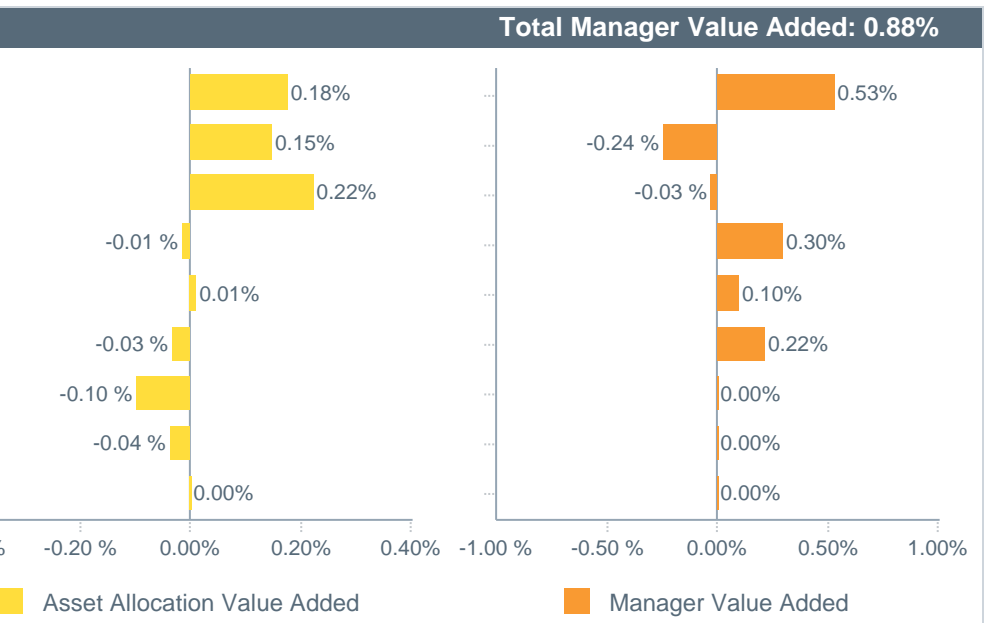
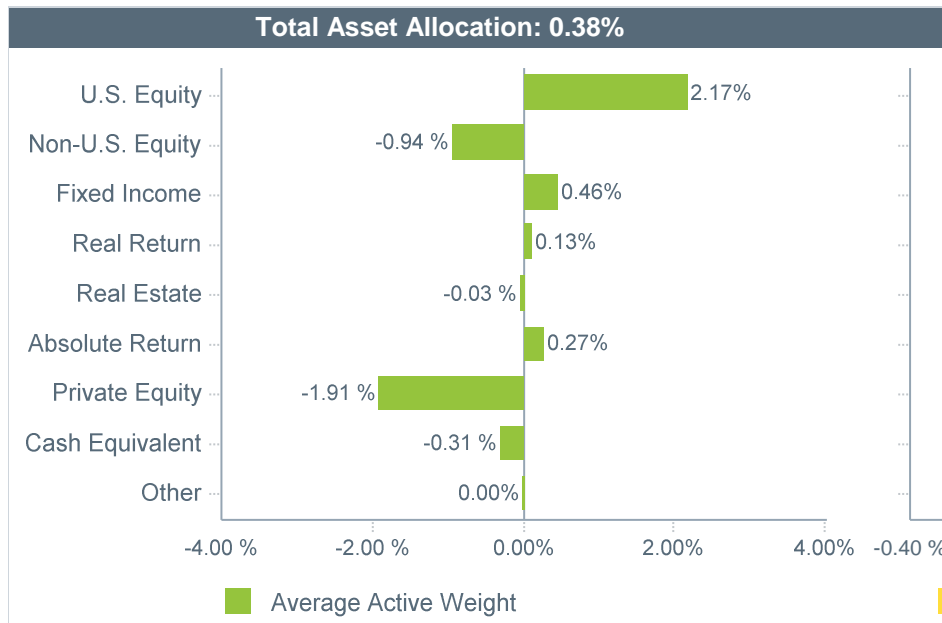
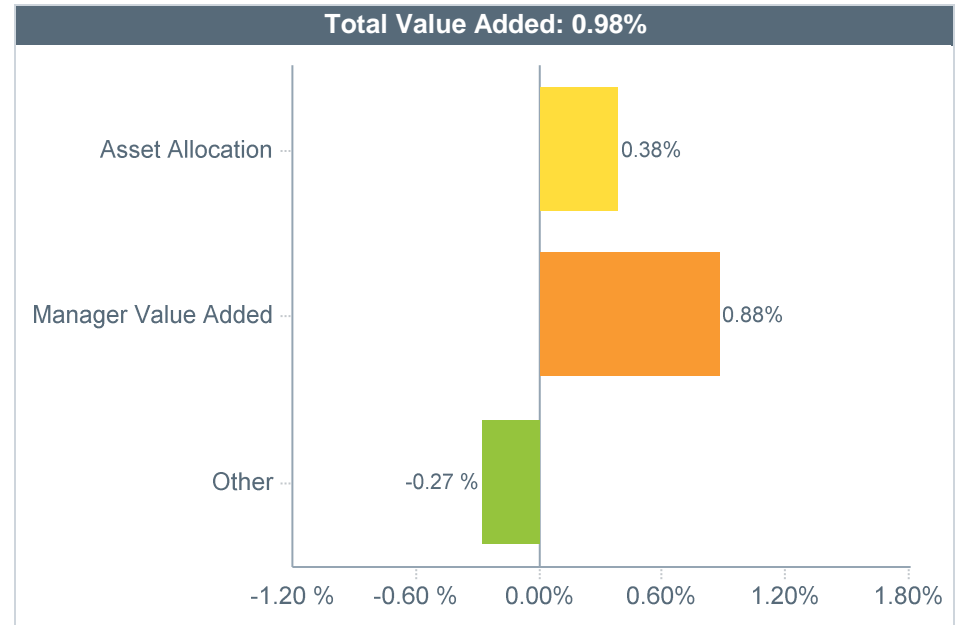
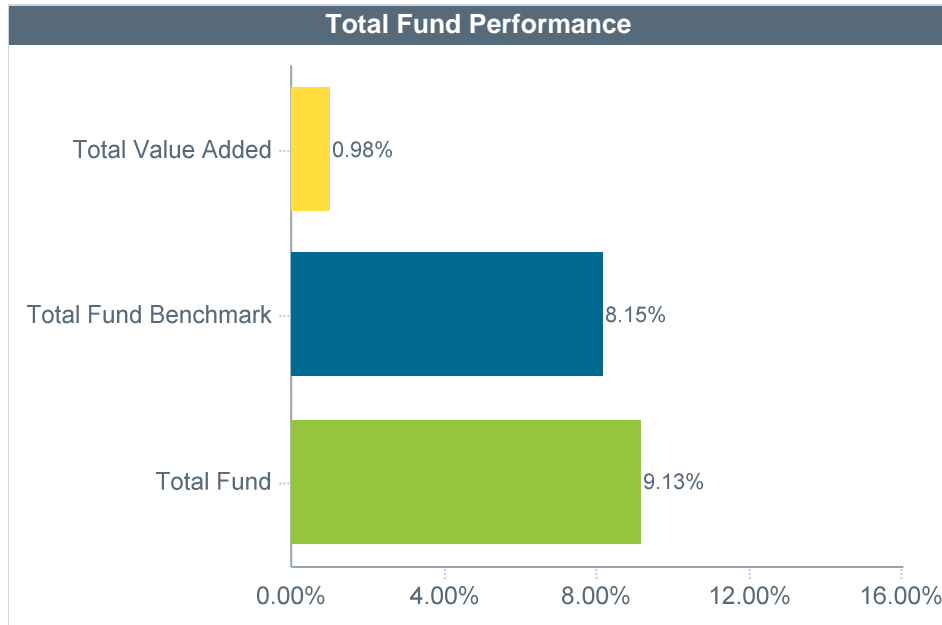
As of December 31, 2016

	7 Years	10 Years	12 Years	15 Years	20 Years	25 Years
U.S. Equity Composite	12.48	6.88	7.51	6.93	7.85	N/A
Russell 3000 Index (I)*	12.84	7.06	7.61	6.97	7.95	N/A
Difference	-0.36	-0.18	-0.10	-0.04	-0.10	N/A
Non-U.S. Equity Composite	2.77	1.18	4.09	5.74	N/A	N/A
MSCI ACW Ex US Investable Mkt Index (Gross) (I)*	3.32	0.72	3.74	5.30	N/A	N/A
Difference	-0.55	0.46	0.35	0.44	N/A	N/A
Fixed Income Composite	5.08	5.64	4.97	6.19	6.29	N/A
50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (I)*	5.19	5.64	4.96	6.16	6.27	6.46
Difference	-0.11	0.00	0.01	0.03	0.02	N/A
Real Return Composite	N/A	N/A	N/A	N/A	N/A	N/A
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
Real Estate Composite	11.16	N/A	N/A	N/A	N/A	N/A
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)	11.37	5.05	7.02	7.03	8.32	6.92
Difference	-0.21	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
HFRI FOF: Dvf'd Index (1 Mo Lag)	2.44	1.47	2.63	3.37	4.44	5.73
Difference	N/A	N/A	N/A	N/A	N/A	N/A
Private Equity Composite	14.30	9.05	9.18	N/A	N/A	N/A
Private Equity Benchmark (I) [Short Term]	14.30	9.05	9.18	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]	15.12	9.35	9.42	8.75	8.94	N/A
Difference	-0.82	-0.30	-0.24	N/A	N/A	N/A
Cash Equivalent Composite	0.30	1.02	1.60	1.57	2.35	N/A
Citi 3 Mo T-Bill Index	0.09	0.72	1.24	1.26	2.19	2.62
Difference	0.21	0.30	0.36	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.

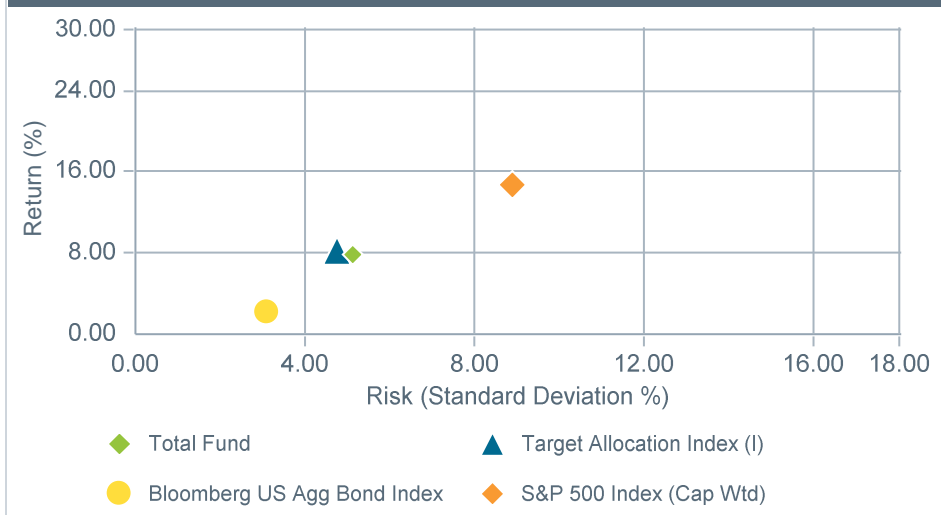
Historical Statistics - 5 Years

	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	5.80	10.66	12.99	2.90	5.45	3.59	3.17	5.91	0.22
Sharpe Ratio	1.22	1.30	0.47	1.43	0.44	2.41	1.52	2.26	1.49
Downside Risk	3.25	5.77	8.51	1.71	3.56	0.75	1.72	0.17	0.00
Excess Return	7.11	13.88	6.16	4.15	2.41	8.64	4.83	13.34	0.32

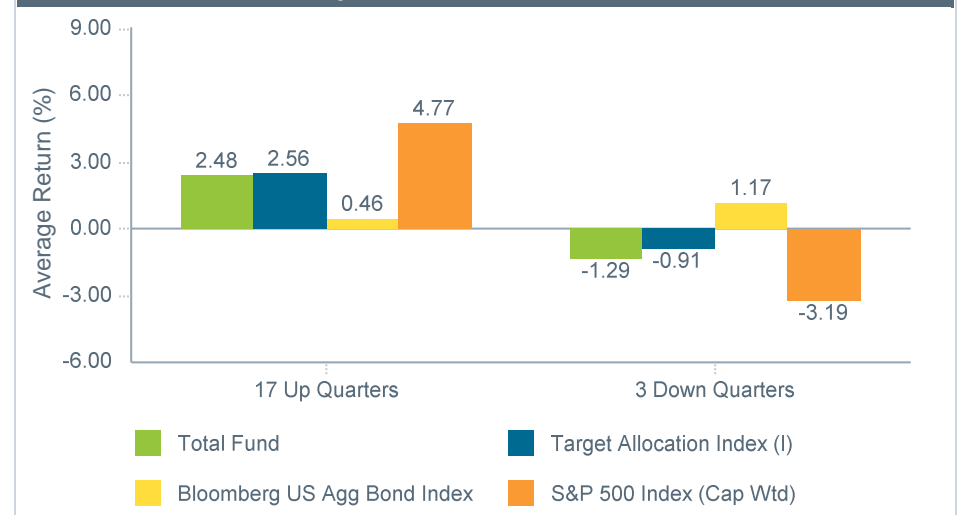
Correlation Matrix - 5 Years

	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	0.90	1.00							
Non-U.S. Equity Composite	0.95	0.80	1.00						
Fixed Income Composite	0.53	0.28	0.49	1.00					
Real Return Composite	0.63	0.38	0.56	0.82	1.00				
Real Estate Composite	-0.07	-0.10	-0.14	-0.19	-0.09	1.00			
Absolute Return Composite	-0.08	-0.11	-0.11	-0.28	-0.19	0.13	1.00		
Private Equity Composite	-0.05	-0.12	-0.14	-0.21	-0.12	0.57	0.24	1.00	
Cash Equivalent Composite	0.12	0.06	0.15	0.11	0.04	-0.01	-0.04	-0.08	1.00

Risk/Return - 5 Years

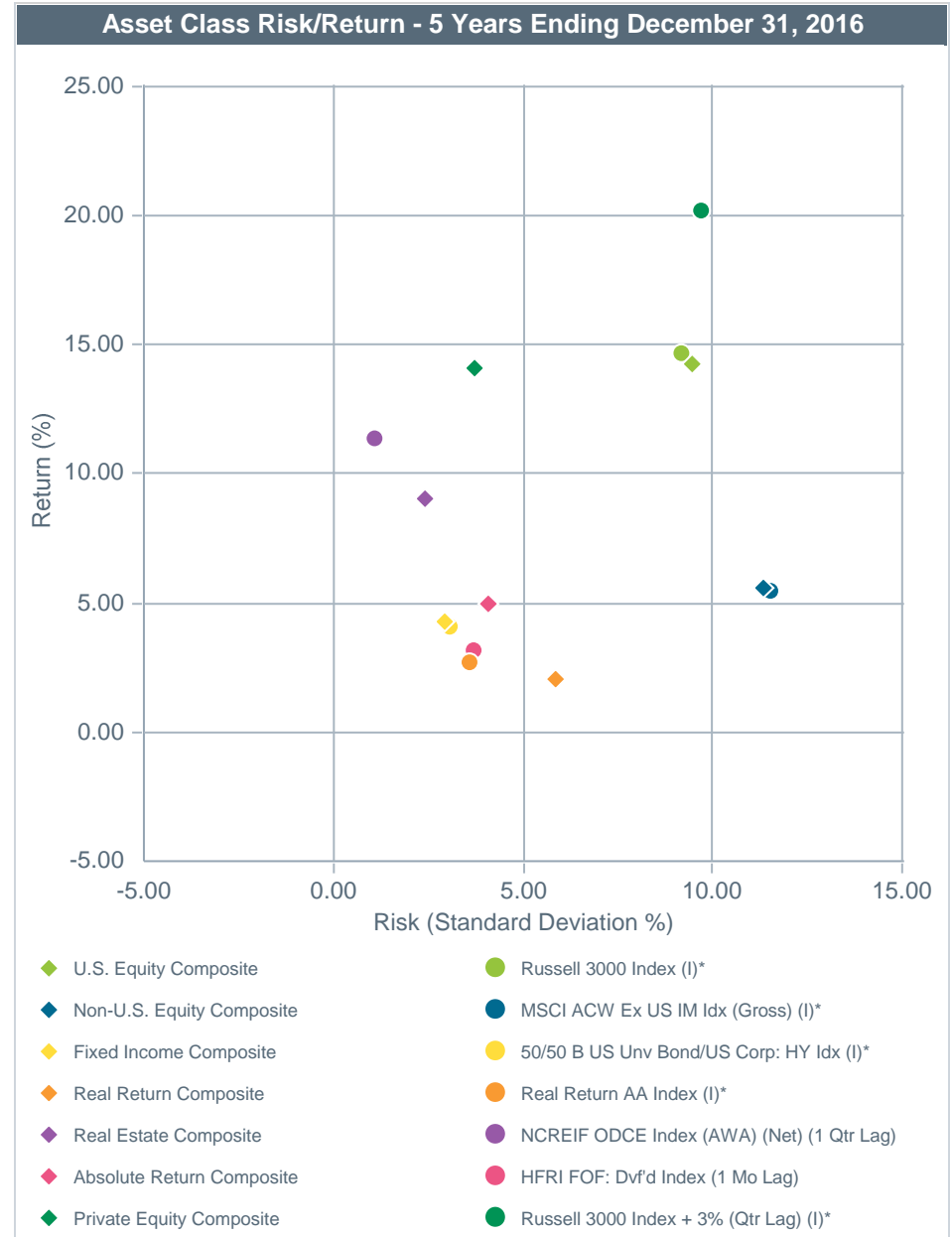
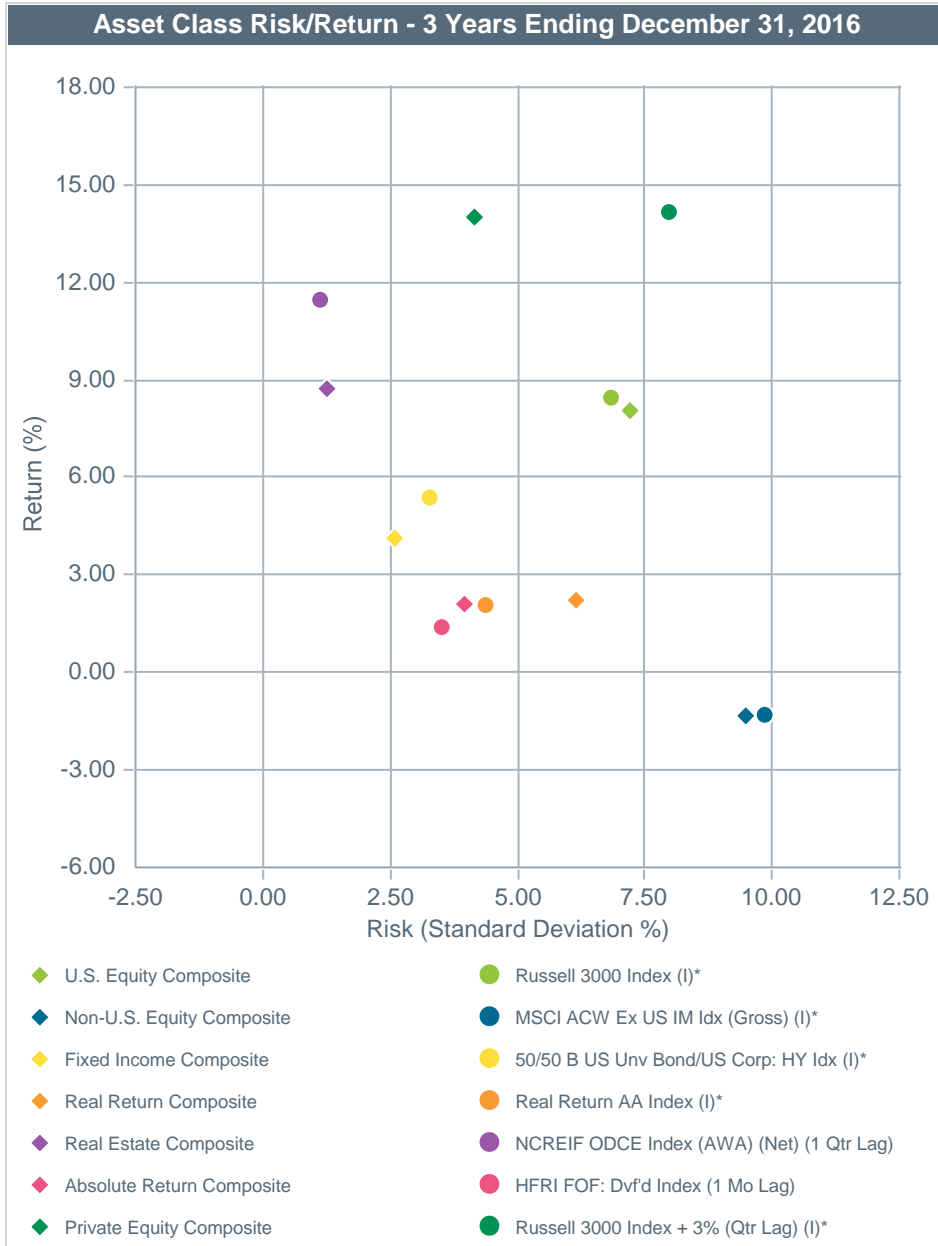


Up Down Market Bar Chart



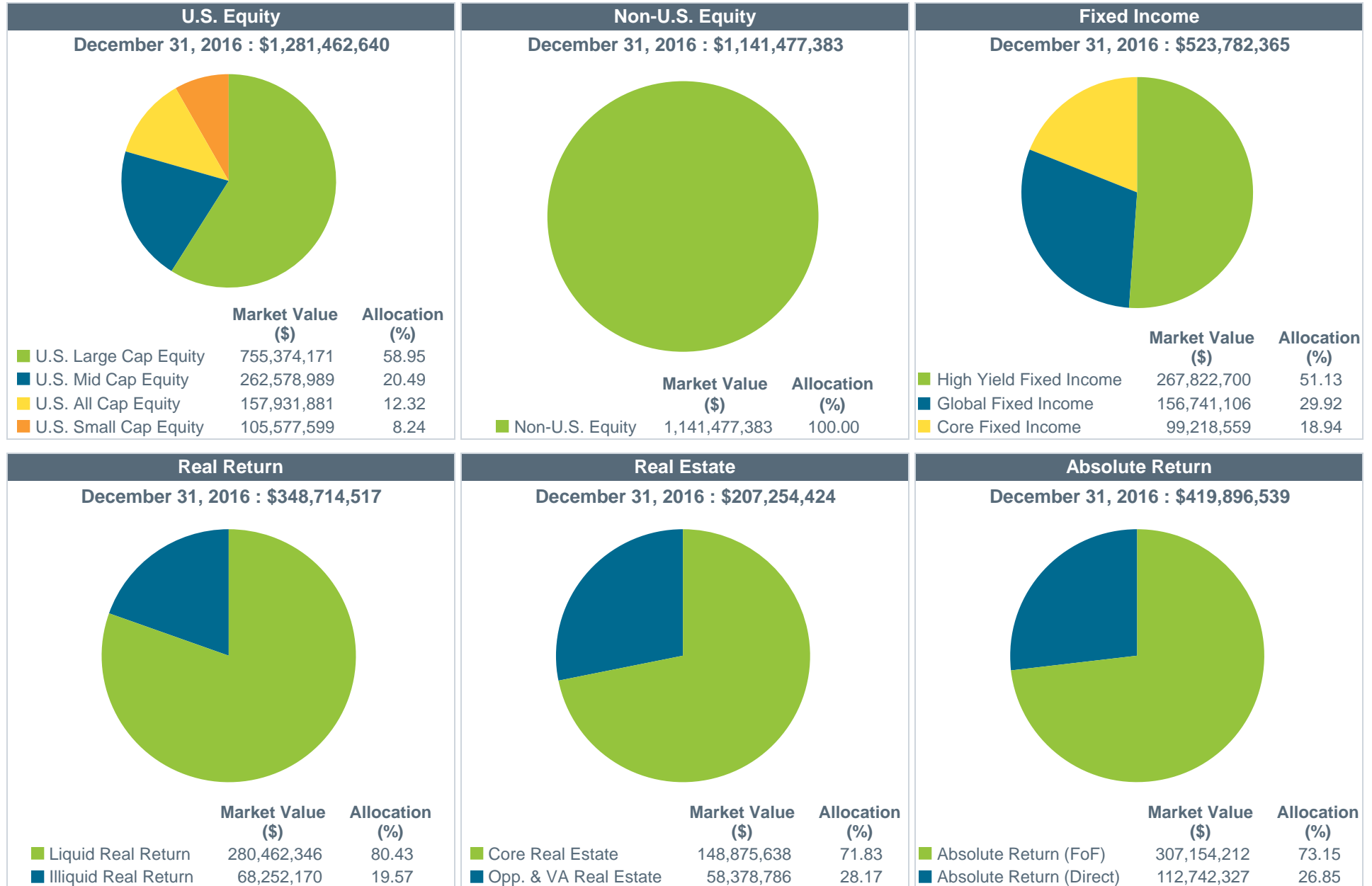
Performance shown is net of fees, except where noted. Calculation is based on quarterly periodicity. Excess return is measured against the BofA ML 3 Mo US T-Bill Index.





Performance shown is net of fees. Composites with less history than the specified time period will not appear in the chart.





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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
River Road Asset Management (SA)	6.78	10.53	20.81	20.81	8.42	13.15	-3.97	9.86	32.64	11.95	07/01/2011
Russell 3000 Val Index	7.24	11.40	18.40	18.40	8.55	14.81	-4.13	12.70	32.69	12.22	
Difference	-0.46	-0.87	2.41	2.41	-0.13	-1.66	0.16	-2.84	-0.05	-0.27	
River Road FAV (SA)	9.10	18.42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18.42	07/01/2016
Russell 3000 Val Index	7.24	11.40	18.40	18.40	8.55	14.81	-4.13	12.70	32.69	11.40	
Difference	1.86	7.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.02	
Westfield Capital (SA)	-0.32	6.25	1.23	1.23	4.03	13.85	-1.42	12.82	39.06	10.24	07/01/2011
Russell 3000 Grth Index	1.20	6.18	7.39	7.39	8.27	14.44	5.09	12.44	34.23	12.10	
Difference	-1.52	0.07	-6.16	-6.16	-4.24	-0.59	-6.51	0.38	4.83	-1.86	
U.S. All Cap Equity Composite	4.39	9.82	10.17	10.17	6.17	13.80	-2.26	11.13	36.25	10.72	07/01/2011
Russell 3000 Index	4.21	8.79	12.74	12.74	8.43	14.67	0.48	12.56	33.55	12.19	
Difference	0.18	1.03	-2.57	-2.57	-2.26	-0.87	-2.74	-1.43	2.70	-1.47	
Scientific Beta	2.75	3.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.86	07/01/2016
S&P 500 Index (Cap Wtd)	3.82	7.82	11.96	11.96	8.87	14.66	1.38	13.69	32.39	7.82	
Difference	-1.07	-3.96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-3.96	
Internal S&P 500 Index (SA)	3.74	7.70	11.65	11.65	8.78	14.57	1.46	13.63	32.27	6.56	07/01/2001
S&P 500 Index (Cap Wtd)*	3.82	7.82	11.96	11.96	8.87	14.66	1.38	13.69	32.39	6.47	
Difference	-0.08	-0.12	-0.31	-0.31	-0.09	-0.09	0.08	-0.06	-0.12	0.09	
U.S. Large Cap Equity Composite	3.60	7.35	12.34	12.34	8.92	N/A	1.53	13.29	N/A	12.34	07/01/2013
Russell 1000 Index	3.83	8.01	12.05	12.05	8.59	14.69	0.92	13.24	33.11	12.21	
Difference	-0.23	-0.66	0.29	0.29	0.33	N/A	0.61	0.05	N/A	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. 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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Internal US Mid Cap (SA)	7.29	11.62	21.10	21.10	N/A	N/A	-2.39	N/A	N/A	10.06	08/01/2014
S&P Mid Cap 400 Index (Cap Wtd)	7.42	11.87	20.74	20.74	9.04	15.33	-2.18	9.77	33.50	10.03	
Difference	-0.13	-0.25	0.36	0.36	N/A	N/A	-0.21	N/A	N/A	0.03	
Systematic Financial Management (SA)	10.45	16.90	20.13	20.13	6.19	N/A	-5.14	5.09	34.70	13.35	07/01/2012
Russell Mid Cap Val Index	5.52	10.22	20.00	20.00	9.45	15.70	-4.78	14.75	33.46	15.65	
Difference	4.93	6.68	0.13	0.13	-3.26	N/A	-0.36	-9.66	1.24	-2.30	
U.S. Mid Cap Equity Composite	8.65	13.68	21.95	21.95	6.39	N/A	-4.74	3.65	N/A	10.79	07/01/2013
S&P Mid Cap 400 Index (Cap Wtd)	7.42	11.87	20.74	20.74	9.04	15.33	-2.18	9.77	33.50	12.51	
Difference	1.23	1.81	1.21	1.21	-2.65	N/A	-2.56	-6.12	N/A	-1.72	
NT Structured Small Cap (SA)	9.06	16.80	21.10	21.10	7.41	15.35	-3.27	5.80	39.24	12.03	07/01/2011
Russell 2000 Index	8.83	18.68	21.31	21.31	6.74	14.46	-4.41	4.89	38.82	10.97	
Difference	0.23	-1.88	-0.21	-0.21	0.67	0.89	1.14	0.91	0.42	1.06	
U.S. Small Cap Equity Composite	8.89	16.59	20.87	20.87	7.36	N/A	-3.34	5.93	N/A	12.05	07/01/2013
Russell 2000 Index	8.83	18.68	21.31	21.31	6.74	14.46	-4.41	4.89	38.82	11.36	
Difference	0.06	-2.09	-0.44	-0.44	0.62	N/A	1.07	1.04	N/A	0.69	
U.S. Equity Composite	5.11	9.50	14.66	14.66	8.06	14.29	-0.48	10.58	33.56	9.43	07/01/1992
Russell 3000 Index (I)*	4.21	8.79	12.74	12.74	8.43	14.67	0.48	12.56	33.55	N/A	
Difference	0.90	0.71	1.92	1.92	-0.37	-0.38	-0.96	-1.98	0.01	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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Lazard Int'l Strategic Equity (SA)	-3.71	0.76	0.20	0.20	N/A	N/A	-0.61	N/A	N/A	-2.88	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-2.51	-4.96	-4.81	-4.81	N/A	N/A	4.64	N/A	N/A	0.94	
LSV Int'l Concentrated Value Equity (SA)	2.31	11.44	6.77	6.77	N/A	N/A	-5.97	N/A	N/A	-3.23	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	3.51	5.72	1.76	1.76	N/A	N/A	-0.72	N/A	N/A	0.59	
BTC ACWI Ex US Fund (CF)	-1.28	5.53	5.44	5.44	-1.47	N/A	-5.62	-3.88	14.68	6.26	06/01/2012
MSCI ACW Ex US Index (USD) (Net)	-1.25	5.57	4.50	4.50	-1.78	5.00	-5.66	-3.87	15.29	6.16	
Difference	-0.03	-0.04	0.94	0.94	0.31	N/A	0.04	-0.01	-0.61	0.10	
American Century Non-US Growth Equity (SA)	-5.42	1.73	-4.42	-4.42	N/A	N/A	-0.89	N/A	N/A	-4.57	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-4.22	-3.99	-9.43	-9.43	N/A	N/A	4.36	N/A	N/A	-0.75	
Franklin Templeton Non-US Equity (SA)	-4.42	3.10	1.12	1.12	N/A	N/A	0.60	N/A	N/A	-2.29	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-3.22	-2.62	-3.89	-3.89	N/A	N/A	5.85	N/A	N/A	1.53	
BTC ACWI Ex US Small Cap Fund (CF)	-3.58	4.18	3.75	3.75	0.84	N/A	2.85	-3.90	N/A	6.15	07/01/2013
MSCI ACW Ex US Sm Cap Index (USD) (Net)	-3.52	4.11	3.91	3.91	0.77	7.74	2.60	-4.03	19.73	5.42	
Difference	-0.06	0.07	-0.16	-0.16	0.07	N/A	0.25	0.13	N/A	0.73	
Non-U.S. Equity Composite	-1.94	5.00	3.97	3.97	-1.32	5.57	-3.46	-4.28	17.94	2.08	04/01/2000
MSCI ACW Ex US Investable Mkt Index (Gross) (I)*	-1.52	5.51	4.91	4.91	-1.36	5.46	-5.25	-3.44	15.78	1.64	
Difference	-0.42	-0.51	-0.94	-0.94	0.04	0.11	1.79	-0.84	2.16	0.44	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
NISA Core Agg Fixed Income (SA)	-3.06	-2.57	2.96	2.96	3.27	2.35	0.77	6.16	-2.12	3.09	07/01/2011
Bloomberg US Agg Bond Index	-2.98	-2.53	2.65	2.65	3.03	2.23	0.55	5.97	-2.02	2.93	
Difference	-0.08	-0.04	0.31	0.31	0.24	0.12	0.22	0.19	-0.10	0.16	
Core Fixed Income Composite	-3.06	-2.58	3.15	3.15	2.45	N/A	0.59	3.63	N/A	2.31	07/01/2013
Bloomberg US Agg Bond Index	-2.98	-2.53	2.65	2.65	3.03	2.23	0.55	5.97	-2.02	2.72	
Difference	-0.08	-0.05	0.50	0.50	-0.58	N/A	0.04	-2.34	N/A	-0.41	
Cerberus KRS Levered Loan Opps, L.P.	2.28	3.87	8.63	8.63	N/A	N/A	9.29	N/A	N/A	8.17	09/01/2014
S&P-LSTA Lvg'd Loan Index	2.26	5.41	10.16	10.16	3.58	5.11	-0.69	1.60	5.29	3.43	
Difference	0.02	-1.54	-1.53	-1.53	N/A	N/A	9.98	N/A	N/A	4.74	
Columbia HY Fixed Income (SA)	0.80	5.44	12.19	12.19	5.36	7.54	-0.17	4.45	6.04	7.48	11/01/2011
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	7.21	
Difference	-0.95	-1.96	-4.94	-4.94	0.70	0.18	4.30	2.00	-1.40	0.27	
Marathon Bluegrass Credit Fund	6.40	11.87	16.88	16.88	N/A	N/A	N/A	N/A	N/A	16.88	01/01/2016
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	17.13	
Difference	4.65	4.47	-0.25	-0.25	N/A	N/A	N/A	N/A	N/A	-0.25	
Shenkman Capital (SA)	1.70	4.74	8.46	8.46	2.16	4.42	-0.38	-1.32	5.61	4.10	07/01/2011
Shenkman Blended Index	2.26	5.41	10.16	10.16	4.05	6.26	-0.69	2.98	6.42	5.54	
Difference	-0.56	-0.67	-1.70	-1.70	-1.89	-1.84	0.31	-4.30	-0.81	-1.44	
Waterfall (SA)	2.85	3.53	7.52	7.52	6.38	9.63	2.82	8.91	12.30	9.84	07/01/2011
Opportunistic FI Blended Index	1.78	5.50	11.22	11.22	3.39	4.99	-2.73	2.16	5.06	4.51	
Difference	1.07	-1.97	-3.70	-3.70	2.99	4.64	5.55	6.75	7.24	5.33	
High Yield Fixed Income Composite	3.30	6.70	11.40	11.40	5.47	N/A	0.56	4.74	N/A	6.21	07/01/2013
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	5.71	
Difference	1.55	-0.70	-5.73	-5.73	0.81	N/A	5.03	2.29	N/A	0.50	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Manulife Asset Mgmt (SA)	-1.26	-0.28	4.38	4.38	2.67	4.39	0.47	3.19	2.78	4.36	12/01/2011
Bloomberg US Unv Bond Index*	-2.61	-1.68	3.91	3.91	0.32	0.70	-3.29	0.48	-2.19	0.83	
Difference	1.35	1.40	0.47	0.47	2.35	3.69	3.76	2.71	4.97	3.53	
Global Fixed Income Composite	-1.26	-0.28	4.37	4.37	2.56	N/A	0.69	2.64	N/A	2.65	07/01/2013
Bloomberg Gbl Agg Bond Index	-7.07	-6.31	2.09	2.09	-0.19	0.21	-3.15	0.59	-2.60	0.50	
Difference	5.81	6.03	2.28	2.28	2.75	N/A	3.84	2.05	N/A	2.15	
Fixed Income Composite	0.65	2.69	8.22	8.22	4.14	4.31	0.53	3.79	-0.33	6.53	07/01/1992
50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (I)*	-0.44	2.78	10.38	10.38	5.38	4.03	0.43	5.56	-1.35	6.48	
Difference	1.09	-0.09	-2.16	-2.16	-1.24	0.28	0.10	-1.77	1.02	0.05	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Internal TIPS (SA)	-1.44	-0.77	4.14	4.14	2.46	1.20	0.26	3.02	-7.78	4.57	10/01/2003
Internal US TIPS Blend	-1.47	-0.91	4.01	4.01	2.02	0.75	-0.52	2.63	-8.61	4.24	
Difference	0.03	0.14	0.13	0.13	0.44	0.45	0.78	0.39	0.83	0.33	
Nuveen Real Asset Income (SA)	-3.48	-0.25	10.16	10.16	N/A	N/A	N/A	N/A	N/A	2.59	02/01/2015
Nuveen Real Asset Custom Index	-3.22	-1.36	8.74	8.74	N/A	N/A	N/A	N/A	N/A	2.47	
Difference	-0.26	1.11	1.42	1.42	N/A	N/A	N/A	N/A	N/A	0.12	
PIMCO:All Asset;Inst (PAAIX)	-2.62	1.13	12.87	12.87	1.47	4.26	-10.43	3.34	-1.66	3.51	12/01/2011
Bloomberg US Trsy Infl Notes: 1-10 Yr Index	-1.47	-0.91	4.01	4.01	1.45	0.70	-0.52	0.91	-5.58	0.65	
Difference	-1.15	2.04	8.86	8.86	0.02	3.56	-9.91	2.43	3.92	2.86	
Tortoise Capital (CF)	2.88	5.37	15.95	15.95	-0.90	7.78	-26.95	14.90	36.32	14.59	08/01/2009
Alerian MLP Index	2.04	3.13	18.31	18.31	-5.80	2.25	-32.59	4.80	27.58	10.12	
Difference	0.84	2.24	-2.36	-2.36	4.90	5.53	5.64	10.10	8.74	4.47	
Amerra Ag Fund II (CF)	-0.29	1.41	3.50	3.50	8.73	N/A	14.34	8.63	0.06	6.36	12/01/2012
Amerra-AGRI Holding (CF)	-0.45	-0.19	0.72	0.72	N/A	N/A	N/A	N/A	N/A	0.26	08/01/2015
BTG Pactual Brazil Timberland Fund I, L.P.	0.56	9.81	-16.19	-16.19	N/A	N/A	-17.41	N/A	N/A	-16.19	12/01/2014
Magnetar MTP Energy Fund, L.P.	3.42	8.53	13.68	13.68	-0.41	N/A	-15.63	2.98	N/A	0.51	07/01/2013
Magnetar MTP EOF II, L.P.	1.66	15.19	-3.75	-3.75	N/A	N/A	N/A	N/A	N/A	-2.66	08/01/2015
Oberland Capital Healthcare, L.P.	-10.88	-9.16	53.70	53.70	N/A	N/A	-27.53	N/A	N/A	3.41	10/01/2014
Taurus Mining Finance Fund	10.04	13.19	31.15	31.15	N/A	N/A	N/A	N/A	N/A	17.09	04/01/2015
Tenaska Power Fund II (CF)	1.96	13.12	-23.28	-23.28	-3.86	-5.37	16.85	-0.88	-16.55	-4.56	10/01/2008
Real Return Composite	-1.44	1.41	9.69	9.69	2.24	2.06	-6.13	3.78	-4.92	3.08	07/01/2011
Real Return Actual Allocation Index (I)*	-1.08	0.37	6.87	6.87	2.06	2.64	-3.56	3.15	2.29	2.70	
Difference	-0.36	1.04	2.82	2.82	0.18	-0.58	-2.57	0.63	-7.21	0.38	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
H/2 Credit Partners (CF)	5.08	7.32	9.16	9.16	5.91	6.90	2.11	6.57	4.51	6.18	07/01/2011
Harrison Street Core (CF)	1.42	4.11	10.09	10.09	9.69	N/A	7.00	12.03	6.81	7.74	05/01/2012
Mesa West Core Lending, L.P.	3.02	4.53	7.91	7.91	6.62	N/A	7.29	4.68	N/A	6.17	05/01/2013
Prologis Targeted U.S. Logistics Fund (CF)	2.93	6.27	13.34	13.34	N/A	N/A	13.54	N/A	N/A	11.86	10/01/2014
Stockbridge SmtMkts, L.P.	2.69	4.29	9.73	9.73	N/A	N/A	11.30	N/A	N/A	9.92	05/01/2014
DivcoWest Fund IV, L.P.	7.13	19.27	38.32	38.32	N/A	N/A	28.79	N/A	N/A	24.03	03/01/2014
Greenfield Acquisition Partners VI, L.P.	0.76	-3.46	0.93	0.93	11.81	N/A	18.77	16.59	11.34	11.44	12/01/2012
Greenfield Acquisition Partners VII, L.P.	0.51	4.44	12.78	12.78	N/A	N/A	15.29	N/A	N/A	10.09	07/01/2014
Lubert Adler Real Estate Fund VII, L.P.	0.00	3.86	4.19	4.19	N/A	N/A	-0.33	N/A	N/A	-8.74	07/01/2014
Patron Capital V, L.P.	-29.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-30.65	08/01/2016
Rubenstein Properties Fund II, L.P.	1.11	1.23	1.34	1.34	17.64	N/A	11.17	44.51	N/A	13.78	07/01/2013
Walton Street Real Estate Fund VI, L.P.	-6.51	-6.27	-3.80	-3.80	8.16	9.50	12.99	16.41	15.24	-22.52	05/01/2009
Walton Street Real Estate Fund VII, L.P.	3.42	5.82	12.32	12.32	14.73	N/A	16.78	15.13	N/A	14.29	07/01/2013
Real Estate Composite	2.38	4.76	9.76	9.76	8.73	9.05	8.99	7.46	8.85	8.85	05/01/2009
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)	1.83	3.77	9.08	9.08	11.42	11.34	13.86	11.36	11.97	5.76	
Difference	0.55	0.99	0.68	0.68	-2.69	-2.29	-4.87	-3.90	-3.12	3.09	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
BAAM (SA)	0.69	3.76	0.72	0.72	4.86	6.80	6.11	7.91	11.51	6.41	09/01/2011
Davidson-Kemper, L.P.	1.42	4.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.05	02/01/2016
PAAMCO (SA)	0.00	-0.01	-1.84	-1.84	-0.06	4.03	-2.05	3.81	14.91	3.64	09/01/2011
Prisma Capital Partners (SA)	1.10	3.59	-0.82	-0.82	1.62	4.45	2.54	3.18	9.75	3.61	09/01/2011
Senator Investment Group, L.P.	-0.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.47	09/01/2016
Tourbillon Global Master Fund, Ltd	-1.87	7.28	-9.75	-9.75	N/A	N/A	N/A	N/A	N/A	-7.87	11/01/2015
Anchorage Capital	1.55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.99	08/01/2016
Blackrock GAO Fund, Ltd (CF)	-5.48	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-5.63	08/01/2016
Coatue Qualified Partners, L.P.	-0.79	4.01	4.18	4.18	N/A	N/A	N/A	N/A	N/A	6.79	07/01/2015
DSAM Fund, L.P.	-2.00	-1.73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-1.84	05/01/2016
Finisterre Global Op	1.30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.41	08/01/2016
Glenview Capital (CF)	2.99	9.37	-3.28	-3.28	N/A	N/A	N/A	N/A	N/A	-5.63	11/01/2015
HBK II (CF)	2.40	3.82	5.35	5.35	2.56	N/A	-1.46	3.93	N/A	2.81	12/01/2013
Knighthood Capital (CF)	7.99	10.11	8.51	8.51	0.95	N/A	-10.22	5.59	N/A	0.95	01/01/2014
LibreMax Capital (CF)	1.55	4.86	2.56	2.56	N/A	N/A	-0.16	N/A	N/A	2.27	08/01/2014
Liquidalts H2O Force (CF)	6.85	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.16	08/01/2016
Luxor Capital (CF)	12.83	17.36	0.85	0.85	N/A	N/A	-16.70	N/A	N/A	-8.16	04/01/2014
Myriad Opportunities	1.51	3.58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.11	05/01/2016
Pine River (CF)	1.42	4.78	0.63	0.63	N/A	N/A	0.09	N/A	N/A	0.46	05/01/2014
QMS Diversified Global Macro (CF)	-9.74	-11.58	-10.69	-10.69	N/A	N/A	N/A	N/A	N/A	-8.63	11/01/2015
Scopia PX, LLC	4.08	6.10	-4.56	-4.56	N/A	N/A	0.92	N/A	N/A	0.26	11/01/2014
Absolute Return Composite	0.96	3.32	-0.26	-0.26	2.09	5.01	1.80	4.80	11.99	3.88	04/01/2010
HFRI FOF: Dvf'd Index (1 Mo Lag)	0.08	1.33	-1.37	-1.37	1.35	3.12	0.79	4.72	8.61	2.41	
Difference	0.88	1.99	1.11	1.11	0.74	1.89	1.01	0.08	3.38	1.47	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Cash Equivalents (SA)	0.13	0.22	0.44	0.44	0.28	0.31	0.21	0.19	0.27	2.72	07/01/1992
Citi 3 Mo T-Bill Index	0.08	0.15	0.27	0.27	0.11	0.09	0.03	0.02	0.06	2.59	
Difference	0.05	0.07	0.17	0.17	0.17	0.22	0.18	0.17	0.21	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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
River Road Asset Management (SA)	6.90	10.74	21.30	21.30	9.00	13.77	-3.47	10.60	33.42	12.54	07/01/2011
Russell 3000 Val Index	7.24	11.40	18.40	18.40	8.55	14.81	-4.13	12.70	32.69	12.22	
Difference	-0.34	-0.66	2.90	2.90	0.45	-1.04	0.66	-2.10	0.73	0.32	
IM U.S. All Cap Value Equity (SA+CF) Median	6.38	11.15	16.27	16.27	7.55	13.82	-3.37	10.01	34.71	11.15	
Rank	42	54	17	17	24	53	51	46	62	26	
River Road FAV (SA)	9.18	18.57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18.57	07/01/2016
Russell 3000 Val Index	7.24	11.40	18.40	18.40	8.55	14.81	-4.13	12.70	32.69	11.40	
Difference	1.94	7.17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.17	
IM U.S. All Cap Value Equity (SA+CF) Median	6.38	11.15	16.27	16.27	7.55	13.82	-3.37	10.01	34.71	11.15	
Rank	16	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5	
Westfield Capital (SA)	-0.20	6.49	1.77	1.77	4.62	14.51	-0.97	13.62	39.90	10.84	07/01/2011
Russell 3000 Grth Index	1.20	6.18	7.39	7.39	8.27	14.44	5.09	12.44	34.23	12.10	
Difference	-1.40	0.31	-5.62	-5.62	-3.65	0.07	-6.06	1.18	5.67	-1.26	
IM U.S. All Cap Growth Equity (SA+CF) Median	-0.37	5.28	3.73	3.73	5.29	12.89	3.32	8.88	35.88	10.03	
Rank	46	35	57	57	60	18	86	21	24	30	
U.S. All Cap Equity Composite	4.52	10.06	10.73	10.73	6.74	14.42	-1.82	11.86	36.97	11.29	07/01/2011
Russell 3000 Index	4.21	8.79	12.74	12.74	8.43	14.67	0.48	12.56	33.55	12.19	
Difference	0.31	1.27	-2.01	-2.01	-1.69	-0.25	-2.30	-0.70	3.42	-0.90	
Scientific Beta	2.75	3.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.86	07/01/2016
S&P 500 Index (Cap Wtd)	3.82	7.82	11.96	11.96	8.87	14.66	1.38	13.69	32.39	7.82	
Difference	-1.07	-3.96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-3.96	
IM U.S. Large Cap Index Equity (SA+CF) Median	3.84	8.03	12.02	12.02	8.64	14.65	0.95	13.29	32.56	8.03	
Rank	81	96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	96	
Internal S&P 500 Index (SA)	3.74	7.70	11.65	11.65	8.78	14.57	1.46	13.64	32.27	6.56	07/01/2001
S&P 500 Index (Cap Wtd)*	3.82	7.82	11.96	11.96	8.87	14.66	1.38	13.69	32.39	6.47	
Difference	-0.08	-0.12	-0.31	-0.31	-0.09	-0.09	0.08	-0.05	-0.12	0.09	
IM U.S. Large Cap Index Equity (SA+CF) Median	3.84	8.03	12.02	12.02	8.64	14.65	0.95	13.29	32.56	6.20	
Rank	75	80	78	78	41	72	23	37	82	24	
U.S. Large Cap Equity Composite	3.60	7.35	12.34	12.34	8.92	N/A	1.53	13.29	N/A	12.34	07/01/2013
Russell 1000 Index	3.83	8.01	12.05	12.05	8.59	14.69	0.92	13.24	33.11	12.21	
Difference	-0.23	-0.66	0.29	0.29	0.33	N/A	0.61	0.05	N/A	0.13	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Internal US Mid Cap (SA)	7.29	11.62	21.10	21.10	N/A	N/A	-2.39	N/A	N/A	10.06	08/01/2014
S&P Mid Cap 400 Index (Cap Wtd)	7.42	11.87	20.74	20.74	9.04	15.33	-2.18	9.77	33.50	10.03	
Difference	-0.13	-0.25	0.36	0.36	N/A	N/A	-0.21	N/A	N/A	0.03	
IM U.S. Mid Cap Equity (SA+CF) Median	3.90	8.75	12.12	12.12	7.13	14.61	-1.19	9.78	36.40	7.20	
Rank	27	34	15	15	N/A	N/A	65	N/A	N/A	20	
Systematic Financial Management (SA)	10.53	17.06	20.55	20.55	6.59	N/A	-4.97	5.69	35.33	13.77	07/01/2012
Russell Mid Cap Val Index	5.52	10.22	20.00	20.00	9.45	15.70	-4.78	14.75	33.46	15.65	
Difference	5.01	6.84	0.55	0.55	-2.86	N/A	-0.19	-9.06	1.87	-1.88	
IM U.S. Mid Cap Value Equity (SA+CF) Median	6.62	12.11	18.22	18.22	8.71	15.58	-3.47	11.86	36.24	15.58	
Rank	12	14	40	40	72	N/A	67	87	56	82	
U.S. Mid Cap Equity Composite	8.70	13.76	22.14	22.14	6.64	N/A	-4.64	4.11	N/A	11.10	07/01/2013
S&P Mid Cap 400 Index (Cap Wtd)	7.42	11.87	20.74	20.74	9.04	15.33	-2.18	9.77	33.50	12.51	
Difference	1.28	1.89	1.40	1.40	-2.40	N/A	-2.46	-5.66	N/A	-1.41	
NT Structured Small Cap (SA)	9.05	16.83	21.22	21.22	7.54	15.49	-3.15	5.92	39.43	12.15	07/01/2011
Russell 2000 Index	8.83	18.68	21.31	21.31	6.74	14.46	-4.41	4.89	38.82	10.97	
Difference	0.22	-1.85	-0.09	-0.09	0.80	1.03	1.26	1.03	0.61	1.18	
IM U.S. Small Cap Core Equity (SA+CF) Median	9.70	17.92	20.73	20.73	8.51	16.17	-1.39	6.54	41.28	12.69	
Rank	60	62	47	47	64	62	72	56	67	61	
U.S. Small Cap Equity Composite	8.89	16.63	21.00	21.00	7.48	N/A	-3.22	6.04	N/A	12.17	07/01/2013
Russell 2000 Index	8.83	18.68	21.31	21.31	6.74	14.46	-4.41	4.89	38.82	11.36	
Difference	0.06	-2.05	-0.31	-0.31	0.74	N/A	1.19	1.15	N/A	0.81	
U.S. Equity Composite	5.13	9.55	14.76	14.76	8.17	14.43	-0.40	10.75	33.78	9.45	07/01/1992
Russell 3000 Index (I)*	4.21	8.79	12.74	12.74	8.43	14.67	0.48	12.56	33.55	N/A	
Difference	0.92	0.76	2.02	2.02	-0.26	-0.24	-0.88	-1.81	0.23	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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Lazard Int'l Strategic Equity (SA)	-3.65	0.89	0.44	0.44	N/A	N/A	-0.42	N/A	N/A	-2.57	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-2.45	-4.83	-4.57	-4.57	N/A	N/A	4.83	N/A	N/A	1.25	
IM International Value Equity (SA+CF) Median	-0.36	7.13	3.92	3.92	-0.10	7.68	-1.00	-4.25	23.80	-2.30	
Rank	87	88	84	84	N/A	N/A	44	N/A	N/A	55	
LSV Int'l Concentrated Value Equity (SA)	2.46	11.76	7.32	7.32	N/A	N/A	-5.50	N/A	N/A	-2.65	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	3.66	6.04	2.31	2.31	N/A	N/A	-0.25	N/A	N/A	1.17	
IM International Value Equity (SA+CF) Median	-0.36	7.13	3.92	3.92	-0.10	7.68	-1.00	-4.25	23.80	-2.30	
Rank	12	12	23	23	N/A	N/A	88	N/A	N/A	57	
BTC ACWI Ex US Fund (CF)	-1.25	5.57	5.51	5.51	-1.43	N/A	-5.63	-3.83	14.73	6.29	06/01/2012
MSCI ACW Ex US Index (USD) (Net)	-1.25	5.57	4.50	4.50	-1.78	5.00	-5.66	-3.87	15.29	6.16	
Difference	0.00	0.00	1.01	1.01	0.35	N/A	0.03	0.04	-0.56	0.13	
IM International Core Equity (SA+CF) Median	-2.21	5.03	1.35	1.35	-0.24	7.97	1.14	-3.53	23.99	9.14	
Rank	36	43	14	14	71	N/A	94	55	97	91	
American Century Non-US Growth Equity (SA)	-5.31	1.94	-4.01	-4.01	N/A	N/A	-0.56	N/A	N/A	-4.18	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-4.11	-3.78	-9.02	-9.02	N/A	N/A	4.69	N/A	N/A	-0.36	
IM International Growth Equity (SA+CF) Median	-4.35	2.14	-0.39	-0.39	-0.02	7.51	3.24	-3.37	22.89	-1.83	
Rank	66	53	79	79	N/A	N/A	84	N/A	N/A	87	
Franklin Templeton Non-US Equity (SA)	-4.30	3.35	1.59	1.59	N/A	N/A	0.95	N/A	N/A	-1.84	07/01/2014
MSCI ACW Ex US Index (USD) (Gross)	-1.20	5.72	5.01	5.01	-1.32	5.48	-5.25	-3.44	15.78	-3.82	
Difference	-3.10	-2.37	-3.42	-3.42	N/A	N/A	6.20	N/A	N/A	1.98	
IM International Growth Equity (SA+CF) Median	-4.35	2.14	-0.39	-0.39	-0.02	7.51	3.24	-3.37	22.89	-1.83	
Rank	50	37	29	29	N/A	N/A	72	N/A	N/A	51	
BTC ACWI Ex US Small Cap Fund (CF)	-3.52	4.27	3.90	3.90	0.97	N/A	2.97	-3.79	N/A	6.28	07/01/2013
MSCI ACW Ex US Sm Cap Index (USD) (Net)	-3.52	4.11	3.91	3.91	0.77	7.74	2.60	-4.03	19.73	5.42	
Difference	0.00	0.16	-0.01	-0.01	0.20	N/A	0.37	0.24	N/A	0.86	
IM International Small Cap Equity (SA+CF) Median	-3.76	4.50	1.19	1.19	2.50	11.54	10.39	-3.38	31.13	8.03	
Rank	47	54	34	34	76	N/A	88	56	N/A	70	
Non-U.S. Equity Composite	-1.87	5.14	4.25	4.25	-1.08	5.84	-3.27	-4.02	18.22	2.15	04/01/2000
MSCI ACW Ex US Investable Mkt Index (Gross) (I)*	-1.52	5.51	4.91	4.91	-1.36	5.46	-5.25	-3.44	15.78	1.64	
Difference	-0.35	-0.37	-0.66	-0.66	0.28	0.38	1.98	-0.58	2.44	0.51	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
NISA Core Agg Fixed Income (SA)	-3.02	-2.49	3.27	3.27	3.47	2.53	0.83	6.38	-1.95	3.27	07/01/2011
Bloomberg US Agg Bond Index	-2.98	-2.53	2.65	2.65	3.03	2.23	0.55	5.97	-2.02	2.93	
Difference	-0.04	0.04	0.62	0.62	0.44	0.30	0.28	0.41	0.07	0.34	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-2.81	-2.19	3.10	3.10	3.34	2.82	0.82	6.14	-1.56	3.42	
Rank	83	72	45	45	39	71	48	37	71	62	
Core Fixed Income Composite	-3.02	-2.50	3.29	3.29	2.62	N/A	0.68	3.91	N/A	2.49	07/01/2013
Bloomberg US Agg Bond Index	-2.98	-2.53	2.65	2.65	3.03	2.23	0.55	5.97	-2.02	2.72	
Difference	-0.04	0.03	0.64	0.64	-0.41	N/A	0.13	-2.06	N/A	-0.23	
Cerberus KRS Levered Loan Opps, L.P.	3.17	5.57	12.01	12.01	N/A	N/A	13.09	N/A	N/A	11.22	09/01/2014
S&P-LSTA Lvg'd Loan Index	2.26	5.41	10.16	10.16	3.58	5.11	-0.69	1.60	5.29	3.43	
Difference	0.91	0.16	1.85	1.85	N/A	N/A	13.78	N/A	N/A	7.79	
IM U.S. High Yield Bonds (SA+CF) Median	1.58	6.59	14.06	14.06	4.45	7.13	-2.21	2.61	7.50	3.28	
Rank	10	73	71	71	N/A	N/A	1	N/A	N/A	1	
Columbia HY Fixed Income (SA)	0.89	5.62	12.59	12.59	5.74	7.96	0.16	4.84	6.60	7.89	11/01/2011
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	7.21	
Difference	-0.86	-1.78	-4.54	-4.54	1.08	0.60	4.63	2.39	-0.84	0.68	
IM U.S. High Yield Bonds (SA+CF) Median	1.58	6.59	14.06	14.06	4.45	7.13	-2.21	2.61	7.50	7.10	
Rank	87	72	67	67	11	24	17	9	71	20	
Marathon Bluegrass Credit Fund	8.02	14.54	20.78	20.78	N/A	N/A	N/A	N/A	N/A	20.78	01/01/2016
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	17.13	
Difference	6.27	7.14	3.65	3.65	N/A	N/A	N/A	N/A	N/A	3.65	
IM U.S. High Yield Bonds (SA+CF) Median	1.58	6.59	14.06	14.06	4.45	7.13	-2.21	2.61	7.50	14.06	
Rank	2	2	4	4	N/A	N/A	N/A	N/A	N/A	4	
Shenkman Capital (SA)	1.82	5.00	9.00	9.00	2.67	4.94	0.12	-0.83	6.12	4.59	07/01/2011
Shenkman Blended Index	2.26	5.41	10.16	10.16	4.05	6.26	-0.69	2.98	6.42	5.54	
Difference	-0.44	-0.41	-1.16	-1.16	-1.38	-1.32	0.81	-3.81	-0.30	-0.95	
Waterfall (SA)	2.99	3.82	8.11	8.11	7.51	10.99	3.82	10.73	14.94	11.08	07/01/2011
Opportunistic FI Blended Index	1.78	5.50	11.22	11.22	3.39	4.99	-2.73	2.16	5.06	4.51	
Difference	1.21	-1.68	-3.11	-3.11	4.12	6.00	6.55	8.57	9.88	6.57	
High Yield Fixed Income Composite	4.00	7.91	13.39	13.39	6.69	N/A	1.54	5.48	N/A	7.35	07/01/2013
Bloomberg US Corp: Hi Yld Index	1.75	7.40	17.13	17.13	4.66	7.36	-4.47	2.45	7.44	5.71	
Difference	2.25	0.51	-3.74	-3.74	2.03	N/A	6.01	3.03	N/A	1.64	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Manulife Asset Mgmt (SA)	-1.20	-0.16	4.63	4.63	2.94	4.68	0.73	3.51	3.12	4.65	12/01/2011
Bloomberg US Unv Bond Index*	-2.61	-1.68	3.91	3.91	0.32	0.70	-3.29	0.48	-2.19	0.83	
Difference	1.41	1.52	0.72	0.72	2.62	3.98	4.02	3.03	5.31	3.82	
Global Fixed Income Composite	-1.20	-0.16	4.62	4.62	2.77	N/A	0.90	2.83	N/A	2.86	07/01/2013
Bloomberg Gbl Agg Bond Index	-7.07	-6.31	2.09	2.09	-0.19	0.21	-3.15	0.59	-2.60	0.50	
Difference	5.87	6.15	2.53	2.53	2.96	N/A	4.05	2.24	N/A	2.36	
Fixed Income Composite	1.02	3.31	9.24	9.24	4.71	4.80	0.88	4.18	0.08	6.65	07/01/1992
50/50 Bloomberg US Unv Bond/US Corp: Hi Yld Index (I)*	-0.44	2.78	10.38	10.38	5.38	4.03	0.43	5.56	-1.35	6.48	
Difference	1.46	0.53	-1.14	-1.14	-0.67	0.77	0.45	-1.38	1.43	0.17	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Internal TIPS (SA)	-1.44	-0.77	4.14	4.14	2.48	1.22	0.26	3.08	-7.73	4.58	10/01/2003
Internal US TIPS Blend	-1.47	-0.91	4.01	4.01	2.02	0.75	-0.52	2.63	-8.61	4.24	
Difference	0.03	0.14	0.13	0.13	0.46	0.47	0.78	0.45	0.88	0.34	
IM U.S. TIPS (SA+CF) Median	-2.38	-1.35	4.67	4.67	2.26	0.93	-1.40	3.57	-8.24	4.37	
Rank	14	19	80	80	20	24	1	67	36	19	
Nuveen Real Asset Income (SA)	-3.29	0.11	10.90	10.90	N/A	N/A	N/A	N/A	N/A	3.30	02/01/2015
Nuveen Real Asset Custom Index	-3.22	-1.36	8.74	8.74	N/A	N/A	N/A	N/A	N/A	2.47	
Difference	-0.07	1.47	2.16	2.16	N/A	N/A	N/A	N/A	N/A	0.83	
PIMCO:All Asset;Inst (PAAIX)	-2.62	1.13	12.87	12.87	1.47	4.26	-10.43	3.34	-1.66	3.51	12/01/2011
Bloomberg US Trsy Infl Notes: 1-10 Yr Index	-1.47	-0.91	4.01	4.01	1.45	0.70	-0.52	0.91	-5.58	0.65	
Difference	-1.15	2.04	8.86	8.86	0.02	3.56	-9.91	2.43	3.92	2.86	
Tortoise Capital (CF)	3.04	5.70	16.67	16.67	-0.28	8.54	-26.68	15.93	37.66	15.17	08/01/2009
Alerian MLP Index	2.04	3.13	18.31	18.31	-5.80	2.25	-32.59	4.80	27.58	10.12	
Difference	1.00	2.57	-1.64	-1.64	5.52	6.29	5.91	11.13	10.08	5.05	
Amerra Ag Fund II (CF)	0.06	2.53	5.92	5.92	12.35	N/A	21.01	10.65	1.14	9.24	12/01/2012
Amerra-AGRI Holding (CF)	0.50	1.41	4.01	4.01	N/A	N/A	N/A	N/A	N/A	3.13	08/01/2015
BTG Pactual Brazil Timberland Fund I, L.P.	1.59	12.67	-10.08	-10.08	N/A	N/A	-11.97	N/A	N/A	-10.61	12/01/2014
Magnetar MTP Energy Fund, L.P.	3.81	9.35	15.27	15.27	0.05	N/A	-15.63	2.98	N/A	0.90	07/01/2013
Magnetar MTP EOF II, L.P.	1.95	15.86	-2.78	-2.78	N/A	N/A	N/A	N/A	N/A	-1.97	08/01/2015
Oberland Capital Healthcare, L.P.	-8.46	-2.05	93.64	93.64	N/A	N/A	14.09	N/A	N/A	40.20	10/01/2014
Taurus Mining Finance Fund	11.71	16.95	41.30	41.30	N/A	N/A	N/A	N/A	N/A	24.58	04/01/2015
Tenaska Power Fund II (CF)	2.07	13.38	-21.75	-21.75	-2.74	-4.57	18.41	-0.69	-15.95	-3.19	10/01/2008
Real Return Composite	-1.26	1.79	10.51	10.51	2.76	2.40	-5.53	3.94	-4.82	3.40	07/01/2011
Real Return Actual Allocation Index (I)*	-1.08	0.37	6.87	6.87	2.06	2.64	-3.56	3.15	2.29	2.70	
Difference	-0.18	1.42	3.64	3.64	0.70	-0.24	-1.97	0.79	-7.11	0.70	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
H/2 Credit Partners (CF)	5.08	7.32	9.16	9.16	5.91	6.90	2.11	6.57	4.51	6.18	07/01/2011
Harrison Street Core (CF)	1.62	4.52	10.98	10.98	10.19	N/A	7.61	12.03	6.81	8.06	05/01/2012
Mesa West Core Lending, L.P.	3.23	4.95	8.79	8.79	7.43	N/A	8.10	5.45	N/A	6.89	05/01/2013
Prologis Targeted U.S. Logistics Fund (CF)	3.07	6.62	14.35	14.35	N/A	N/A	14.32	N/A	N/A	12.65	10/01/2014
Stockbridge SmtMkts, L.P.	2.91	4.75	10.69	10.69	N/A	N/A	11.78	N/A	N/A	10.46	05/01/2014
DivcoWest Fund IV, L.P.	9.28	25.07	49.87	49.87	N/A	N/A	38.42	N/A	N/A	31.78	03/01/2014
Greenfield Acquisition Partners VI, L.P.	1.19	-3.85	0.43	0.43	14.06	N/A	24.88	18.30	12.15	13.28	12/01/2012
Greenfield Acquisition Partners VII, L.P.	0.78	5.95	17.17	17.17	N/A	N/A	19.62	N/A	N/A	14.31	07/01/2014
Lubert Adler Real Estate Fund VII, L.P.	0.36	4.72	6.37	6.37	N/A	N/A	4.60	N/A	N/A	-1.45	07/01/2014
Patron Capital V, L.P.	-29.19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-30.65	08/01/2016
Rubenstein Properties Fund II, L.P.	1.72	2.47	7.61	7.61	23.43	N/A	16.23	50.33	N/A	18.56	07/01/2013
Walton Street Real Estate Fund VI, L.P.	-6.17	-5.63	-2.54	-2.54	9.61	10.54	14.49	18.01	16.08	-22.03	05/01/2009
Walton Street Real Estate Fund VII, L.P.	3.90	6.79	14.25	14.25	16.48	N/A	18.34	16.89	N/A	16.08	07/01/2013
Real Estate Composite	2.66	5.38	11.25	11.25	9.93	9.81	10.49	8.07	9.02	9.34	05/01/2009
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)	1.83	3.77	9.08	9.08	11.42	11.34	13.86	11.36	11.97	5.76	
Difference	0.83	1.61	2.17	2.17	-1.49	-1.53	-3.37	-3.29	-2.95	3.58	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
BAAM (SA)	0.85	4.07	1.28	1.28	5.12	6.96	6.30	7.91	11.51	6.55	09/01/2011
Davidson-Kemper, L.P.	1.73	5.88	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.50	02/01/2016
PAAMCO (SA)	0.00	-0.01	-1.84	-1.84	-0.06	4.03	-2.05	3.81	14.91	3.64	09/01/2011
Prisma Capital Partners (SA)	1.24	3.92	-0.30	-0.30	1.73	4.52	2.32	3.18	9.75	3.67	09/01/2011
Senator Investment Group, L.P.	0.23	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.09	09/01/2016
Tourbillon Global Master Fund, Ltd	-1.45	8.19	-8.30	-8.30	N/A	N/A	N/A	N/A	N/A	-6.34	11/01/2015
Anchorage Capital	2.12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.18	08/01/2016
Blackrock GAO Fund, Ltd (CF)	-5.60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-5.34	08/01/2016
Coatue Qualified Partners, L.P.	-0.42	4.79	7.09	7.09	N/A	N/A	N/A	N/A	N/A	9.59	07/01/2015
DSAM Fund, L.P.	-1.79	-1.02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-0.80	05/01/2016
Finisterre Global Op	2.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.96	08/01/2016
Glenview Capital (CF)	3.33	10.44	-1.30	-1.30	N/A	N/A	N/A	N/A	N/A	-3.70	11/01/2015
HBK II (CF)	3.40	5.72	8.33	8.33	3.55	N/A	-1.38	3.93	N/A	3.77	12/01/2013
Knighthood Capital (CF)	8.51	11.20	10.50	10.50	1.56	N/A	-10.22	5.59	N/A	1.56	01/01/2014
LibreMax Capital (CF)	2.57	6.44	5.62	5.62	N/A	N/A	-0.16	N/A	N/A	3.52	08/01/2014
Liquidalts H2O Force (CF)	8.71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.93	08/01/2016
Luxor Capital (CF)	13.13	18.04	2.22	2.22	N/A	N/A	-15.99	N/A	N/A	-7.42	04/01/2014
Myriad Opportunities	3.53	8.70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.25	05/01/2016
Pine River (CF)	1.80	5.57	2.02	2.02	N/A	N/A	0.88	N/A	N/A	1.28	05/01/2014
QMS Diversified Global Macro (CF)	-9.81	-10.88	-9.63	-9.63	N/A	N/A	N/A	N/A	N/A	-7.42	11/01/2015
Scopia PX, LLC	4.46	6.88	-3.00	-3.00	N/A	N/A	1.74	N/A	N/A	1.39	11/01/2014
Absolute Return Composite	1.26	3.99	0.70	0.70	2.43	5.22	1.84	4.80	11.99	4.04	04/01/2010
HFRI FOF: Dv'd Index (1 Mo Lag)	0.11	1.37	-1.34	-1.34	1.36	3.13	0.79	4.72	8.61	2.41	
Difference	1.15	2.62	2.04	2.04	1.07	2.09	1.05	0.08	3.38	1.63	

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 December 31, 2016

	QTD	FYTD	CYTD	1 Year	3 Years	5 Years	2015	2014	2013	Since Incep.	Inception Date
Cash Equivalents (SA)	0.13	0.22	0.44	0.44	0.28	0.31	0.21	0.19	0.27	2.72	07/01/1992
Citi 3 Mo T-Bill Index	0.08	0.15	0.27	0.27	0.11	0.09	0.03	0.02	0.06	2.59	
Difference	0.05	0.07	0.17	0.17	0.17	0.22	0.18	0.17	0.21	0.13	

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

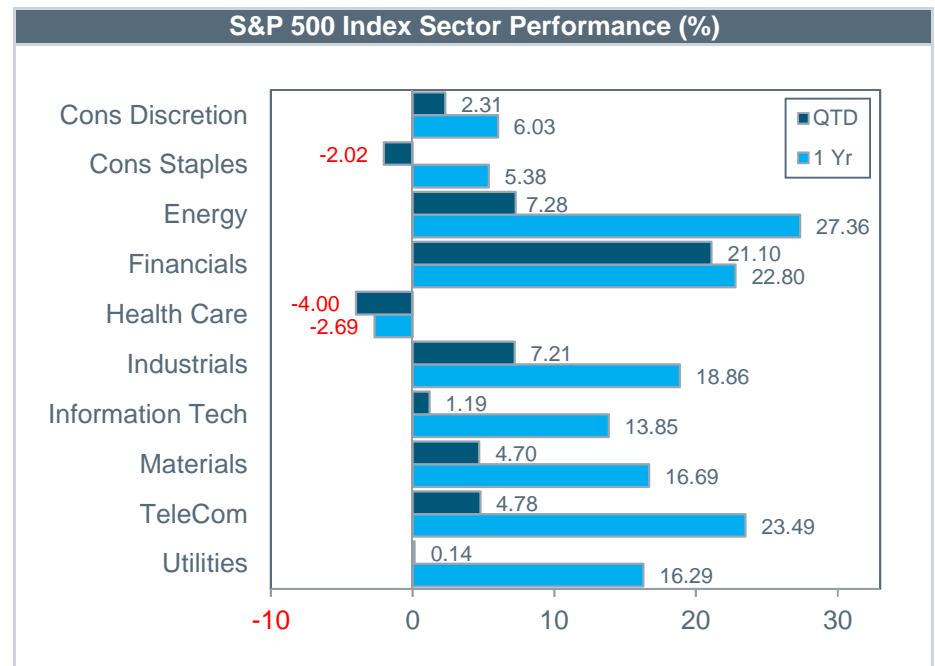
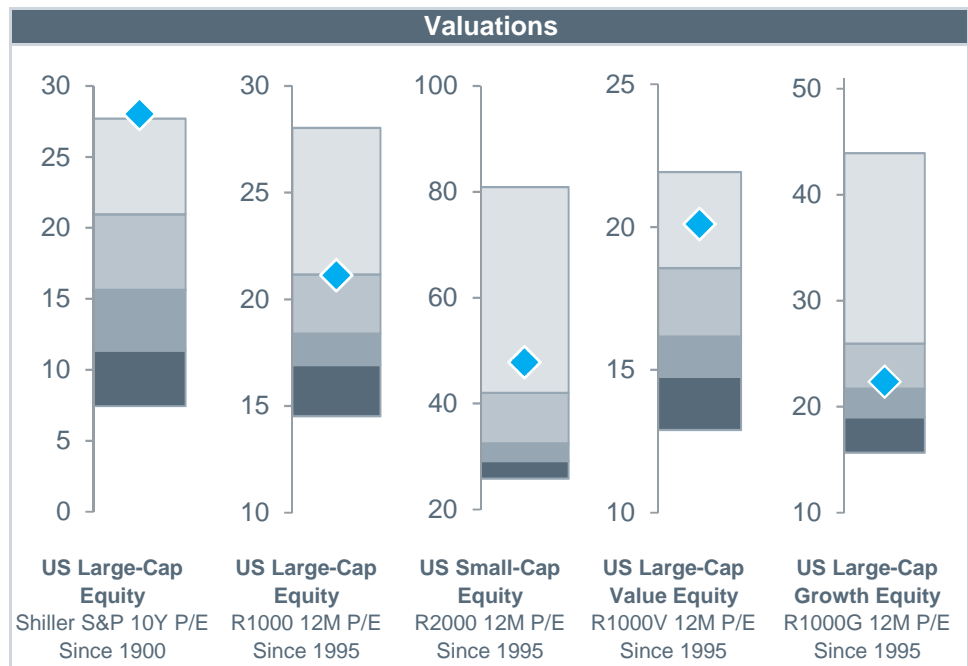
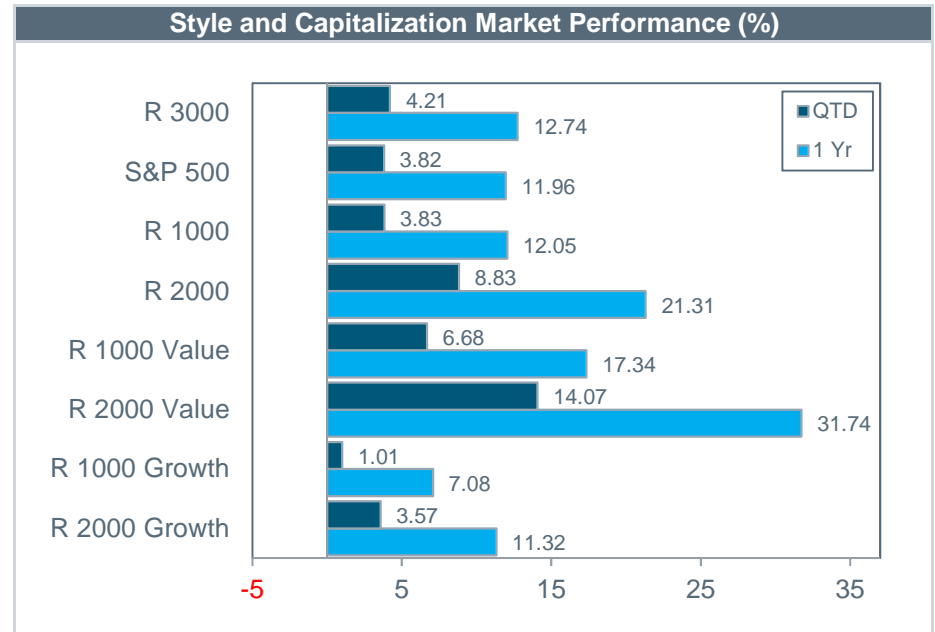
Performance for the NCREIF ODCE Index (Net) (AWA) is lagged by one quarter and available quarterly; interim month returns assume a 0.00% return.

Fourth Quarter Review

Broad Market
 US equity markets started the fourth quarter with a slight decline, fueled largely by uncertainty surrounding the presidential election. However, results swiftly shifted post-election, and all major US equity indices finished the quarter and year in positive territory, with the Russell 3000 Index returning 4.2% and 12.7%, respectively.

Market Cap
 While all major indices finished the quarter in positive territory, small cap led the way with the Russell 2000 returning 21.3% compared with 12.1% for the Russell 1000.

Style and Sector
 Value stocks outperformed growth across all market caps in 2016. Post-election, several sectors finished the year with a strong rally including: Consumer Discretionary (14.5%), Energy (28.0%), Financials (20.4%), and Producer Durables (18.2%).



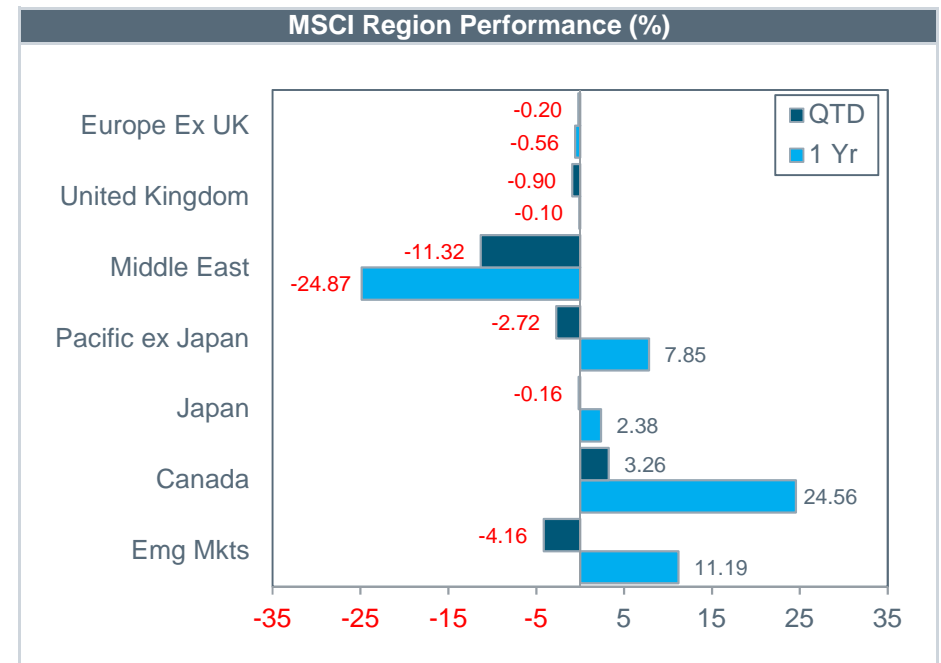
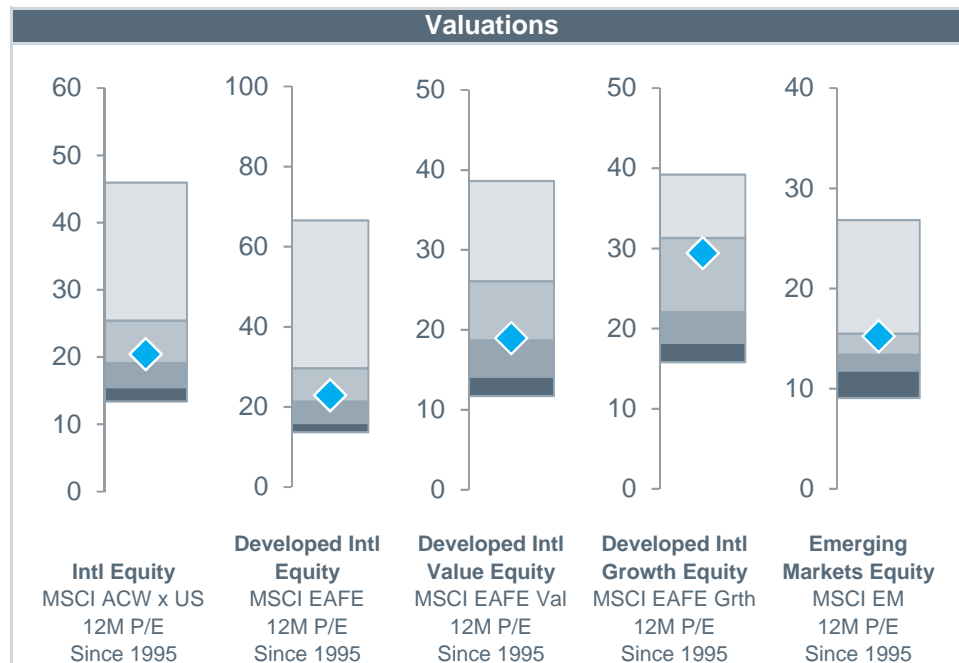
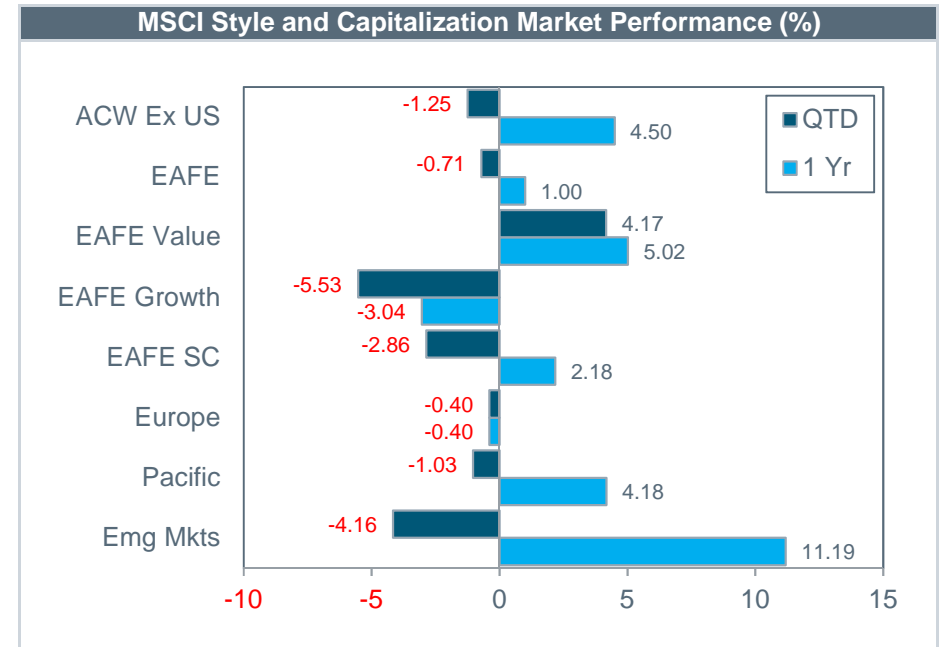
Valuation data courtesy of Bloomberg Professional Service and Robert J. Shiller, Irrational Exuberance, Second Edition. P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers.

Fourth Quarter Review

Developed Markets
 Developed international markets ended the quarter slightly negative, but were positive for the year. Cyclical sectors, such as financials and energy, provided positive contributions for the quarter. By country, there were few bright spots, with only a few European countries posting positive returns in Q4.

Emerging Markets
 Emerging Markets underperformed developed markets by a significant margin for the quarter. Year-end returns remained strong, but lagged US equities. Poor performance in emerging markets this quarter stemmed from fears that stimulus programs in the US could lead to higher bond yields and a stronger dollar, which may draw significant capital to the currency.

Market Cap & Style
 Value stocks outperformed growth stocks for both the quarter and year while small-cap lagged large-cap for the quarter, but outperformed for the year.



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.



Fourth Quarter Review

Broad Market

Recent and anticipated interest rate hikes negatively affected bond market returns for the quarter. The Bloomberg Barclays US Aggregate Bond Index ended the year with a return of 2.7% after returning -3.0% during Q4. Long duration government bonds, which are particularly sensitive to interest rate movements, returned -11.5% for the quarter and ended the year with a return of 1.4% as measured by the Bloomberg Barclays Long US Government Index.

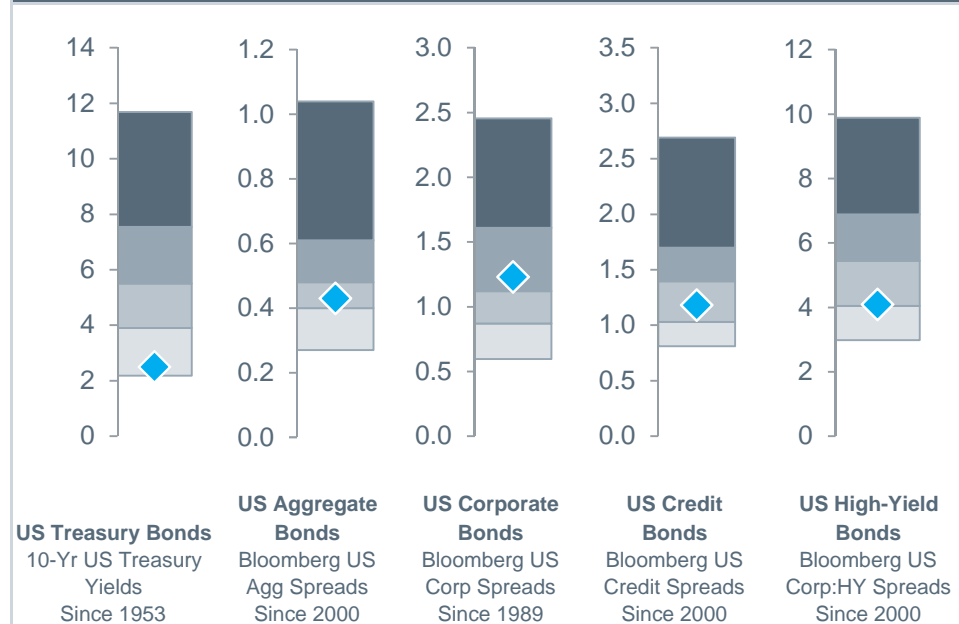
Credit Market

Investment grade and high yield credit spreads compressed during the quarter as investors' increased their appetite for credit. The BofAML US High Yield Index returned 17.5% for the quarter – its best return since 2009.

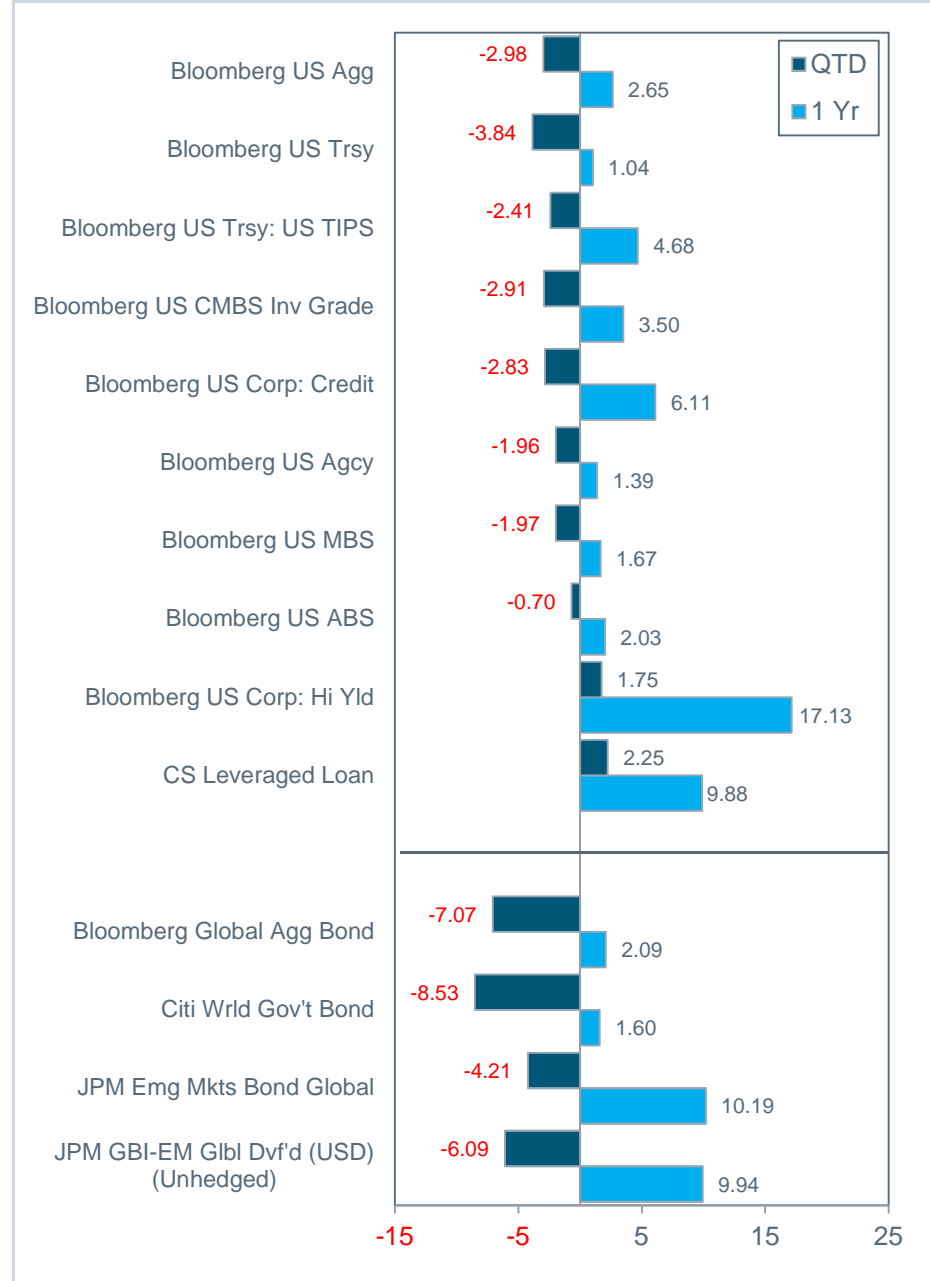
International

Foreign debt from both developed and emerging markets declined significantly during the quarter as the US dollar strengthened. The sharpest decline occurred immediately following the US presidential election.

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.

Fourth Quarter Review - Absolute Return

General Market - Hedge Funds

The fourth quarter wrapped up a mixed year for the hedge fund industry. Individual hedged equity managers had another difficult quarter from an alpha perspective, with early reports indicating the second worst quarter of alpha generation since 2010, in part due to sector rotations out of technology, consumer, and health care following the November elections. Poor performance from short books was a main detractor for many managers that delivered disappointing alpha and absolute returns. The best performing strategies for the year continued to be in the distressed/restructuring space.

General Market - Global Tactical Asset Allocation (GTAA)

Most GTAA managers underperformed an undiversified and static 60/40 portfolio of US large cap equity and US fixed income. Managers that focus on lower-volatility and low correlation alpha provided the strongest performance for the quarter, as long dollar, short US duration, and credit positions were rewarded in a welcome break from a challenging year for these managers.

Fourth Quarter Review - Real Assets

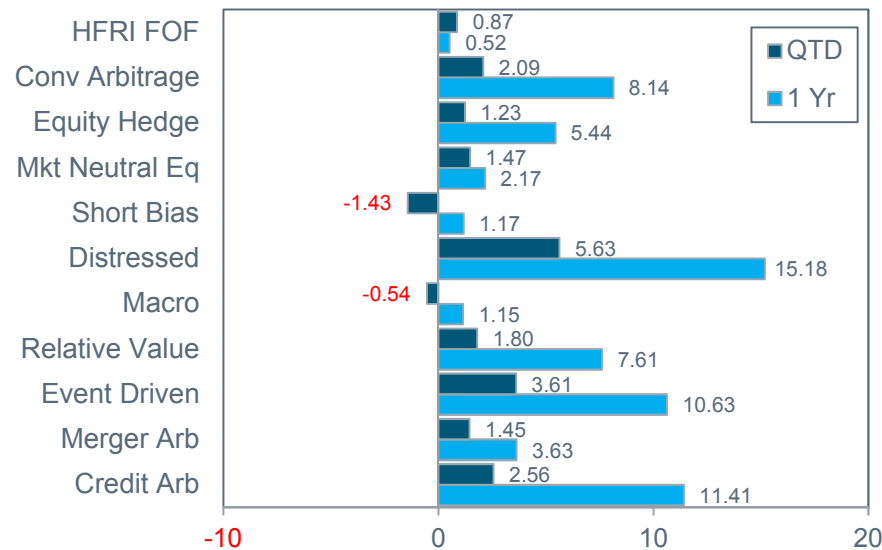
General Market - Diversified Inflation Strategies (DIS)

While most managers ended the year in positive territory, the fourth quarter proved challenging due to macroeconomic events. Managers with larger energy commodity exposure and natural resource equity exposure led the group during both the quarter and year. Managers with larger infrastructure and REIT allocations posted negative performance during the quarter as these asset classes initially appeared correlated with increased bond yields. Those that structurally allocate to TIPS at the expense of REITs, infrastructure, and natural resource equity ended the quarter at the approximate midpoint of the group.

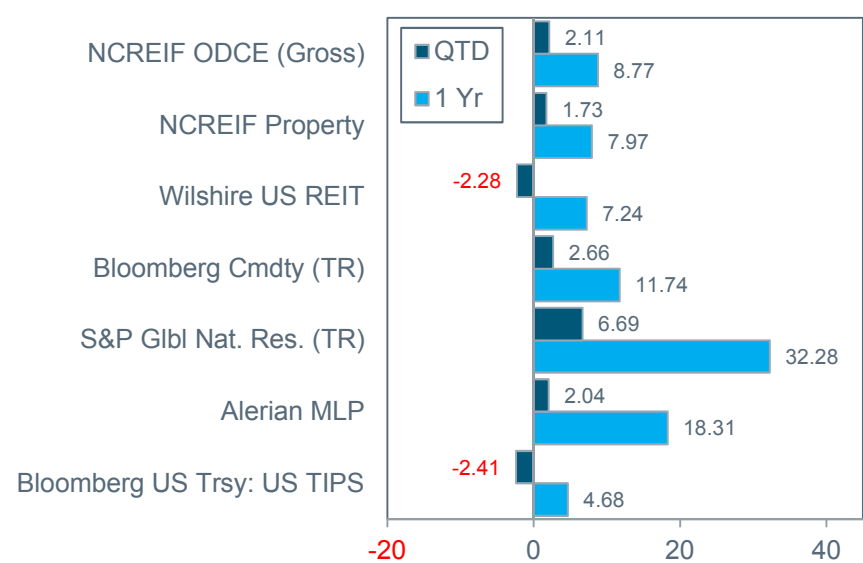
General Market - Real Estate

Investors responded to recent US political events and interest rate increases by selling off REITs, as evidenced by the -3.5% return in the FTSE/NAREIT US Real Estate Index during the quarter. The NCREIF-ODCE Index returned 2.1% for the quarter based on preliminary results, with a nearly equal share of returns deriving from income and appreciation.

HFRI Hedge Fund Performance (%)



Real Asset Performance (%)



Annual Asset Class Performance

As of December 31, 2016

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Best	25.91	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
	16.56	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
	14.84	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
	10.27	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
	5.54	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
	3.58	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
	1.78	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
	1.02	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
	-1.37	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
	-6.17	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
	-7.83	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
	-15.94	5.88	6.86	2.84	2.72	1.45	-43.38	1.92	6.31	-13.32	4.21	-8.61	-4.30	-4.47	1.00
	-20.48	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	0.52
Worst	-22.10	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
	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 December 31, 2016

- 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.

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.

Knighthead 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 December 31, 2016

<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. 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 December 31, 2016

<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		
25.60% Russell 3000 Index	1/1/2016	
25.20% MSCI ACW Ex US Investable Market Index (Gross)		
6.80% Bloomberg US Univ Bond Index		
7.20% Bloomberg US Corp HY Index		
8.00% 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		
2.20% Citi 3 Mo T-Bill Index		

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

As of December 31, 2016

<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 December 31, 2016

<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	
	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 December 31, 2016

<u>Composite/Manager</u>	<u>Benchmark</u>	<u>Since</u>	
Total Fund Target Allocation Index (I) (Cont.)	20.00% R 3000 Index	11/1/2013	
	20.00% MSCI ACW Ex US Index (Gross)		
	4.00% MSCI Emerging Markets Index (Gross)		
	20.00% Barclays Universal Bond Index		
	10.00% 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		
	26.50% Russell 3000 Index		1/1/2016
	26.50% MSCI ACW Ex US Investable Market Index (Gross)		
	6.00% Bloomberg US Univ Bond Index		
	6.00% Bloomberg US Corp HY Index		
	8.00% 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			
2.00% Citi 3 Mo T-Bill Index			

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

As of December 31, 2016

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



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

As of December 31, 2016

<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
	100.00% MSCI ACW Ex US Investable Market Index (Gross)	1/1/2016
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 December 31, 2016

<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
	100.00% MSCI ACW Ex US Investable Market Index (Gross)	1/1/2016
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
	50.00% Bloomberg US Unv Bond Index	
	50.00% Bloomberg US Corp: Hi Yld Index	1/1/2016
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
	50.00% Bloomberg US Unv Bond Index	
	50.00% Bloomberg US Corp: Hi Yld Index	1/1/2016
Real Estate Composite (P) & Real Estate Composite (I)	The custom index is calculated monthly and consists of:	
	100.00% NCREIF ODCE Index (AWA) (Net) (Qtr Lag)	Inception
Real Return Actual Allocation Index (P) & Real Return Actual Allocation Index (I)	The custom index is calculated monthly and consists of:	
	100.00% Consumer Price Index + 3%	Inception
	100.00% Real Return Actual Allocation Index	11/1/2013

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

As of December 31, 2016

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

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

As of December 31, 2016

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

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

As of December 31, 2016

<u>Composite/Manager</u>	<u>Benchmark</u>	<u>Since</u>
KERS Haz (P) Target Allocation Index, CERS (P) Target Allocation Index, & CERS Haz (P) Target Allocation Index (Cont.)	20.00% R 3000 Index 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	11/1/2013
	26.50% Russell 3000 Index 26.50% MSCI ACW Ex US Investable Market Index (Gross) 6.00% Bloomberg US Univ Bond Index 6.00% Bloomberg US Corp: Hi Yld Index 8.00% 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	1/1/2016
SPRS (P) Target Allocation Index	The blended index is calculated monthly and consists of: Total Fund Target Allocation Index (P) 20.00% R 3000 Index 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	Inception
	20.00% R 3000 Index 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	7/1/2013
	20.00% R 3000 Index 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	11/1/2013



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

As of December 31, 2016

<u>Composite/Manager</u>	<u>Benchmark</u>	<u>Since</u>
SPRS (P) Target Allocation Index (Cont.)	23.00% Russell 3000 Index 23.00% MSCI ACW Ex US Investable Market Index (Gross) 9.00% Bloomberg US Univ Bond Index 9.00% Bloomberg US Corp: Hi Yld Index 8.00% 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	1/1/2016
KERS (I) Target Allocation Index	The blended index is calculated monthly and consists of: 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 + 2.5% 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
	26.50% Russell 3000 Index 26.50% MSCI ACW Ex US Investable Market Index (Gross) 6.00% Bloomberg US Univ Bond Index 6.00% Bloomberg US Corp: Hi Yld Index 8.00% 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	1/1/2016

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

As of December 31, 2016

Composite/Manager

KERS Haz (I) Target Allocation Index,
CERS (I) Target Allocation Index,
CERS Haz (I) Target Allocation Index , &
SPRS (I) Target Allocation Index

Benchmark

The blended index is calculated monthly and consists of:

Since

Inception

Total Fund Target Allocation Index (I)

- 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

- 26.50%** **Russell 3000 Index**
- 26.50%** **MSCI ACW Ex US Investable Market Index (Gross)**
- 6.00%** **Bloomberg US Univ Bond Index**
- 6.00%** **Bloomberg US Corp: Hi Yld Index**
- 8.00%** **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**

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&P</u>	<u>Moody's</u>	<u>Explanation</u>	<u>S&P</u>	<u>Moody's</u>	<u>Explanation</u>
Higher Credit Quality – Investment Grade			Lower Credit Quality – Below Investment Grade		
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., 1st quartile, 2nd quartile, 3rd quartile, and 4th quartile). The median observation is where the 2nd quartile and 3rd 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.

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 4th 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		

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 - A method for identifying the sources of a total fund's over- or underperformance relative to its benchmark. The calculation identifies the contributions of positive or negative total fund excess return caused by allocation differences relative to the total fund's custom benchmark, and performance differences of the investment managers relative to the benchmark components that represent them.

Total Fund Performance -

Total Fund - The percentage return of the total fund for the specified time period.

Total Fund Benchmark - The percentage return of the total fund benchmark for the specified time period; calculated using the target asset allocation and the corresponding benchmark returns.

Total Value Added - The percentage of over- or underperformance of the total fund as compared to the total fund benchmark.

Total Value Added -

Asset Allocation - Shows how the variance of the total fund's actual allocation from its target allocation added to or subtracted from fund performance.

Manager Value Added - The portion of the total value added attributable to the outperformance or underperformance of the fund's investment managers, relative to the individual benchmarks that represent them in the total fund benchmark.

Market Timing/Other - The contribution of other residual factors, including estimation error and transaction timing.

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.

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.



Glossary

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

CHICAGO

NEW YORK

Disclaimer of Warranties and Limitation of Liability - This document was prepared by RVK, Inc. (RVK) and may include information and data from some or all of the following sources: client staff; custodian banks; investment managers; specialty investment consultants; actuaries; plan administrators/record-keepers; index providers; as well as other third-party sources as directed by the client or as we believe necessary or appropriate. RVK has taken reasonable care to ensure the accuracy of the information or data, but makes no warranties and disclaims responsibility for the accuracy or completeness of information or data provided or methodologies employed by any external source. This document is provided for the client's internal use only and does not constitute a recommendation by RVK or an offer of, or a solicitation for, any particular security and it is not intended to convey any guarantees as to the future performance of the investment products, asset classes, or capital markets.

