



Monthly Investment Performance Analysis

Santa Barbara County Employees' Retirement System

Period Ended: March 31, 2019



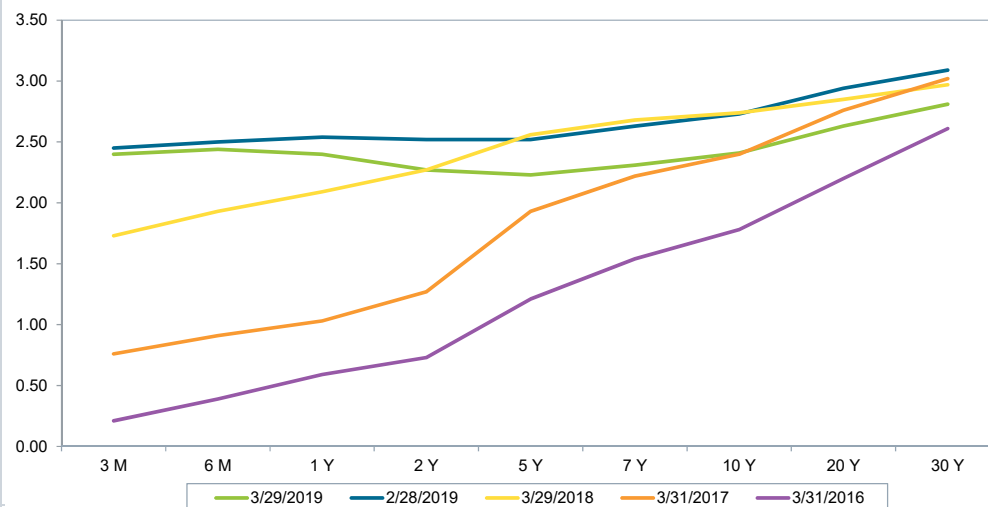
General Market Commentary

- The Federal Open Market Committee (FOMC) left interest rates unchanged at its March meeting. The FOMC's economic outlook softened, as suggested by zero projected rate hikes in 2019, and only one in 2020. As a result, 10-year yields declined notably in the days after the FOMC meeting, and traded below 3-month yields as the US Treasury yield curve inverted.
- Though equity markets faltered early in March due to poor economic news, most global market segments rallied throughout the remainder of the month, primarily driven by strong corporate earnings and accommodative monetary policy.
- International developed markets lagged their US and emerging counterparts, primarily due to the release of poor economic data in Germany and France and increased uncertainty over Brexit. British Parliament passed an amendment giving itself the authority to vote on Brexit options, a direct rebuke to Prime Minister Theresa May.
- Equity markets posted positive returns in March as the S&P 500 (Cap Wtd) Index returned 1.94% and the MSCI EAFE (Net) Index returned 0.63%. Emerging markets returned 0.84% as measured by the MSCI EM (Net) Index.
- The Bloomberg US Aggregate Bond Index returned 1.92% in March, outperforming the 1.23% return by the Bloomberg US Treasury Intermediate Term Index. International fixed income markets returned 0.89%, as measured by the FTSE Non-US World Gov't Bond Index.
- Public real estate, as measured by the FTSE NAREIT Eq REITs Index (TR), returned 3.35% in March and 9.12% over the trailing five-year period.
- The Cambridge US Private Equity Index returned 18.01% for the trailing one-year period and 13.40% for the trailing five-year period ending September 2018.
- Absolute return strategies, as measured by the HFRI FOF Comp Index, returned 1.27% for the month and 0.49% over the trailing one-year period.
- Crude oil's price increased by 5.10% during the month, but has decreased by 7.39% YoY.

Economic Indicators	Mar-19		Feb-19	Mar-18	10 Yr	20 Yr
Federal Funds Rate (%)	2.43	▲	2.40	1.68	0.47	1.91
Breakeven Inflation - 5 Year (%)	1.79	▼	1.86	2.04	1.73	1.86
Breakeven Inflation - 10 Year (%)	1.87	▼	1.94	2.06	2.01	2.03
Breakeven Inflation - 30 Year (%)	1.92	▼	1.98	2.07	2.16	2.27
Bloomberg US Agg Bond Index - Yield (%)	2.93	▼	3.21	3.12	2.61	3.95
Bloomberg US Agg Bond Index - OAS (%)	0.44	▼	0.45	0.41	0.56	0.64
Bloomberg US Agg Credit Index - OAS (%)	1.13	▼	1.14	1.03	1.43	1.47
Bloomberg US Corp: HY Index - OAS (%)	3.91	▲	3.79	3.54	5.21	5.53
Capacity Utilization (%)	78.80	▼	79.00	78.19	75.98	77.27
Unemployment Rate (%)	3.8	—	3.8	4.0	6.7	5.9
PMI - Manufacturing (%)	55.3	▲	54.2	59.3	54.1	52.8
Baltic Dry Index - Shipping	689	▲	658	1,055	1,385	2,311
Consumer Conf (Conf Board)	124.10	▼	131.40	127.00	85.25	92.80
CPI YoY (Headline) (%)	1.5	—	1.5	2.4	1.6	2.2
CPI YoY (Core) (%)	2.1	—	2.1	2.1	1.8	2.0
PPI YoY (%)	1.4	▲	0.5	3.0	1.5	2.3
M2 YoY (%)	4.1	▼	4.2	4.0	6.1	6.2
US Dollar Total Weighted Index	92.07	▲	91.16	86.37	81.62	86.26
WTI Crude Oil per Barrel (\$)	60	▲	57	65	73	61
Gold Spot per Oz (\$)	1,292	▼	1,313	1,326	1,315	892

The previous month's CPI YoY is used as a proxy for the current YoY return until it becomes available.
Treasury data courtesy of the US Department of the Treasury. Economic data courtesy of Bloomberg Professional Service.

Treasury Yield Curve (%)

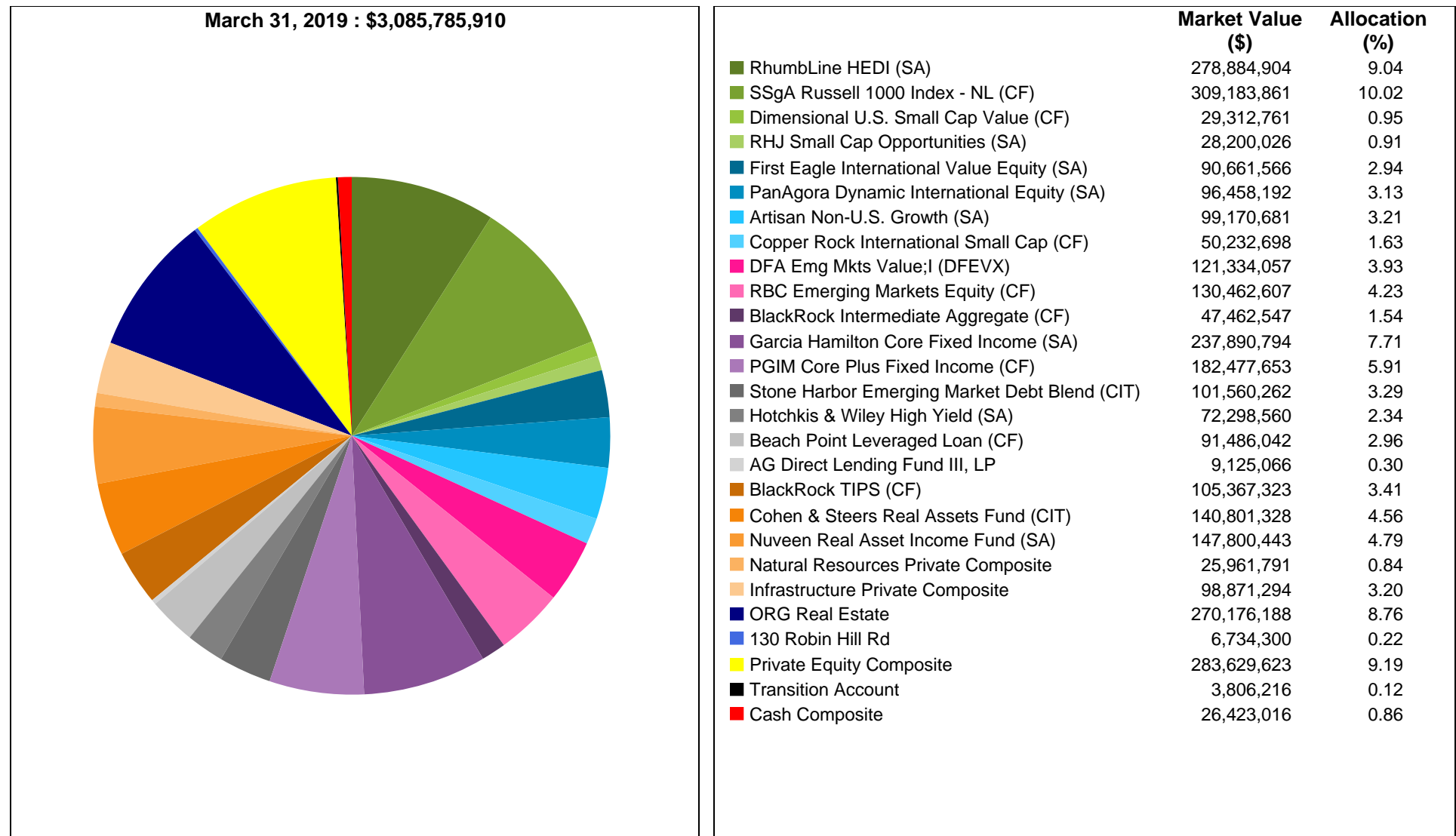


Treasury Yield Curve (%)	Mar-19	Feb-19		Mar-18		Mar-17		Mar-16
3 Month	2.40	2.45		1.73		0.76		0.21
6 Month	2.44	2.50		1.93		0.91		0.39
1 Year	2.40	2.54		2.09		1.03		0.59
2 Year	2.27	2.52		2.27		1.27		0.73
5 Year	2.23	2.52		2.56		1.93		1.21
7 Year	2.31	2.63		2.68		2.22		1.54
10 Year	2.41	2.73		2.74		2.40		1.78
20 Year	2.63	2.94		2.85		2.76		2.20
30 Year	2.81	3.09		2.97		3.02		2.61
Market Performance (%)	MTD	QTD	CYTD	1 Yr	3 Yr	5 Yr	7 Yr	10 Yr
S&P 500 (Cap Wtd)	1.94	13.65	13.65	9.50	13.51	10.91	12.85	15.92
Russell 2000	-2.09	14.58	14.58	2.05	12.92	7.05	10.74	15.36
MSCI EAFE (Net)	0.63	9.98	9.98	-3.71	7.27	2.33	5.63	8.96
MSCI EAFE SC (Net)	0.16	10.65	10.65	-9.36	7.50	4.47	8.21	12.76
MSCI EM (Net)	0.84	9.93	9.93	-7.41	10.68	3.68	2.69	8.95
Bloomberg US Agg Bond	1.92	2.94	2.94	4.48	2.03	2.74	2.48	3.77
ICE BofAML 3 Mo US T-Bill	0.22	0.60	0.60	2.12	1.19	0.74	0.56	0.43
NCREIF ODCE (Gross)	1.42	1.42	1.42	7.52	7.97	10.17	10.77	8.74
FTSE NAREIT Eq REITs Index (TR)	3.35	16.33	16.33	20.86	6.13	9.12	9.25	18.28
HFRI FOF Comp Index	1.27	4.99	4.99	0.49	4.06	2.27	3.15	3.58
Bloomberg Cmdbt Index (TR)	-0.18	6.32	6.32	-5.25	2.22	-8.92	-7.14	-2.56

Monthly Portfolio Highlights	
The Total Fund returned 1.06% for the month of March net of fees, and outperformed the Policy Benchmark by 92 basis points. Global markets rose in March, however, the YTD risk rally eased as risk appetite waned due to signs of global economic weakness, along with continued trade and political uncertainty.	
Market Trend	Portfolio Effect
U.S. Equity	
US equity outperformed international equity, however the risk rally slowed during the month. Growth stocks continued to outperform value stocks, and small cap stocks lagged large cap stocks.	The Composite posted a positive return of 1.56%, and outperformed the Russell 3000 Index by 10 basis points. Relative outperformance was driven by RhumbLine HEDI, which returned 2.38%.
Developed Market Non-U.S. Equity	
International developed markets lagged their US and emerging counterparts, primarily due to the release of poor economic data in Germany and France and increased uncertainty over Brexit.	The Composite posted a positive return of 0.80%, and outperformed the MSCI EAFE Index by 17 basis points. Copper Rock, First Eagle, and Artisan all contributed to relative outperformance, returning 0.80%, 0.86%, and 0.99%, respectively.
Emerging Market Equity	
Despite losing momentum towards the end of the month, emerging markets outperformed developed markets due to a more dovish stance of the FED and uncertainty in the developed market space.	The Composite posted a positive return of 0.97%, and outperformed the MSCI Emg Mkts Index by 13 basis points. Relative performance was driven by RBC, which returned 1.35% for the month.
Core Fixed Income	
The Federal Open Market Committee (FOMC) left interest rates unchanged at its March meeting, as suggested by zero projected rate hikes in 2019. 10-year yields declined notably in the days after the FOMC meeting, and traded below 3-month yields as the US Treasury yield curve inverted.	The Composite posted a positive return of 1.86%, but underperformed the Bloomberg US Agg Bond Index by 6 basis points. Garcia Hamilton was the largest driver of relative underperformance, returning 1.60%.
Non-Core Fixed Income	
High Yield continued to rally in March due to more accommodative monetary policy actions in the US and strong corporate earnings. Local currency EMD lagged hard currency for the month due to weakness versus the US dollar.	The Composite posted a positive return of 0.07%, but underperformed the Custom Non-Core Fixed Income Benchmark by 21 basis points. Stone Harbor was the largest driver of relative underperformance, returning -0.26% and underperforming its benchmark by 29 basis points.
Real Return	
Oil continued to appreciate but gold and copper fell. Crude oil's price increased by 5.10% during the month, but has decreased by 7.39% YoY.	The Composite posted a positive return of 1.16%, outperforming the CPI+4% by 27 basis points, but underperforming the Custom Real Return Benchmark by 41 basis points. Nuveen was the largest contributor to absolute performance, returning 2.18%.

Santa Barbara County Employees' Retirement System
Asset Allocation By Manager and Schedule of Investable Assets

As of March 31, 2019



Schedule of Investable Assets Ex Treasury Cash						
Periods Ending	Beginning Market Value (\$)	Net Cash Flow (\$)	Gain/Loss (\$)	Ending Market Value (\$)	% Return	Unit Value
FYTD	2,967,154,413	-23,270,213	127,390,728	3,071,274,928	4.31	104.31

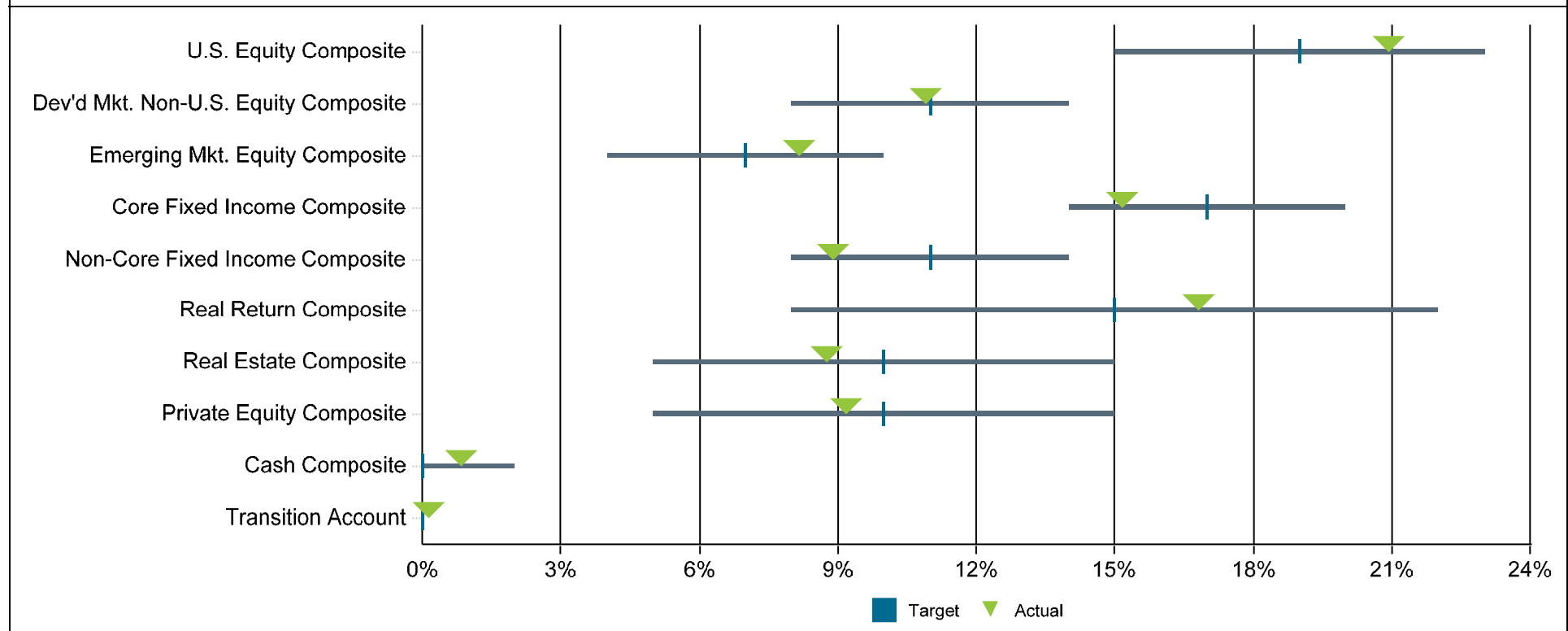
Market values shown are preliminary and subject to change. Performance shown is net of fees and provided by BNY Mellon. Allocations shown may not sum up to 100% exactly due to rounding. Schedule of Investable Assets excludes Treasury Cash. The fiscal year ends 06/30.



Santa Barbara County Employees' Retirement System
Asset Allocation vs Target Allocation

As of March 31, 2019

	Market Value (\$)	Allocation (%)	Lower Range (%)	Target (%)	Upper Range (%)
Total Fund Composite	3,085,785,910	100.0	-	100.0	-
U.S. Equity Composite	645,581,551	20.9	15.0	19.0	23.0
Dev'd Mkt. Non-U.S. Equity Composite	336,525,832	10.9	8.0	11.0	14.0
Emerging Mkt. Equity Composite	251,796,664	8.2	4.0	7.0	10.0
Core Fixed Income Composite	467,834,942	15.2	14.0	17.0	20.0
Non-Core Fixed Income Composite	274,469,969	8.9	8.0	11.0	14.0
Real Return Composite	518,802,179	16.8	8.0	15.0	22.0
Real Estate Composite	270,181,617	8.8	5.0	10.0	15.0
Private Equity Composite	283,629,623	9.2	5.0	10.0	15.0
Cash Composite	26,423,016	0.9	0.0	0.0	2.0
Transition Account	3,806,216	0.1	0.0	0.0	0.0

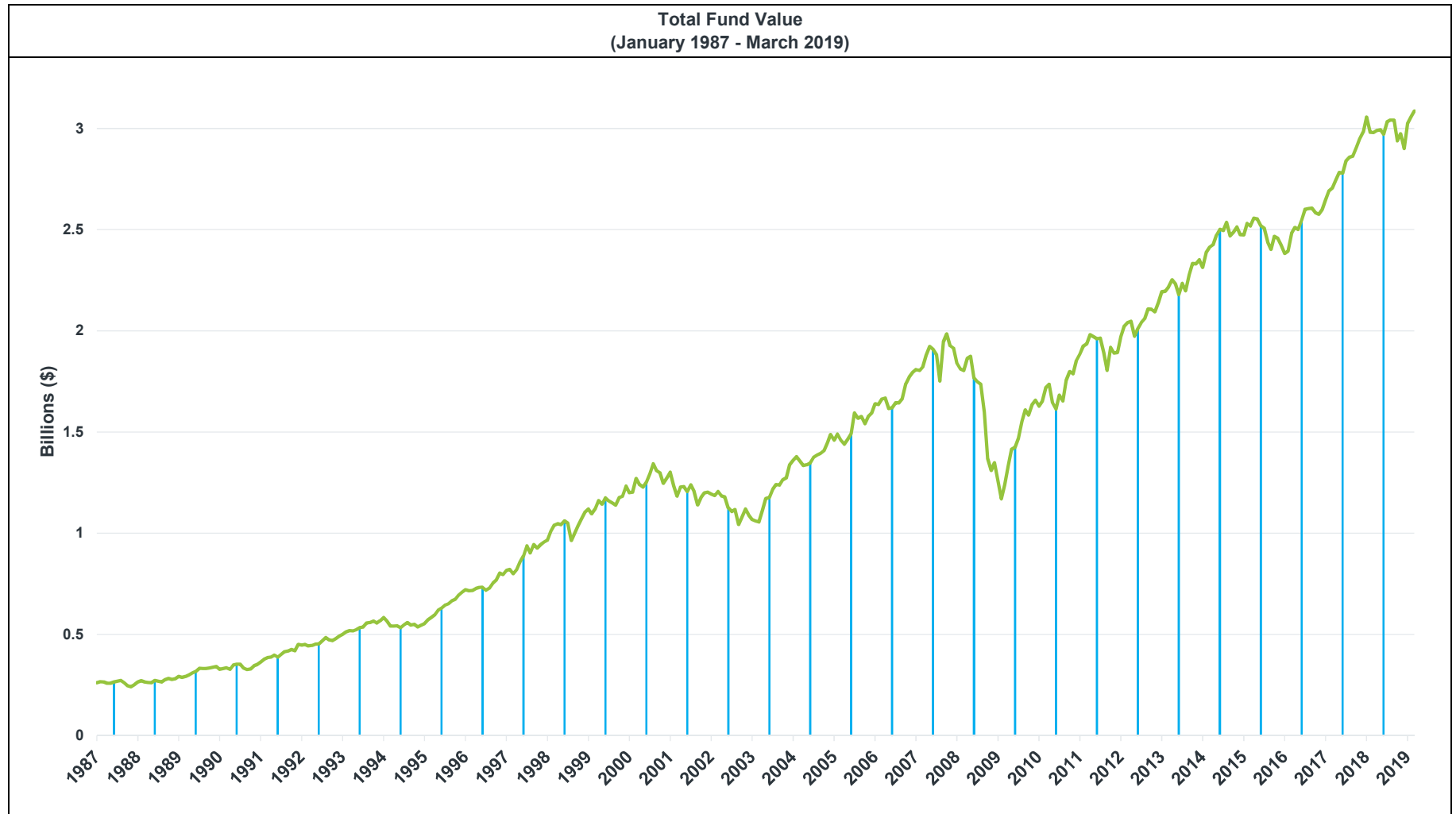


Market values shown are preliminary and subject to change. Allocations shown may not sum up to 100% exactly due to rounding. Market value for the Transition Account represents residual assets from portfolio restructuring.

**Santa Barbara County Employees' Retirement System
Plan Asset Overview**

As of March 31, 2019

	Market Value (\$)	Performance (%)											
		FYTD	FY 2018	FY 2017	FY 2016	FY 2015	FY 2014	FY 2013	FY 2012	FY 2011	FY 2010	FY 2009	Since Incep.
Total Fund	3,085,785,910	4.31	7.80	10.49	1.37	0.42	15.25	8.10	1.99	22.01	14.37	-18.99	8.21



Market values and performance shown are preliminary and subject to change. Performance shown is net of fees and is annualized for periods greater than one year. The fiscal year for Santa Barbara County Employees' Retirement System ends 06/30. Inception date for the Total Fund is 01/01/1987. Total Fund performance excludes Treasury Cash.



Santa Barbara County Employees' Retirement System
Asset Allocation & Performance

As of March 31, 2019

	Allocation		Performance (%)									
	Market Value (\$)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	10 Years	Since Incep.	Inception Date
Total Fund Composite	3,085,785,910	100.00	1.06	6.74	6.74	4.31	4.54	8.30	5.67	9.97	8.21	01/01/1987
Total Fund Composite ex 130 RHR	3,079,051,610	99.78	1.06	6.74	6.74	4.32	4.54	8.30	5.67	9.97	8.21	01/01/1987
SBCERS Policy Benchmark			0.14	4.54	4.54	3.14	3.49	8.37	5.91	9.42	N/A	
Difference			0.92	2.20	2.20	1.18	1.05	-0.07	-0.24	0.55	N/A	
SBCERS Dynamic Policy Benchmark			0.28	5.55	5.55	2.42	2.77	8.13	5.32	N/A	N/A	
Difference			0.78	1.19	1.19	1.90	1.77	0.17	0.35	N/A	N/A	
U.S. Equity Composite	645,581,551	20.92	1.56	13.74	13.74	6.21	10.19	13.35	10.06	15.46	10.58	01/01/1987
Russell 3000 Index			1.46	14.04	14.04	4.70	8.77	13.49	10.36	16.00	10.32	
Difference			0.10	-0.30	-0.30	1.51	1.42	-0.14	-0.30	-0.54	0.26	
Dev'd Mkt. Non-U.S. Equity Composite	336,525,832	10.91	0.80	9.72	9.72	-2.60	-4.06	6.20	3.14	N/A	7.74	07/01/2012
MSCI EAFE Index (USD) (Net)			0.63	9.98	9.98	-2.51	-3.71	7.27	2.33	8.96	7.01	
Difference			0.17	-0.26	-0.26	-0.09	-0.35	-1.07	0.81	N/A	0.73	
Emerging Mkt. Equity Composite	251,796,664	8.16	0.97	8.31	8.31	3.87	-4.17	10.64	4.08	N/A	4.32	07/01/2012
MSCI Emg Mkts Index (USD) (Net)			0.84	9.93	9.93	0.60	-7.41	10.68	3.68	8.95	4.22	
Difference			0.13	-1.62	-1.62	3.27	3.24	-0.04	0.40	N/A	0.10	
Core Fixed Income Composite	467,834,942	15.16	1.86	3.13	3.13	4.51	4.68	N/A	N/A	N/A	3.34	07/01/2017
Bloomberg US Agg Bond Index			1.92	2.94	2.94	4.65	4.48	2.03	2.74	3.77	2.40	
Difference			-0.06	0.19	0.19	-0.14	0.20	N/A	N/A	N/A	0.94	
Non-Core Fixed Income Composite	274,469,969	8.89	0.07	5.13	5.13	2.82	-0.52	N/A	N/A	N/A	1.82	07/01/2017
Custom Non-Core Fixed Income Benchmark			0.28	5.27	5.27	4.34	2.54	6.39	3.66	8.62	3.54	
Difference			-0.21	-0.14	-0.14	-1.52	-3.06	N/A	N/A	N/A	-1.72	
Real Return Composite	518,802,179	16.81	1.16	6.39	6.39	3.41	4.64	N/A	N/A	N/A	4.19	07/01/2017
Consumer Price Index+4%			0.89	2.18	2.18	3.89	5.94	6.29	5.53	5.87	6.23	
Difference			0.27	4.21	4.21	-0.48	-1.30	N/A	N/A	N/A	-2.04	
Custom Real Return Benchmark			1.57	7.02	7.02	3.04	5.02	N/A	N/A	N/A	5.62	
Difference			-0.41	-0.63	-0.63	0.37	-0.38	N/A	N/A	N/A	-1.43	
Real Estate Composite	270,181,617	8.76	0.86	2.38	2.38	7.74	10.42	10.47	11.28	6.91	6.14	04/01/2006
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)			1.52	1.52	1.52	5.29	7.36	7.27	9.41	6.01	5.94	
Difference			-0.66	0.86	0.86	2.45	3.06	3.20	1.87	0.90	0.20	
Private Equity Composite	283,629,623	9.19	0.08	0.25	0.25	9.13	11.08	14.60	13.01	13.28	9.14	06/01/2006
Russell 3000 Index+3% (1 Qtr Lag)			-9.08	-13.67	-13.67	-2.49	-2.40	12.24	11.15	16.58	10.77	
Difference			9.16	13.92	13.92	11.62	13.48	2.36	1.86	-3.30	-1.63	

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Santa Barbara County Employees' Retirement System
Asset Allocation & Performance

As of March 31, 2019

	Allocation		Performance (%)									
	Market Value (\$)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	10 Years	Since Incep.	Inception Date
Total Fund Composite	3,085,785,910	100.00	1.06	6.74	6.74	4.31	4.54	8.30	5.67	9.97	8.21	01/01/1987
Total Fund Composite ex 130 RHR	3,079,051,610	99.78	1.06	6.74	6.74	4.32	4.54	8.30	5.67	9.97	8.21	01/01/1987
SBCERS Policy Benchmark			0.14	4.54	4.54	3.14	3.49	8.37	5.91	9.42	N/A	
Difference			0.92	2.20	2.20	1.18	1.05	-0.07	-0.24	0.55	N/A	
SBCERS Dynamic Policy Benchmark			0.28	5.55	5.55	2.42	2.77	8.13	5.32	N/A	N/A	
Difference			0.78	1.19	1.19	1.90	1.77	0.17	0.35	N/A	N/A	
U.S. Equity Composite	645,581,551	20.92	1.56	13.74	13.74	6.21	10.19	13.35	10.06	15.46	10.58	01/01/1987
Russell 3000 Index			1.46	14.04	14.04	4.70	8.77	13.49	10.36	16.00	10.32	
Difference			0.10	-0.30	-0.30	1.51	1.42	-0.14	-0.30	-0.54	0.26	
RhumbLine HEDI (SA)	278,884,904	9.04	2.38	14.13	14.13	11.28	14.64	14.42	N/A	N/A	13.55	07/01/2015
Russell 1000 Index			1.74	14.00	14.00	5.54	9.30	13.52	10.63	16.05	10.79	
Difference			0.64	0.13	0.13	5.74	5.34	0.90	N/A	N/A	2.76	
SSgA Russell 1000 Index - NL (CF)	309,183,861	10.02	1.74	14.02	14.02	5.56	9.45	13.61	10.70	N/A	12.80	04/01/2012
Russell 1000 Index			1.74	14.00	14.00	5.54	9.30	13.52	10.63	16.05	12.79	
Difference			0.00	0.02	0.02	0.02	0.15	0.09	0.07	N/A	0.01	
Dimensional U.S. Small Cap Value (CF)	29,312,761	0.95	-3.64	11.12	11.12	-10.62	-3.62	8.24	4.65	16.17	7.76	04/01/2005
Russell 2000 Val Index			-2.88	11.93	11.93	-7.51	0.17	10.86	5.59	14.12	7.06	
Difference			-0.76	-0.81	-0.81	-3.11	-3.79	-2.62	-0.94	2.05	0.70	
RHJ Small Cap Opportunities (SA)	28,200,026	0.91	-2.48	9.88	9.88	-10.38	-4.53	N/A	N/A	N/A	14.00	06/01/2016
Russell 2000 Grth Index			-1.35	17.14	17.14	-3.15	3.85	14.87	8.41	16.52	14.33	
Difference			-1.13	-7.26	-7.26	-7.23	-8.38	N/A	N/A	N/A	-0.33	
Dev'd Mkt. Non-U.S. Equity Composite	336,525,832	10.91	0.80	9.72	9.72	-2.60	-4.06	6.20	3.14	N/A	7.74	07/01/2012
MSCI EAFE Index (USD) (Net)			0.63	9.98	9.98	-2.51	-3.71	7.27	2.33	8.96	7.01	
Difference			0.17	-0.26	-0.26	-0.09	-0.35	-1.07	0.81	N/A	0.73	
First Eagle International Value Equity (SA)	90,661,566	2.94	0.86	8.05	8.05	0.44	-1.11	4.63	N/A	N/A	2.87	06/01/2014
MSCI EAFE Index (USD) (Net)			0.63	9.98	9.98	-2.51	-3.71	7.27	2.33	8.96	1.77	
Difference			0.23	-1.93	-1.93	2.95	2.60	-2.64	N/A	N/A	1.10	
PanAgora Dynamic International Equity (SA)	96,458,192	3.13	0.54	9.55	9.55	-3.87	-5.88	6.77	3.12	9.62	9.04	05/01/2009
MSCI EAFE Index (USD) (Net)			0.63	9.98	9.98	-2.51	-3.71	7.27	2.33	8.96	7.72	
Difference			-0.09	-0.43	-0.43	-1.36	-2.17	-0.50	0.79	0.66	1.32	

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Santa Barbara County Employees' Retirement System
Asset Allocation & Performance

As of March 31, 2019

	Allocation		Performance (%)									
	Market Value (\$)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	10 Years	Since Incep.	Inception Date
Artisan Non-U.S. Growth (SA)	99,170,681	3.21	0.99	10.47	10.47	0.74	-1.21	7.21	3.07	N/A	3.90	02/01/2014
MSCI EAFE Index (USD) (Net)			0.63	9.98	9.98	-2.51	-3.71	7.27	2.33	8.96	3.20	
Difference			0.36	0.49	0.49	3.25	2.50	-0.06	0.74	N/A	0.70	
Copper Rock International Small Cap (CF)	50,232,698	1.63	0.80	11.68	11.68	-11.02	-12.40	2.65	1.85	N/A	5.33	03/01/2013
MSCI EAFE Sm Cap Index (USD) (Net)			0.16	10.65	10.65	-7.92	-9.36	7.50	4.47	12.76	7.62	
Difference			0.64	1.03	1.03	-3.10	-3.04	-4.85	-2.62	N/A	-2.29	
Emerging Mkt. Equity Composite	251,796,664	8.16	0.97	8.31	8.31	3.87	-4.17	10.64	4.08	N/A	4.32	07/01/2012
MSCI Emg Mkts Index (USD) (Net)			0.84	9.93	9.93	0.60	-7.41	10.68	3.68	8.95	4.22	
Difference			0.13	-1.62	-1.62	3.27	3.24	-0.04	0.40	N/A	0.10	
DFA Emg Mkts Value;I (DFEVX)	121,334,057	3.93	0.56	7.18	7.18	1.66	-7.54	11.64	3.45	N/A	2.13	05/01/2013
MSCI Emg Mkts Index (USD) (Net)			0.84	9.93	9.93	0.60	-7.41	10.68	3.68	8.95	2.72	
Difference			-0.28	-2.75	-2.75	1.06	-0.13	0.96	-0.23	N/A	-0.59	
RBC Emerging Markets Equity (CF)	130,462,607	4.23	1.35	9.38	9.38	6.01	-0.82	N/A	N/A	N/A	8.91	09/01/2016
MSCI Emg Mkts Index (USD) (Net)			0.84	9.93	9.93	0.60	-7.41	10.68	3.68	8.95	9.07	
Difference			0.51	-0.55	-0.55	5.41	6.59	N/A	N/A	N/A	-0.16	
Core Fixed Income Composite	467,834,942	15.16	1.86	3.13	3.13	4.51	4.68	N/A	N/A	N/A	3.34	07/01/2017
Bloomberg US Agg Bond Index			1.92	2.94	2.94	4.65	4.48	2.03	2.74	3.77	2.40	
Difference			-0.06	0.19	0.19	-0.14	0.20	N/A	N/A	N/A	0.94	
BlackRock Intermediate Aggregate (CF)	47,462,547	1.54	1.39	2.30	2.30	4.28	4.37	N/A	N/A	N/A	2.59	12/01/2017
Bloomberg US Agg Int Index			1.39	2.28	2.28	4.24	4.33	1.71	2.31	3.27	2.55	
Difference			0.00	0.02	0.02	0.04	0.04	N/A	N/A	N/A	0.04	
Garcia Hamilton Core Fixed Income (SA)	237,890,794	7.71	1.60	2.53	2.53	3.69	4.09	N/A	N/A	N/A	2.46	09/01/2017
Bloomberg US Agg Bond Index			1.92	2.94	2.94	4.65	4.48	2.03	2.74	3.77	1.80	
Difference			-0.32	-0.41	-0.41	-0.96	-0.39	N/A	N/A	N/A	0.66	
PGIM Core Plus Fixed Income (CF)	182,477,653	5.91	2.28	4.08	4.08	5.52	N/A	N/A	N/A	N/A	5.49	06/01/2018
Bloomberg US Agg Bond Index			1.92	2.94	2.94	4.65	4.48	2.03	2.74	3.77	4.52	
Difference			0.36	1.14	1.14	0.87	N/A	N/A	N/A	N/A	0.97	

Performance shown is net of fees and provided by BNY Mellon. Performance shown is preliminary and subject to change. Performance is annualized for periods greater than one year. Total Fund performance excludes Treasury Cash. Indices show N/A for since inception returns when the fund contains more history than the corresponding benchmark. The fiscal year ends 06/30.



Santa Barbara County Employees' Retirement System
Asset Allocation & Performance

As of March 31, 2019

	Allocation		Performance (%)									
	Market Value (\$)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	10 Years	Since Incep.	Inception Date
Non-Core Fixed Income Composite	274,469,969	8.89	0.07	5.13	5.13	2.82	-0.52	N/A	N/A	N/A	1.82	07/01/2017
Custom Non-Core Fixed Income Benchmark			0.28	5.27	5.27	4.34	2.54	6.39	3.66	8.62	3.54	
Difference			-0.21	-0.14	-0.14	-1.52	-3.06	N/A	N/A	N/A	-1.72	
Stone Harbor Emerging Market Debt Blend (CIT)	101,560,262	3.29	-0.26	5.62	5.62	3.56	-6.20	3.82	1.25	N/A	0.58	08/01/2012
Stone Harbor Blended Benchmark			0.03	4.76	4.76	5.49	-1.73	4.58	2.31	6.50	2.01	
Difference			-0.29	0.86	0.86	-1.93	-4.47	-0.76	-1.06	N/A	-1.43	
Hotchkis & Wiley High Yield (SA)	72,298,560	2.34	0.76	6.42	6.42	2.46	3.20	8.59	3.45	N/A	4.05	12/01/2013
Bloomberg US Corp Hi Yld Index			0.94	7.26	7.26	4.86	5.93	8.56	4.68	11.26	5.06	
Difference			-0.18	-0.84	-0.84	-2.40	-2.73	0.03	-1.23	N/A	-1.01	
Beach Point Leveraged Loan (CF)	91,486,042	2.96	-0.11	4.12	4.12	2.64	3.27	3.41	3.18	N/A	4.04	10/01/2012
CS Lvg'd Loan Index			-0.12	3.78	3.78	2.53	3.33	5.87	3.83	7.95	4.33	
Difference			0.01	0.34	0.34	0.11	-0.06	-2.46	-0.65	N/A	-0.29	
AG Direct Lending Fund III, LP	9,125,066	0.30										
Real Return Composite	518,802,179	16.81	1.16	6.39	6.39	3.41	4.64	N/A	N/A	N/A	4.19	07/01/2017
Consumer Price Index+4%			0.89	2.18	2.18	3.89	5.94	6.29	5.53	5.87	6.23	
Difference			0.27	4.21	4.21	-0.48	-1.30	N/A	N/A	N/A	-2.04	
Custom Real Return Benchmark			1.57	7.02	7.02	3.04	5.02	N/A	N/A	N/A	5.62	
Difference			-0.41	-0.63	-0.63	0.37	-0.38	N/A	N/A	N/A	-1.43	
Public Real Return Composite	393,969,094	12.77										
BlackRock TIPS (CF)	105,367,323	3.41	1.82	3.18	3.18	1.87	2.64	1.69	1.93	N/A	0.28	12/01/2012
Bloomberg US Trsy US TIPS Index			1.84	3.19	3.19	1.92	2.70	1.70	1.94	3.41	0.30	
Difference			-0.02	-0.01	-0.01	-0.05	-0.06	-0.01	-0.01	N/A	-0.02	
Cohen & Steers Real Assets Fund (CIT)	140,801,328	4.56	1.77	10.21	10.21	1.57	3.64	N/A	N/A	N/A	3.13	09/01/2017
Cohen & Steers Real Assets Custom Index			1.53	10.12	10.12	1.48	4.23	5.89	0.71	N/A	3.47	
Difference			0.24	0.09	0.09	0.09	-0.59	N/A	N/A	N/A	-0.34	
Nuveen Real Asset Income Fund (SA)	147,800,443	4.79	2.18	11.03	11.03	6.34	7.81	N/A	N/A	N/A	3.93	09/01/2017
Nuveen Real Asset Income Blend Index			2.16	11.10	11.10	5.57	7.48	6.64	5.26	N/A	3.41	
Difference			0.02	-0.07	-0.07	0.77	0.33	N/A	N/A	N/A	0.52	

Performance shown is net of fees and provided by BNY Mellon. Performance shown is preliminary and subject to change. Performance is annualized for periods greater than one year. Total Fund performance excludes Treasury Cash. Indices show N/A for since inception returns when the fund contains more history than the corresponding benchmark. The fiscal year ends 06/30.



Santa Barbara County Employees' Retirement System
Asset Allocation & Performance

As of March 31, 2019

	Allocation		Performance (%)									
	Market Value (\$)	%	MTD	QTD	CYTD	FYTD	1 Year	3 Years	5 Years	10 Years	Since Incep.	Inception Date
Private Real Return Composite	124,833,085	4.05										
Natural Resources Private Composite	25,961,791	0.84	0.16	-0.95	-0.95	0.21	0.08	6.54	4.82	N/A	4.50	10/01/2013
Consumer Price Index+4% (1 Qtr Lag)			0.01	0.50	0.50	3.68	5.99	6.11	5.57	5.87	5.39	
Difference			0.15	-1.45	-1.45	-3.47	-5.91	0.43	-0.75	N/A	-0.89	
Infrastructure Private Composite	98,871,294	3.20	-1.65	-0.31	-0.31	6.15	6.02	14.69	-6.64	N/A	-12.31	01/01/2014
Consumer Price Index+4%			0.89	2.18	2.18	3.89	5.94	6.29	5.53	5.87	5.74	
Difference			-2.54	-2.49	-2.49	2.26	0.08	8.40	-12.17	N/A	-18.05	
Real Estate Composite	270,181,617	8.76	0.86	2.38	2.38	7.74	10.42	10.47	11.28	6.91	6.14	04/01/2006
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)			1.52	1.52	1.52	5.29	7.36	7.27	9.41	6.01	5.94	
Difference			-0.66	0.86	0.86	2.45	3.06	3.20	1.87	0.90	0.20	
ORG Real Estate	270,176,188	8.76	0.86	2.38	2.38	7.74	10.45	10.64	11.32	6.90	6.13	04/01/2006
NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag)			1.52	1.52	1.52	5.29	7.36	7.27	9.41	6.01	5.94	
Difference			-0.66	0.86	0.86	2.45	3.09	3.37	1.91	0.89	0.19	
Private Equity Composite	283,629,623	9.19	0.08	0.25	0.25	9.13	11.08	14.60	13.01	13.28	9.14	06/01/2006
Russell 3000 Index+3% (1 Qtr Lag)			-9.08	-13.67	-13.67	-2.49	-2.40	12.24	11.15	16.58	10.77	
Difference			9.16	13.92	13.92	11.62	13.48	2.36	1.86	-3.30	-1.63	

Performance for the NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag) is available quarterly; interim months assume a 0.00% return.

Performance shown is net of fees and provided by BNY Mellon. Performance shown is preliminary and subject to change. Performance is annualized for periods greater than one year. Total Fund performance excludes Treasury Cash. Indices show N/A for since inception returns when the fund contains more history than the corresponding benchmark. The fiscal year ends 06/30.



Performance Related Comments

- RVK, Inc. began monitoring the assets of the Santa Barbara County Employees' Retirement System in 06/2016. Prior historical data was provided by the previous investment consultant.
- Inception dates shown represent the first full month following initial funding.
- Performance is annualized for periods greater than one year.
- Total Fund performance excludes Treasury Cash.
- Performance shown is net of fees and provided by BNY Mellon.
- Market values and performance shown are preliminary and subject to change.

Custom Index Comments

- RVK began calculating the SBCERS Policy Benchmark on 04/01/2016. Historical performance was provided by the previous consultant. The passive **Policy Benchmark** currently consists of 19% Russell 3000 Index, 11% MSCI EAFE Index (USD) (Net), 7% MSCI Emg Mkts Index (USD) (Net), 17% Bloomberg US Agg Bond Index, 11% Custom Non-Core Fixed Income Benchmark, 15% Consumer Price Index+4%, 10% NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag), and 10% Russell 3000 Index+3% (1 Qtr Lag). Prior to 07/01/2017 the Policy Benchmark consisted of 23% Russell 3000 Index, 9% MSCI EAFE Index (USD) (Net), 10% MSCI Emg Mkts Index (USD) (Net), 1% MSCI Frontier Markets Index (USD) (Net), 10% Investment Grade Bonds Blended Index, 4% JP Morgan Gbl Gov't Bond Ex US Index, 3% Stone Harbor Blended Benchmark, 7% Bloomberg US Trsy US TIPS Index, 4% Bloomberg US Corp Hi Yld Index, 2% CS Lvg'd Loan Index, 3% Bloomberg Cmdty Index (TR), 2% S&P Gbl Lg Mid Cap Cmdty & Res Index (USD) (Gross), 3% Consumer Price Index+4% (1 Qtr Lag), 2% DJ Brookfield Gbl Infrastructure Comp Index, 2% Consumer Price Index+4%, 6% NCREIF ODCE Index (AWA) (Net) (Monthly) (1 Qtr Lag), 2% FTSE NAREIT Eq REITs TR Index (1 Qtr Lag), and 7% Russell 3000 Index+3% (1 Qtr Lag).
- The active **SBCERS Dynamic Policy Benchmark** is calculated monthly using beginning of month manager weights applied to each corresponding primary benchmark return.
- The passive **Custom Non-Core Fixed Income Benchmark** currently consists of 33.3% Bloomberg US Corp Hi Yld Index, 33.3% Stone Harbor Blended Benchmark, and 33.3% CS Lvg'd Loan Index.
- The passive **Stone Harbor Blended Benchmark** currently consists of 50% JPM GBI-EM Gbl Dvf'd Index (USD) (TR) (Unhedged), 40% JPM Emg Mkts Bond Gbl Dvf'd Index (TR), and 10% JPM CEMBI Brd Dvf'd Index.
- The active **Custom Real Return Benchmark** is calculated monthly using beginning of month manager weights within the Real Return Composite applied to each corresponding primary benchmark return.
- The passive **Cohen & Steers Real Assets Custom Index** is a custom benchmark created by the manager and currently consists of 27.5% FTSE EPRA/NAREIT Dvld Index (USD) (Net), 27.5% Bloomberg Cmdty Index (TR), 15% S&P Gbl Natural Res Sect Index (TR), 15% DJ Brookfield Gbl Infrastructure Index, 10% ICE BofAML 1-3 Yr US Corp Index, and 5% Gold Spot Per Ounce Index. Prior to 9/30/2013 benchmark consisted of 30% FTSE EPRA/NAREIT Dvld Index (USD) (Net), 30% Bloomberg Cmdty Index (TR), 20% S&P Gbl Natural Res Sect Index (TR), 12.5% ICE BofAML 1-3 Yr Corp Index, and 7.5% Gold Spot Per Ounce Index.
- The passive **Nuveen Real Asset Income Blend Index** is a custom benchmark created by the manager and currently consists of 28% S&P Gbl Infrastructure Index, 21% FTSE EPRA/NAREIT Dvld Index (USD) (Net), 18% Wells Fargo Hybrid & Preferred Securities REIT Index, 15% Bloomberg Global Capital Securities Index and 18% Bloomberg US Corp Hi Yld Index.
- Performance for the NCREIF ODCE Index (AWA) (Net) (1 Qtr Lag) is available quarterly; interim months assume a 0.00% return.

**Santa Barbara County Employees' Retirement System
Fee Schedule for Public Investment Managers**

As of March 31, 2019

	Fee Schedule	Market Value As of 03/31/2019 (\$)	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Total Fund Composite - Public Assets		2,391,287,649	8,376,050	0.35
U.S. Equity Composite				
RhumbLine HEDI (SA)	0.04 % of First \$300 M 0.03 % of Next \$200 M 0.02 % Thereafter	278,884,904	111,554	0.04
SSgA Russell 1000 Index - NL (CF)	0.02 % of First \$100 M 0.01 % Thereafter	309,183,861	40,918	0.01
Dimensional U.S. Small Cap Value (CF)	0.50 % of Assets	29,312,761	146,564	0.50
RHJ Small Cap Opportunities (SA)	0.85 % of Assets	28,200,026	239,700	0.85
Dev'd Mkt. Non-U.S. Equity Composite				
First Eagle International Value Equity (SA)	0.75 % of Assets	90,661,566	679,962	0.75
PanAgora Dynamic International Equity (SA)	0.33 % of First \$100 M 0.30 % of Next \$100 M 0.25 % Thereafter	96,458,192	318,312	0.33
Artisan Non-U.S. Growth (SA)	0.80 % of First \$50 M 0.60 % Thereafter	99,170,681	695,024	0.70
Copper Rock International Small Cap (CF)	0.64 % of Assets	50,232,698	320,233	0.64
Emerging Mkt. Equity Composite				
DFA Emg Mkts Value;I (DFEVX)	0.54 % of Assets	121,334,057	655,204	0.54
RBC Emerging Markets Equity (CF)	0.50 % of Assets	130,462,607	652,313	0.50
Core Fixed Income Composite				
BlackRock Intermediate Aggregate (CF)	0.05 % of First \$100 M 0.04 % of Next \$400 M 0.02 % Thereafter	47,462,547	23,731	0.05
Garcia Hamilton Core Fixed Income (SA)	0.30 % of First \$10 M 0.25 % Thereafter	237,890,794	599,727	0.25
PGIM Core Plus Fixed Income (CF)	0.26 % of Assets	182,477,653	474,442	0.26

**Santa Barbara County Employees' Retirement System
Fee Schedule for Public Investment Managers**

As of March 31, 2019

	Fee Schedule	Market Value As of 03/31/2019 (\$)	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Non-Core Fixed Income Composite				
Stone Harbor Emerging Market Debt Blend (CIT)	0.55 % of First \$100 M 0.50 % Thereafter	101,560,262	557,801	0.55
Hotchkis & Wiley High Yield (SA)	0.50 % of First \$50 M 0.45 % of Next \$50 M 0.40 % Thereafter	72,298,560	350,344	0.48
Beach Point Leveraged Loan (CF)	0.50 % of Assets	91,486,042	457,430	0.50
Public Real Return Composite				
BlackRock TIPS (CF)	0.05 % of First \$100 M 0.04 % of Next \$400 M 0.03 % Thereafter	105,367,323	51,879	0.05
Cohen & Steers Real Assets Fund (CIT)	0.65 % of Assets	140,801,328	915,209	0.65
Nuveen Real Asset Income Fund (SA)	0.80 % of First \$50 M 0.75 % of Next \$50 M 0.65 % Thereafter	147,800,443	1,085,703	0.73

- The Investment Manager Fee for Copper Rock International Small Cap (CF) is 0.6375% of assets.
- The Investment Manager Fee for BlackRock TIPS (CF) is 0.05% of first \$100M, 0.035% of next \$400M, and 0.0275% thereafter.
- Mutual Fund fees are sourced from Morningstar and/or the investment manager.

Overview of RVK Performance Reports		
	Monthly Investment Performance Analysis	Quarterly Investment Performance Analysis
Frequency	Typically available by the 15th business day following month end	Typically available 30-45 calendar days following quarter end
Analytics Included		
Capital Markets Review (abbreviated)	✓	
Capital Markets Review (with full asset class detail)		✓
Monthly Portfolio Highlights or Executive Summary	✓	✓
Manager Monitoring/Investment Manager Updates/Watch List		✓
Asset Allocation By Manager and Schedule of Investable Assets	✓	✓
Asset Allocation vs. Target Allocation	✓	✓
Plan Asset Overview	✓	✓
Total Fund Asset Allocation & Ranks vs. Peers		✓
Trailing Performance	✓	
Trailing & Fiscal Year Performance (including ranks)		✓
Total Fund IDP Attribution		✓
Composite Profile Pages (including ranks)		✓
Investment Manager Profile Pages (including ranks)		✓
Fee Schedule for Public Investment Managers	✓	✓
Underlying Indices of SBCERS Policy Index		✓
Work Plan		✓
Terminated Managers Trailing Performance		✓

Glossary

Active Return - The difference between the investment manager/composite performance relative to the performance of an appropriate market benchmark.

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

Benchmark Effect - The difference between the blended return of each respective managers' benchmark within a composite and the composite's benchmark return.

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.



Glossary

- 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.
- 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."
- Cash Flow Effect** - The composite's active return minus the sum of each managers' active return minus the benchmark effect.
- 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., ICE BofAML 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.

Glossary

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.

Peer Groups -

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

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

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

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

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

1 - Highest Statistical Value

100 - Lowest Statistical Value

Example: American Funds AMCP;R-4 (RAFEX) is ranked in the 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 - ICE BofAML 3 Mo US T-Bill Index unless specified otherwise.



Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



Glossary

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

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

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

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

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

PORTLAND

CHICAGO

NEW YORK

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