Executive Summary of Performance

Prepared For

California Public Employees' Retirement System
Judges II
Legislators' Fund
Long-Term Care
California Employers' Retiree Benefit Trust
Health Care Fund
Supplemental Income Plans

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Capital Market Overview

U.S. Equity Market

The U.S. stock market, represented by the Wilshire 5000 Total Market Index[SM], was up 3.83% for the second quarter of 2018, rebounding from only the second negative quarter in nearly six years. Volatility has returned this year but is approximately in line with long-term historical figures. Although there have been more up days than down during 2018, the daily losses have been more substantial. The average daily loss has been approximately 34% greater than the average daily gain, a spread not seen in more than a decade. Trade and tariffs continued to help drive markets this spring as did increased anti-euro sentiment in Italy. Strong gains in personal income and consumer spending during the second quarter have left room for optimism.

Large capitalization stocks far underperformed small caps as the Wilshire Large-Cap Index[SM] was up +3.41% versus a gain of +7.87% for the Wilshire US Small-Cap Index[SM]. The large-cap segment of the market trailed small-caps for the past twelve months, as well. The Wilshire US Micro-Cap Index[SM] was up +9.21% for the quarter and 19.37% for the one-year. Growth stocks have been generally outpacing value except for the most recent quarter within the small-cap space, where value led growth.

Sector performance was mixed with seven of the eleven major sectors producing gains. The best performing sector, by far, was Energy (+14.2%) while Financials (-2.4%) and Industrials (-2.2%) were the main detractors from total return.

Fixed Income Market

The U.S. Treasury yield curve rose across all maturities during the quarter with the biggest increases occurring in the short to intermediate segment of the curve. The bellwether 10-year Treasury yield ended the quarter at 2.85%, up 11 basis points from March. The Federal Open Market Committee decided to increase its overnight rate by 25 basis points in June to a range of 1.75% to 2.00%. There was little indication that the Fed is looking to change course and expressed generally strong sentiment towards the health of the economy. Credit spreads widened during the quarter within investment grade credit but were little changed for the high yield market.

The shape of the yield curve is often considered when looking for signs of a potentially slowing economy. A common measurement of slope, the 10-year minus 2-year Treasuries spread, has been on the decline since late 2013 and is currently below the long-term average at 0.38%. It should be noted that the last three times that the spread went negative (1989, 2000 and 2007) the U.S. economy entered a recession not long afterwards. While the short end of the curve is directly linked to the Federal funds rate, the long end is driven by market activity. Continued economic growth without upward movement in long rates could be an indication that market participants are expecting a slowdown on the horizon.

Non-U.S. Markets

Equity markets outside of the U.S. produced mixed results during the second quarter of 2018 while currency had a major effect on U.S.-based investors. As global growth slowed and the Federal Reserve adopted a more aggressive stance on interest rates, the U.S. dollar was up approximately 5% versus a basket of international currencies. Equity price volatility affected global markets as tensions seemed to escalate between the U.S. and its major trading partners. It is yet to be seen, however, how much of the threatened tariffs and retaliation is actually implemented. The European Union faces a fresh challenge with political developments in Italy, already being rattled by the Greek financial crisis and Brexit in past years. The broad developed markets index, however, was in positive territory for the quarter in local currency terms.

Real Assets Markets

The U.S. Treasury yield curve rose across all maturities during the quarter with the biggest increases occurring in the short to intermediate segment of the curve. The bellwether 10-year Treasury yield ended the quarter at 2.85%, up 11 basis points from March. The Federal Open Market Committee decided to increase its overnight rate by 25 basis points in June to a range of 1.75% to 2.00%. There was little indication that the Fed is looking to change course and expressed generally strong sentiment towards the health of the economy. Credit spreads widened during the quarter within investment grade credit but were little changed for the high yield market.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Summary of Index Returns

For Periods Ended June 30, 2018

	Quarter	One Year	Three Years	Five Years	Ten Years
Domestic Equity					
Standard & Poor's 500	3.44%	14.38%	11.93%	13.42%	10.17%
Wilshire 5000	3.83	14.66	11.85	13.36	10.23
Wilshire 4500	6.02	16.45	11.21	13.26	10.98
Wilshire Large Cap	3.41	14.42	12.00	13.47	10.07
Wilshire Small Cap	7.87	16.87	10.80	12.56	11.71
Wilshire Micro Cap	9.21	19.37	10.47	12.32	10.94
Domestic Equity					
Wilshire Large Value	2.14%	9.37%	10.24%	10.89%	8.90%
Wilshire Large Growth	4.82	19.67	13.54	16.19	11.26
Wilshire Mid Value	5.97	12.65	10.85	12.09	11.00
Wilshire Mid Growth	2.88	17.00	9.39	12.70	10.91
Wilshire Small Value	9.30	13.69	11.10	12.19	11.72
Wilshire Small Growth	6.43	19.92	10.18	12.76	11.61
International Equity					
MSCI All World ex U.S. (USD)	-2.61%	7.28%	5.07%	5.99%	2.54%
MSCI All World ex U.S. (local currency)	1.80	8.18	6.57	9.52	5.46
MSCI EAFE	-1.24	6.84	4.90	6.44	2.84
MSCI Europe	-1.27	5.28	4.22	6.21	2.36
MSCI Pacific	-1.35	9.90	6.36	6.92	3.95
MSCI Emerging Markets Index	-7.96	8.20	5.60	5.01	2.26
Domestic Fixed Income					
Barclays Aggregate Bond	-0.16%	-0.40%	1.72%	2.27%	3.72%
Barclays Credit	-0.88	-0.65	2.86	3.37	5.15
Barclays Mortgage	0.24	0.15	1.46	2.25	3.54
Barclays Treasury	0.10	-0.65	1.02	1.48	2.97
Citigroup High Yield Cash Pay	1.09	2.74	5.19	5.11	7.75
Barclays US TIPS	0.77	2.11	1.93	1.68	3.03
91-Day Treasury Bill	0.46	1.36	0.68	0.42	0.35
International Fixed Income					
Citigroup Non-U.S. Gov. Bond	-5.11%	3.22%	3.74%	1.01%	1.78%
Citigroup World Gov. Bond	-3.35	1.90	2.81	1.11	2.07
Citigroup Hedged Non-U.S. Gov.	0.23	3.57	3.85	4.30	4.41
Currency*					
Euro vs. $	-5.07%	2.37%	1.57%	-2.12%	-2.95%
Yen vs. $	-3.99	1.44	3.38	-2.15	-0.44
Pound vs. $	-5.88	1.64	-5.67	-2.74	-4.02
Real Estate					
Wilshire REIT Index	9.73%	3.88%	7.84%	8.42%	7.81%
Wilshire RESI	9.74	4.00	8.27	8.80	7.91

*Positive values indicate dollar depreciation.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Summary Review of Plans
Periods Ended 6/30/2018

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year
TOTAL FUND for PERF	**$351.8 bil**	**0.6%**	**8.6%**	**6.7%**	**8.1%**	**5.6%**
Total Fund Policy Benchmark [1]		**0.6%**	**8.6%**	**6.9%**	**8.1%**	**6.7%**
Actuarial Rate		1.8%	7.4%	7.5%	7.5%	7.6%
Affiliate Funds						
Judges I	**$39.7 mil**	**0.5%**	**1.5%**	**0.9%**	**0.5%**	**0.5%**
91-Day Treasury Bill		0.5%	1.4%	0.7%	0.4%	0.4%
Judges II	**$1,521.7 mil**	**1.1%**	**7.5%**	**6.2%**	**7.2%**	**6.3%**
Weighted Policy Benchmark		1.1%	7.3%	6.0%	7.0%	6.3%
Legislators' Retirement System	**$114.0 mil**	**1.0%**	**4.8%**	**4.4%**	**5.2%**	**5.8%**
Weighted Policy Benchmark		1.0%	4.7%	4.2%	4.9%	5.5%
Long-Term Care ("LTC")	**$4,515.3 mil**	**1.0%**	**4.0%**	**3.7%**	**4.1%**	**4.4%**
Weighted Policy Benchmark		1.0%	4.0%	3.5%	3.9%	4.2%
CERBT Strategy 1	**$6,800.6 mil**	**1.0%**	**8.0%**	**6.4%**	**7.4%**	**5.9%**
CERBT Strategy 1 Policy Benchmark		1.0%	7.7%	6.0%	7.0%	5.8%
CERBT Strategy 2	**$1,090.1 mil**	**0.9%**	**6.2%**	**5.4%**	**6.2%**	**-.-%**
CERBT Strategy 2 Policy Benchmark		0.9%	5.8%	5.0%	5.8%	-.-%
CERBT Strategy 3	**$395.1 mil**	**0.9%**	**4.7%**	**4.3%**	**5.1%**	**-.-%**
CERBT Strategy 3 Policy Benchmark		0.9%	4.4%	4.0%	4.6%	-.-%
Health Care Fund	**$443.3 mil**	**-0.2%**	**-0.3%**	**1.8%**	**2.5%**	**4.0%**
Barclays U.S. Aggregate		-0.2%	-0.4%	1.7%	2.3%	3.7%
Supplemental Contribution Plan	**$109.9 mil**	**0.3%**	**4.3%**	**3.7%**	**4.4%**	**5.0%**
CalPERS Custom SCP Plan Index		0.4%	4.3%	3.9%	4.7%	5.7%
457 Program	**$1,448.2 mil**	**1.5%**	**8.0%**	**6.3%**	**7.0%**	**5.7%**
CalPERS Custom 457 Plan Index		1.5%	7.9%	6.4%	7.2%	6.1%

[1] The Total Fund Policy Benchmark return equals the return for each asset class benchmark weighted at the current target asset allocation.

Wilshire Consulting
Performance Analysis – June 30, 2018
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Total Fund Review PERF

Periods Ended 6/30/2018

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR[12]	5-Year Ratios Sharpe[13]	5-Year Ratios Info[14]
TOTAL FUND	**$351.8 bil**	**0.6%**	**8.6%**	**6.7%**	**8.1%**	**5.6%**	**$42.6 bil**	**1.4**	**-0.1**
Total Fund Policy Benchmark [2]		**0.6%**	**8.6%**	**6.9%**	**8.1%**	**6.7%**		**1.4**	**0.0**
Actuarial Rate		1.8%	7.4%	7.5%	7.5%	7.6%			
GROWTH	**199.0**	**0.9%**	**12.1%**	**9.1%**	**10.4%**	**7.0%**	**$43.7 bil**	**1.2**	**-0.2**
Growth Policy Benchmark [3]		0.9%	12.9%	9.5%	10.9%	8.2%		**1.2**	**0.0**
PUBLIC EQUITY	**171.8**	**0.6%**	**11.5%**	**8.8%**	**10.2%**	**6.7%**	**$35.4 bil**	**1.0**	**0.1**
Public Equity Policy Benchmark [4]		1.0%	11.9%	8.8%	10.1%	7.0%		**1.0**	**0.0**
PRIVATE EQUITY	**27.2**	**3.1%**	**16.1%**	**10.4%**	**11.9%**	**9.0%**	**$10.8 bil**	**3.4**	**-0.2**
Private Equity Policy Benchmark [5]		0.0%	18.6%	12.3%	14.2%	13.5%		**1.4**	**0.0**
INCOME	**79.1**	**-0.8%**	**0.4%**	**3.2%**	**3.8%**	**5.7%**	**$7.2 bil**	**0.8**	**1.2**
Income Policy Benchmark [6]		-0.9%	0.0%	2.7%	3.1%	4.9%		**0.6**	**0.0**
REAL ASSETS [7]	**38.1**	**1.6%**	**8.0%**	**7.1%**	**9.4%**	**-0.5%**	**$5.4 bil**	**1.6**	**-0.1**
Real Assets Policy Benchmark [8]		1.9%	6.8%	8.3%	9.6%	6.3%		**2.4**	**0.0**
INFLATION	**20.8**	**0.8%**	**9.3%**	**0.8%**	**-0.4%**	**-1.8%**	**$1.5 bil**	**-0.1**	**0.7**
Inflation Policy Benchmark [9]		0.8%	8.9%	0.5%	-0.9%	-1.0%		**-0.2**	**0.0**
LIQUIDITY	**11.8**	**0.6%**	**1.7%**	**0.9%**	**0.9%**	**1.0%**	**$0.0 bil**	**0.5**	**-0.3**
Liquidity Policy Benchmark [10]		0.4%	1.3%	0.7%	1.0%	1.1%		**0.5**	**0.0**
ABSOLUTE RETURN STRATEGIES [11]	**0.2**	**-4.4%**	**-3.6%**	**-2.5%**	**1.2%**	**1.3%**		**0.2**	**-0.9**
Absolute Return Strategies Policy Benchmark [11]		1.6%	6.0%	5.7%	5.5%	5.8%		**20.9**	**0.0**
EXTERNAL MULTI-ASSET CLASS COMPOSITE	**1.5**	**-3.0%**	**2.9%**	**2.8%**	**5.1%**	**-.-%**		**N/A**	**N/A**
Absolute 7.5%		1.8%	7.5%	7.5%	7.5%	-.-%		**N/A**	**N/A**
TRUST LEVEL PORTFOLIO MANAGEMENT / OTHER	**1.3**	**-1.3%**	**3.0%**	**-.-%**	**-.-%**	**-.-%**		**N/A**	**N/A**
TERMINATED AGENCY POOL	**0.1**	**0.8%**	**2.3%**	**3.3%**	**3.3%**	**-.-%**		**N/A**	**N/A**
TOTAL FUND PLUS TAP	**351.9**	**0.6%**	**8.6%**	**6.7%**	**8.1%**	**5.6%**		**N/A**	**N/A**

[2] The Total Fund Policy Benchmark return equals the return for each asset class benchmark weighted at the current target asset allocations.
[3] Growth Policy Benchmark equals the benchmark returns of public equity and private equity weighted at policy allocation target percentages.
[4] The Public Equity Policy Benchmark is a custom global benchmark maintained by FTSE.
[5] The Private Equity Policy Benchmark is currently 1-quarter lagged (67% FTSE US TMI + 33% FTSE AW x-US TMI) with a hurdle of + 3%.
[6] The Income Policy Benchmark equals the benchmark returns of domestic and international fixed income components weighted at policy allocation target percentages.
[7] Real Assets include real estate, whose returns are net of investment management fees and all expenses, including property level operations expenses netted from property income. This method differs from GASB 31, which requires all investment expenses be identified for inclusion in the System's general purpose financial statements.
[8] The Real Assets Policy Benchmark equals the benchmark returns of real estate, timber, and infrastructure weighted at policy allocation target percentages.
[9] The Inflation Policy Benchmark equals the benchmark returns of commodities and TIPS weighted at policy allocation target percentages.
[10] The Liquidity Policy Benchmark is a custom index maintained by State Street Bank.
[11] The Absolute Return Strategies program was excluded from Public Equity on July 1, 2011. Public Equity history does not include Absolute Return Strategies performance. The Absolute Return Strategies Policy Benchmark is currently Merrill Lynch Treasury 1-Year Note + 5%.
[12] VaR (Value at Risk) measures how much the portfolio might decrease over a 12 month period in extreme cases. The VAR estimate shows how much the portfolio value might fall in the worst 5% of 12 month periods. VAR is calculated using total risk (standard deviation) and market value ((Expected Return – (1.65 X SD)) X MV).
[13] The Sharpe Ratio or reward-to-variability ratio is a measure of the mean excess return per unit of risk in an investment strategy. The Sharpe ratio is used to characterize how well the return of an asset compensates the investor for the total risk taken. The 5-year period was selected to provide sufficient data points for a meaningful calculation, but is still short enough to reflect the changes to the investment programs over the last few years.
[14] The "Information Ratio" calculates the amount of excess performance earned per unit of excess risk, as measured by tracking error. Higher information ratios imply a greater return per unit of excess risk ventured.

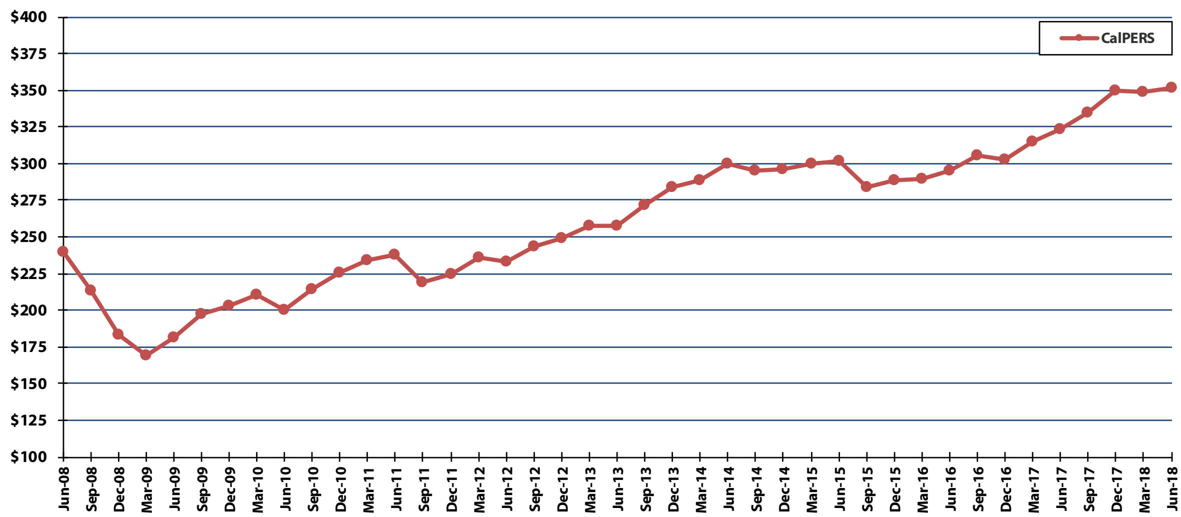
Total Fund Review for PERF (continued)

Periods Ended 6/30/2018

Total Fund Flow

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	1Q18	2Q18
Market Value ($bil)	253.0	183.3	203.3	225.7	225.0	248.6	283.6	295.8	288.9	302.8	350.0	348.7	351.8

Total Fund Market Value



Asset Allocation

Asset Class	Actual (%)	Policy (%)	Difference (%)
Growth	56.6	57.0	-0.4
Income	22.5	22.0	+0.5
Real Assets	10.8	12.0	-1.2
Inflation	5.9	6.0	-0.1
Liquidity	3.3	3.0	+0.3
Multi-Asset/TLPM	0.8	0.0	+0.8
ARS/Other PERF	0.1	0.0	+0.1
Total	100.0	100.0	0.0

* Asset allocation targets are in the process of shifting to the new targets adopted by the Investment Committee in September 2016. Transitions accounts are included with their respective asset classes.

Wilshire Consulting
Performance Analysis – June 30, 2018
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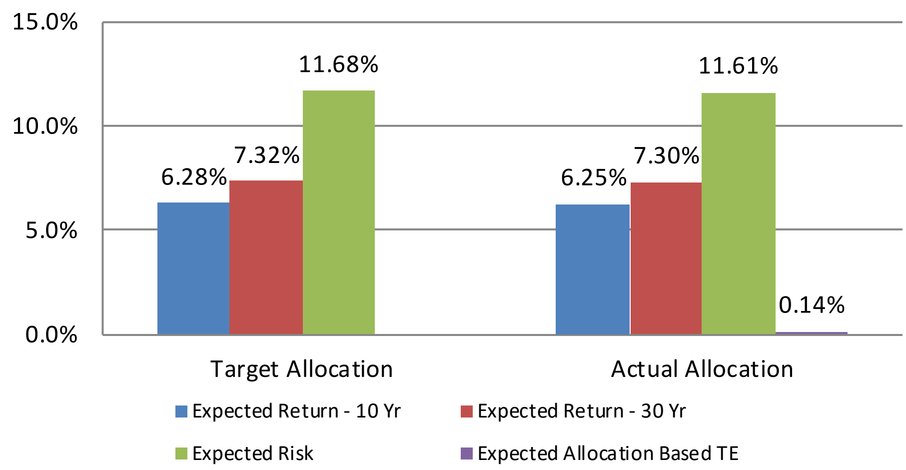
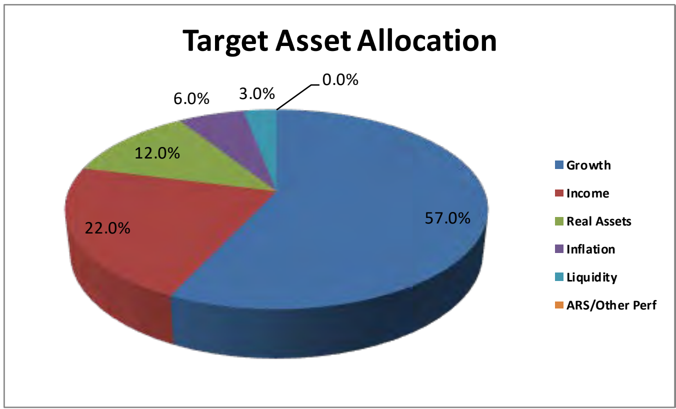
Total Fund Review for PERF (continued)

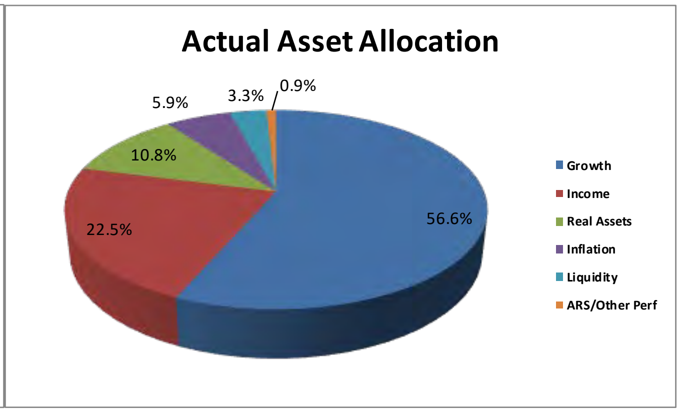
Periods Ended 6/30/2018

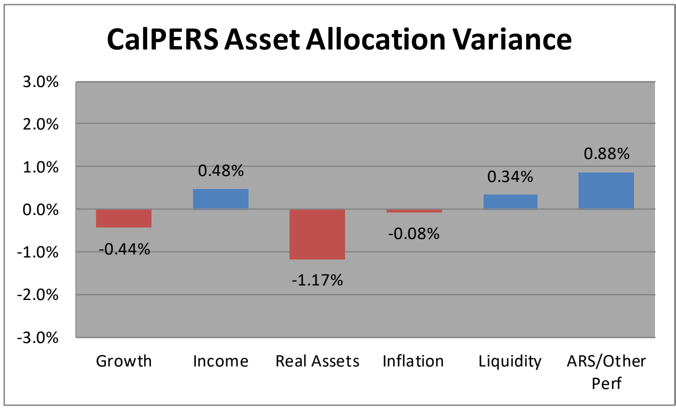
Expected Return/Risk and Tracking Error based on Wilshire's Asset Class Assumptions

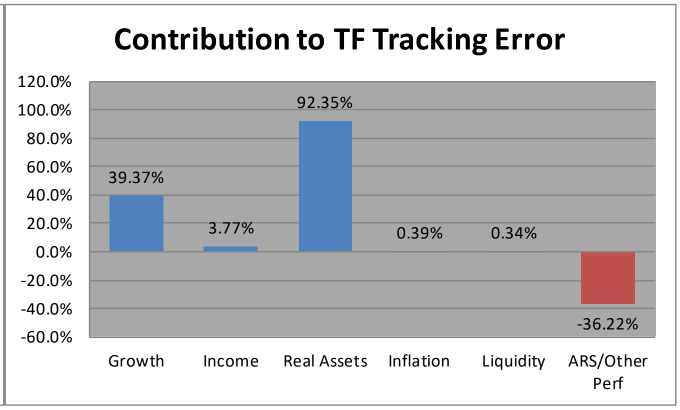


Total Fund Asset Allocation





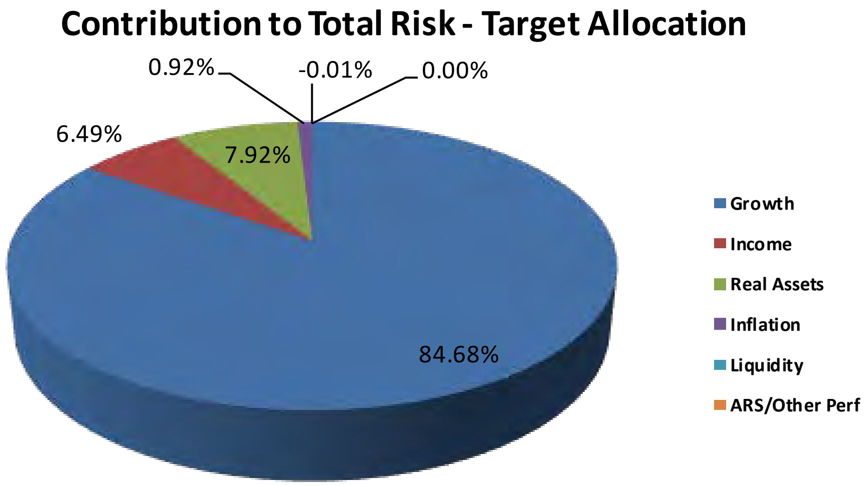


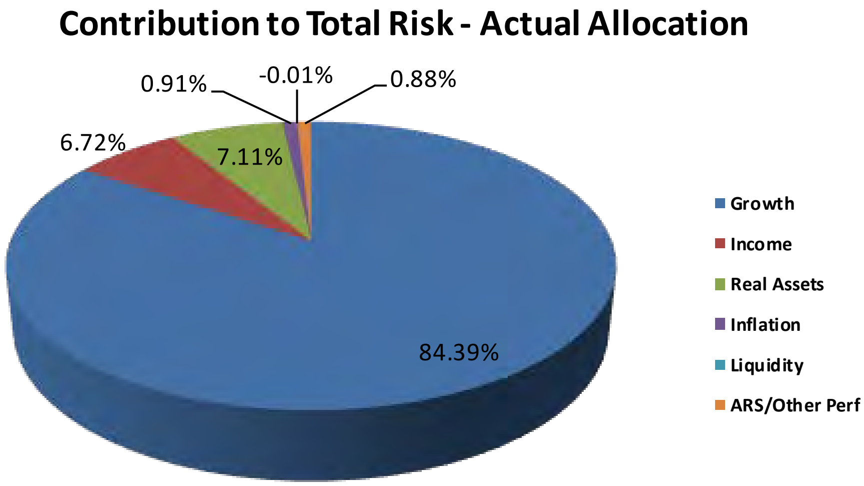


Total Fund Review for PERF (continued)

Periods Ended 6/30/2018

Contribution to Total Risk based on Wilshire's Asset Class Assumptions





California Public Employees' Retirement System
Total Fund Attribution - Quarter
As of 6/30/2018

Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	56.74	0.94	57.00	0.89	-0.26	0.05	0.00	-0.01	0.02	0.01
Public Equity	49.03	0.58	49.00	1.01	0.03	-0.43	0.00	0.00	-0.21	-0.21
Private Equity	7.71	3.14	8.00	0.02	-0.29	3.12	0.00	-0.01	0.23	0.22
Income	20.54	-0.80	22.00	-0.85	-1.46	0.05	0.04	0.00	0.01	0.05
Real Assets	10.66	1.56	12.00	1.91	-1.34	-0.35	-0.02	0.00	-0.04	-0.06
Inflation	6.91	0.77	6.00	0.79	0.91	-0.02	-0.01	0.00	0.00	-0.01
Ext. MAC/ARS/TLPM/Other	1.04	-3.05	0.00	1.82	1.04	-4.87	0.02	-0.06	0.00	-0.04
Liquidity	4.11	0.55	3.00	0.40	1.11	0.16	0.00	0.00	0.00	0.00
Monthly Linked Return	**100.00**	**0.58**	**100.00**	**0.62**		**-0.04**	**0.02**	**-0.06**	**-0.01**	**-0.04**
Trading/Hedging/Other		0.02		0.00		0.02				**0.02**
Total		***0.60***		***0.62***		***-0.01***				***-0.01***

The Total Fund Attribution displays the return contribution of each asset class to the total fund. This is done by monthly linking each program's allocation at the beginning of the month with each month's returns to determine if tactical allocation and active management within asset classes helped or hurt performance. The interaction effect is a cross-factor, used to help further explain the combined impact of a portfolio's selection and allocation decisions within a segment.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

California Public Employees' Retirement System
Total Fund Attribution - Calendar Year-to-Date
As of 6/30/2018

Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	57.20	0.68	55.50	1.25	1.70	-0.58	-0.06	0.01	-0.28	-0.32
Public Equity	49.57	-0.13	47.50	0.24	2.07	-0.37	-0.02	0.00	-0.18	-0.21
Private Equity	7.63	5.80	8.00	6.73	-0.37	-0.93	-0.03	0.01	-0.09	-0.12
Income	19.85	-2.30	21.00	-2.56	-1.15	0.26	0.07	0.00	0.05	0.12
Real Assets	10.54	3.33	12.50	3.69	-1.96	-0.36	-0.06	0.00	-0.04	-0.10
Inflation	7.34	1.75	7.50	1.79	-0.16	-0.04	-0.02	0.00	0.00	-0.02
Ext. MAC/ARS/TLPM/Other	0.89	-6.05	0.00	3.68	0.89	-9.73	0.03	-0.10	0.00	-0.07
Liquidity	4.18	0.99	3.50	0.76	0.68	0.23	0.00	0.00	0.01	0.01
Monthly Linked Return	**100.00**	**0.46**	**100.00**	**0.84**		**-0.38**	**-0.04**	**-0.09**	**-0.26**	**-0.38**
Trading/Hedging/Other		0.00		0.00		0.00				**0.00**
Total		***0.46***		***0.84***		***-0.38***				***-0.38***

The Total Fund Attribution displays the return contribution of each asset class to the total fund. This is done by monthly linking each program's allocation at the beginning of the month with each month's returns to determine if tactical allocation and active management within asset classes helped or hurt performance. The interaction effect is a cross-factor, used to help further explain the combined impact of a portfolio's selection and allocation decisions within a segment.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

California Public Employees' Retirement System
Total Fund Attribution - Fiscal Year-to-Date
As of 6/30/2018

Asset Class	Actual (%)		Policy (%)		Difference (%)		Total Fund Return Contribution (%)			
	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	57.23	12.11	54.75	12.95	2.48	-0.84	0.06	0.01	-0.41	-0.34
Public Equity	49.45	11.47	46.75	11.89	2.70	-0.42	0.10	0.00	-0.20	-0.10
Private Equity	7.79	16.09	8.00	18.59	-0.21	-2.50	-0.04	0.01	-0.21	-0.24
Income	19.53	0.35	20.50	-0.03	-0.97	0.38	0.11	0.00	0.08	0.19
Real Assets	10.65	7.99	12.75	6.81	-2.10	1.19	0.03	-0.04	0.16	0.16
Inflation	7.58	9.26	8.25	8.90	-0.67	0.36	-0.01	0.00	0.03	0.02
Ext. MAC/ARS/TLPM/Other	0.72	2.46	0.00	7.50	0.72	-5.04	0.01	-0.08	0.00	-0.07
Liquidity	4.28	1.67	3.75	1.31	0.53	0.37	-0.02	0.00	0.01	-0.01
Monthly Linked Return	**100.00**	**8.60**	**100.00**	**8.64**		**-0.04**	**0.18**	**-0.11**	**-0.12**	**-0.04**
Trading/Hedging/Other		-0.02		0.00		-0.02				**-0.02**
Total		***8.58***		***8.64***		***-0.06***				***-0.06***

The Total Fund Attribution displays the return contribution of each asset class to the total fund. This is done by monthly linking each program's allocation at the beginning of the month with each month's returns to determine if tactical allocation and active management within asset classes helped or hurt performance. The interaction effect is a cross-factor, used to help further explain the combined impact of a portfolio's selection and allocation decisions within a segment.

Total Fund Review for PERF (continued)

Periods Ended 6/30/2018

- The California Public Employees' Retirement System ("CalPERS, the System") generated a total fund return of 0.60%, for the quarter ended June 30, 2018. CalPERS' return can be attributed as follows:

0.62%	Strategic Policy Allocation
0.02%	Actual/Tactical Asset Allocation
-0.01%	Active Management
-0.06%	Interaction
0.02%	Trading/Currency Hedging
0.60%	**Total Return**

- The total fund attribution table on the previous page displays the return contribution of each asset class to the total fund. This table will allow the Board to see if tactical allocation and active management within asset classes helped or hurt performance during the quarter.

  – Strategic Policy: The contribution to total return from each asset class, calculated as the percentage allocated to each asset class multiplied by the benchmark for that asset class.

  – Actual Allocation: The return contribution during the quarter due to differences in the actual allocation from the policy allocation (i.e. the actual allocation to total equity was higher than the policy allocation). A positive number would indicate an overweight benefited performance and vice versa.

  – Active Management: The return contribution from active management. The number would be positive if the asset class outperformed the designated policy index and vice versa (i.e. the US fixed income segment outperformed its custom benchmark during the quarter and contributed positively to active management.

  – Interaction: Captures the interaction of managers' performance and asset class weighting differences.

  – Actual Return: The actual return of the asset classes if allocations to them were static during the quarter. These returns will not match exactly with the actual segment returns since asset class allocations change during the quarter due to market movement, cash flows, etc.

- Investment landscape during the first half of 2018 has been challenging, with volatility back in the market in a big way. After breaking its 9-quarter positive return streak with a small loss in the first quarter, CalPERS investments navigated a host of ongoing and new uncertainties in the second quarter and was able to come away with a small gain of 0.60%. This performance nearly matched CalPERS' strategic policy benchmark, which came in at 0.62%.

- Wilshire's attribution showed that neither asset allocation nor active management provided any meaningful contribution, or, caused notable detraction. The System's asset allocation contribution showed that the negative effect of being underweight to the higher returning Real Assets and overweight to the less robust Inflation were countered by gains derived from a below-policy exposure to Income, which turned out to be the poorest performing major CalPERS asset class this quarter. The active management contribution was also muted for Q2, with drag from Real Assets' underperformance mostly offset by Growth's outperformance (which came from the private equity component, specifically).

Total Fund Review for PERF (continued)

Periods Ended 6/30/2018

Relative to the Total Fund Policy Benchmark:

- **Growth Exposure:** In the second quarter of 2018, performance of the Growth composite largely set the tone for CalPERS investments overall. After stumbling in Q1 where most of the risk assets were weighed down by a slew of interest rate and trade concerns, the Growth composite saw market sentiment quickly recover on the backs of better-than-expected global economic indicators and was able to rebound in Q2. While market sentiment was dampened by new geopolitical uncertainty, rising U.S. interest rates/U.S. dollar strength, and Trump administration's increasingly contentious trade rhetoric later in the quarter, the Growth composite did hold on to a small 0.9% gain to close out the period and modestly topped the total fund policy benchmark (by +32 bps). Impact of the macro headwinds were fully reflected in the Growth composite's public equity component performance, as it returned just 0.6% for the quarter. The private equity program was the better performing component with a 3.1% gain, and contributed to the Growth composite's relative outperformance.

- **Income Exposure:** Fixed income markets in general struggled for the second straight quarter, in part due to the continued rising of US Treasury yields (up +11 bps to 2.86%) as the Fed carries out its policy of interest rate normalization. Additionally, bond spreads outside of the high yield sector have also widened, driven by intensifying tensions surrounding US-China (and with other major trading partners) trade relations and emerging geopolitical concerns in developed Europe and other emerging markets. Faced with the confluence of these forces, the Income composite fluctuated between losses and gains throughout the second quarter, but ultimately settled with a -0.8% loss that ranked at the bottom of the leaderboard among the major CalPERS asset classes; this result lagged both the Income policy benchmark and the total fund policy benchmark.

- **Real Assets Exposure:** Performance of the Real Assets asset class has been quite consistent over the years due to the generally slow-but-steady nature of the underlying investment portfolios, which currently include private real estate, forestland, and infrastructure. Quarterly returns of Real Assets has averaged in the high 1% range over the past two years, and this program did not deviate far from that pattern in Q2 of 2018 by generating an overall gain of 1.6%. While this performance did come in ahead of the total fund policy benchmark's 0.6% pace, it missed Real Assets' own benchmark return by a -35 bps margin and is considered a detractor from the total fund-level attribution standpoint.

- **Inflation Exposure:** Primarily supported by the commodities portfolios, which have benefited from a rebound in crude oil prices, the Inflation composite posted a modest 0.8% gain in the second quarter of 2018, tying the Inflation asset class benchmark while comparing favorably to the totally fund policy.

- **Liquidity:** Correlating with short-term interest rates, which has steadily risen since the Fed began quantitative tightening and raising the Fed Funds Rate, the Liquidity composite also saw its return pick up over the past year. Its 0.6% Q2 return beat its own asset class benchmark and nearly parred the total fund policy benchmark. Starting Q3 2015, this composite is solely comprised of short-term investment funds.

- **External Multi-Asset Class Composite:** Results of the System's Multi-Asset Class program (MAC) were soft this quarter, as it dropped -3.1% that was its worst quarterly finish over the last five years. This rate of return came in below the total fund policy benchmark as well as the program's own absolute 7.5% annual objective.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Growth Review for PERF

Periods Ended 6/30/2018

Growth Allocation

Asset Allocation: Actual versus Target Weights

Asset Class	Actual Asset Allocation	Target Asset Allocation	Difference
Growth	56.6%	57.0%	-0.4%
Public Equity	48.8%	49.0%	-0.2%
Private Equity	7.7%	8.0%	-0.3%

Growth Segment Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR[21]	5-year Sharpe Ratio[22]	5-year Info Ratio[23]
GROWTH	**199.0**	**0.9%**	**12.1%**	**9.1%**	**10.4%**	**7.0%**	**$43.7 bil**	**1.2**	**-0.2**
Growth Policy Benchmark		0.9%	12.9%	9.5%	10.9%	8.2%		**1.2**	**0.0**
Value Added		0.0%	-0.8%	-0.4%	-0.5%	-1.2%			
PUBLIC EQUITY [15]	**171.8**	**0.6%**	**11.5%**	**8.8%**	**10.2%**	**6.7%**	**$35.4 bil**	**1.0**	**0.1**
Public Equity Policy Benchmark [16]		1.0%	11.9%	8.8%	10.1%	7.0%		**1.0**	**0.0**
Value Added		-0.4%	-0.4%	0.0%	0.1%	-0.3%			
US Equity Composite	**79.9**	**3.5%**	**14.7%**	**11.3%**	**13.1%**	**10.1%**		**1.5**	**0.3**
Custom US Equity Benchmark [17]		4.1%	15.4%	11.5%	13.2%	10.1%		**1.5**	**0.0**
Value Added		-0.6%	-0.7%	-0.2%	-0.1%	0.0%			
Total Int'l Equity	**92.0**	**-2.1%**	**8.5%**	**6.3%**	**7.3%**	**3.5%**		**0.7**	**-0.2**
Custom Int'l Equity Benchmark [18]		-1.9%	8.6%	6.0%	7.2%	3.4%		**0.7**	**0.0**
Value Added		-0.2%	-0.1%	0.3%	0.1%	0.1%			
PRIVATE EQUITY [19]	**27.2**	**3.1%**	**16.1%**	**10.4%**	**11.9%**	**9.0%**	**$10.8 bil**	**3.4**	**-0.2**
PE Policy Benchmark [20]		0.0%	18.6%	12.3%	14.2%	13.5%		**1.4**	**0.0**
Value Added		3.1%	-2.5%	-1.9%	-2.3%	-4.5%			

[15] Includes domestic equity, international equity, corporate governance, and MDP ventures. It does not include asset allocation transition accounts; those accounts are reflected in total fund but are not included in any composite.
[16] The Public Equity Policy Benchmark is a custom global benchmark maintained by FTSE.
[17] The Custom US Equity Benchmark currently represents the FTSE Total Market Index. It is linked historically to its prior benchmarks.
[18] The Custom Int'l Equity Benchmark currently represents the FTSE All World ex US Index. It is linked historically to its prior benchmarks.
[19] The performance of CalPERS' private equity (AIM) investments is 1-quarter lagged.
[20] The AIM Policy Benchmark currently equals 3% + 1-quarter lagged (67% FTSE US TMI + 33% FTSE AW x-US TMI), and is linked historically to its prior benchmarks.
[21] VaR (Value at Risk) measures how much the portfolio might decrease over a 12 month period in extreme cases. The VAR estimate shows how much the portfolio value might fall in the worst 5% of 12 month periods. VAR is calculated using total risk (standard deviation) and market value.
[22] The Sharpe Ratio or reward-to-variability ratio is a measure of the mean excess return per unit of risk in an investment strategy. The Sharpe ratio is used to characterize how well the return of an asset compensates the investor for the risk taken.
[23] The "Information Ratio" calculates the amount of excess performance earned per unit of excess risk, as measured by tracking error. Higher information ratios imply a greater return per unit of excess risk ventured.

Growth Review for PERF (continued)

Comments Regarding Growth Segment Performance

Helped Performance:

- **U.S. Equity Exposure:** After seeing its positive momentum disrupted by trade war concerns and sharply higher bond yields in the first quarter, the U.S. equity market got back to its winning ways in Q2. Bolstered by supportive economic data, broadly constructive corporate earnings, and a modest rise in inflation, U.S. equities easily balanced the sustained trade war rhetoric with China and other major trade partners to resume an upward path. For the quarter, CalPERS's U.S. equity composite netted an overall return of 3.5%. While this output fell a bit short of the composite's own policy measure of 4.1%, it was the highest return generated by any major Growth components this quarter and easily topped the Growth policy benchmark (by +263 bps). Within the composite, the internal U.S. equity component continues to be the stronger performing unit, finishing the quarter up 3.8%. The smaller external U.S. equity component did close with respectable gains as well, but came in several steps behind at 1.6%.

- **Private Equity Exposure:** CalPERS' private equity program continues to offer the benefit of diversification from public equities and steady (if not always higher) absolute returns. After having averaged over 4% return per quarter in 2017, the private equity portfolio saw its pace of appreciation moderate somewhat in the first half of 2018, but nonetheless kept up the forward momentum in Q2 to finish with a 3.1% total return. This performance handily outpaced the total public equity program's 0.6% return, and beat out private equity's own policy benchmark by +312 bps to serve as a net contributor to the Growth composite.

Impeded Performance:

- **International Equity Exposure:** Performance of PERS' international equity composite diverged sharply from its domestic equity counterpart during the second quarter, as volatility in equity markets outside of the U.S. remained elevated. Multiple macro headwinds, ranging from threats of disruption to global trade, rising political risks (in a number of countries), and the revived strength of US dollar, all factored in to weigh down developed non-U.S. and emerging markets equity performance; the latter component was hit particularly bad during this past quarter, given that China was the main target in the new U.S. protectionist trade policies. Amid this challenging backdrop, the international equity composite skid for the second consecutive quarter, losing -2.1% this time after previously falling -0.7% in Q1, and notably lagged the Growth policy benchmark's 0.9% return. Results within the international equity segment were fairly similar, with the larger-sized internally managed composite retreating -2.0% while the smaller externally managed composite finishing down -2.4%.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Public Equity Review for PERF - U.S. Equity

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	Date
US Equity Composite (ex ARS)	**79.9**	**3.5%**	**14.7%**	**11.3%**	**13.1%**	**10.1%**	**12/79**
Custom US Equity Benchmark [24]		4.1%	15.4%	11.5%	13.2%	10.1%	
Value Added		-0.6%	-0.7%	-0.2%	-0.1%	0.0%	
Total Internal US Equity	**69.6**	**3.8%**	**15.1%**	**11.6%**	**13.2%**	**10.4%**	**6/88**
Custom Internal US Equity Benchmark [25]		3.9%	15.1%	11.5%	13.2%	10.1%	
Value Added		-0.1%	0.0%	0.1%	0.0%	0.3%	
Total External US Equity	**10.2**	**1.6%**	**11.7%**	**8.9%**	**11.6%**	**8.8%**	**12/98**
Custom External US Equity Benchmark [26]		2.6%	12.8%	10.5%	12.2%	9.7%	
Value Added		-1.0%	-1.1%	-1.6%	-0.6%	-0.9%	

Public Equity Review for PERF - International Equity

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	Date
Total Int'l Equity (ex ARS)	**92.0**	**-2.1%**	**8.5%**	**6.3%**	**7.3%**	**3.5%**	**12/02**
Custom Int'l Equity Benchmark [27]		-1.9%	8.6%	6.0%	7.2%	3.4%	
Value Added		-0.2%	-0.1%	0.3%	0.1%	0.1%	
Total Internal Int'l Equity	**68.4**	**-2.0%**	**8.5%**	**6.2%**	**7.3%**	**3.6%**	**3/05**
Custom Internal Int'l Equity Benchmark [28]		-1.4%	9.1%	6.2%	7.1%	3.5%	
Value Added		-0.6%	-0.6%	0.0%	0.2%	0.1%	
Total External Int'l Equity	**23.6**	**-2.4%**	**8.7%**	**6.6%**	**7.3%**	**3.8%**	**6/89**
Custom External Int'l Equity Benchmark [29]		-1.3%	9.7%	6.1%	7.1%	3.3%	
Value Added		-1.1%	-1.0%	0.5%	0.2%	0.5%	

Private Equity Review for PERF – Partnership Investments

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	Date
Private Equity	**27.2**	**3.1%**	**16.1%**	**10.4%**	**11.9%**	**9.0%**	**3/90**
PE Policy Benchmark		0.0%	18.6%	12.3%	14.2%	13.5%	
Value Added		3.1%	-2.5%	-1.9%	-2.3%	-4.5%	
Private Equity Partnership Investments	27.1	3.2%	16.1%	10.5%	12.0%	9.1%	3/90
Private Equity Distribution Stock	0.0	3.4%	45.6%	-9.4%	-12.1%	-5.3%	12/99

[24] The Custom US Equity Benchmark currently represents the FTSE Total Market Index. It is linked historically to its prior benchmarks.
[25] The Custom Internal US Equity Benchmark currently represents the FTSE Total Market Index. It is linked historically to its prior benchmarks.
[26] The Custom External US Equity Benchmark return equals the return for each manager's benchmark weighted at the current target asset allocation.
[27] The Custom Int'l Equity Benchmark currently represents the FTSE All World ex US Index. It is linked historically to its prior benchmarks.
[28] The Custom Internal Int'l Equity Benchmark currently represents the FTSE Developed World ex US/Tobacco Index. This benchmark is linked historically to its prior benchmarks.
[29] The Custom External Int'l Equity Benchmark return equals the return for each manager's benchmark weighted at the current target asset allocation.

Absolute Return Strategies Review for PERF

Period Ended 6/30/2018

ARS Allocation

Asset Allocation: Actual versus Target Weights

Asset Class	Actual Asset Allocation	Target Asset Allocation	Difference
ARS	0.1%	0.0%	+0.1%

ARS Segment Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	5-Year Info Ratio[31]	5-Year Up Capture Ratio	5-Year Sharpe Ratio[32]	5-Year Sortino Ratio[33]
Absolute Return Strategies	**0.2**	**-4.4%**	**-3.6%**	**-2.5%**	**1.2%**	**1.3%**	**-0.9**	**0.2**	**0.2**	**0.3**
ARS Policy Benchmark[30]		1.6%	6.0%	5.7%	5.5%	5.8%				
Value Added		-6.0%	-9.6%	-8.2%	-4.3%	-4.5%				
Total Direct Investments	**0.2**	**-4.5%**	**-3.8%**	**-2.8%**	**1.2%**	**1.6%**				
HFRI Fund of Funds Index		0.9%	5.6%	2.1%	3.6%	1.4%				

ARS Characteristics

		Rolling Correlations vs. Index			
Percentage of positive Months	Beta vs. S&P 500	W5000	MSCI AW x-US	Domestic Fixed Benchmark	Real Estate Benchmark
61%	0.0	0.0	0.0	0.2	0.0

- Beta vs. S&P 500: This measures the amount of stock market risk in the portfolio. A beta of 1.0 would indicate that the portfolio's performance should closely track the stock market, while a beta higher than 1.0 implies greater-than-market risk and possibly leverage. The portfolio's beta is currently at 0.0, implying that there are no relationship between the portfolio's expected return and the stock market return, which is appropriate for this program.

- Correlation vs. various indices: We have calculated the historical correlation between the ARS and CalPERS' other main asset classes. Over a market cycle, the ARS has shown little to no correlation to the public equity and real estate markets while also exhibiting very low correlation with fixed income markets.

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30 The ARS Policy Benchmark consists of the Merrill Lynch 1-Year Treasury Note + 5% and is linked historically to its prior benchmark.

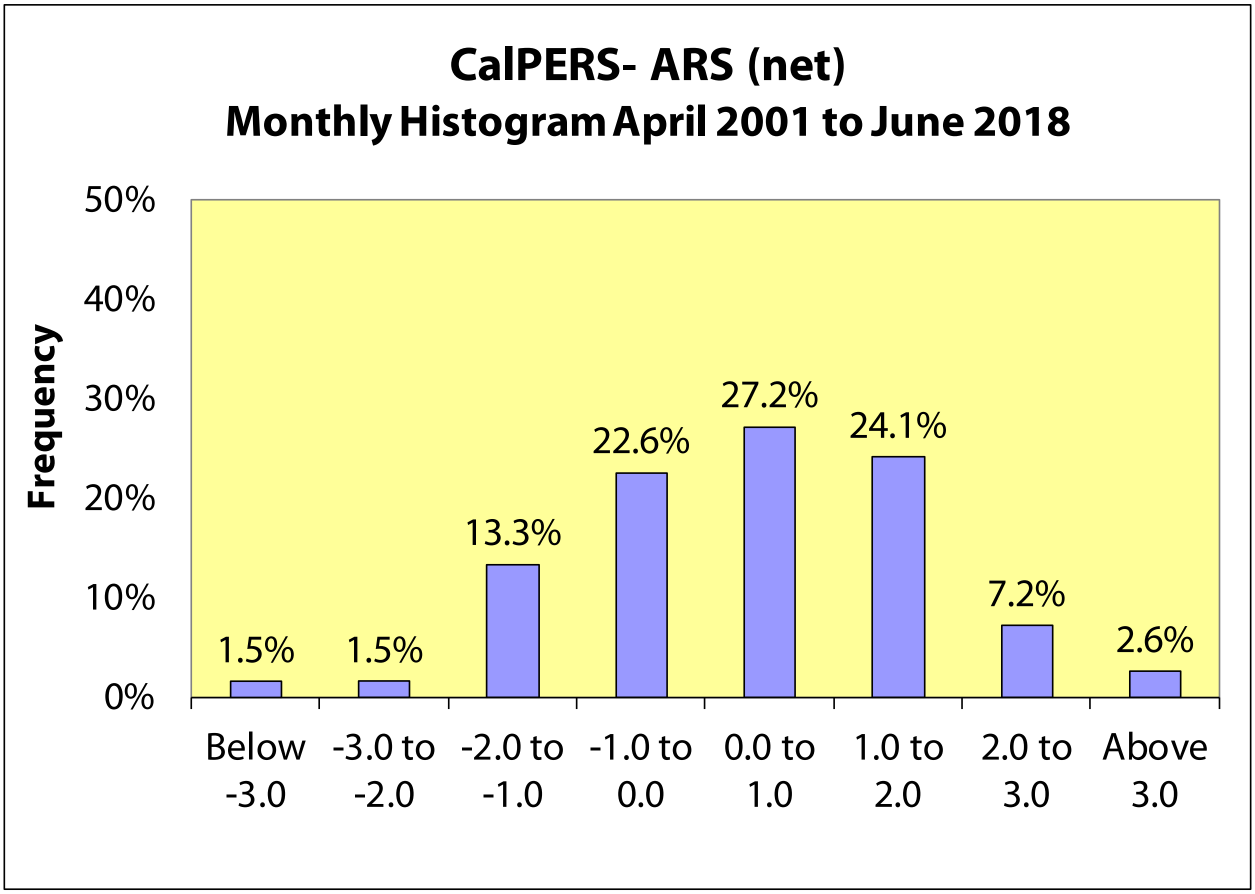
31 The "Information Ratio" calculates the amount of excess performance earned per unit of excess risk, as measured by tracking error. Higher information ratios imply a greater return per risk ventured.

32 The Sharpe Ratio or reward-to-variability ratio is a measure of the mean excess return per unit of risk in an investment strategy. The Sharpe ratio is used to characterize how well the return of an asset compensates the investor for the risk taken.

33 The Sortino Ratio is measure of a risk-adjusted return of an investment asset. It is an extension of the Sharpe Ratio. While the Sharpe ratio takes into account any volatility, in return of an asset, Sortino ratio differentiates volatility due to up and down movements. The up movements are considered desirable and not accounted in the volatility.

Absolute Return Strategies Review for PERF (Continued)

Period Ended 6/30/2018



- Histogram: The ARS is designed to generate small amounts of return on a consistent basis. This chart shows the frequency of monthly performance results. A significant number of outlying monthly performance returns would indicate insufficient risk controls. We believe that the distribution of monthly returns is as expected.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Income Review for PERF

Periods Ended 6/30/2018

Income Allocation

Asset Allocation: Actual versus Target Weights

Asset Class	Actual Asset Allocation	Target Asset Allocation	Difference
Income	22.5%	22.0%	+0.5%

Income Segment Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR[37]	5-year Sharpe Ratio[38]	5-year Info Ratio[39]
INCOME	**79.1**	**-0.8%**	**0.4%**	**3.2%**	**3.8%**	**5.7%**	**$7.2 bil**	**0.8**	**1.2**
Income Policy Benchmark[34]		-0.9%	0.0%	2.7%	3.1%	4.9%		**0.6**	**0.0**
Value Added		0.1%	0.4%	0.5%	0.7%	0.8%			
U.S. Income	**72.4**	**-0.3%**	**0.3%**	**3.3%**	**4.2%**	**6.1%**		**0.8**	**1.4**
U.S. Income Policy Benchmark[35]		-0.3%	-0.2%	2.7%	3.4%	5.3%		**0.5**	**0.0**
Value Added		0.0%	0.5%	0.6%	0.8%	0.8%			
Non-U.S. Income	**6.6**	**-6.0%**	**1.5%**	**2.7%**	**0.6%**	**2.3%**		**-0.2**	**0.8**
Non-US Income Policy Benchmark[36]		-5.6%	1.7%	2.4%	0.0%	1.3%		**-0.2**	**0.0**
Value Added		-0.4%	-0.2%	0.3%	0.6%	1.0%			

Comments Regarding Income Segment Performance

Helped Performance:

- **Mortgage Bonds:** Mortgage-backed securities was one of the better performing investment grade fixed income segments in the second quarter of 2018. The System's mortgage bonds portfolio performed in line with this broad market movement, notching a small gain of 0.3% and beat out the Income policy benchmark's -0.9% return. The smaller-sized long duration mortgage portfolio, due to its heightened interest rate sensitivity, did not register gains and was essentially flat during this rising-UST yield-quarter. Although it still outperformed relative to the Income policy and there contributed positively.

[34] The Income Policy Benchmark return equals the benchmark returns for domestic and international fixed income components weighted at policy allocation target percentages.
[35] The US Fixed Income Policy Benchmark consists of the Barclays Long Liability Index and is linked historically to its prior benchmark.
[36] The Non-US Fixed Income Policy Benchmark consists of the Barclays International Fixed Income and is linked historically to its prior benchmark.
[37] VaR (Value at Risk) measures how much the portfolio might decrease over a 12 month period in extreme cases. The VAR estimate shows how much the portfolio value might fall in the worst 5% of 12 month periods. VAR is calculated using total risk (standard deviation) and market value.
[38] The Sharpe Ratio or reward-to-variability ratio is a measure of the mean excess return per unit of risk in an investment strategy. The Sharpe ratio is used to characterize how well the return of an asset compensates the investor for the risk taken.
[39] The "Information Ratio" calculates the amount of excess performance earned per unit of excess risk, as measured by tracking error. Higher information ratios imply a greater return per risk ventured.

Income Review for PERF (Continued)

Comments Regarding Income Segment Performance

- **Government Bonds:** The overall internal Treasuries and government-sponsored bonds portfolio braced for sharp losses during the first half of the quarter following the significant rise in 10-year UST yields. But the subsequent risk aversion-driven buying brought the 10-year yields back below the 3% level and allowed the portfolio to recover those lost ground to close out Q2 on a small 0.4% gain. This compared favorably to the Income policy's -0.9% return for the same period and was deemed a performance contributor.

- **High Yield Bonds:** While many other fixed income sectors retreated as yields rose, high yield credit saw little change in spreads relative to Treasuries and held steady through most of the quarter. The CalPERS internal and external high yield portfolios posted solid results, rising 1.0% and 0.8% respectively, and out-performed the Income policy benchmark in Q2.

Impeded Performance:

- **Corporate Bonds:** Investment grade credit was among the worst performing domestic fixed income sectors this quarter in light of the widening of investment grade credit spreads, and CalPERS' $13.1 billion corporate bond portfolio was no different: it lost -1.9% and underperformed the Income policy benchmark. The $2.7 billion long duration corporate bond portfolio behaved similarly, turning in a -2.0% return for Q2 and also detracted.

- **International Fixed Income / Sovereign Bonds:** CalPERS' international fixed income and sovereign bonds portfolios faced stiff headwinds in the second quarter in the form of continued rising US interest rates and the renewed strengthening of US dollar. Both portfolios fell sharply in the quarter, losing -6.0% and -2.1%, respectively, and lagged the Income policy benchmark by sizable margins.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Wilshire

Income Review for PERF (Continued)

Income Portfolios Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	Date
INCOME	**79.1**	**-0.8%**	**0.4%**	**3.2%**	**3.8%**	**5.7%**	**6/88**
Income Policy Benchmark [40]		-0.9%	0.0%	2.7%	3.1%	4.9%	
Value Added		0.1%	0.4%	0.5%	0.7%	0.8%	
U.S. Income	**72.4**	**-0.3%**	**0.3%**	**3.3%**	**4.2%**	**6.1%**	**12/95**
Mortgage Bonds*	15.3	0.3%	0.9%	2.2%	3.7%	4.7%	12/82
Long Duration Mortgages*	4.0	0.0%	0.6%	2.9%	3.6%	6.1%	6/05
Corporate Bonds*	13.1	-1.9%	-1.1%	4.6%	5.4%	7.6%	3/02
U.S. Government*	29.1	0.4%	0.6%	3.0%	3.4%	4.8%	1/00
Sovereign Bonds*	2.4	-2.1%	-0.6%	3.0%	4.5%	-.-%	7/09
Long Duration Corporates*	2.7	-2.0%	-2.1%	3.9%	3.3%	8.3%	9/05
Internal High Yield Bonds*	3.7	1.0%	4.6%	8.4%	9.3%	10.0%	9/99
External High Yield*	1.9	0.8%	4.1%	5.7%	5.8%	6.3%	3/02
Non-U.S. Income	**6.6**	**-6.0%**	**1.5%**	**2.7%**	**0.6%**	**2.3%**	**3/89**
Custom Benchmark [41]		-5.6%	1.7%	2.4%	0.0%	1.3%	
Value Added		-0.4%	-0.2%	0.3%	0.6%	1.0%	

Securities Lending Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	Date
Internal Active Short Term**	2.6	0.5%	1.6%	1.0%	0.7%	-.-%	3/11
Custom Benchmark		0.5%	1.4%	0.8%	0.5%	-.-%	
Value Added		0.0%	0.2%	0.2%	0.2%	-.-%	
CalPERS ESEC Cash Collateral**	2.3	0.4%	1.2%	0.8%	0.6%	-.-%	6/10
Custom Benchmark		0.4%	1.4%	0.8%	0.5%	-.-%	
Value Added		0.0%	-0.2%	0.0%	0.1%	-.-%	

[40] The Income Policy Benchmark return equals the benchmark returns for domestic and international fixed income components weighted at policy allocation target percentages.
[41] The custom benchmark consists of the Barclays International Fixed Income Index and is linked historically to its prior benchmark.
* These portfolios and/or composites are unitized and represent ownership of both the PERF and other Affiliates Investment Programs.
** These portfolios hold the collateral for the security lending program.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Inflation Performance for PERF

Period Ended 6/30/2018

Inflation Allocation

Asset Allocation: Actual versus Target Weights

Asset Class	Actual Asset Allocation	Target Asset Allocation	Difference
Inflation	5.9%	6.0%	-0.1%

Inflation Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR[44]	5-year Sharpe Ratio[45]	5-year Info Ratio[46]
INFLATION	**20.8**	**0.8%**	**9.3%**	**0.8%**	**-0.4%**	**-1.8%**	**$1.5 bil**	**-0.1**	**0.7**
Inflation Policy Benchmark [42]		0.8%	8.9%	0.5%	-0.9%	-1.0%		**-0.2**	**0.0**
Value Added		0.0%	0.4%	0.3%	0.5%	-0.8%			
Internal Commodities [43]	**3.7**	**8.2%**	**30.3%**	**-4.3%**	**-9.5%**	**-12.4%**			
GSCI Total Return Index		8.0%	30.0%	-4.4%	-9.4%	-12.4%			
Value Added		0.2%	0.3%	0.1%	-0.1%	0.0%			
Core Inflation Linked Bonds	**14.0**	**-2.0%**	**2.6%**	**1.8%**	**2.0%**	**2.9%**			
Custom Benchmark		-1.9%	2.6%	1.8%	1.8%	2.7%			
Value Added		-0.1%	0.0%	0.0%	0.2%	0.2%			
Tactical Commodities	**1.6**	**8.7%**	**32.5%**	**-4.8%**	**-9.7%**	**-.-%**			
GSCI Total Return Index		8.0%	30.0%	-4.4%	-9.4%	-.-%			
Value Added		0.7%	2.5%	-0.4%	-0.3%	-.-%			
Tactical TIPS	**1.6**	**0.8%**	**2.1%**	**1.8%**	**1.5%**	**-.-%**			
CalPERS TIPS		0.8%	2.1%	1.9%	1.7%	-.-%			
Value Added		0.0%	0.0%	-0.1%	-0.2%	-.-%			

- At first glance, CalPERS' Inflation asset class ended the second quarter of 2018 on a quiet note, earning a small total return of 0.8% that mirrored the pace of the asset class benchmark. Upon taking a closer look at the investments within the Inflation program, however, the components' results were actually sharply diverging. The commodities investments, albeit smaller in size (25% of Inflation's assets), have registered strong appreciations averaging above 8% primarily thanks to the continued rally in crude oil prices. On the other hand, the rest of Inflation's assets, invested in inflation-linked bonds, turned in a much less satisfactory performance that end up offsetting commodities' gains. The Core TIPS portfolio, currently representing 67% of Inflation's total assets, was particularly weak with a -2.0% drop despite the rise in breakeven inflation rate during Q2. The commodities tailwind was also a material factor contributing to the Inflation asset class's strong 9.3% trailing 12-month return, although the effect of this rally fades beyond the 1-year mark, and the program's longer-term track record currently remains mildly in the red with the asset class benchmark.

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[42] The Inflation Policy Benchmark equals the benchmark returns of commodities and TIPS weighted at policy allocation target percentages.
[43] The internal commodities overlay portfolio is a derivatives portfolio which has no market value but a notional value approximately equal to the size of the commodities collateral.
[44] VaR (Value at Risk) measures how much the portfolio might decrease over a 12 month period in extreme cases. The VAR estimate shows how much the portfolio value might fall in the worst 5% of 12 month periods. VAR is calculated using total risk (standard deviation) and market value.
[45] The Sharpe Ratio or reward-to-variability ratio is a measure of the mean excess return per unit of risk in an investment strategy. The Sharpe ratio is used to characterize how well the return of an asset compensates the investor for the risk taken.
[46] The "Information Ratio" calculates the amount of excess performance earned per unit of excess risk, as measured by tracking error. Higher information ratios imply a greater return per unit of excess risk ventured.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Wilshire

Real Assets Review for PERF

Period Ended 6/30/2018

Real Assets Allocation

Asset Allocation: Actual versus Target Weights

Asset Class	Actual Asset Allocation	Target Asset Allocation	Difference
Real Assets	10.8%	12.0%	-1.2%

Real Assets Segment Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR[51]	5-year Sharpe Ratio[52]	5-year Info Ratio[53]
REAL ASSETS	**38.1**	**1.6%**	**8.0%**	**7.1%**	**9.4%**	**-0.5%**	**$5.4 bil**	**1.6**	**-0.1**
Real Assets Policy Benchmark [47]		1.9%	6.8%	8.3%	9.6%	6.3%		**2.4**	**0.0**
Value Added		-0.3%	1.2%	-1.2%	-0.2%	-6.8%			
Real Estate [48]	**31.8**	**1.3%**	**6.8%**	**7.2%**	**9.8%**	**-1.0%**	**$4.5 bil**	**1.6**	**-0.1**
Real Estate Policy Benchmark [49]		2.0%	7.1%	9.0%	10.4%	7.1%		**2.3**	**0.0**
Value Added		-0.7%	-0.3%	-1.8%	-0.6%	-8.1%			
Forestland [50]	**2.0**	**0.2%**	**1.9%**	**-2.4%**	**-1.0%**	**-1.1%**			
NCREIF Timberland Index		0.9%	3.8%	3.4%	6.1%	4.1%			
Value Added		-0.7%	-1.9%	-5.8%	-7.1%	-5.2%			
Infrastructure [50]	**4.3**	**4.1%**	**20.6%**	**13.0%**	**15.0%**	**14.4%**			
CPI + 400 BPS 1Qtr Lag		2.2%	6.4%	5.9%	5.5%	5.9%			
Value Added		1.9%	14.2%	7.1%	9.5%	8.5%			

- The Real Assets asset class has repeatedly played a key stabilizer role for CalPERS investments in the past three years, as this program consistently averaged a steady-paced 1.7% return per quarter over this stretch. Performance in the volatile Q2 did not deviate far from this norm, with Real Assets posting a 1.6% total return that also finished ahead of CalPERS' Growth and Income asset classes (which returned 0.9% and -0.8%, respectively). Consistent with the program structure, most of this quarter's return was driven by private real estate, which accounted for 83% of total RA assets and was up 1.3%. The infrastructure portfolio (11% of RA assets) also contributed nicely by posting a 4.1% gain. Timber, the smallest Real Assets portfolio, remains the laggard in the RA program, as it once again struggled to find positive momentum and was nearly flat in Q2.

[47] The Real Assets Policy Benchmark equals the benchmark returns of real estate, timber, and infrastructure weighted at policy allocation target percentages.

[48] The Real Estate performance is reported on a 1-quarter lagged basis. The Real Estate total returns are net of investment management fees and all expenses, including property level operations expenses netted from property income. This method differs from GASB 31, which requires all investment expenses be identified for inclusion in the System's general purpose financial statements.

[49] The Real Estate Policy Benchmark consists of the NCREIF ODCE Index (1-quarter lagged) and the FTSE EPRA/NAREIT Developed Index weighted at their policy allocation target percentages. It is historically linked to its prior benchmarks.

[50] These investments are reported on a 1-quarter lagged basis.

[51] VaR (Value at Risk) measures how much the portfolio might decrease over a 12 month period in extreme cases. The VAR estimate shows how much the portfolio value might fall in the worst 5% of 12 month periods. VAR is calculated using total risk (standard deviation) and market value.

[52] The Sharpe Ratio or reward-to-variability ratio is a measure of the mean excess return per unit of risk in an investment strategy. The Sharpe ratio is used to characterize how well the return of an asset compensates the investor for the risk taken.

[53] The "Information Ratio" calculates the amount of excess performance earned per unit of excess risk, as measured by tracking error. Higher information ratios imply a greater return per unit of excess risk ventured.

Real Assets Review for PERF (Continued)

Period Ended 6/30/2018

Real Assets Segment Performance

- While softness in the Timber portfolio did largely contribute to Real Assets' -35 bps miss relative to the asset class benchmark this quarter, the overall program was actually one of the top performers for CalPERS in the past year, earning an 8.0% trailing 12-month return that beat its own benchmark by +119 bps.

- Wilshire would like to note that while not reflected in this period's performance, one of the Timber portfolio's main investments, Crown Pine Timber, was successfully sold off shortly after the end of the second quarter. While the transaction represented a markdown of the portfolio value (at a loss to CalPERS), the sale alleviated the program from further financial stress in the near future, and Wilshire commends staff for working out a solution to a challenging issue that was a holdover from the pre-financial crisis era investment. Challenges of this investment included onerous debt arrangements, unfavorable supply agreements, and sawtimber market pricing below pro forma causing an increasingly heavy drag on cash flow. Selling the investment better aligns the Real Assets program with its intended role. Also to be noted is that the current staff had no role in making the original investments and has been working out this investment over the past three years. The negative impact on total performance of Real Assets prior to the sale of Crown Pine over the trailing five-year period as of 6/30/2018 was -52 bps. This execution allows staff to continue turning focus towards building income-driven strategies that can sustain CalPERS during periods of falling value.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Liquidity Review for PERF

Period Ended 6/30/2018

Liquidity Allocation

Asset Allocation: Actual versus Target Weights

Asset Class	Actual Asset Allocation	Target Asset Allocation	Difference
Liquidity	3.3%	3.0%	+0.3%

Liquidity Segment Performance

	Market Value	Qtr	1-Year	3-Year	5-Year	10-Year	VaR[56]	5-year Sharpe Ratio[57]	5-year Info Ratio[58]
LIQUIDITY	**11.8**	**0.6%**	**1.7%**	**0.9%**	**0.9%**	**1.0%**	**$0.0 bil**	**N/A**	**N/A**
Liquidity Policy Benchmark [54]		0.4%	1.3%	0.7%	1.0%	1.1%			
Value Added		0.2%	0.4%	0.2%	-0.1%	-0.1%			
Cash Composite	**11.8**	**0.6%**	**1.7%**	**1.0%**	**0.6%**	**0.5%**			
Csutom STIF [55]		0.5%	1.4%	0.8%	0.5%	0.4%			
Value Added		0.1%	0.3%	0.2%	0.1%	0.1%			

[54] The Liquidity Policy Benchmark is a custom index maintained by State Street Bank.
[55] The Custom STIF Policy Benchmark is a custom index maintained by State Street Bank.
[56] VaR (Value at Risk) measures how much the portfolio might decrease over a 12 month period in extreme cases. The VAR estimate shows how much the portfolio value might fall in the worst 5% of 12 month periods. VAR is calculated using total risk (standard deviation) and market value.
[57] The Sharpe Ratio or reward-to-variability ratio is a measure of the mean excess return per unit of risk in an investment strategy. The Sharpe ratio is used to characterize how well the return of an asset compensates the investor for the risk taken.
[58] The “Information Ratio” calculates the amount of excess performance earned per unit of excess risk, as measured by tracking error. Higher information ratios imply a greater return per unit of excess risk ventured.

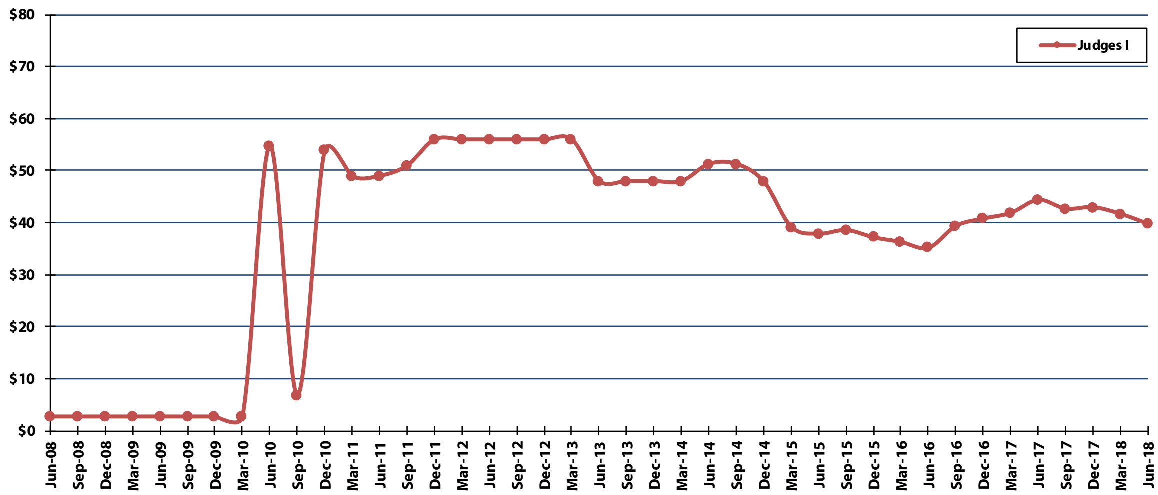
Affiliate Fund Information

Judges' Retirement System I Fund

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Judges I Performance
Periods Ended June 30, 2018

Growth in Assets (in $Millions)



Net of Fee Plan Performance Results Judges I

	Market Value	Qtr	One Year	Three Year	Five Year	Ten Year
Judges I	**$39.7 mil**	**0.5%**	**1.5%**	**0.9%**	**0.5%**	**0.5%**
91-Day Treasury Bill		0.5	1.4	0.7	0.4	0.4
Judges I Internal Short-Term	**$39.7 mil**	**0.5**	**1.5**	**0.9**	**0.5**	**0.5**
91-Day Treasury Bill		0.5	1.4	0.7	0.4	0.4

* JRS I maintains a reserve balance of approximately two months of benefit payments. Prior to 2009-2010 fiscal year, the fund held approximately one month of benefit reserve with the majority of funds held at the State Treasurer's Office. The cash balance experienced spikes in 2010 due to delayed passage of the 2010-2011 fiscal year budget by the Legislature, which the Governor signed on October 8, 2010.

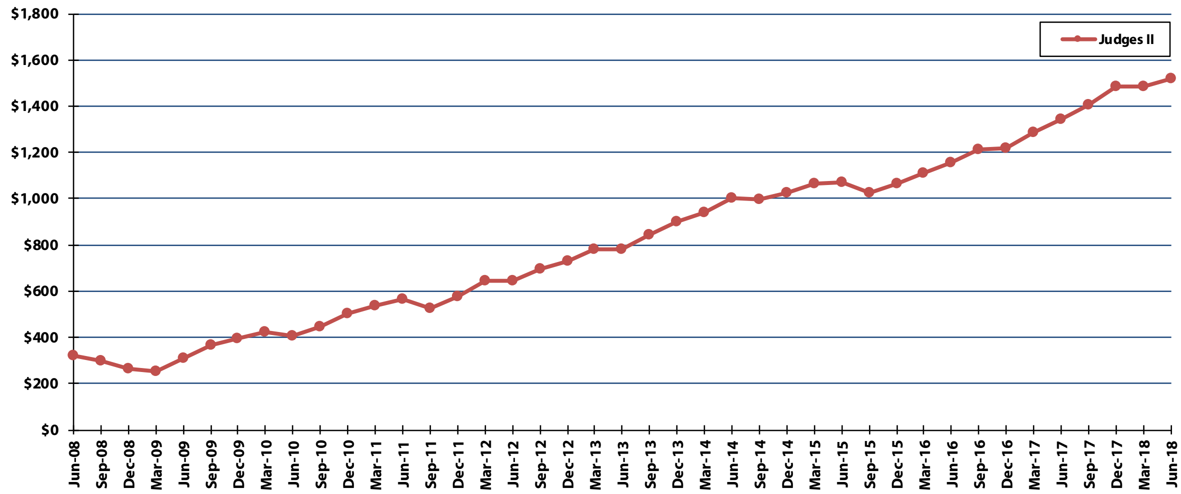
Judges' Retirement System II Fund

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Judges II Performance

Period Ended June 30, 2018

Growth in Assets (in $Millions)



Total Plan Asset Allocation

Asset Class	Actual (%)	Policy (%)	Difference (%)
Global Equity	49.2	50.0	-0.8
US Fixed Income	34.4	34.0	+0.4
TIPS	5.0	5.0	0.0
REITS	8.2	8.0	+0.2
Commodities	3.2	3.0	+0.2
Cash/Short-Term	0.0	0.0	0.0
Total Judges II	100.0	100.0	0.0

Commentary Judges II

- Following a disappointing first quarter where markets floundered amid rising concerns of trade wars/sharply higher bond yields that dampened asset performance, most of Judges II ("JRS II, the Plan") investments rebounded in Q2 on the back of strong U.S. economic fundamentals. While the escalating trade tensions and rising interest rate/oil prices did cap some of the enthusiasm late in the quarter, overall speaking the Plan return was on a steady path during the April-June period and closed with a modest gain of 1.1%. Coupled with a strong finish from the second half of 2017, this translated into a solid 7.5% trailing 12-month return. Both of these quarter and 1-year figures showed well in relative terms, outpacing the Plan's weighted policy benchmark by +2 bps and +16 bps, respectively. There are no concerns with JRS II's performance over longer-term horizon, either, where it has averaged returns in the mid-single digit range that also compare well against the policy benchmark.

- At the end of Q2, Judges II's asset allocation showed minor overweight in U.S. fixed income, REITs and commodities while having small underweight in global equity; it was on target in TIPS and short-term cash.

- Despite the persistent trade rhetoric, global equity, the largest asset class in Judges II representing 49.2% of the total plan assets, drew support primarily from a strong U.S. equity market and concluded the second quarter on a mildly positive note. The global equity fund's 1.0% rise this quarter helped recoup the -0.7% loss it incurred from Q1, and came in right on par with the custom benchmark's pace. Longer-term track record of the fund remains in great shape, too, as it has accumulated market-like gains beyond the 1-year mark and continues to perform in line with expectations.

- The Judges II U.S. fixed income fund fluctuated between losses and gains throughout the second quarter as bond investors attempted to interpret the implications of the ongoing trade tensions and the continued firming of growth and inflation signals. But with UST yields climbing higher (10-Yr yield +11 bps QoQ) and credit spreads growing wider, the fund ultimately closed the quarter with a small -0.3% loss. Despite the negative finish, this result was a marked improvement from the fund's -2.0% Q1 drop, while matching the custom Bloomberg Barclays benchmark. This benchmark-tying performance also allowed the U.S. fixed income fund to maintain its long-term edge in relative terms.

- TIPS performed respectably well in Q2. While consumer price increases moderated somewhat in 2018, it nonetheless remains on a rising trend with annualized core CPI increase reaching 2.2% through May and the 10-Yr breakeven inflation rate closing the quarter at 2.11% (up from 2.05% at the end of March). Within this backdrop, the JRS II TIPS portfolio closely followed the Bloomberg Barclays U.S. Tips Index to a 0.8% Q2 gain.

- U.S. REITs was one of the strongest performing publicly traded assets in the second quarter of 2018, handily outpacing the broader equity market. The JRS II REIT portfolio performed no differently, generating gains in all three months to close out Q2 with a total return of 5.3%. This quarter's output was right behind the REIT custom benchmark (+5.5%), while once again contributed to the portfolio's solid long-term track record.

- Despite a strengthening US dollar, which often has an inverse impact on raw material prices and therefore capped some of their performance, the commodities segment largely rode the rally of crude oil prices to still finish Q2 with a bang. In fact, the commodities portfolio was the strongest performing JRS II investment this quarter, ringing in 8.2% of gains that was also +16 bps ahead of the benchmark GSCI Commodity Total Return Index. Together with big gains from the second half of 2017, this portfolio's 30.3% trailing 12-month return also led all other JRS II asset classes; although the previously challenged track record from 2015 and 2014 meant the portfolio's 3- and 5-yr annualized track record currently remains in the red.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Net of Fee Plan Performance Results Judges II

	Market Value	Qtr	One Year	Three Year	Five Year	Ten Year
Judges II	**$1,521.7 mil**	**1.1%**	**7.5%**	**6.2%**	**7.2%**	**6.3%**
Weighted Policy Benchmark[59]		1.1	7.3	6.0	7.0	6.3
JRS II Global Equity	**$748.7 mil**	**1.0**	**12.0**	**8.9**	**10.3**	**6.7**
Global Equity Benchmark [60]		1.0	11.9	8.8	10.2	6.6
JRS II US Fixed Income	**$524.1 mil**	**-0.3**	**0.2**	**3.3**	**4.2**	**6.0**
Custom Benchmark [61]		-0.3	-0.2	2.7	3.4	5.3
JRS II TIPS	**$76.5 mil**	**0.8**	**2.2**	**1.9**	**1.6**	**-.-**
Custom Benchmark [62]		0.8	2.1	1.9	1.7	-.-
JRS II REITs	**$124.1 mil**	**5.3**	**6.6**	**6.7**	**6.9**	**4.5**
Custom Benchmark [63]		5.5	6.7	6.7	6.9	4.5
JRS II Commodities	**$48.2 mil**	**8.2**	**30.3**	**-3.9**	**-9.4**	**-.-**
GSCI Total Return Index		8.0	30.0	-4.4	-9.4	-.-
JRS II Cash/Short-Term	**$0.2 mil**	**6.8**	**9.3**	**3.5**	**2.3**	**1.4**
91-Day Treasury Bill		0.5	1.4	0.7	0.4	0.4

[59] The weighted policy benchmark returns are calculated based on asset class index returns weighted by asset class policy targets.
[60] The JRS II Global Equity Benchmark is a custom global benchmark maintained by FTSE starting on 9/8/2011. Prior of that it is calculated as an asset weighted benchmark of its underlying domestic and international funds.
[61] The current US Fixed Income Custom Benchmark is the Bloomberg Barclays Long Liability Index. Barclays Long Liability ex TIPS was used as the benchmark between June 2005 and May 2007. Prior of that the benchmark was Citigroup LPF.
[62] The TIPS benchmark is the Bloomberg Barclays U.S. TIPS Index.
[63] The REIT Custom Benchmark is the FTSE EPRA/NAREIT Developed Index. Historically, it has been the Wilshire RESI and REIT Indices.

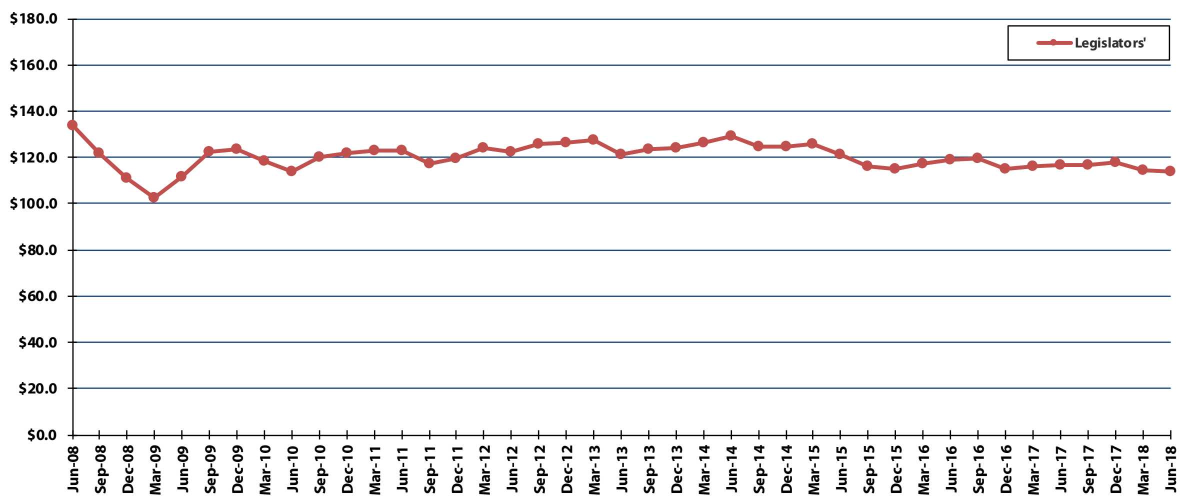
Legislators' Retirement System Fund

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

LRS Performance

Period Ended June 30, 2018

Growth in Assets (in $Millions)



Total Plan Asset Allocation

Asset Class	Actual (%)	Policy (%)	Difference (%)
Global Equity	24.1	24.0	+0.1
US Fixed Income	38.7	39.0	-0.3
TIPS	26.1	26.0	+0.1
REITS	8.1	8.0	+0.1
Commodities	3.0	3.0	0.0
Cash/Short-Term	0.0	0.0	0.0
Total LRS	100.0	100.0	0.0

Commentary LRS

- The California Legislators' Retirement System's ("LRS, the System") higher allocation to fixed income (39% to U.S. fixed income and 26% to TIPS) means that its performance generally does not share too much of the upside swings, but its 1.0% Q2 2018 total return was still good enough that it easily mimicked the output of the weighted policy benchmark. Given LRS's conservative asset allocation and its utilization of investment grade fixed income, the long-term track record exhibits a relatively consistent pace. This is readily observed as the System's 3-, 5-, and 10-year returns have all averaged at or near the 5% range, while also modestly outpacing the weighted policy benchmark.

- As of June 30, the System was overweight in global equity, TIPS and REITs while underweight in U.S. fixed income.

- Despite the persistent trade rhetoric, global equity, which represents nearly a quarter of LRS' total assets at 24.1% weight, drew support primarily from a strong U.S. equity market and concluded the second quarter on a mildly positive note. The global equity fund's 1.0% rise this quarter helped recoup the -0.7% loss it incurred from Q1, and came in right on par with the custom benchmark's pace. Longer-term track record of the fund remains in great shape, too, as it has accumulated market-like gains beyond the 1-year mark and continues to perform in line with expectations.

- The LRS U.S. fixed income fund fluctuated between losses and gains throughout the second quarter as bond investors attempted to interpret the implications of the ongoing trade tensions and the continued firming of growth and inflation signals. But with UST yields climbing higher (10-yr yield +11 bps QoQ) and credit spreads growing wider, the fund ultimately closed the quarter with a small -0.3% loss. Despite the negative finish, this result was a marked improvement from the fund's -2.0% Q1 drop, while matching the custom Bloomberg Barclays benchmark. This benchmark-tying performance also allowed the U.S. fixed income fund to maintain its long-term edge in relative terms.

- TIPS performed respectably well in Q2. While consumer price increases moderated somewhat in 2018, it nonetheless remains on a rising trend with annualized core CPI increase reaching 2.2% through May and the 10-yr breakeven inflation rate closing the quarter at 2.11% (up from 2.05% at the end of March). Within this backdrop, the LRS TIPS portfolio closely followed the Bloomberg Barclays U.S. TIPS Index to a 0.8% Q2 gain.

- US REITs was one of the strongest performing publicly traded assets in the second quarter of 2018, handily outpacing the broader equity market. The LRS REIT portfolio performed no differently, generating gains in all three months to close out Q2 with a total return of 5.3%. This quarter's output was right behind the REIT custom benchmark (+5.5%), while once again contributed to the portfolio's solid long-term track record.

- Despite a strengthening US dollar, which often has an inverse impact on raw material prices and therefore capped some of their performance, the commodities segment largely rode the rally of crude oil prices to still finish Q2 with a bang. In fact, the commodities portfolio was the strongest performing LRS investment this quarter, ringing in 8.2% of gains that was also +16 bps head of the benchmark GSCI Commodity Total Return Index. Together with big gains from the second half of 2017, this portfolio's 30.3% trailing 12-month return also led all other JRS asset classes; although the previously challenged track record from 2015 and 2014 meant the portfolio's 3- and 5-year annualized track record currently remains in the red.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Wilshire

Net of Fee Plan Performance Results LRS

	Market Value	Qtr	One Year	Three Year	Five Year	Ten Year
LRS	**$114.0 mil**	**1.0%**	**4.8%**	**4.4%**	**5.2%**	**5.8%**
Weighted Policy Benchmark[64]		1.0	4.7	4.2	4.9	5.5
LRS Global Equity	**$27.5 mil**	**1.0**	**12.0**	**9.0**	**10.3**	**6.9**
Global Equity Benchmark [65]		1.0	11.9	8.8	10.1	6.8
LRS US Fixed Income	**$44.1 mil**	**-0.3**	**0.2**	**3.3**	**4.2**	**6.0**
Custom Benchmark[66]		-0.3	-0.2	2.7	3.4	5.3
LRS TIPS	**$29.8 mil**	**0.8**	**2.2**	**1.9**	**1.6**	**3.1**
Custom Benchmark[67]		0.8	2.1	1.9	1.7	3.0
LRS REITs	**$9.2 mil**	**5.3**	**6.6**	**6.7**	**6.9**	**-.-**
Custom Benchmark [68]		5.4	6.7	6.7	6.9	-.-
LRS Commodities	**$3.4 mil**	**8.2**	**30.3**	**-3.9**	**-9.4**	**-.-**
GSCI Total Return Index		8.0	30.0	-4.4	-9.4	-.-
LRS Cash/Short-Term	**$0.0 mil**	**1.9**	**9.2**	**3.5**	**2.1**	**1.3**
91-Day Treasury Bill		0.5	1.4	0.7	0.4	0.4

[64] The weighted policy benchmark returns are calculated based on asset class index returns weighted by asset class policy targets.
[65] The LRS Global Equity Benchmark is a custom global benchmark maintained by FTSE starting on 9/8/2011. Prior of that it is calculated as an asset weighted benchmark of its underlying domestic and international funds.
[66] The current benchmark is the Bloomberg Barclays Long Liability Index. Barclays Long Liability ex TIPS was used as the benchmark between June 2005 and May 2007. Prior of that the benchmark was Citigroup LPF.
[67] The current benchmark is the Bloomberg Barclays U.S. TIPS Index. Prior of July 2007 the benchmark was the Barclays Long Liability TIPS Index.
[68] The REIT Custom Benchmark is the FTSE EPRA/NAREIT Developed Index.

Long-Term Care Fund

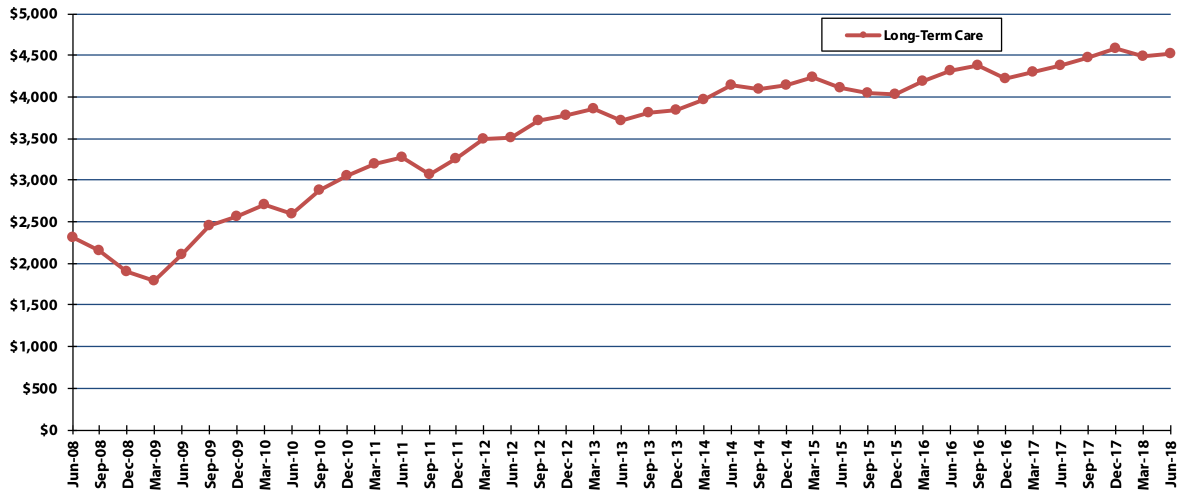
Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Wilshire

LTC Performance

Period Ended June 30, 2018

Growth in Assets (in $Millions)



Total Plan Asset Allocation

Asset Class	Actual (%)	Policy (%)	Difference (%)
Global Equity	17.0	15.0	+2.0
US Fixed Income	58.7	61.0	-2.3
TIPS	5.7	6.0	-0.3
REITS	12.4	12.0	+0.4
Commodities	6.1	6.0	+0.1
Cash/Short-Term	0.0	0.0	0.0
Total LTC	100.0	100.0	0.0

Commentary LTC

- The Long-Term Care Program's 1.0% total Q2 return was in the same league with the other Affiliates Funds, despite it having 58.7% of assets committed to investment grade domestic fixed income, which is a much higher level compared to Judges II (34.4%) and LRS (38.7%). While investment grade bonds reported performance that came in at the bottom of the leaderboard this quarter, LTC was able to even that out with its bigger REITs and Commodities allocation, which rebounded sharply from their Q1 selloff. Relative to the Program's own policy benchmark, LTC's Q2 performance was right on par, over longer time horizon the Program has also done well as it is currently ahead of the policy benchmark over time periods 3-year and beyond.

- The LTC's asset allocation showed that it was overweight in global equity, REITs and commodities, while underweight in U.S. fixed income and TIPS.

- Despite the persistent trade rhetoric, global equity, the second largest asset class in LTC representing 17.0% of the total plan assets, drew support primarily from a strong U.S. equity market and concluded the second quarter on a mildly positive note. The global equity fund's 0.8% rise this quarter helped offset the -0.8% loss it incurred from Q1, and came in just ahead of the custom benchmark's pace. Longer-term track record of the fund remains in great shape, too, as it has accumulated market-like gains beyond the 1-year mark and continues to perform in line with expectations.

- The LTC U.S. fixed income fund fluctuated between losses and gains throughout the second quarter as bond investors attempted to interpret the implications of the ongoing trade tensions and the continued firming of growth and inflation signals. But with UST yields climbing higher (10-Yr yield +11 bps QoQ) and credit spreads growing wider, the fund ultimately closed the quarter with a small -0.3% loss. Despite the negative finish, this result was a marked improvement from the fund's -2.2% Q1 drop, while matching the custom Bloomberg Barclays benchmark. This benchmark-tying performance also allowed the U.S. fixed income fund to maintain its long-term edge in relative terms.

- TIPS performed respectably well in Q2. While consumer price increases moderated somewhat in 2018, it nonetheless remains on a rising trend with annualized core CPI increase reaching 2.2% through May and the 10-Yr breakeven inflation rate closing the quarter at 2.11% (up from 2.05% at the end of March). Within this backdrop, the LTC TIPS portfolio closely followed the Bloomberg Barclays U.S. TIPS Index to a 0.8% Q2 gain.

- U.S. REITs was one of the strongest performing publicly traded assets in the second quarter of 2018, handily outpacing the broader equity market. The LTC REIT portfolio performed no differently, generating gains in all three months to close out Q2 with a total return of 5.1%. This quarter's output mirrored the REIT custom benchmark while once again contributed to the portfolio's solid long-term track record.

- Despite a strengthening US dollar, which often has an inverse impact on raw material prices and therefore capped some of their performance, the commodities segment largely rode the rally of crude oil prices to still finish Q2 with a bang. In fact, the commodities portfolio was the strongest performing LTC investment this quarter, ringing in 8.0% of the gains that matched the benchmark GSCI Commodity Total Return Index. Together with big gains from the second half of 2017, this portfolio's 29.7% trailing 12-month return also led all other LTC asset classes; although the previously challenged track record from 2015 and 2014 meant the portfolio's 3- and 5-year annualized track record currently remains in the red.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Net of Fee Plan Performance Results LTC

	Market Value	Qtr	One Year	Three Year	Five Year	Ten Year
Long-Term Care ("LTC")	**$4,515.3 mil**	**1.0%**	**4.0%**	**3.7%**	**4.1%**	**4.4%**
Weighted Policy Benchmark[69]		1.0	4.0	3.5	3.9	4.2
LTC Global Equity	**$767.7 mil**	**0.8**	**11.4**	**8.7**	**9.9**	**6.6**
Custom Benchmark[70]		0.7	11.1	8.3	9.6	6.5
LTC US Fixed Income	**$2,650.7mil**	**-0.3**	**-0.2**	**2.7**	**3.4**	**5.5**
Custom Benchmark[71]		-0.3	-0.2	2.7	3.4	5.3
LTC TIPS	**$259.4 mil**	**0.8**	**2.1**	**1.9**	**1.7**	**3.1**
Bloomberg Barclays U.S. TIPS Index		0.8	2.1	1.9	1.7	3.0
LTC REITs	**$561.8 mil**	**5.1**	**6.2**	**5.9**	**6.2**	**4.1**
Custom Benchmark[72]		5.0	5.5	5.1	5.4	3.7
LTC Commodities	**$275.7 mil**	**8.0**	**29.7**	**-4.4**	**-9.4**	**-.-**
GSCI Total Return Index		8.0	30.0	-4.4	-9.4	-.-
LTC Cash/Short-Term	**$0.1 mil**	**0.5**	**2.3**	**3.1**	**1.8**	**1.1**
91-Day Treasury Bill		0.5	1.4	0.7	0.4	0.4

[69] The weighted policy benchmark returns are calculated based on asset class index returns weighted by asset class policy targets.
[70] Effective 12/12/2012 the domestic and international equity asset classes were aggregated into a single global equity asset class, benchmarked against the MSCI ACWI IMI (net).
[71] The LTC US Fixed Income Custom Benchmark is the Bloomberg Barclays Long Liability Index. Barclays Long Liability ex TIPS ex High Yield was the benchmark between June 2007 and July 2005. Prior of that the benchmark was the Barclays Aggregate Bond Index.
[72] Effective 12/12/2012, the REIT Custom Benchmark changed to the FTSE EPRA/NAREIT Developed Liquid (net) Index.

California Employees' Retiree Benefit Trust

Wilshire

Capital Market Overview

U.S. Equity Market

The U.S. stock market, represented by the Wilshire 5000 Total Market Index^{SM}, was up 3.83% for the second quarter of 2018, rebounding from only the second negative quarter in nearly six years. Volatility has returned this year but is approximately in line with long-term historical figures. Although there have been more up days than down during 2018, the daily losses have been more substantial. The average daily loss has been approximately 34% greater than the average daily gain, a spread not seen in more than a decade. Trade and tariffs continued to help drive markets this spring as did increased anti-euro sentiment in Italy. Strong gains in personal income and consumer spending during the second quarter have left room for optimism.

Large capitalization stocks far underperformed small caps as the Wilshire Large-Cap Index^{SM} was up +3.41% versus a gain of +7.87% for the Wilshire US Small-Cap Index^{SM}. The large-cap segment of the market trailed small-caps for the past twelve months, as well. The Wilshire US Micro-Cap Index^{SM} was up +9.21% for the quarter and 19.37% for the one-year. Growth stocks have been generally outpacing value except for the most recent quarter within the small-cap space, where value led growth.

Sector performance was mixed with seven of the eleven major sectors producing gains. The best performing sector, by far, was Energy (+14.2%) while Financials (-2.4%) and Industrials (-2.2%) were the main detractors from total return.

Fixed Income Market

The U.S. Treasury yield curve rose across all maturities during the quarter with the biggest increases occurring in the short to intermediate segment of the curve. The bellwether 10-year Treasury yield ended the quarter at 2.85%, up 11 basis points from March. The Federal Open Market Committee decided to increase its overnight rate by 25 basis points in June to a range of 1.75% to 2.00%. There was little indication that the Fed is looking to change course and expressed generally strong sentiment towards the health of the economy. Credit spreads widened during the quarter within investment grade credit but were little changed for the high yield market.

The shape of the yield curve is often considered when looking for signs of a potentially slowing economy. A common measurement of slope, the 10-year minus 2-year Treasuries spread, has been on the decline since late 2013 and is currently below the long-term average at 0.38%. It should be noted that the last three times that the spread went negative (1989, 2000 and 2007) the U.S. economy entered a recession not long afterwards. While the short end of the curve is directly linked to the Federal funds rate, the long end is driven by market activity. Continued economic growth without upward movement in long rates could be an indication that market participants are expecting a slowdown on the horizon.

Non-U.S. Markets

Equity markets outside of the U.S. produced mixed results during the second quarter of 2018 while currency had a major effect on U.S.-based investors. As global growth slowed and the Federal Reserve adopted a more aggressive stance on interest rates, the U.S. dollar was up approximately 5% versus a basket of international currencies. Equity price volatility affected global markets as tensions seemed to escalate between the U.S. and its major trading partners. It is yet to be seen, however, how much of the threatened tariffs and retaliation is actually implemented. The European Union faces a fresh challenge with political developments in Italy, already being rattled by the Greek financial crisis and Brexit in past years. The broad developed markets index, however, was in positive territory for the quarter in local currency terms.

Real Assets Markets

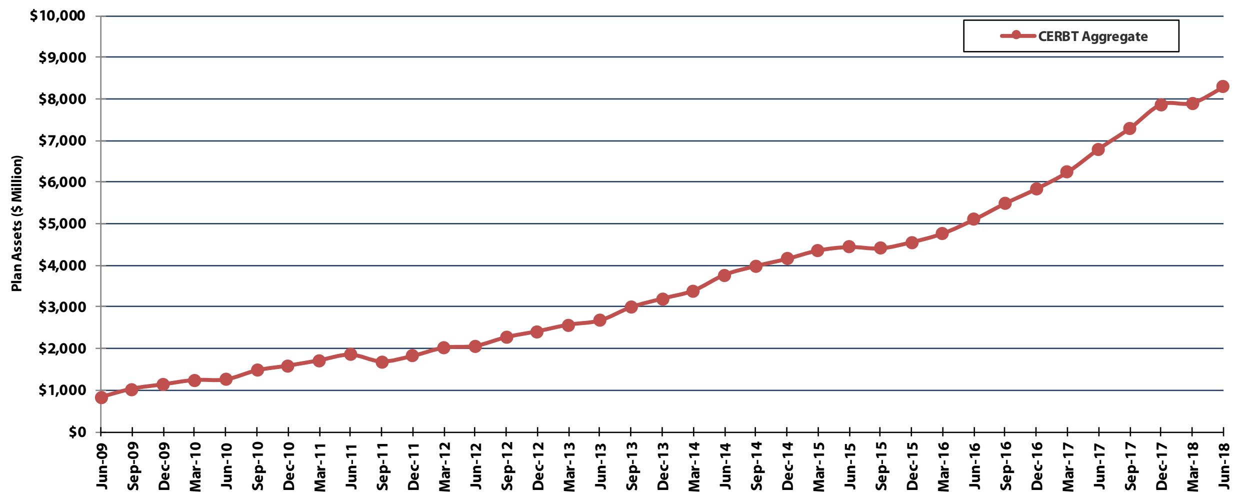
The U.S. Treasury yield curve rose across all maturities during the quarter with the biggest increases occurring in the short to intermediate segment of the curve. The bellwether 10-year Treasury yield ended the quarter at 2.85%, up 11 basis points from March. The Federal Open Market Committee decided to increase its overnight rate by 25 basis points in June to a range of 1.75% to 2.00%. There was little indication that the Fed is looking to change course and expressed generally strong sentiment towards the health of the economy. Credit spreads widened during the quarter within investment grade credit but were little changed for the high yield market.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

California Employers' Retiree Benefit Trust Aggregate

Periods Ended June 30, 2018

Growth in Assets (in $Millions)



Net of Fee Trust Performance Aggregate

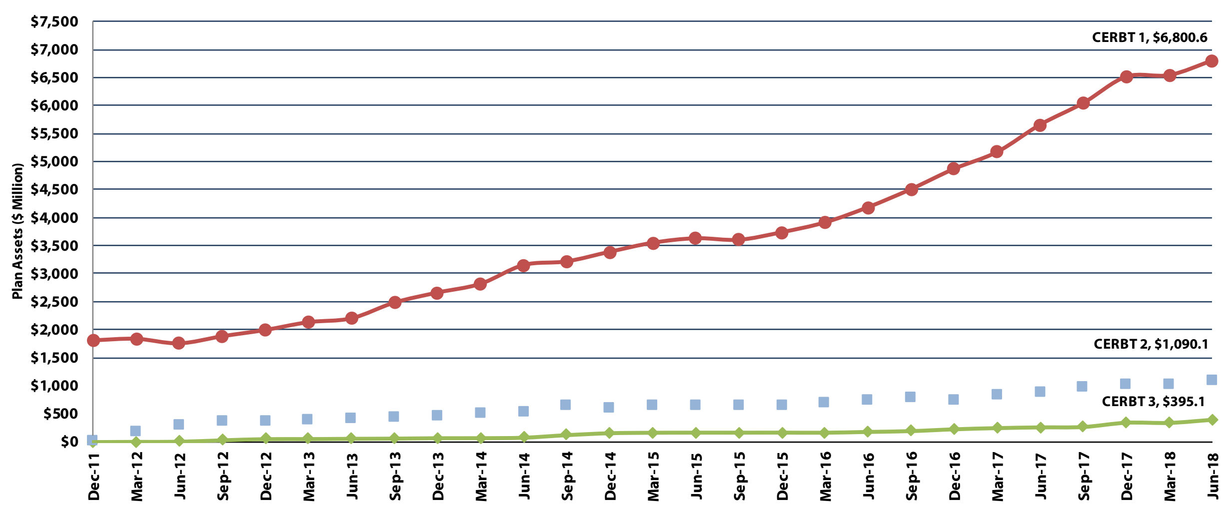
Periods Ended June 30, 2018

	Market Value	Qtr	One Year	Three Year	Five Year	Ten Year
CERBT Aggregate	**$8,285.8 mil**	**1.0%**	**7.6%**	**6.2%**	**7.1%**	**5.8%**
CERBT Trust Aggregate Benchmark		1.0	7.3	5.8	6.7	5.6

California Employers' Retiree Benefit Trust Strategy 1, 2, 3

Periods Ended June 30, 2018

Growth in Assets (in $Millions)



Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Wilshire

California Employers' Retiree Benefit Trust Strategy 1

Asset Allocation

Asset Class	Actual	Policy	Difference
Global Equity	56.0%	57.0%	-1.0%
US Bonds	26.3	27.0	-0.7
TIPS	4.9	5.0	-0.1
REITS	8.2	8.0	+0.2
Commodities	3.2	3.0	+0.2
Cash/Short-Term±	1.4	0.0	+1.4
Total CERBT 1	100.0	100.0	0.0

Net of Fee Trust Performance Results

Trust Performance

Periods Ended June 30, 2018

	Market Value	Qtr	One Year	Three Year	Five Year	Ten Year
CERBT Strategy 1	**$6,800.6 mil**	**1.0%**	**8.0%**	**6.4%**	**7.4%**	**5.9%**
Total CERBT Strat. 1 Benchmark		1.0	7.7	6.0	7.0	5.8
Global Equity	3,811.4 mil	0.8	11.5	8.7	10.0	6.5
CERBT Global Equity Benchmark		0.7	11.1	8.3	9.6	6.3
Domestic Fixed Income	1,786.0 mil	-0.3	0.2	3.3	4.2	6.0
CalPERS Custom Long Liability		-0.3	-0.2	2.7	3.4	5.3
TIPS	334.4 mil	0.8	2.2	1.9	1.6	-.-
CalPERS TIPS		0.8	2.1	1.9	1.7	-.-
REITs	557.6 mil	5.1	6.2	5.9	6.2	4.2
PERS FTSE/EPRA NAREIT Dev. Liquid		5.0	5.5	5.1	5.4	3.7
Commodities	215.1 mil	8.2	30.3	-4.4	-9.6	-.-
GSCI Total Return		8.0	30.0	-4.4	-9.4	-.-
Cash/Short-Term±	96.2 mil	0.7	2.7	1.4	0.8	0.6
91-Day T-Bill		0.5	1.4	0.7	0.4	0.4

± Cash balances are inclusive of employer fund contributions that are in the process of being invested into asset classes. These contributions occur daily, but tend to be higher at the end of each quarter.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

California Employers' Retiree Benefit Trust Strategy 2

Asset Allocation

Asset Class	Actual	Policy	Difference
Global Equity	39.7%	40.0%	-0.3%
US Bonds	38.3	39.0	-0.7
TIPS	9.9	10.0	-0.1
REITS	8.3	8.0	+0.3
Commodities	3.2	3.0	+0.2
Cash/Short-Term±	0.5	0.0	+0.5
Total CERBT 2	100.0	100.0	0.0

Net of Fee Trust Performance Results

Trust Performance
Periods Ended June 30, 2018

	Market Value	Qtr	One Year	Three Year	Five Year	Ten Year
CERBT Strategy 2	**$1,090.1 mil**	**0.9%**	**6.2%**	**5.4%**	**6.2%**	**-.-%**
Total CERBT Strat. 2 Benchmark		0.9	5.8	5.0	5.8	-.-
Global Equity	433.1 mil	0.8	11.5	8.7	9.9	-.-
CERBT Global Equity Benchmark		0.7	11.1	8.3	9.6	-.-
Domestic Fixed Income	417.7 mil	-0.3	0.2	3.3	4.2	-.-
CalPERS Custom Long Liability		-0.3	-0.2	2.7	3.4	-.-
TIPS	108.3 mil	0.8	2.2	1.9	1.6	-.-
CalPERS TIPS		0.8	2.1	1.9	1.7	-.-
REITs	90.3 mil	5.1	6.2	5.9	6.2	-.-
PERS FTSE/EPRA NAREIT Dev Liquid		5.0	5.5	5.1	5.4	-.-
Commodities	34.8 mil	8.1	30.4	-4.4	-9.6	-.-
GSCI Total Return		8.0	30.0	-4.4	-9.4	-.-
Cash/Short-Term±	5.8 mil	0.7	3.7	1.9	1.2	-.-
91-Day T-Bill		0.5	1.4	0.7	0.4	-.-

± Cash balances are inclusive of employer fund contributions that are in the process of being invested into asset classes. These contributions occur daily, but tend to be higher at the end of each quarter.

Wilshire Consulting
Performance Analysis – June 30, 2018
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California Employers' Retiree Benefit Trust Strategy 3

Asset Allocation

Asset Class	Actual	Policy	Difference
Global Equity	23.7%	24.0%	-0.3%
US Bonds	38.1	39.0	-0.9
TIPS	25.7	26.0	-0.3
REITS	8.2	8.0	+0.2
Commodities	3.2	3.0	+0.2
Cash/Short-Term±	1.0	0.0	+1.0
Total CERBT 3	100.0	100.0	0.0

Net of Fee Trust Performance Results

Trust Performance

Periods Ended June 30, 2018

	Market Value	Qtr	One Year	Three Year	Five Year	Ten Year
CERBT Strategy 3	**$395.1 mil**	**0.9%**	**4.7%**	**4.3%**	**5.1%**	**-.-%**
Total CERBT Strat. 3 Benchmark		0.9	4.4	4.0	4.6	-.-
Global Equity	93.7 mil	0.8	11.5	8.7	9.9	-.-
CERBT Global Equity Benchmark		0.7	11.1	8.3	9.6	-.-
Domestic Fixed Income	150.7 mil	-0.3	0.2	3.3	4.2	-.-
CalPERS Custom Long Liability		-0.3	-0.2	2.7	3.4	-.-
TIPS	101.6 mil	0.8	2.2	1.9	1.6	-.-
CalPERS TIPS		0.8	2.1	1.9	1.7	-.-
REITs	32.6 mil	5.1	6.2	5.9	6.1	-.-
PERS FTSE/EPRA NAREIT Dev. Liquid		5.0	5.5	5.1	5.4	-.-
Commodities	12.5 mil	8.2	30.4	-4.2	-9.5	-.-
GSCI Total Return		8.0	30.0	-4.4	-9.4	-.-
Cash/Short-Term±	4.0 mil	1.9	3.5	1.7	1.1	-.-
91-Day T-Bill		0.5	1.4	0.7	0.4	-.-

± Cash balances are inclusive of employer fund contributions that are in the process of being invested into asset classes. These contributions occur daily, but tend to be higher at the end of each quarter.

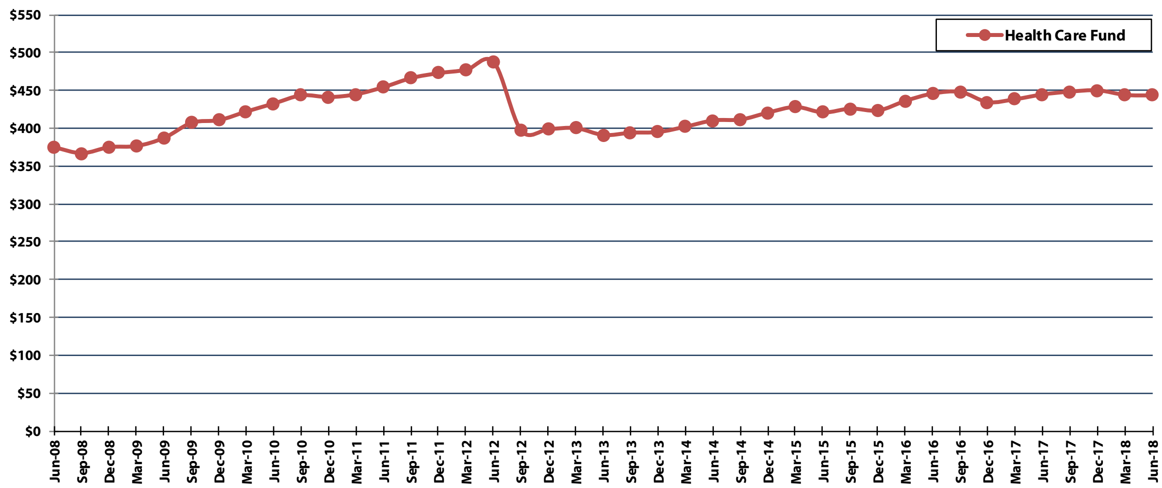
Health Care Fund

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Health Care Fund

Periods Ended June 30, 2018

Growth in Assets (in $Millions)[73]



Net of Fee Fund Performance

Fund Performance

Periods Ended June 30, 2018

	Market Value	Qtr	One Year	Three Year	Five Year	Ten Year
Health Care Fund	**$443.3 mil**	**-0.2%**	**-0.3%**	**1.8%**	**2.5%**	**4.0%**
Barclays US Aggregate Bond Idx		-0.2	-0.4	1.7	2.3	3.7

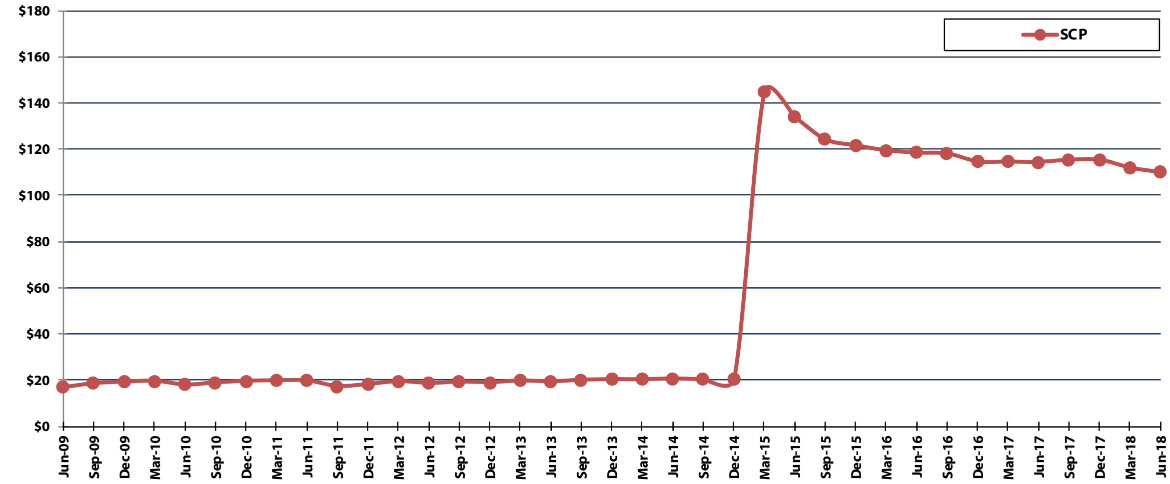
[73] The decline in assets in the third quarter of 2012 was due to a $100 million withdrawal from the fund.

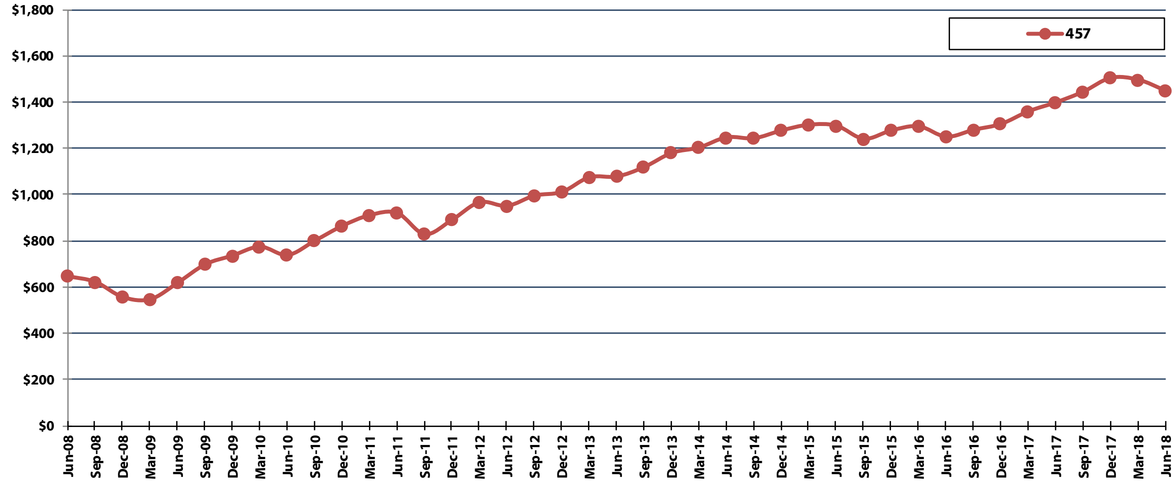
Supplemental Income Plans

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Supplemental Income Plan Performance[74]

Growth in Assets (in $Millions)





[74] SCP experienced a steep increase in assets during the first quarter of 2015. This was due to the termination of the State Peace Officers' and Firefighters' (POFF) Defined Contribution Plan, which took place June 1, 2014. The termination required distributions of participant's money in the POFF DC Plan in accordance with state and federal law, and SCP was designated as the default plan for participants who did not make an affirmative election to take a distribution.

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Net Fund Performance Supplemental Contribution Plan

Periods Ended June 30, 2018

	Market Value	Qtr	One Year	Three Year	Five Year	Ten Year
CalPERS Target Income Fund	$17.7 mil	0.1%	2.4%	2.9%	3.5%	-.-
SIP Income Policy		0.1	2.4	2.8	3.4	-.-
CalPERS Target 2015 Fund	$15.8 mil	0.1	2.4	2.9	3.8	-.-
SIP 2015 Policy		0.1	2.4	2.8	3.7	-.-
CalPERS Target 2020 Fund	$22.8 mil	0.1	3.0	3.1	4.4	-.-
SIP 2020 Policy		0.1	2.9	3.0	4.2	-.-
CalPERS Target 2025 Fund	$20.1 mil	0.3	4.7	4.2	5.4	-.-
SIP 2025 Policy		0.3	4.6	4.1	5.3	-.-
CalPERS Target 2030 Fund	$15.1 mil	0.3	5.9	5.0	6.2	-.-
SIP 2030 Policy		0.3	5.8	4.9	6.0	-.-
CalPERS Target 2035 Fund	$7.0 mil	0.4	7.2	5.8	-.-	-.-
SIP 2035 Policy		0.4	7.1	5.7	-.-	-.-
CalPERS Target 2040 Fund	$3.6 mil	0.5	8.5	6.6	7.8	-.-
SIP 2040 Policy		0.5	8.5	6.5	7.6	-.-
CalPERS Target 2045 Fund	$0.9 mil	0.6	9.7	7.3	-.-	-.-
SIP 2045 Policy		0.6	9.6	7.2	-.-	-.-
CalPERS Target 2050 Fund	$0.08 mil	0.6	9.8	7.3	-.-	-.-
SIP 2050 Policy		0.6	9.6	7.2	-.-	-.-
CalPERS Target 2055 Fund	$0.09 mil	0.6	9.8	7.4	-.-	-.-
SIP 2055 Policy		0.6	9.6	7.2	-.-	-.-
SSgA Russell All Cap Index SL	$4.2 mil	3.9	14.8	11.6	-.-	-.-
Russell 3000		3.9	14.8	11.6	-.-	-.-
SSgA Global All Cap ex-US SL	$0.5 mil	-2.7	8.0	5.7	-.-	-.-
MSCI ACWI ex-US IMI (N)		-2.6	7.7	5.5	-.-	-.-
SSgA US Bond Index SL	$0.3 mil	-0.2	-0.4	1.7	-.-	-.-
Barclays Aggregate Bond Index		-0.2	-0.4	1.7	-.-	-.-
SSgA US Short Term Bond	$0.3 mil	0.3	0.1	0.6	-.-	-.-
Barclays US Gov/Credit		0.3	0.2	0.7	-.-	-.-
SSgA Real Asset NL	$0.2 mil	3.3	8.5	3.2	-.-	-.-
Real Assets Blended Index		3.5	8.8	3.3	-.-	-.-
SSgA STIF	$1.2 mil	0.5	1.5	0.8	-.-	-.-
BofAML 3 Month US TBill		0.5	1.4	0.7	-.-	-.-
SCP AGGREGATE	**$109.9 mil**					
CalPERS CUSTOM SCP PLAN INDEX						

Wilshire Consulting
Performance Analysis – June 30, 2018
Prepared for CalPERS

Wilshire

Net Fund Performance 457 Program

Periods Ended June 30, 2018

	Market Value	Qtr	One Year	Three Year	Five Year	Ten Year
CalPERS Target Income Fund	$78.5 mil	0.1%	2.4%	2.9%	3.5%	-.-
SIP Income Policy		0.1	2.4	2.8	3.4	-.-
CalPERS Target 2015 Fund	$70.7 mil	0.1	2.4	2.9	3.8	-.-
SIP 2015 Policy		0.1	2.4	2.8	3.7	-.-
CalPERS Target 2020 Fund	$121.3 mil	0.1	3.0	3.1	4.4	-.-
SIP 2020 Policy		0.1	2.9	3.0	4.2	-.-
CalPERS Target 2025 Fund	$103.6 mil	0.3	4.7	4.2	5.4	-.-
SIP 2025 Policy		0.3	4.6	4.1	5.3	-.-
CalPERS Target 2030 Fund	$102.5 mil	0.3	5.9	5.0	6.2	-.-
SIP 2030 Policy		0.3	5.8	4.9	6.0	-.-
CalPERS Target 2035 Fund	$59.6 mil	0.4	7.2	5.8	7.0	-.-
SIP 2035 Policy		0.4	7.1	5.7	6.8	-.-
CalPERS Target 2040 Fund	$56.3 mil	0.5	8.5	6.6	7.8	-.-
SIP 2040 Policy		0.5	8.5	6.5	7.6	-.-
CalPERS Target 2045 Fund	$28.0 mil	0.6	9.7	7.3	8.3	-.-
SIP 2045 Policy		0.6	9.6	7.2	8.1	-.-
CalPERS Target 2050 Fund	$14.1 mil	0.6	9.8	7.3	8.3	-.-
SIP 2050 Policy		0.6	9.6	7.2	8.1	-.-
CalPERS Target 2055 Fund	$7.0 mil	0.6	9.8	7.4	-.-	-.-
SIP 2055 Policy		0.6	9.6	7.2	-.-	-.-
SSgA Russell All Cap Index SL	$540.3 mil	3.9	14.8	11.6	-.-	-.-
Russell 3000		3.9	14.8	11.6	-.-	-.-
SSgA Global All Cap ex-US SL	$70.2 mil	-2.7	8.0	5.7	-.-	-.-
MSCI ACWI ex-US IMI (N)		-2.6	7.7	5.5	-.-	-.-
SSgA US Bond Index SL	$55.3 mil	-0.2	-0.4	1.7	-.-	-.-
Barclays Aggregate Bond Index		-0.2	-0.4	1.7	-.-	-.-
SSgA US Short Term Bond	$33.5 mil	0.3	0.1	0.6	-.-	-.-
Barclays US Gov/Credit		0.3	0.2	0.7	-.-	-.-
SSgA Real Asset NL	$5.8 mil	3.3	8.5	3.2	-.-	-.-
Real Assets Blended Index		3.5	8.8	3.3	-.-	-.-
SSgA STIF	$101.6 mil	0.5	1.5	0.8	-.-	-.-
BofAML 3 Month US TBill		0.5	1.4	0.7	-.-	-.-
457 AGGREGATE	**$1,448.2 mil**					
CalPERS CUSTOM 457 PLAN INDEX						