# **W** Wilshire

# **Executive Summary of Performance** Prepared For

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

Fourth Quarter 2015

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# TABLE OF CONTENTS

Section	Page
Capital Market Review	3
Summary of all Plans	6
PERF	7
Judges II/Long-Term Care	29
Legislators' Fund	36
California Employers' Retiree Benefit Trust	40
Supplemental Income Plans	45

#### **Capital Market Overview**

The fourth quarter of 2015 brought an end to a year in which capital markets were dominated by the broad macroeconomic themes of "U.S. interest rates" and "economic slowdown in China." After years of uncertainty, the U.S. Federal Reserve finally took action on interest rates; on December 16, the Fed decided to raise the target range of the Fed Funds rate to 0.25-0.50%, from the 0.00-0.25% range it had maintained since 2007. However, bond markets had already priced in the Fed's action over the course of the year, so bond yields increased only modestly subsequent to the rate hike. The ten-year Treasury yield ended the quarter up 21 basis points, finishing at 2.27%; however, it is noteworthy that the ten-year yield was 2.28% on December 15 and rose only two basis points after the Fed announcement on December 16. The ten-year reached a low near 1.7% during 2015 and ended the year only 10 basis points higher than vear-end 2014. Growth in consumer prices remained weak in the U.S., primarily due to the stunning collapse in oil prices and the resultant slide in gasoline prices. The Consumer Price Index, All Urban Consumers (CPI-U) fell -0.60% in the fourth quarter of 2015 and for the year posted a remarkably low 0.73% increase. This marks four years of consumer inflation remaining below 2.0% per year. The 10-year breakeven inflation rate closed the fourth quarter at 1.54%, up from 1.41% last quarter, and has been below 2% since September 2014. U.S. Real GDP growth slowed but was sound during the third quarter of 2015, expanding 2.0% annualized. The U.S. economy continues to move forward with economic growth equaling 2.1% for the past 12 months. The only point of weakness during the quarter was in business spending, which was down due to a substantial accumulation of inventory during the first half of the year. Separately, the trade deficit widened as growth in exports was close to zero. China's economic slowdown has had major effects on the global economy, as lesser demand for industrial raw materials has sent commodities prices sharply lower. Nowhere has that been more evident than in crude oil markets. Lower demand worldwide combined with ample supplies from OPEC countries extended the bear market in crude oil futures; losses in bellwether sweet light crude futures exceeded -30%, and the benchmark contracts closed on December 31 at \$37.04 per barrel. Gold, despite a fairly tumultuous year in geopolitical events, slid 12% over 2015 as well. Although global stocks enjoyed fairly strong performance in the fourth quarter, 2015 was a difficult year for most capital assets, with few sectors yielding notable gains and many others struggling to achieve positive returns.

#### **U.S. Equity Market**

The U.S. stock market, represented by the Wilshire 5000 Total Market Index<sup>SM</sup>, was up for the fourth quarter of 2015 by 6.36%. Although the annual return of 0.67% marked the index's seventh consecutive annual gain since a -37.23% decline in 2008, it was the lowest annual return during that period. The U.S. market was held back by a rough third quarter return of -6.91%, which ended a remarkable winning streak of twelve consecutive quarterly gains that began in the third quarter of 2012. The market rebounded during the last quarter of the year as leading economic indicators in the U.S. rose in October and November, suggesting continued economic growth. Large capitalization stocks outperformed smaller shares with the Wilshire Large-Cap Index<sup>SM</sup> up 6.77% versus a gain of 2.62% for the Wilshire US Small-Cap Index<sup>SM</sup>. Larger shares were up for the past twelve months, as well, while the small cap index was down for the year. The Wilshire US Micro-Cap Index<sup>SM</sup> was up 3.92% for the quarter but down -4.13% for the past year. Growth stocks trailed value during the fourth quarter in both large- and small-cap spaces with mixed results for the past year. For the quarter, Wilshire 5000 sector performance was mostly

positive except for the Energy sector, which was down -0.39%. The three best performing sectors were Materials, Technology and Health Care, up 9.01%, 8.68% and 8.62%, respectively. For the year, Health Care (15.47%), Consumer Discretionary (7.54%) and Consumer Staples (5.70%) were the best-performing sectors, while Energy (-22.31%), Materials (-10.93%) and Utilities (-4.44%) were the worst performers. Real estate-related stocks closed out 2015 as one of the strongest-performing broad sectors of global equities markets (Wilshire US Real Estate Securities Index<sup>SM</sup>, 7.64% fourth quarter, 4.81% calendar 2015). MLPs, which had enjoyed resilient performance for many years, reversed course and were among the worst performers in real asset space in 2015 (Alerian MLP Index, -2.76% fourth quarter, -32.59% calendar 2015).

#### **Fixed Income Market**

The Federal Reserve's decision on December 16 to raise the key federal-funds rate to a 0.25-0.50% target range had little immediate impact on Treasury markets. The pressure of rising yields on bond prices was tempered by the special status Treasuries enjoy as a global safe-haven asset. Two-year Treasury yields rose 42 basis points over the quarter; as noted above, the largest increases occurred well before the Fed announcement. For the year, two-year yields rose a total of 39 bps, ending at 1.06%. Thirty-year yields increased 14 bps over the fourth quarter and 26 bps for the year, ending at 3.01%. Given a rising interest rate environment, shorter-term Treasuries outperformed longer-term paper for the quarter and the year (Barclays 1-3 Year U.S. Treasury, -0.43% fourth quarter, 0.56% 2015; Barclays Long U.S. Treasury, -1.38% fourth quarter, -1.21% 2015). Credit spreads, which had tightened as investors sought out high yields, widened over 2015, especially at year-end. This is in response to the prospect of higher financing costs in the future. The impact of wider spreads was less pronounced in low-duration structured securitized debt such as MBS and ABS (Barclays U.S. Government-Related, -0.39% calendar 2015; Barclays U.S. Corporate Investment Grade, -0.68% calendar 2015; Barclays U.S. Securitized, 1.47% calendar 2015). High yield bonds hit strong headwinds in 2015, as oil and gas-related issuers dealt with the ongoing slump in commodities prices. Option-adjusted spreads on high-yields increased markedly over 2015, magnifying their losses relative to investment-grade bonds (Barclays U.S. Aggregate, 0.55% calendar 2015; Barclays U.S. High Yield, -4.47% calendar 2015).

#### Non-U.S. Markets

Global developed economy stock markets ended 2015 with moderate gains for the year, although the strong U.S. dollar continues to erode performance for dollar-based investors (MSCI EAFE, net, calendar 2015: 5.33% local currency, -0.81% USD). Volatility, along with the looming threat of a continuing economic slowdown in China, will continue to affect equity performance going into 2016. However, investors were cheered by Europe's nascent economic recovery, the European Central Bank's accommodative monetary policy (MSCI Europe, net, calendar 2015: 4.91% local, -2.84% USD), and overall resilience in the Asia-Pacific region outside of China (MSCI Pacific, net, calendar 2015: 5.95% local, 2.96% USD). Emerging markets continue to suffer from China's weakness and the worldwide collapse in commodities. The strong U.S. dollar has also impacted emerging market companies, since much of their debt financing is transacted in dollars and therefore has become much more expensive (MSCI Emerging Markets, net, calendar 2015: -5.76% local, -14.92% USD).

# **Summary of Index Returns** For Periods Ended December 31, 2015

Domestic EquityStandard & Poor's 5007.04%1.38%5.13%12.56%7.30%Wilshire 50006.360.6714.7212.097.40Wilshire 45003.10-2.6513.3010.487.93Wilshire Large Cap6.771.2714.9912.327.35Wilshire Small Cap2.62-4.8612.2010.148.19Wilshire Micro Cap3.92-4.1213.629.285.48Domestic EquityWilshire Large Value7.38%-0.79%13.45%11.65%6.41%Wilshire Large Growth6.083.5416.7813.088.22Wilshire Mid Value3.78-1.0113.0311.357.65Wilshire Small Growth1.11-3.8513.4910.188.67Wilshire Small Growth1.70-5.2812.7110.258.49International EquityMSCI All World ex U.S. (USD)3.24%-5.66%1.50%1.06%2.92%MSCI All World ex U.S. (USD)3.24%-5.66%1.50%1.06%2.92%MSCI Earope2.49-2.844.513.883.36MSCI Earope2.902.965.813.182.37MSCI Earope2.902.965.813.182.37MSCI Earope2.49-2.844.513.883.36MSCI Earope2.49-2.844.513.883.61Domestic Fixed Inc
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MSCI EAFE       4.71       -0.81       5.01       3.60       3.03         MSCI Europe       2.49       -2.84       4.51       3.88       3.36         MSCI Pacific       9.00       2.96       5.81       3.18       2.37         MSCI Emerging Markets Index       0.66       -14.92       -6.76       -4.81       3.61         Domestic Fixed Income         Barclays Aggregate Bond       -0.57%       0.55%       1.44%       3.25%       4.52%         Barclays Aggregate Bond       -0.52       -0.77       1.49       4.38       5.18         Barclays Mortgage       -0.10       1.51       2.01       2.96       4.64         Barclays Treasury       -0.94       0.84       1.00       2.91       4.18         Citigroup High Yield Cash Pay       -2.35       -5.41       1.04       4.62       6.51         Barclays US TIPS       -0.64       -1.44       -2.27       2.55       3.93
MSCI Europe2.49-2.844.513.883.36MSCI Pacific9.002.965.813.182.37MSCI Emerging Markets Index0.66-14.92-6.76-4.813.61Domestic Fixed IncomeBarclays Aggregate Bond-0.57%0.55%1.44%3.25%4.52%Barclays Credit-0.52-0.771.494.385.18Barclays Mortgage-0.101.512.012.964.64Barclays Treasury-0.940.841.002.914.18Citigroup High Yield Cash Pay-2.35-5.411.044.626.51Barclays US TIPS-0.64-1.44-2.272.553.93
MSCI Pacific MSCI Emerging Markets Index9.00 0.662.96 -14.925.81 -6.763.18 -4.812.37 3.61Domestic Fixed IncomeBarclays Aggregate Bond-0.57%0.55%1.44%3.25%4.52% 4.52%Barclays Credit-0.52-0.771.494.385.18Barclays Mortgage-0.101.512.012.964.64Barclays Treasury-0.940.841.002.914.18Citigroup High Yield Cash Pay-2.35-5.411.044.626.51Barclays US TIPS-0.64-1.44-2.272.553.93
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Citigroup High Yield Cash Pay Barclays US TIPS-2.35 -0.64-5.41 -1.441.04 -2.274.62 2.556.51 3.93
Barclays US TIPS -0.64 -1.44 -2.27 2.55 3.93
91-Day Treasury Bill 0.03 0.05 0.05 0.08 1.24
International Fixed Income
Citigroup Non-U.S. Gov. Bond -1.38% -5.54% -4.27% -1.30% 3.05%
Citigroup World Gov. Bond -1.23 -3.57 -2.70 -0.08 3.44
Citigroup Hedged Non-U.S. Gov.         0.58         1.55         4.18         4.42         4.28
Currency*
Euro vs. \$ -2.68% -10.23% -6.25% -4.13% -0.82%
Yen vs. \$ -0.44 - 0.33 -10.42 -7.58 -0.19
Pound vs. \$ -2.70 -5.47 -3.21 -1.20 -1.51
Real Estate
Wilshire REIT Index         7.47%         4.23%         11.84%         12.44%         7.31%
Wilshire RESI         7.64         4.81         12.09         12.44         7.26

<b>Summary Review of Plans</b>
Periods Ended 12/31/2015

	Market Value	<u>Otr</u>	<u>1-Year</u>	<u>3-Year</u>	5-Year	<u> 10-Year</u>
TOTAL FUND for PERF	\$289.9 bil	2.2%	-0.1%	7.3%	7.2%	5.1%
Total Fund Policy Benchmark <sup>1</sup>		1.6%	-0.6%	6.8%	7.1%	6.2%
Actuarial Rate		1.8%	7.5%	7.5%	7.6%	7.7%
Affiliate Funds						
Judges I	\$37.1 mil	0.1%	0.2%	0.1%	0.1%	1.4%
91-Day Treasury Bill		0.0%	0.1%	0.1%	0.1%	1.3%
Judges II	\$1,065.7 mil	2.0%	-2.2%	5.6%	6.6%	5.5%
Weighted Policy Benchmark		2.0%	-2.2%	5.5%	6.5%	5.5%
Legislators' Retirement System	\$115.0 mil	0.5%	-2.1%	3.1%	5.4%	5.4%
Weighted Policy Benchmark		0.6%	-2.1%	2.7%	5.3%	5.2%
Long-Term Care ("LTC")	\$4,035.1 mil	-0.2%	-2.6%	1.5%	3.8%	4.5%
Weighted Policy Benchmark		-0.4%	-2.9%	1.1%	3.6%	4.3%
CERBT Strategy 1	\$3,734.6 mil	2.4%	-2.2%	5.5%	6.1%	%
CERBT Strategy 1 Policy Benchmark		2.3%	-2.4%	5.2%	6.0%	%
CERBT Strategy 2	\$649.4 mil	1.4%	-2.1%	4.1%	%	%
CERBT Strategy 2 Policy Benchmark		1.4%	-2.2%	3.8%	%	%
CERBT Strategy 3	\$168.0 mil	0.5%	-2.0%	2.9%	%	%
CERBT Strategy 3 Policy Benchmark		0.5%	-2.1%	2.5%	%	%
Health Care Bond Fund	\$423.4 mil	-0.6%	0.6%	2.0%	3.8%	4.8%
Barclays U.S. Aggregate		-0.6%	0.5%	1.4%	3.2%	4.5%
Supplemental Contribution Plan	\$121.6 mil	1.3%	-1.3%	4.6%	4.8%	%
CalPERS Custom SCP Plan Index		1.5%	-1.0%	4.9%	5.4%	%
457 Program	\$1,276.0 mil	2.9%	-0.7%	6.6%	5.8%	4.5%
CalPERS Custom 457 Plan Index		3.1%	-0.5%	6.9%	6.4%	5.0%

<sup>63</sup> The Total Fund Policy Benchmark return equals the return for each asset class benchmark weighted at the current target asset allocation.

<b>Total Fund Review PERF</b>	
Periods Ended 12/31/2015	

								5-Year	Ratios
<b>TOTAL FUND</b> Total Fund Policy Benchmark <sup>2</sup> Actuarial Rate	Market <u>Value</u> \$289.9 bil	<u>Qtr</u> 2.2% 1.6% 1.8%	<u>1-Year</u> -0.1% -0.6% 7.5%	<u>3-Year</u> 7.3% 6.8% 7.5%	<u>5-Year</u> 7.2% 7.1% 7.6%	<u>10-Year</u> 5.1% 6.2% 7.7%	<u>VaR<sup>12</sup></u> \$38.5 bil	<u>Sharpe<sup>13</sup></u> 1.1 1.0	<u>Info<sup>14</sup></u> 0.1 0.0
GROWTH	182.0	3.9%	-1.2%	9.3%	7.9%	5.8%	\$37.5 bil	0.8	-0.1
Growth Policy Benchmark <sup>3</sup>		2.7%	-2.0%	9.4%	8.1%	6.7%		0.7	0.0
PUBLIC EQUITY	154.7	5.0%	-2.3%	8.7%	6.7%	5.0%	\$31.2 bil	0.5	0.5
Public Equity Policy Benchmark <sup>4</sup>		5.0%	-2.2%	8.5%	6.6%	5.4%		0.5	0.0
PRIVATE EQUITY	27.4	-1.9%	5.5%	12.9%	12.7%	11.2%	\$8.9 bil	2.6	0.0
Private Equity Policy Benchmark <sup>5</sup>		-8.5%	-2.0%	12.5%	13.2%	12.9%		1.0	0.0
INCOME	55.6	-1.0%	-1.4%	1.3%	4.7%	6.1%	\$6.5 bil	1.0	0.6
Income Policy Benchmark <sup>6</sup>		-0.8%	-1.5%	0.6%	4.2%	5.4%		0.8	0.0
REAL ASSETS 7	31.4	2.5%	14.0%	12.7%	12.1%	1.2%	\$4.3 bil	1.7	0.1
Real Assets Policy Benchmark <sup>8</sup>		3.0%	12.6%	11.6%	11.7%	8.3%	+	2.7	0.0
INFLATION	14.0	-4.7%	-11.3%	-7.1%	-1.8%	%	\$1.0 bil	-0.2	0.2
Inflation Policy Benchmark <sup>9</sup>		-5.2%	-12.0%	-8.0%	-2.3%	%		-0.3	0.0
LIQUIDITY	5.2	0.3%	0.6%	0.2%	1.1%	2.0%	\$0.0 bil	0.7	-0.7
Liquidity Policy Benchmark <sup>10</sup>		0.0%	0.7%	0.6%	1.5%	2.1%		0.8	0.0
ABSOLUTE RETURN STRATEGIES <sup>11</sup>	0.5	-0.5%	2.5%	5.3%	3.3%	3.7%		1.0	-0.6
Absolute Return Strategies Policy Benchmark <sup>11</sup>		1.1%	5.2%	5.2%	5.3%	6.9%		32.4	0.0
MULTI-ASSET CLASS COMPOSITE	1.2	1.1%	0.9%	6.2%	%	%		N/A	N/A
Absolute 7.5%		1.8%	7.5%	7.5%	%	%		N/A	N/A
CURRENCY + ASSET ALLOCATION TRANSITION	0.0	%	%	%	%	%		N/A	N/A
TERMINATED AGENCY POOL	0.1	-0.9%	-2.1%	%	%	%		N/A	N/A
TOTAL FUND PLUS TAP	290.0	2.2%	-0.1%	7.3%	7.2%	5.1%		N/A	N/A

<sup>2</sup> The Total Fund Policy Benchmark return equals the return for each asset class benchmark weighted at the current target asset allocations.

<sup>3</sup>Growth Policy Benchmark equals the benchmark returns of public equity and private equity weighted at policy allocation target percentages.

<sup>4</sup> The Public Equity Policy Benchmark is a custom global benchmark maintained by FTSE.

<sup>5</sup> 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%.

The Income Policy Benchmark equals the benchmark returns of domestic and international fixed income components weighted at policy allocation target percentages.

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.

<sup>8</sup> The Real Assets Policy Benchmark equals the benchmark returns of real estate, timber, and infrastructure weighted at policy allocation target percentages.

<sup>9</sup> The Inflation Policy Benchmark equals the benchmark returns of commodities and TIPS weighted at policy allocation target percentages.

<sup>10</sup> The Liquidity Policy Benchmark is a custom index maintained by State Street Bank.

<sup>11</sup> 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%.

<sup>12</sup> 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).

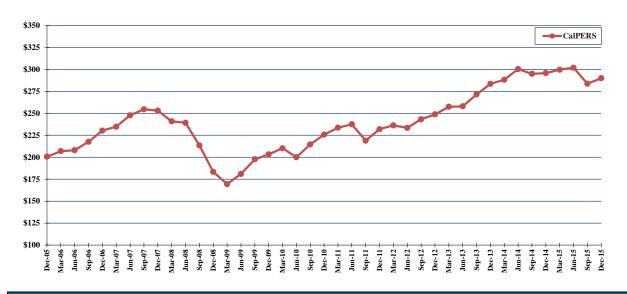
<sup>13</sup> The Sharpe Ratio or reward-to-variability ratio is a measure of the mean excess return per unit of risk in an investment strategy. The Sharpe ratio is used to characterize how well the return of an asset compensates the investor for the total risk taken. The 5-year period was selected to 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.

<sup>14</sup> 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 Flow**

	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>1Q15</u>	<u>2Q15</u>	<u>3Q15</u>	<u>4Q15</u>
Market Value (\$bil)	230.3	252.9	183.3	203.3	225.7	225.0	248.8	283.6	295.8	299.6	301.9	283.7	289.9

#### **Total Fund Market Value**

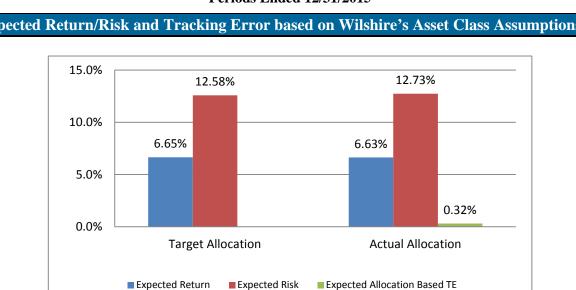


#### **Asset Allocation**

#### Asset Allocation: Actual versus Target Weights\*

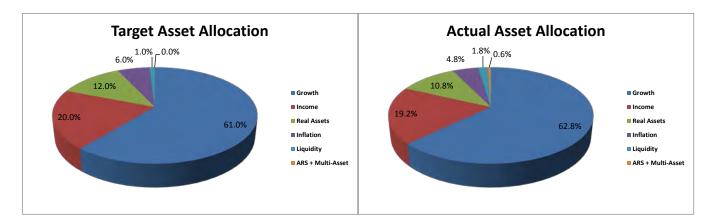
Asset Class	Actual Asset Allocation	Target Asset Allocation	Difference
Growth	62.8%	61.0%	1.8%
Income	19.2%	20.0%	-0.8%
Real Assets	10.8%	12.0%	-1.2%
Inflation	4.8%	6.0%	-1.2%
ARS	0.2%	0.0%	0.2%
Liquidity	1.8%	1.0%	0.8%
Multi-Asset	0.4%	0.0%	0.4%

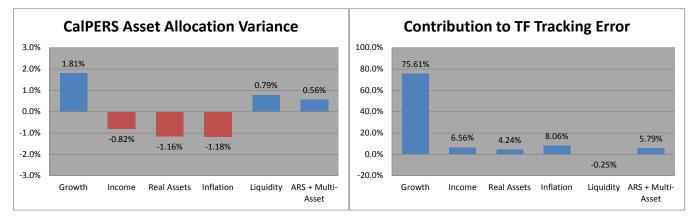
\* Asset allocation targets are in the process of shifting to the new targets adopted by the Investment Committee in May 2014. Transitions accounts are included with their respective asset classes.



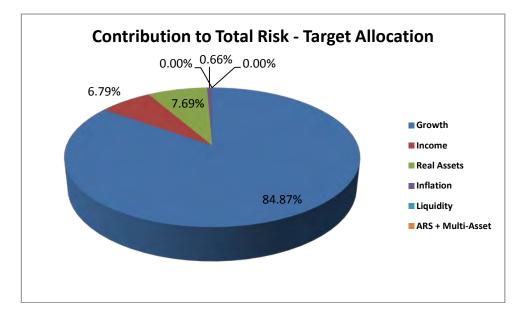
Expected Return/Risk and Tracking Error based on Wilshire's Asset Class Assumptions

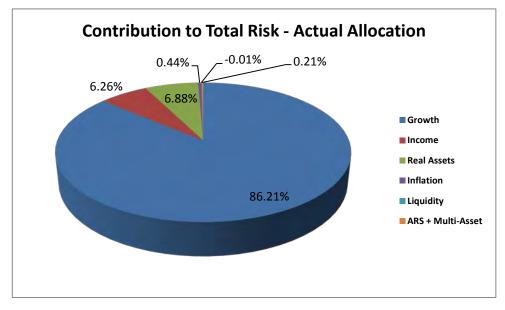
#### **Total Fund Asset Allocation**





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





#### California Public Employees' Retirement System Total Fund Attribution - Quarter As of 12/31/2015

	Actua	l (%)	Polic	y (%)	Differe	nce (%)	Total Fund Return Contribution (%)			
Asset Class	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	62.92	3.88	61.00	2.72	1.92	1.15	0.08	-0.05	0.68	0.71
Public Equity	53.25	4.97	51.00	5.02	2.25	-0.06	0.04	0.00	-0.03	0.01
Private Equity	9.68	-1.87	10.00	-8.54	-0.32	6.68	0.04	-0.04	0.70	0.70
Income	19.32	-0.99	20.00	-0.85	-0.68	-0.14	0.00	0.00	-0.03	-0.03
Real Assets	10.83	2.46	12.00	2.98	-1.17	-0.52	-0.04	0.01	-0.06	-0.09
Inflation	5.01	-4.69	6.00	-5.20	-0.99	0.51	0.07	-0.01	0.03	0.09
Absolute Return	0.59	-0.52	0.00	1.06	0.59	-1.58	0.00	-0.01	0.00	-0.01
Liquidity	1.32	0.30	1.00	0.03	0.32	0.27	0.01	0.00	0.00	0.02
Monthly Linked Return	100.00	2.27	100.00	1.58		0.69	0.11	-0.05	0.62	0.69
Trading/Hedging/Other		-0.04		0.00		-0.04				-0.04
Total		2.23		1.58		0.65				0.65

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.

#### California Public Employees' Retirement System Total Fund Attribution - Calendar Year-to-Date As of 12/31/2015

	Actua	l (%)	Polic	y (%)	Differe	nce (%)	Т	)		
Asset Class	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	63.29	-1.15	61.00	-2.01	2.29	0.85	-0.10	0.01	0.55	0.46
Public Equity	53.54	-2.32	51.00	-2.17	2.54	-0.15	-0.11	0.00	-0.08	-0.19
Private Equity	9.75	5.48	10.00	-1.96	-0.25	7.44	-0.01	-0.06	0.71	0.65
Income	18.57	-1.06	19.50	-1.47	-0.93	0.41	-0.08	0.00	0.07	0.00
Real Assets	10.34	14.03	12.00	12.63	-1.66	1.39	-0.21	-0.06	0.17	-0.10
Inflation	5.07	-11.31	6.00	-11.99	-0.93	0.68	0.11	-0.01	0.05	0.15
Absolute Return	0.85	2.48	0.00	5.16	0.85	-2.68	0.03	-0.01	0.00	0.03
Liquidity	1.87	0.58	1.50	0.75	0.37	-0.17	0.03	0.00	-0.01	0.03
Monthly Linked Return	100.00	-0.06	100.00	-0.62		0.56	-0.22	-0.06	0.84	0.56
Trading/Hedging/Other		-0.03		0.00		-0.03				-0.03
Total		-0.09		-0.62		0.54				0.54

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.

#### California Public Employees' Retirement System Total Fund Attribution - Fiscal Year-to-Date As of 12/31/2015

	Actua	l (%)	Polic	y (%)	Differe	nce (%)	Total Fund Return Contribution (%)			
Asset Class	Weight	Return	Weight	Return	Weight	Return	Actual Allocation	Interaction	Active Management	Total
Growth	63.08	-4.25	61.00	-5.55	2.08	1.30	-0.08	-0.04	0.87	0.75
Public Equity	53.38	-5.22	51.00	-5.26	2.38	0.04	-0.09	0.00	0.02	-0.07
Private Equity	9.70	1.04	10.00	-7.53	-0.30	8.57	0.01	-0.04	0.85	0.82
Income	18.89	-0.01	20.00	0.13	-1.11	-0.14	-0.08	0.00	-0.03	-0.10
Real Assets	10.74	3.72	12.00	6.28	-1.26	-2.56	-0.13	0.03	-0.29	-0.40
Inflation	5.06	-10.91	6.00	-11.60	-0.94	0.69	0.08	-0.01	0.04	0.11
Absolute Return	0.65	-2.55	0.00	2.41	0.65	-4.96	0.04	-0.03	0.00	0.01
Liquidity	1.57	0.19	1.00	0.04	0.57	0.15	0.03	0.00	0.00	0.03
Monthly Linked Return	100.00	-2.87	100.00	-3.28		0.41	-0.14	-0.05	0.59	0.41
Trading/Hedging/Other		-0.08		0.00		-0.08				-0.08
Total		-2.96		-3.28		0.32				0.32

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.

• The California Public Employees' Retirement System ("CalPERS, the System") generated a total fund return of 2.23%, for the quarter ended December 31, 2015. CalPERS' return can be attributed as follows:

1.58%	Strategic Policy Allocation
0.11%	Actual/Tactical Asset Allocation
0.62%	Active Management
-0.05%	Interaction
-0.04%	Trading/Currency Hedging
2.23%	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.
- CalPERS investments recovered from its steep third quarter losses and registered a net gain of 2.2% in Q4 2015. This compared favorably to the 1.6% gain of the strategic policy benchmark as both the active management and asset allocation components were positive and helped lift the System's relative performance. For the most part, Q4's positive active management contribution came from the Growth asset class, where the Private Equity program produced a significant amount of outperformance (+668 bps) that helped more than compensate for the relative weaknesses in Income (-14 bps) and Real Assets (-52 bps). From an allocation perspective, CalPERS benefited from being overweight in Growth, where the exposure to healthy rebound in Public Equity valuations as well as the strong Private Equity relative performance provided incremental boost to Total Fund return. Additionally, having a modestly lower-than-policy target exposure to Inflation, which struggled as one of the worst performing asset classes in Q4, also further contributed to CalPERS' relative performance.

#### Relative to the Total Fund Policy Benchmark:

- Growth Exposure: The Growth composite remains CalPERS' largest asset class exposure, accounting for 63% of the plan assets as of December 31. Given its size, the composite often exerts high amount of influence over Total Fund performance and that remains the case during the last quarter of 2015: Growth netted a 3.9% return in Q4 that was the highest among the six major CalPERS asset classes and handily outperformed both the Growth policy benchmark (2.7%) as well as the total fund policy benchmark (1.6%). Within Growth, the larger-sized public equity component reported a solid rise of 5.0% that helped lift PERS' overall return this quarter, while the smaller private equity portfolio generated a 668 bps of outperformance that made a major contribution to the System's relative results.
- Income Exposure: The long-awaited Fed "lift-off" finally took place during the fourth quarter, when the Federal Open Market Committee voted to raise the key Fed Fund rates to a 0.25-0.50% target range. In anticipation of this decision, market interest rates have been steadily inching higher throughout the quarter, putting pressure on bond prices in most fixed income sectors. Within this higher rate environment, the Income composite ceded ground and finished down -1.0% for the quarter. This performance fell 14 bps shy of the Income policy benchmark, and naturally underperformed when compared to the total fund policy benchmark. For Q4, the two main components within Income notched similar results, with the U.S. fixed income portfolio saw a -1.0% return while the international fixed income came in slightly lower, at -1.2%.
- **Real Assets Exposure:** Real Assets remains one of the few CalPERS asset classes that had consistently generated positive returns, and it did just that in the fourth quarter with a rise of 2.5%. This performance was better than the total fund policy benchmark, although it wasn't good enough to beat its own asset class benchmark, which was up 3.0% this quarter, therefore still making Real Assets one of the performance detractors for Q4. Most of this relative weakness was driven by the real estate composite, where the private real estate investments' appreciation lagged the market averages.
- Inflation Exposure: Faced with a worldwide collapse of commodity prices and continued muted inflation pressure in the U.S., the Inflation composite struggled in the second half of 2015. After sliding -6.5% in the third quarter, the composite lost another -4.7% in Q4, making it the weakest piece among CalPERS' major asset classes. Although on one bright note the Inflation composite did perform better than its own policy benchmark by a margin of 51 bps. Performance from both the inflation-linked bond component and the commodities component were weak, with the former ending the quarter down -1.3% and the latter losing -16.5%.
- Liquidity: The Liquidity composite saw a very small but positive gain of 0.3% this quarter, coming in below the total fund policy benchmark but was better than its own asset class benchmark (0.03%). Starting Q3 2015, the composite is solely composed of short term investment funds.
- Absolute Return Strategy: The Absolute Return Strategy (ARS) program registered a small loss of -0.5%, underperforming the total fund policy benchmark.

# Growth Review for PERF

Periods Ended 12/31/2015

**Growth Allocation** 

#### Asset Allocation: Actual versus Target Weights

Asset Class	Actual Asset Allocation	Target Asset Allocation	Difference
Growth	<u>62.8%</u>	61.0%	+1.8%
Public Equity	53.4%	51.0%	+2.4%
Private Equity	9.4%	10.0%	-0.6%

#### **Growth Segment Performance**

<b>GROWTH</b> Growth Policy Benchmark Value Added	Market <u>Value</u> 182.0	<u>Qtr</u> 3.9% 2.7% 1.2%	<b><u>1-Year</u></b> -1.2% -2.0% 0.8%	<b><u>3-Year</u></b> <b>9.3%</b> 9.4% -0.1%	<b>5-Year</b> <b>7.9%</b> 8.1% -0.2%	<u>10-Year</u> 5.8% 6.7% -0.9%	<u>VaR<sup>21</sup></u> \$37.5 bil	5-year Sharpe <u>Ratio<sup>22</sup></u> 0.8 0.7	5-year Info <u>Ratio<sup>23</sup></u> -0.1 0.0
PUBLIC EQUITY <sup>15</sup> Public Equity Policy Benchmark <sup>16</sup> Value Added	154.7	<b>5.0%</b> 5.0% 0.0%	<b>-2.3%</b> -2.2% -0.1%	<b>8.7%</b> 8.5% 0.2%	<b>6.7%</b> 6.6% 0.1%	<b>5.0%</b> 5.4% -0.4%	\$31.2 bil	0.5 0.5	0.5 0.0
US Equity Composite Custom US Equity Benchmark <sup>17</sup> Value Added	80.8	<b>6.0%</b> 6.2% -0.2%	-0.8% -0.4% -0.4%	<b>14.7%</b> 14.5% 0.2%	<b>11.9%</b> 11.9% 0.0%	<b>7.2%</b> 7.3% -0.1%		1.0 1.0	0.2 0.0
<b>Total Int'l Equity</b> Custom Int'l Equity Benchmark <sup>18</sup> Value Added	73.9	<b>3.9%</b> 3.8% 0.1%	<b>-4.1%</b> -3.9% -0.2%	<b>3.0%</b> 3.4% -0.4%	<b>2.0%</b> 2.4% -0.4%	<b>3.6%</b> 3.4% 0.2%		0.1 0.2	-0.4 0.0
PRIVATE EQUITY <sup>19</sup> PE Policy Benchmark <sup>20</sup> Value Added	27.4	<b>-1.9%</b> -8.5% 6.6%	<b>5.5%</b> -2.0% 7.5%	<b>12.9%</b> 12.5% 0.4%	<b>12.7%</b> 13.2% -0.5%	<b>11.2%</b> 12.9% -1.7%	\$8.9 bil	2.6 1.0	0.0 0.0
Private Equity Partnership Investments Private Equity Distribution Stock	27.4 0.0	-1.8% -4.0%	5.6% -44.2%	12.9% -20.0%	12.8% -26.6%	11.3% -7.3%			

<sup>15</sup> 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.

<sup>16</sup> The Public Equity Policy Benchmark is a custom global benchmark maintained by FTSE.

<sup>17</sup> The Custom US Equity Benchmark currently represents the FTSE Total Market Index. It is linked historically to its prior benchmarks.

<sup>18</sup> The Custom Int'l Equity Benchmark currently represents the FTSE All World ex US Index. It is linked historically to its prior benchmarks.

<sup>19</sup> The performance of CalPERS' private equity (AIM) investments is 1-quarter lagged.

<sup>20</sup> 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.

<sup>21</sup> 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.

<sup>22</sup> 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.

<sup>23</sup> 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: Shrugging off steep third-quarter losses, the U.S. equity composite opened the first month of Q4 with a strong rally. The newfound optimism did not last for long, however, as other worries quickly took hold. As concerns grew on the corporate profitability impact from higher interest rates, the stuttering rest-of-the-world economies, to the renewed collapse of oil-led commodity prices all contributed to heightened volatility in the rest of the quarter. This late-quarter pullback eroded some of October's rally, but overall the CalPERS U.S. equity composite still finished Q4 on a good note, returning 6.0%. This performance handily outperformed the Growth policy benchmark's 2.7% gain. Both of the System's internal and external U.S. equity composites enjoyed solid mid-single digit rise, with the former finishing up 6.1% and the latter up 5.0%.
- International Equity Exposure: Similar to U.S. stocks, both developed and emerging equity markets were able to hold on to their October gains to finish Q4 in the black. However, in part due to negative forex impact (from the continued strengthening of U.S. Dollar) PERS' international equity composite saw a more modest return of 3.9% for the quarter; although relatively speaking this performance still compared favorably to the Growth policy benchmark's 2.7% pace. Within the international equity segment, the internally managed composite was up 3.7% while the externally managed composite did slightly better with a return of 4.5%.
- **Private Equity Exposure:** With partnerships typically reporting performance on a one-quarter lagged basis, the CalPERS private equity program was unable to keep up with public equity investments in terms of pure gains, as it closed out the fourth quarter of 2015 on a small down note (-1.9%). However, on a relative basis private equity actually did very well, finishing ahead of its own policy benchmark by a margin of 668 bps. Therefore despite the negative finish, with an outperformance of this size the private equity program was still considered a net contributor to CalPERS' total return this quarter.
- **Corporate Governance:** Within CalPERS' public equity investments, the Corporate Governance program was a standout in Q4 as it netted a total return of 9.3%. This sizable gain outperformed the Growth policy benchmark as well as the program's own policy benchmark.

#### Helped Performance:

None.

<b>US Equity Composite (ex ARS)</b> <i>Custom US Equity Benchmark</i> <sup>24</sup> <i>Value Added</i>	<u>Market</u> <u>Value</u> 80.8	<u>Qtr</u> 6.0% 6.2% -0.2%	<u>1-Year</u> -0.8% -0.4% -0.4%	3-Year 14.7% 14.5% 0.2%	<u>5-Year</u> 11.9% 11.9% 0.0%	<u>10-Year</u> 7.2% 7.3% -0.1%	<u>Date</u> 12/79
<b>Total Internal US Equity</b> Custom Internal US Equity Benchmark <sup>25</sup> Value Added	72.2	<b>6.1%</b> 6.3% -0.2%	-0.5% -0.3% -0.2%	<b>14.7%</b> 14.5% 0.2%	<b>12.1%</b> 11.9% 0.2%	<b>7.5%</b> 7.3% 0.2%	6/88
<b>Total External US Equity</b> Custom External US Equity Benchmark <sup>26</sup> Value Added	8.6	<b>5.0%</b> 5.6% -0.6%	<b>-3.5%</b> -2.3% -1.2%	<b>14.3%</b> 13.4% 0.9%	<b>10.6%</b> 11.4% -0.8%	<b>6.1%</b> 7.1% -1.0%	12/98

#### Public Equity Review for PERF - U.S. Equity

# **Public Equity Review for PERF - International Equity**

<b>Total Int'l Equity (ex ARS)</b> Custom Int'l Equity Benchmark <sup>27</sup> Value Added	<u>Market</u> <u>Value</u> 73.9	<u>Otr</u> 3.9% 3.8% 0.1%	<u>1-Year</u> -4.1% -3.9% -0.2%	3-Year 3.0% 3.4% -0.4%	5-Year 2.0% 2.4% -0.4%	<u>10-Year</u> 3.6% 3.4% 0.2%	<u>Date</u> 12/02
<b>Total Internal Int'l Equity</b> Custom Internal Int'l Equity Benchmark <sup>28</sup> Value Added	61.7	<b>3.7%</b> 3.7% 0.0%	<b>-3.5%</b> -3.6% 0.1%	<b>3.3%</b> 3.0% 0.3%	<b>2.2%</b> 2.0% 0.2%	<b>3.3%</b> 3.4% %	3/05
<b>Total External Int'l Equity</b> Custom External Int'l Equity Benchmark <sup>29</sup> Value Added	20.9	<b>4.5%</b> 4.0% 0.5%	<b>-4.9%</b> -5.4% 0.5%	<b>2.3%</b> 1.8% 0.5%	<b>1.5%</b> 0.9% 0.6%	<b>3.8%</b> 3.3% 0.5%	6/89

## Public Equity Review for PERF - Corporate Governance/MDP/FoF

	Market						
	Value	<u>Qtr</u>	1-Year	<u>3-Year</u>	5-Year	10-Year	Date
Total Corporate Governance	2.0	9.3%	3.9%	12.3%	7.2%	3.9%	12/98
Policy Benchmark		6.7%	1.5%	12.6%	9.2%	4.6%	
Value Added		2.6%	2.4%	-0.3%	-2.0%	-0.7%	

<sup>24</sup> The Custom US Equity Benchmark currently represents the FTSE Total Market Index. It is linked historically to its prior benchmarks.

<sup>25</sup> The Custom Internal US Equity Benchmark currently represents the FTSE Total Market Index. It is linked historically to its prior benchmarks.
<sup>26</sup> The Custom External US Equity Benchmark return equals the return for each manager's benchmark weighted at the current target asset allocation.

<sup>27</sup> The Custom Int'l Equity Benchmark currently represents the FTSE All World ex US Index. It is linked historically to its prior benchmarks.

<sup>28</sup> 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.

<sup>29</sup> 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 12/31/2015

#### **ARS** Allocation

	Asset Alloc	ation:	Actual	versus	Target V	Weigh	ts			
Asset Class		Actual Alloc			arget Asset Allocation	t	Di	fference		
ARS		0.2% 0.0%					+0.2%			
ARS Segment Perform	nance									
	Market						Info	5-Year Up Capture	Sharpe	5-Year Sorting
	<u>Value</u>	<u>Qtr</u>	<u>1-Year</u>	<u>3-Year</u>	<u>5-Year</u>	<u>10-Year</u>		<u>Ratio</u>		Ratio <sup>3</sup>
Absolute Return Strategies ARS Policy Benchmark <sup>30</sup>	0.5	-0.5%	2.5%	5.3%	<b>3.3%</b>	<b>3.7%</b>	-0.6	0.6	1.0	1.4
2		1.1%	5.2%	5.2%	5.3%	6.9%				
Value Added		-1.6%	-2.7%	0.1%	-2.0%	-3.2%				
Fotal Direct Investments	0.4	-1.0%	1.7%	5.1%	3.5%	4.2%				
Fotal Funds of Funds	0.0	9.3%	16.2%	8.9%	4.8%	3.3%				

#### **ARS Characteristics**

			<b>Rolling Corre</b>	elations vs. Inc	lex
Percentage				<b>Domestic</b>	
of positive	<u>Beta vs.</u>		MSCI AW	<b>Fixed</b>	Real Estate
Months	<u>S&amp;P 500</u>	<u>W5000</u>	<u>x-US</u>	<b>Benchmark</b>	<b>Benchmark</b>
64%	0.1	0.2	0.3	-0.1	0.1

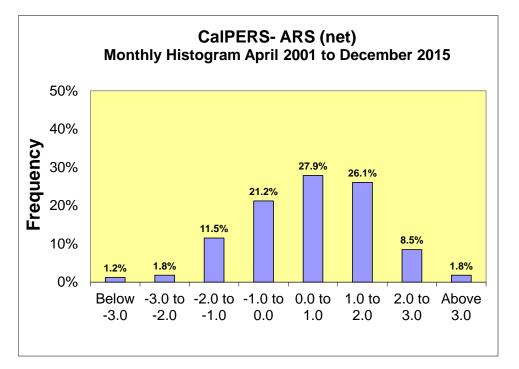
- Beta vs. S&P 500: This measures the amount of stock market risk in the portfolio. A beta of 1.0 would indicate that the portfolio's performance should closely track the stock market, while a beta higher than 1.0 implies greater-than-market risk and possibly leverage. The portfolio's beta is 0.1 which implies a weak relationship to 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 positive correlation to the equity markets while exhibiting a weak negative correlation with fixed income markets.

<sup>&</sup>lt;sup>30</sup> The ARS Policy Benchmark consists of the Merrill Lynch 1-Year Treasury Note + 5% and is linked historically to its prior benchmark.

<sup>&</sup>lt;sup>31</sup> 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.

<sup>&</sup>lt;sup>32</sup> 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.

<sup>&</sup>lt;sup>33</sup> 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 12/31/2015

• 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.

# Income Review for PERF

Periods Ended 12/31/2015

#### **Income Allocation**

Asset Class		Actual Alloca		C	get Asset ocation		Difference			
Income		19	.2%		20.0%		-0.8	%	1	
Income Segment Perform	nance									
INCOME	Market <u>Value</u> 55.6	<u>Qtr</u> -1.0%	<u>1-Year</u> -1.4%	<u>3-Year</u> 1.3%	<u>5-Year</u> 4.7%	<u>10-Year</u> 6.1%	<u>VaR<sup>37</sup></u> \$6,5 bil	5-year Sharpe <u>Ratio<sup>38</sup></u> 1.0	5-year Info <u>Ratio<sup>39</sup></u> 0.6	
Income Policy Benchmark <sup>34</sup> Value Added	55.0	-0.8% -0.2%	-1.5% 0.1%	0.6% 0.7%	4.2% 0.5%	5.4% 0.7%	φ <b>υ.υ υπ</b>	0.8	0.0	
U <b>.S. Income</b> U.S. Income Policy Benchmark <sup>35</sup> Value Added	50.6	<b>-1.0%</b> -0.8% -0.2%	<b>-0.7%</b> -0.8% 0.1%	<b>2.1%</b> 1.3% 0.8%	<b>5.4%</b> 4.9% 0.5%	<b>6.3%</b> 5.7% 0.6%		1.1 0.9	0.4 0.0	
<b>Non-U.S. Income</b> Non-US Income Policy Benchmark <sup>36</sup> Value Added	5.0	<b>-1.2%</b> -1.2% 0.0%	<b>-8.4%</b> -7.9% -0.5%	<b>-5.6%</b> -6.0% 0.4%	<b>-1.5%</b> -2.4% 0.9%	<b>3.3%</b> 2.5% 0.8%		-0.2 -0.4	1.1 0.0	

#### **Comments Regarding Income Segment Performance**

#### Helped Performance:

- Mortgage Bonds: Mortgage is one of the few fixed income sectors that held up relatively well throughout Q4 thanks to stable quality and sound fundamentals. CalPERS' \$10.1 billion mortgage portfolio did not finish the quarter in the black, but its small -0.2% return easily outperformed the Income policy benchmark by more than 60 bps while also compared favorably to the System's government and corporate bond portfolios.
- Sovereign Bonds: The \$2.0 billion sovereign bond portfolio was among the best performing PERS fixed income portfolios this quarter, whose 0.6% gain was markedly ahead of the Income policy benchmark.

- <sup>35</sup> The US Fixed Income Policy Benchmark consists of the Barclays Long Liability Index and is linked historically to its prior benchmark.
- <sup>36</sup> The Non-US Fixed Income Policy Benchmark consists of the Barclays International Fixed Income and is linked historically to its prior benchmark.
- <sup>37</sup> 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.
- <sup>38</sup> 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.
- <sup>39</sup> 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.

<sup>&</sup>lt;sup>34</sup> The Income Policy Benchmark return equals the benchmark returns for domestic and international fixed income components weighted at policy allocation target percentages.

#### Impeded Performance:

- Government Bonds: Treasury prices were notably dented this quarter by the long anticipated (and the eventual) rise of Fed Funds rate, which pushed Treasury yields in all maturities higher throughout Q4: 2-year T-yield shot up 42 bps, 10-year yield rose 23 bps and the 30-year yield was up 17 bps. As a result government bonds performance were weak, with the PERS government bond portfolio netting a -1.2% loss that finished 32 bps below the Income policy benchmark.
- **Corporate Bonds:** CalPERS' \$11.3 billion internal corporate bond portfolio drew similar performance to the government bond portfolio: it was down -1.3% and detracted from the overall Income performance in the fourth quarter.
- High Yield Bonds: High yield fared worse than investment grade by seeing spread to Treasury yields widen further in the quarter, reflecting the expectation of higher financing costs for businesses in the future. Additionally, the renewed downward spiral of crude oil prices also put tremendous pressure on energy issues that further prompted large capital exodus from the high yield space. Both of PERS' internal and external high yield portfolios struggled to find a firm footing in Q4, losing -2.5% and -2.7% respectively, and underperformed relative to the Income policy benchmark.
- International Fixed Income: The same forex effect that reduced earnings on international equity this quarter worked similarly here, as a strong U.S. Dollar dampened international fixed income returns for U.S.-based investors. The CalPERS international fixed income portfolio was down -1.2%, finishing below the Income policy benchmark by 31 bps.

	Market <u>Value</u>	Qtr	<u>1-Year</u>	<u>3-Year</u>	5-Year	<u> 10-Year</u>	Date
INCOME	55.6	-1.0%	-1.4%	1.3%	4.7%	6.1%	6/88
Income Policy Benchmark 40		-0.8%	-1.5%	0.6%	4.2%	5.4%	
Value Added		-0.2%	0.1%	0.7%	0.5%	0.7%	
Internal US Income + Opportunistic	50.6	-1.0%	-0.7%	2.1%	5.4%	6.3%	12/95
Mortgage Bonds	10.1	-0.2%	2.4%	3.9%	4.5%	5.5%	12/82
Long Duration Mortgages*	3.8	-0.8%	2.3%	2.0%	4.9%	6.6%	6/05
Corporate Bonds*	11.3	-1.3%	-3.9%	2.0%	6.6%	6.7%	3/02
U.S. Government*	19.7	-1.2%	-0.3%	0.6%	5.4%	5.6%	12/99
Sovereign Bonds* 41	2.0	0.6%	-3.7%	0.0%	5.4%	5.8%	6/96
Long Duration Corporates*	2.0	0.1%	-5.3%	2.2%	8.2%	7.9%	9/05
Custom Benchmark <sup>42</sup>		-0.8%	-0.8%	1.3%	4.9%	5.7%	
Opportunistic 43	3.8	-2.1%	-1.7%	4.7%	4.2%	5.3%	6/00
Internal High Yield Bonds*	0.9	-2.5%	-5.5%	4.4%	4.4%	9.7%	9/99
External High Yield*	1.6	-2.7%	-4.0%	3.2%	6.0%	5.1%	3/02
High Yield Mortgage*	0.3	0.2%	7.6%	9.7%	14.8%	%	3/08
Citigroup High Yield Cash Pay		-2.7%	-5.6%	1.1%	4.5%	6.4%	
Special Investments	0.0	2.0%	8.5%	9.4%	6.4%	6.8%	3/91
Total International Fixed Income	5.0	-1.2%	-8.4%	-5.6%	-1.5%	3.3%	3/89
Custom Benchmark <sup>44</sup>		-1.2%	-7.9%	-6.0%	-2.4%	2.5%	
Value Added		0.0%	-0.5%	0.4%	0.9%	0.8%	
Securities Lending 45	9.2	0.1%	0.5%	0.6%	0.9%	1.5%	8/00
Custom Benchmark		0.0%	0.1%	0.1%	0.1%	1.3%	
Value Added		0.1%	0.4%	0.5%	0.8%	0.2%	
Internal Active Short Term**	2.7	0.1%	0.3%	0.2%	%	%	3/11
Custom Benchmark		0.0%	0.2%	0.0%	%	%	
Value Added		0.1%	0.1%	0.2%	%	%	
CalPERS ESEC Cash Collateral**	6.5	0.0%	0.6%	0.3%	0.2%	%	6/10
Custom Benchmark		0.0%	0.1%	0.1%	0.1%	%	
Value Added		0.0%	0.5%	0.2%	0.1%	%	

#### **Income Review for PERF (Continued)**

<sup>40</sup> The Income Policy Benchmark return equals the benchmark returns for domestic and international fixed income components weighted at policy allocation target percentages.

<sup>41</sup> The Internal Sovereign Bond market value is also included in the Internal Treasury Bond market value.

<sup>42</sup> The custom benchmark consists of the Barclays Long Liability Index. Prior of 3Q 2004 the benchmark was Citigroup LPF.

<sup>43</sup> Opportunistic includes internal and external high yield. Internal High Yield's market value is included in both the Total Internal Bonds and the Opportunistic Market Values.

<sup>44</sup> The custom benchmark consists of the Barclays International Fixed Income Index and is linked historically to its prior benchmark.

<sup>45</sup> The Securities Lending composite is a non-PERF composite. The composite includes the Structure Investment Vehicles performance.

\* These portfolios and/or composites are unitized and are included across multiple plans.

\*\* These portfolios hold the collateral for the security lending program.

#### Inflation Performance for PERF Period Ended 12/31/2015

#### **Inflation Allocation**

Asset Class	Asset Allo	Actual Alloca	Asset	Targ	get Asset ocation	U	Difference				
Inflation			.8%		6.0%		-1.2				
Inflation Performance											
INFLATION	Market <u>Value</u> 14.0	<u>Qtr</u> -4.7%	<u>1-Year</u> -11.3%	<u>3-Year</u> -7.1%	<u>5-Year</u> -1.8%	<u>10-Year</u> %	<u>VaR<sup>48</sup></u> \$1.0 bil	5-year Sharpe <u>Ratio<sup>49</sup></u> -0.2	5-year Info <u>Ratio<sup>50</sup></u> 0.2		
Inflation Policy Benchmark <sup>46</sup> Value Added		-5.2% 0.5%	-12.0% 0.7%	-8.0% 0.9%	-2.3% 0.5%	% %		-0.3	0.0		
<b>Internal Commodities <sup>47</sup></b> GSCI Total Return Index Value Added	1.9	<b>-16.5%</b> -16.6% 0.1%	<b>-32.6%</b> -32.9% 0.3%	<b>-23.8%</b> -23.7% -0.1%	<b>-15.2%</b> -15.2% 0.0%	<b>%</b> %					
<b>Core Inflation Linked Bonds</b> <i>Custom Benchmark</i> <i>Value Added</i>	10.2	<b>-1.3%</b> -1.3% 0.0%	<b>-4.9%</b> -4.9% 0.0%	<b>-2.0%</b> -2.5% 0.5%	<b>2.8%</b> 2.3% 0.5%	<b>%</b> %					
<b>Tactical Commodities</b> GSCI Total Return Index Value Added	0.9	<b>-16.6%</b> -16.6% 0.0%	<b>-33.0%</b> -32.9% -0.1%	<b>%</b> %	<b>%</b> %	<b>%</b> %					
<b>Tactical TIPS</b> CalPERS TIPS Value Added	1.0	<b>-0.6%</b> -0.6% 0.0%	<b>-1.7%</b> -1.4% -0.3%	<b>%</b> %	<b>%</b> %	<b>%</b> %					

The Inflation asset class faced strong headwinds in the second half of 2015, where macro conditions were unfavorable to neither the inflation-linked bonds component nor the commodities component. In the wake of OPEC's unwillingness to cut oil production and multiple new data pointing towards a continued cooling of Chinese economic growth, PERS commodities investments took the brunt of the oil-led commodity pricing collapse: both the internal and tactical commodities portfolios fell more than -16% in the last quarter of 2015. And with energy price stuck in the bottom of the barrel, growth in U.S. consumer prices remained weak into the fourth quarter, handicapping the TIPS portfolios' performance. In relative terms, however, Inflation's -4.7% total return this quarter actually bettered its asset class policy benchmark by a modest margin of 51 bps, thanks to the composite's smaller-than-target allocation to the poorer performing commodities (20% vs. 25% of total Inflation assets).

<sup>50</sup> 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.

<sup>&</sup>lt;sup>46</sup> The Inflation Policy Benchmark equals the benchmark returns of commodities and TIPS weighted at policy allocation target percentages.

<sup>&</sup>lt;sup>47</sup> 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.

<sup>&</sup>lt;sup>48</sup> 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.

<sup>&</sup>lt;sup>49</sup> 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.

#### Real Assets Review for PERF Period Ended 12/31/2015

#### **Real Assets Allocation**

A Asset Class	sset Allo	<b>cation:</b> Actual Alloca	Asset	Targ	<b>arget W</b> get Asset ocation	C	Differe	nce	
Real Assets		10	.8%		12.0%		-1.2	%	
Real Assets Segment Po	erforman	ce							
	Market <u>Value</u>	Qtr	<u>1-Year</u>	<u>3-Year</u>	5-Year	<u>10-Year</u>	VaR <sup>55</sup>	5-year Sharpe <u>R</u> atio <sup>56</sup>	5-year Info <u>Ratio<sup>57</sup></u>
REAL ASSETS	31.4	2.5%	14.0%	12.7%	12.1%	1.2%	\$4.3 bil	1.7	0.1
Real Assets Policy Benchmark <sup>51</sup>		3.0%	12.6%	11.6%	11.7%	8.3%		2.7	0.0
Value Added		-0.5%	1.4%	1.1%	0.4%	-7.1%			
Real Estate 52	26.9	2.6%	15.5%	13.4%	13.4%	0.7%	\$4.4 bil	1.7	0.1
Real Estate Policy Benchmark <sup>53</sup>		3.4%	13.9%	12.4%	12.9%	9.1%		2.6	0.0
Value Added		-0.8%	1.6%	1.0%	0.5%	-8.4%			
Forestland <sup>54</sup>	2.2	0.0%	0.0%	2.8%	-1.3%	%			
NCREIF Timberland Index		0.8%	9.3%	9.8%	6.3%	%			
Value Added		-0.8%	-9.3%	-6.9%	-7.6%	%			
Infrastructure <sup>54</sup>	2.3	3.2%	11.0%	15.0%	19.1%	%			
CPI + 400 BPS 1Qtr Lag		0.7%	4.0%	5.0%	6.1%	%			
Value Added		2.5%	7.0%	10.0%	13.0%	%			

With Q4's 2.5% gain, Real Assets extended its streak of turning a positive return to twenty one consecutive quarters, something no other major CalPERS asset class has achieved. Unfortunately, in relative terms this performance represented a modest miss as the asset class benchmark saw a return of 3.0%. Most of this quarter's underperformance was driven by the real estate component, which represented 86% of RA's total assets and consists solely of private real estate investments, as this segment generated 83 bps of net of fee underperformance and held back Real Assets' overall return. As for Real Assets' two similar-sized, smaller components, their performance contribution once again offset one another, with the forestland portfolio finishing virtually flat while the infrastructure piece saw a steady rise of 2.6%. Q4's miss had little impact to Real Assets' near- to mid-term track record, where this composite currently remains one step ahead of its policy benchmark over the last five years.

<sup>&</sup>lt;sup>51</sup>The Real Assets Policy Benchmark equals the benchmark returns of real estate, timber, and infrastructure weighted at policy allocation target percentages.

<sup>&</sup>lt;sup>52</sup> 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.

<sup>&</sup>lt;sup>53</sup> 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.

<sup>&</sup>lt;sup>54</sup> These investments are reported on a 1-quarter lagged basis.

<sup>&</sup>lt;sup>55</sup> 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.

<sup>&</sup>lt;sup>56</sup> 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.

<sup>&</sup>lt;sup>57</sup> 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.

#### Liquidity Review for PERF Period Ended 12/31/2015

Liquidity Allocation

Asset Class	Asset Class			•	et Asset	]	Differer	ice	
Liquidity		1	.8%		1.0%		+0.8		
Liquidity Segment Perf	ormance	9							
	Market	0	4 \$7	2.84		10.37	V D60	5-year Sharpe Ratio <sup>61</sup>	5-year Info
LIQUIDITY	Value 5.2	<u>Qtr</u> 0.3%	<u>1-Year</u> 0.6%	<u>3-Year</u> 0.2%	<u>5-Year</u> 1.1%	<u>10-Year</u> 2.0%	<u>VaR<sup>60</sup></u> \$0.0 bil	<u>Katio</u> N/A	Ratio <sup>62</sup> N/A
Liquidity Policy Benchmark 58		0.0%	0.7%	0.6%	1.5%	2.1%			
Value Added		0.3%	-0.1%	-0.4%	-0.4%	-0.1%			
US 2-10 Year	2.7	-0.6%	2.2%	0.9%	%	%			
Barclays Gov Liquidity 2-10 Yr Idx		-0.7%	2.2%	1.0%	%	%			
Value Added		0.1%	0.0%	-0.1%	%	%			
Cash Composite	4.8	-0.4%	0.2%	0.2%	0.2%	1.7%			
Csutom STIF 59		0.0%	0.1%	0.1%	0.1%	1.6%			
Value Added		-0.4%	0.1%	0.1%	0.1%	0.1%			

<sup>58</sup>The Liquidity Policy Benchmark is a custom index maintained by State Street Bank.

<sup>59</sup> The Custom STIF Policy Benchmark is a custom index maintained by State Street Bank.

<sup>60</sup> 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.

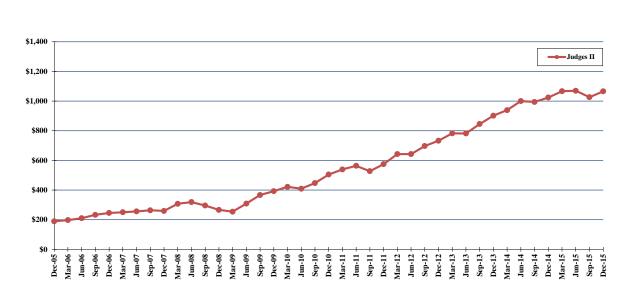
<sup>61</sup> The Sharpe Ratio or reward-to-variability ratio is a measure of the mean excess return per unit of risk in an investment strategy. The Sharpe ratio is used to characterize how well the return of an asset compensates the investor for the risk taken.

<sup>62</sup> 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**

#### **Affiliate Fund Performance Period Ended December 31, 2015**

Growth in Assets (in \$Millions)





#### **Total Plan Performance Results**

#### **Total Plan Performance** Periods Ended December 31, 2015

<b>Judges II</b> Weighted Policy Benchmark <sup>63</sup>	Market <u>Value</u> \$1,065.7 mil	<u>Qtr</u> 2.0% 2.0	One <u>Year</u> -2.2% -2.2	Three <u>Year</u> 5.6% 5.5	Five <u>Year</u> 6.6% 6.5	<b>Ten</b> <u>Year</u> <b>5.5%</b> 5.5
<b>Long-Term Care ("LTC")</b>	\$4,035.1 mil	<b>-0.2</b>	<b>-2.6</b>	<b>1.5</b>	<b>3.8</b>	<b>4.5</b>
Weighted Policy Benchmark <sup>63</sup>		-0.4	-2.9	1.1	3.6	4.3

## Total Plan Asset Allocation

#### Judges II Asset Allocation: Actual versus Target Weights

	Actual Asset	Target Asset	
Asset Class	Allocation (%)	Allocation (%)	Difference
Global Equity	50.1	50.0	0.1
US Fixed Income	33.8	34.0	-0.2
TIPS	4.8	5.0	-0.2
REITs	8.2	8.0	0.2
Commodities	3.0	3.0	0.0
Cash/Short-Term	0.1	0.0	0.1
Total	100.0	100.0	0.0

#### LTC Asset Allocation: Actual versus Target Weights

	Actual Asset	Target Asset	
Asset Class	Allocation (%)	Allocation (%)	Difference
Global Equity	15.0	15.0	0.0
US Fixed Income	62.2	61.0	1.2
TIPS	6.0	6.0	0.0
REITs	12.4	12.0	0.4
Commodities	4.4	6.0	-1.6
Cash/Short-Term	0.0	0.0	0.0
Total	100.0	100.0	0.0

<sup>63</sup> The weighted policy benchmark returns for Judges II and LTC are based on asset class index returns weighted by asset class policy targets.

#### **Commentary – Total Plan**

- 2015 proved to be one of the more difficult years in recent history as markets were heavily influenced by headline risks and global economic outlook. Judges II (JRS II) performed admirably, particularly in the last three months of 2015 when market sentiment slowly retrenched again. For the quarter, the Plan churned out a small but positive return of 2.0%; this matched its weighted policy benchmark, as most of JRS II's asset classes turned in market-like performance. Over longer time horizon, JRS II's track record has stayed on par with the policy benchmark as well.
- Due to its conservative asset allocation targets dictating a low exposure to public equities, which performed very well in Q4, the Long-Term Care Program ("LTC") closed out the quarter on a small down note. However, relatively speaking its -0.2% return was still considered good as it outperformed the policy benchmark's -0.4% pace largely thanks to its underweight in commodities.
- At the end of the quarter, Judges II's asset allocation showed a light bias towards global equity and REITs while having small underweight in investment grade fixed income and TIPS.
- The LTC's asset allocation also did not show too much deviation from its adopted targets, with small overweight in U.S. fixed income and REITs while underweight in commodities.

Judges II Asset Class Performance

Periods Ended December 31, 2015							
JRS II Global Equity	Market <u>Value</u> \$534.2 mil	<u>Qtr</u> 5.0%	One <u>Year</u> -2.1%	Three <u>Year</u> 8.6%	Five <u>Year</u> 7.0%	Ten <u>Year</u> 4.9%	
Global Equity Benchmark <sup>64</sup>		5.0	-2.2	8.5	7.0	4.8	
JRS II US Fixed Income	\$360.4 mil	-1.0	-0.7	2.1	5.4	6.1	
Custom Benchmark <sup>65</sup>		-0.8	-0.8	1.3	4.9	5.7	
JRS II TIPS	\$51.6 mil	-0.6	-1.6	-2.4			
Custom Benchmark <sup>66</sup>		-0.6	-1.4	-2.3			
JRS II REITS	\$86.9 mil	4.4	0.0	6.6	7.9	3.9	
Custom Benchmark <sup>67</sup>		4.4	0.1	6.6	8.0	3.5	
JRS II Commodities	\$31.6 mil	-16.1	-32.5	-23.8			

#### Asset Class Performance Results – Judges II

<sup>64</sup> 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.

<sup>30</sup> The current US Fixed Income Custom Benchmark is the 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.

<sup>66</sup> The TIPS benchmark is the Barclays U.S. TIPS Index.

<sup>3/</sup> The REIT Custom Benchmark is the FTSE EPRA/NAREIT Developed Index. Historically, it has been the Wilshire RESI and REIT Indices.

	GSCI Total Return Index	-16.6	-32.9	-23.7		
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#### **Commentary – Judges II**

- Global equities performed relatively well in Q4, despite some late-quarter negative developments that weighed on market sentiment (think weak economic data out of China, a relapse of commodity prices, and poorly perceived ECB effort in extending its growth-boosting bond buying program). Both developed and emerging stock markets were able to hold on to gains and finish Q4 in the black. To that effect, the global equity portfolio fully participated in the broad market movement to net a 5.0% total return, which helped trim its full-year losses down to -2.1%. Both measures mirrored the portfolio's custom benchmark pace, and the global equity fund continues to perform in line with expectations in the long run.
- Fixed income markets largely closed down in the fourth quarter. Even before the Fed's December 16 decision to hike interest rate, investors have been anticipating the outcome and driving up rates given that consumption, the housing market, and job growth in the U.S. have all stayed strong throughout the year. The higher rate environment generated a Q4 return of -1.0% for the Judges II domestic fixed income portfolio, and brought the portfolio's 2015 total return back into the red (-0.7%). While negative, these results weren't far off of the benchmark performance as for the same periods, the custom Barclays index produced returns of -0.8% and -0.8%, respectively. Over longer time periods, the fixed income portfolio's track record remains on solid footing, and continues to do well against the benchmark measure too.
- Even though markets have been concerned about inflation since the implementation of unconventional monetary policy, to this day it has yet to really materialize. With little price pressure in goods and services, particularly in the face of energy prices' continued slide, both the JRS II TIPS portfolio and the Barclays U.S. TIPS Index failed to secure gains this quarter by closing down -0.6%. The TIPS portfolio's one- and three-year annualized returns are currently in the negative territory as well, but they remain in lock-step with the index measure.
- Real estate-related stocks closed out 2015 as one of the best performing equity sectors and JRS II's REIT investments took full advantage of this positive momentum. Tracking closely to the custom REIT Index, the REIT portfolio rose 4.4% this quarter, making it the plan's second highest returning asset class. Q4's advance essentially erased all of the portfolio's losses for the year, and pumped its three-year annualized gain back up to 6.6%, both of which remain on par with the custom benchmark's pace.
- With Chinese growth slowing and no oil production quota cap from OPEC, there was little surprise that commodity prices slumped, led by the collapsing of crude oil prices. Within this backdrop, the commodities portfolio was the weakest link within the Judges II program during Q4 as it recorded double-digit rate of losses. However, relative to the GSCI Commodity Total Return Index, the portfolio actually fared better by 50 bps. For the trailing one-year and three-year periods, both the commodities portfolio and the index measure performed similarly but are squarely in the red.

#### Asset Class Performance Results – Long-Term Care

	Market		One	Three	Five	Ten
	<u>Value</u>	<u>Qtr</u>	<u>Year</u>	<u>Year</u>	<u>Year</u>	<u>Year</u>
LTC Global Equity	\$605.8 mil	5.0%	-1.9%	8.1%	7.2%	5.0%
Custom Benchmark <sup>68</sup>		4.9	-2.2	7.9	7.1	4.9
LTC US Fixed Income	\$2,508.0mil	-0.8	-0.7	1.4	5.0	5.9
Custom Benchmark <sup>69</sup>		-0.8	-0.8	1.3	4.9	5.7
LTC TIPS	\$243.6 mil	-0.6	-1.4	-2.3	2.5	3.9
Barclays U.S. TIPS Index		-0.6	-1.4	-2.3	2.5	3.8
LTC REITs	\$498.7 mil	4.0	0.2	6.1	7.6	3.5
Custom Benchmark <sup>70</sup>		3.9	-0.5	5.5	7.3	3.2
LTC Commodities	\$178.7 mil	-16.7	-32.8	-23.8		
GSCI Total Return Index		-16.6	-32.9	-23.7		

#### Long-Term Care Asset Class Performance Periods Ended December 31, 2015

#### **Commentary – Long-Term Care**

- Global equity was the highest returning portfolio for LTC in Q4; this fund finished just ahead of its custom benchmark, 5.0% to 4.9%, respectively. Over the one-year and beyond time periods, the global equity fund's record remains in fine shape and continues to stay one step ahead of the benchmark.
- Under the backdrop of rising yields, the LTC domestic fixed income portfolio followed its custom benchmark and recorded a small decline in the fourth quarter. This quarter's loss dropped the portfolio's trailing twelve-month return into the red as well, although from a longer market cycle view this LTC fixed income portfolio has generated very respectable returns over time, and the track record also compares favorably to the benchmark.

<sup>&</sup>lt;sup>50</sup> 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).

<sup>&</sup>lt;sup>50</sup> The LTC US Fixed Income Custom Benchmark is the 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.

<sup>&</sup>lt;sup>70</sup> Effective 12/12/2012, the REIT Custom Benchmark changed to the FTSE EPRA/NAREIT Developed Liquid (net) Index.

#### **Commentary – Long-Term Care**

- Same as the JRS II's TIPS investment, the LTC TIPS portfolio registered small amount of losses in the fourth quarter as inflation pressure in the U.S. has stayed mute. Relatively speaking, though, the TIPS fund has tracked closely to its custom benchmark, currently the Barclays U.S. TIPS Index, and is performing in line with expectation.
- Sharing the momentum of publicly traded equities, REITs also concluded Q4 on a positive note as the LTC REIT portfolio ran up 4.0% during this period; this finish was just slightly better than the custom benchmark, the FTSE EPRA/NAREIT Developed Liquid Index (net). While the REIT portfolio ended 2015 on a relatively flat note (up just 0.2%), over longer time horizon it has generated very solid gains for the Long Term Care program, all of which have stayed ahead of its custom benchmark by a steady margin as well.
- With commodity prices slumping only deepened as the year wore on, the commodities portfolio saw steep losses during 2015: it was down -16.7% for the quarter and -32.8% for the whole year, although both figures mirrored the GSCI Commodity Total Return Index. The portfolio currently has a three-year return of -23.8% and that too, is on par with the pace of the benchmark.

# Legislators' Information



# California Legislators' Retirement System

#### **Total Plan Performance Periods Ended December 31, 2015**

	Market Value	Qtr	One Year	Three <u>Year</u>	Five Year	Ten <u>Year</u>
LRS	\$115.0 mil	$\frac{\sqrt{10}}{0.5\%}$	-2.1%	<u> </u>	<u> </u>	5.4%
Weighted Policy Benchmark <sup>71</sup>		0.6	-2.1	2.7	5.3	5.2

#### **Asset Allocation**

Asset Class	Actual	Policy	Difference
Global Equity	24.1%	24.0%	+0.1%
US Fixed Income	38.9	39.0	-0.1
TIPS	25.8	26.0	-0.2
REITs	8.2	8.0	+0.2
Commodities	<u>3.0</u>	<u>3.0</u>	<u>0.0</u>
	100.0	100.0	0.0

<sup>71</sup> The weighted policy benchmark returns are calculated based on asset class index returns weighted by asset class policy targets.

#### Commentary

- The California Legislators' Retirement System ("LRS, the System) eked out a small gain in the last quarter of 2015, with a 0.5% gain that closely followed its weighted policy benchmark's 0.6% return. Similar to what Judges II and the Long-Term Care Program experienced in Q4, LRS's public equity portfolios turned in solid gains and helped offset the commodity portfolio's steep losses. And with a smaller allocation to the weak-performing commodities than the other two plans the LRS was able to hang on to a small gain to close out the quarter.
- As of December 31, the System was marginally overweight in global equity and REITs while underweight in investment grade fixed income and TIPS.

#### **Asset Classes Performance Results**

LRS Global Equity	Market <u>Value</u> \$27.7 mil	<u>Qtr</u> 5.1%	One <u>Year</u> -2.1%	Three <u>Year</u> 8.6%	Five <u>Year</u> 7.2%	Ten <u>Year</u> 4.9%
Global Equity Benchmark <sup>72</sup>		5.0	-2.2	8.5	7.1	4.8
<b>LRS US Fixed Income</b> <i>Custom Benchmark</i> <sup>73</sup>	\$44.7 mil	<b>-1.0</b> -0.8	<b>-0.7</b> -0.8	<b>2.1</b> 1.3	<b>5.4</b> 4.9	<b>6.1</b> 5.7
<b>LRS TIPS</b> Custom Benchmark <sup>74</sup>	\$29.7 mil	<b>-0.6</b> -0.6	<b>-1.6</b> -1.4	<b>-2.4</b> -2.3	<b>2.5</b> 2.5	<b>3.9</b> 3.8
<b>LRS REITs</b> Custom Benchmark <sup>75</sup>	<b>\$9.4 mil</b>	<b>4.4</b> 4.4	<b>0.0</b> 0.1	<b>6.6</b> 6.6	- <b>.</b> -	<b></b> 
<b>LRS Commodities</b> GSCI Total Return Index	\$3.4 mil	<b>-16.2</b> -16.6	<b>-32.5</b> -32.9	<b>-23.9</b> -23.7	- <b>.</b> -	<b></b>

#### Asset Class Performance Periods Ended December 31, 2015

<sup>&</sup>lt;sup>72</sup> 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.

<sup>&</sup>lt;sup>73</sup> The current benchmark is the 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.

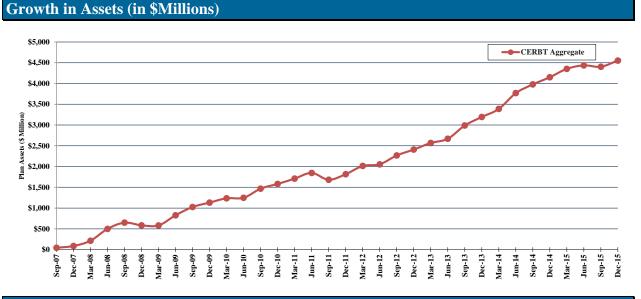
<sup>&</sup>lt;sup>74</sup> The current benchmark is the Barclays U.S. TIPS Index. Prior of July 2007 the benchmark was the Barclays Long Liability TIPS Index.  $_{75}$ 

<sup>&</sup>lt;sup>75</sup> The REIT Custom Benchmark is the FTSE EPRA/NAREIT Developed Index.

#### Commentary

- Global equities performed relatively well in Q4, despite some late-quarter negative developments that weighed on market sentiment (think weak economic data out of China, a relapse of commodity prices, and poorly perceived ECB effort in extending its growth-boosting bond buying program). Both developed and emerging stock markets were able to hold on to gains and finish Q4 in the black. To that effect, the global equity portfolio fully participated in the broad market movement to net a 5.1% total return, which helped trim its full-year losses down to -2.1%. Both measures mirrored the portfolio's custom benchmark pace, and the global equity fund continues to perform in line with expectations in the long run.
- Fixed income markets largely closed down in the fourth quarter. Even before the Fed's December 16 decision to hike interest rate, investors have been anticipating the outcome and driving up rates given that consumption, the housing market, and job growth in the U.S. have all stayed strong throughout the year. The higher rate environment generated a Q4 return of -1.0% for the LRS domestic fixed income portfolio, and brought the portfolio's 2015 total return back into the red (-0.7%). While negative, these results weren't far off of the benchmark performance as for the same periods, the custom Barclays index produced returns of -0.8% and -0.8%, respectively. Over longer time periods, the fixed income portfolio's track record remains on solid footing, and continues to do well against the benchmark measure too.
- Even though markets have been concerned about inflation since the implementation of unconventional monetary policy, to this day it has yet to really materialize. With little price pressure in goods and services, particularly in the face of energy prices' continued slide, both the LRS TIPS portfolio and the Barclays U.S. TIPS Index failed to secure gains this quarter by closing down -0.6%. The TIPS portfolio's one- and three-year annualized returns are currently in the negative territory as well, but they remain in lock-step with the index measure.
- Real estate-related stocks closed out 2015 as one of the best performing equity sectors and LRS' REIT investments took full advantage of this positive momentum. Tracking closely to the custom REIT Index, the REIT portfolio rose 4.4% this quarter, making it the System's second highest returning asset class. Q4's advance essentially erased all of the portfolio's losses for the year, and pumped its three-year annualized gain back up to 6.6%, both of which remain on par with the custom benchmark's pace.
- With Chinese growth slowing and no oil production quota cap from OPEC, there was little surprise that commodity prices slumped, led by the collapsing of crude oil prices. Within this backdrop, the commodities portfolio was the weakest link within the LRS program during Q4 as it recorded doubledigit rate of losses. However, relative to the GSCI Commodity Total Return Index, the portfolio actually fared better by 47 bps. For the trailing one-year and three-year periods, both the commodities portfolio and the index measure performed similarly but are squarely in the red.

# **California Employers' Retiree Benefit Trust**



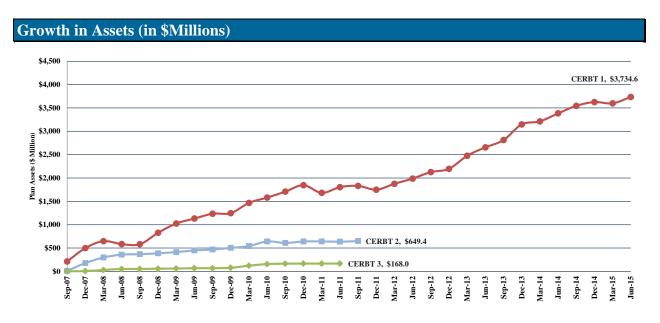
## California Employers' Retiree Benefit Trust Aggregate

**Performance Results** 

Periods Ended December 31, 2015

	Market		One	Three	Five	Ten
	Value	<u>Qtr</u>	Year	Year	Year	Year
CERBT Aggregate	\$4,552.0 mil	2.2%	-2.2%	5.3%	5.9%	%
Benchmark		2.1	-2.4	4.9	5.8	





California Employers'	Retiree	Benefit	Trust	Strategy 1	
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Asset Allocation				
Asset Class	Actual	Policy	Difference	
Global Equity US Bonds	57.1% 26.8	57.0% 27.0	+0.1% -0.2	
TIPS	4.8	5.0	-0.2	
REITS Commodities	8.0 3.0	8.0 3.0	0.0 0.0	
Cash Equivalents	<u>0.2</u>	<u>0.0</u>	<u>+0.2</u>	
	100.0	100.0	0.0	

#### **Trust Performance Results**

#### **Trust Performance** Periods Ended December 31, 2015

	Market Value	<u>Qtr</u>	One <u>Year</u>	Three <u>Year</u>	Five <u>Year</u>	Ten <u>Year</u>
CERBT Strategy 1	\$3,734.6 mil	2.4%	-2.2%	5.5%	6.1%	<u>%</u>
Benchmark		2.3	-2.4	5.2	6.0	
Global Equity	2,129.9 mil	5.0	-1.9	8.2	7.1	
Benchmark		4.9	-2.2	7.9	6.9	
Domestic Fixed Income	1,000.5 mil	-0.9	-0.7	2.1	5.5	
Benchmark		-0.8	-0.8	1.3	4.9	
REITs	299.7 mil	4.1	0.2	6.1	7.6	
Benchmark		3.9	-0.5	5.5	7.3	
TIPS	179.9 mil	-0.6	-1.6	-2.4		
Benchmark		-0.6	-1.4	-2.3		
Commodities	113.0 mil	-16.7	-32.8	-23.9		
Benchmark		-16.6	-32.9	-23.7		
Cash±	6.3 mil	0.1	0.0	0.1	0.1	

 $\pm$  The cash component may contain residual trade balance that has yet to be settled during the periodic rebalancing process as of December 31.

California Employers' Retiree Benefit Trust Strategy 2
--

ocation				
Asset Class	Actual	Policy	Difference	
<b>.</b> .				
	8.0		0.0	
ommodities	3.0	3.0	0.0	
ash Equivalents	<u>0.4</u>	<u>0.0</u>	+0.4	
	100.0	100.0	0.0	
		Asset ClassActuallobal Equity40.1%S Bonds38.8IPS9.7EITS8.0ommodities3.0ash Equivalents <u>0.4</u>	Asset ClassActualPolicylobal Equity40.1%40.0%S Bonds38.839.0IPS9.710.0EITS8.08.0ommodities3.03.0ash Equivalents <u>0.4</u> <u>0.0</u>	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

#### **Trust Performance Results**

#### **Trust Performance** Periods Ended December 31, 2015

	Market		One	Three	Five	Ten
	<b>Value</b>	<u>Qtr</u>	<u>Year</u>	Year	Year	Year
CERBT Strategy 2	\$649.4 mil	1.4%	-2.1%	4.1%	%	%
Benchmark		1.4	-2.2	3.8		
Global Equity	260.1 mil	5.0	-1.9	8.2		
Benchmark		4.9	-2.2	7.9		
Domestic Fixed Income	251.5 mil	-0.9	-0.7	2.1		
Benchmark		-0.8	-0.8	1.3		
TIPS	63.0 mil	-0.6	-1.6	-2.4		
Benchmark		-0.6	-1.4	-2.3		
REITs	52.2 mil	4.1	0.3	6.1		
Benchmark		3.9	-0.5	5.5		
Commodities	19.6 mil	-16.7	-32.8	-23.9		
Benchmark		-16.6	-32.9	-23.7		
Cash±	2.5 mil	0.1	0.2	0.1		

 $\pm$  The cash component may contain residual trade balance that has yet to be settled during the periodic rebalancing process as of December 31.

California	<b>Employers'</b>	<b>Retiree Benefit</b>	Trust Strategy 3
	1 1		

Asse	et Allocation				
	Asset Class	Actual	Policy	Difference	
	Global Equity	24.0%	24.0%	0.0%	
	US Bonds	39.2	39.0	+0.2	
	TIPS	25.2	26.0	-0.8	
	REITS	8.0	8.0	0.0	
	Commodities	3.0	3.0	0.0	
	Cash Equivalents	<u>0.6</u>	<u>0.0</u>	<u>+0.6</u>	
		100.0	100.0	0.0	

#### **Trust Performance Results**

#### **Trust Performance** Periods Ended December 31, 2015

	Market		One	Three	Five	Ten
CEDDT Studtory 2	<u>Value</u> \$168.0 mil	<u>Qtr</u> 0.5%	<u>Year</u> -2.0%	<u>Year</u> 2.9%	<u>Year</u> %	<u>Year</u> %
<b>CERBT Strategy 3</b> Benchmark	\$100.0 IIII	0.5	-2.1	2.5		/0
Global Equity	40.2 mil	5.0	-1.9	8.1		
Benchmark		4.9	-2.2	7.9		
Domestic Fixed Income	65.8 mil	-0.9	-0.7	2.0		
Benchmark		-0.8	-0.8	1.3		
TIPS	42.3 mil	-0.6	-1.6	-2.3		
Benchmark		-0.6	-1.4	-2.3		
REITs	13.4 mil	4.0	0.2	6.1		
Benchmark		3.9	-0.5	5.5		
Commodities	5.1 mil	-16.8	-32.8	-23.8		
Benchmark		-16.6	-32.9	-23.7		
Cash±	1.0 mil	0.1	0.2	1.5		

 $\pm$  The cash component may contain residual trade balance that has yet to be settled during the periodic rebalancing process as of December 31.



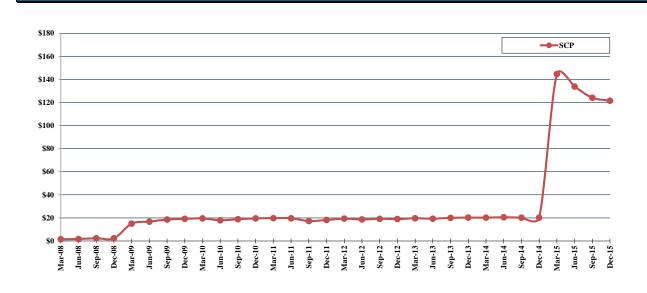
## Health Care Bond Fund

## **Fund Performance**

Periods Ended December 31, 2015

	Market <u>Value</u>	Qtr	One <u>Year</u>	Three Year	Five <u>Year</u>	Ten <u>Year</u>
Health Care Bond Fund	\$423.4 mil	-0.6%	0.6%	2.0%	3.8%	4.8%
Benchmark		-0.6	0.5	1.4	3.2	4.5

# **Supplemental Income Plans**



# **Supplemental Income Plan Performance**

Growth in Assets (in \$Millions)



# **Supplemental Income Plan Performance**

#### Net Fund Performance Results – Supplemental Contribution Plan

	Market <u>Value</u>	<u>Qtr</u>	One <u>Year</u>	Three <u>Year</u>	Five <u>Year</u>	Ten <u>Year</u>
CalPERS Target Income Fund	\$22.1 mil	0.5	-0.4	2.7	3.8	
SIP Income Policy		0.7	0.0	3.0	4.2	
CalPERS Target 2015 Fund	\$21.0 mil	0.5	-0.4	4.0	4.5	
SIP 2015 Policy		0.7	0.0	4.3	5.1	
CalPERS Target 2020 Fund	\$26.5 mil	0.9	-1.0	4.6	4.7	
SIP 2020 Policy		1.1	-0.6	5.0	5.4	
CalPERS Target 2025 Fund	\$23.0 mil	1.5	-1.4	5.2	5.0	
SIP 2025 Policy		1.8	-1.1	5.5	5.7	
CalPERS Target 2030 Fund	\$15.4 mil	2.0	-2.1	5.8	5.3	
SIP 2030 Policy		2.3	-1.8	6.2	6.1	
CalPERS Target 2035 Fund	\$7.2 mil	2.5	-2.6			
SIP 2035 Policy		2.8	-2.3			
CalPERS Target 2040 Fund	\$3.0 mil	3.0	-3.2	6.5	5.7	
SIP 2040 Policy		3.3	-2.9	6.8	6.5	
CalPERS Target 2045 Fund SIP 2045 Policy	\$0.8 mil	3.2 3.6	-3.4 -3.1	 		 
CalPERS Target 2050 Fund SIP 2050 Policy	\$0.0 mil	3.2 3.6	-3.4 -3.1	 		
CalPERS Target 2055 Fund SIP 2055 Policy	\$0.0 mil	3.2 3.6	-5.1	 	-,- -,-	
SSgA Russell All Cap Index SL	\$2.7 mil	6.2	0.1			
Russell 3000		6.3	0.5			
SSgA Global All Cap ex-US SL	\$0.2 mil	2.9	-4.9			
MSCI ACWI ex-US IMI (N)		3.5	-4.6			
SSgA US Bond Index SL	\$0.4 mil	-0.7	0.1			
Barclays Aggregate Bond Index		-0.6	0.6			
SSgA US Short Term Bond	\$0.3 mil	-0.5	0.0			
Barclays US Gov/Credit		-0.4	0.7			
SSgA Real Asset NL	\$0.1 mil	-2.1	-14.6			
Real Assets Blended Index		-1.9	-14.3			
<b>SSgA STIF</b>	\$1.3 mil	-0.1	-0.4			
BofAML 3 Month US TBill		0.0	0.1			
SCP AGGREGATE CalPERS CUSTOM SCP PLAN INDEX	\$121.6 mil	1.3 1.5	-1.3 -1.0	4.6 4.9	4.8 5.4	

#### Periods Ended December 31, 2015

# Net Fund Performance Results – 457 Program

	Market <u>Value</u>	<u>Qtr</u>	One <u>Year</u>	Three <u>Year</u>	Five <u>Year</u>	Ten <u>Year</u>
CalPERS Target Income Fund	\$89.0 mil	0.6	-0.2	2.8	3.8	
SIP Income Policy		0.7	0.0	3.0	4.2	
CalPERS Target 2015 Fund	\$79.9 mil	0.6	-0.2	4.1	4.5	
SIP 2015 Policy		0.7	0.0	4.3	5.1	
CalPERS Target 2020 Fund	\$112.4 mil	0.9	-0.8	4.7	4.8	
SIP 2020 Policy		1.1	-0.6	5.0	5.4	
CalPERS Target 2025 Fund	\$76.4 mil	1.6	-1.3	5.3	5.0	
SIP 2025 Policy		1.8	-1.1	5.5	5.7	
CalPERS Target 2030 Fund	\$73.8 mil	2.0	-1.9	5.9	5.4	
SIP 2030 Policy		2.3	-1.8	6.2	6.1	
CalPERS Target 2035 Fund	\$40.7 mil	2.5	-2.5	6.4	5.6	
SIP 2035 Policy		2.8	-2.3	6.6	6.4	
CalPERS Target 2040 Fund	\$35.3 mil	3.0	-3.1	6.6	5.7	
SIP 2040 Policy		3.3	-2.9	6.8	6.5	
CalPERS Target 2045 Fund	\$11.1 mil	3.3	-3.3	6.5	5.7	
SIP 2045 Policy		3.6	-3.1	6.8	6.4	
CalPERS Target 2050 Fund	\$5.1 mil	3.3	-3.3	6.5	5.7	
SIP 2050 Policy		3.6	-3.1	6.8	6.4	
CalPERS Target 2055 Fund	\$3.0 mil	3.3	-3.3			
SIP 2055 Policy		3.6	-3.1			
SSgA Russell All Cap Index SL	\$486.8 mil	6.2	0.2			
Russell 3000		6.3	0.5			
SSgA Global All Cap ex-US SL	\$59.0 mil	2.9	-4.8			
MSCI ACWI ex-US IMI (N)		3.5	-4.6			
SSgA US Bond Index SL	\$61.4 mil	-0.6	0.3			
Barclays Aggregate Bond Index		-0.6	0.6			
SSgA US Short Term Bond	\$40.6 mil	-0.5	0.2			
Barclays US Gov/Credit		-0.4	0.7			
S <b>SgA Real Asset NL</b>	\$3.4 mil	-2.0	-14.4			
Real Assets Blended Index		-1.9	-14.3			
<b>SSgA STIF</b> BofAML 3 Month US TBill	\$110.9 mil	$\begin{array}{c} 0.0\\ 0.0\end{array}$	-0.2 0.1	 	 	 
<b>457 AGGREGATE</b>	\$1276.0 mil	2.9	-0.7	6.6	5.8	4.5
CalPERS CUSTOM 457 PLAN INDEX		3.1	-0.5	6.9	6.4	5.0