

# CalPERS Trust Level Monthly Update - Performance & Risk

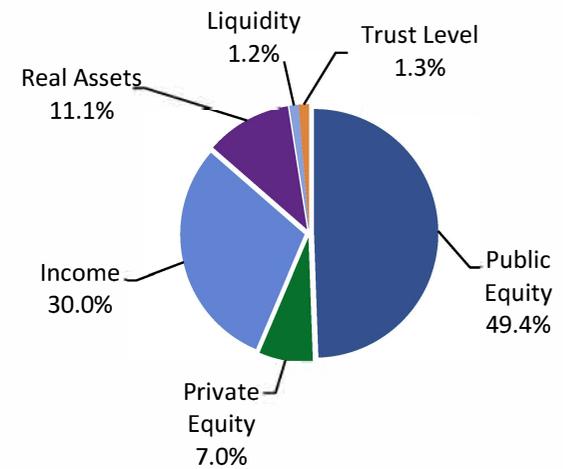


## Public Employees' Retirement Fund (PERF) As of August 31, 2019

### Asset Allocation

Asset Allocation	EMV (bil)	Current Allocation (%)	Target Policy Weight (%)	Variance (%)	Policy Range
<b>Public Equity</b>	\$ 187.1	49.4%	50.0%	(0.6%)	± 7%
Cap Wtd.	\$ 131.5	34.8%	35.0%	(0.2%)	
Factor Wtd.	\$ 55.6	14.7%	15.0%	(0.3%)	
<b>Private Equity</b>	\$ 26.4	7.0%	8.0%	(1.0%)	± 4%
<b>Income</b>	\$ 113.5	30.0%	28.0%	2.0%	± 6%
Long Spread	\$ 59.6	15.7%	15.0%	0.7%	
Long Treasury	\$ 42.1	11.1%	10.0%	1.1%	
High Yield	\$ 11.8	3.1%	3.0%	0.1%	
<b>Real Assets</b>	\$ 42.1	11.1%	13.0%	(1.9%)	± 5%
<b>Liquidity</b>	\$ 4.4	1.2%	1.0%	0.2%	+ 3% / - 6%
<b>Trust Level<sup>1</sup></b>	\$ 5.0	1.3%	-	1.3%	-
<b>Total PERF</b>	\$ 378.5	100.0%	100.0%	0.0%	

Current Total PERF Allocation



TAP <sup>3</sup>	\$ 0.2
PERF Plus TAP	\$ 378.6

### Performance Summary

Performance Summary	10-Yr			5-Yr			3-Yr			1-Yr			FYTD			5-Yr Realized Information Ratio <sup>4</sup>
	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	
<b>Public Equity</b>	9.5%	9.4%	19	6.2%	6.3%	(7)	10.0%	10.2%	(23)	0.8%	1.0%	(13)	(1.3%)	(1.2%)	(4)	(0.2)
Cap Wtd.	9.3%	9.2%	19	5.8%	5.9%	(7)	9.3%	9.6%	(23)	(1.0%)	(0.8%)	(15)	(2.1%)	(2.1%)	(2)	(0.2)
Factor Wtd.	-	-	-	-	-	-	-	-	-	9.1%	9.2%	(9)	0.8%	0.8%	(1)	-
<b>Private Equity<sup>2</sup></b>	13.8%	14.5%	(70)	9.1%	9.1%	(2)	12.3%	12.2%	7	5.2%	(0.3%)	553	NM	NM	NM	-
<b>Income</b>	6.4%	5.3%	109	4.7%	4.1%	59	4.4%	3.8%	53	14.1%	13.6%	47	4.7%	4.6%	16	1.3
Long Spread	-	-	-	-	-	-	-	-	-	12.1%	11.5%	64	3.3%	3.1%	21	-
Long Treasury	-	-	-	-	-	-	-	-	-	18.9%	19.0%	(9)	7.9%	7.9%	(5)	-
High Yield	-	-	-	-	-	-	-	-	-	7.3%	7.0%	32	1.0%	1.0%	3	-
<b>Real Assets<sup>2</sup></b>	4.1%	8.3%	(422)	7.6%	8.5%	(92)	6.6%	6.7%	(11)	4.3%	6.5%	(225)	NM	NM	NM	-
<b>Liquidity</b>	1.2%	1.2%	(7)	1.3%	1.2%	14	1.8%	1.4%	39	2.6%	2.2%	46	0.4%	0.3%	11	-
<b>Trust Level<sup>1</sup></b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total PERF</b>	8.3%	8.6%	(26)	5.8%	5.9%	(15)	8.1%	8.1%	(6)	5.2%	5.3%	(16)	0.8%	0.5%	34	-

TAP <sup>3</sup>	-	-	-	4.5%	-	-	4.2%	-	-	13.5%	-	-	6.3%	-	-	-
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<sup>1</sup> Trust Level includes Multi Asset Class, GE Emerging Manager Program, Completion Overlay, Risk Mitigation, Absolute Return Strategies, Plan Level Transition and other Total Fund level portfolios.

<sup>2</sup> The notation "NM" indicates return is not meaningful for private assets as these are measured on a quarterly cycle.

<sup>3</sup> Terminated Agency Pool (TAP) funded in July 2013 and exists to provide benefit payments to members who are employees of agencies that have terminated their contract with CalPERS.

<sup>4</sup> Information Ratio is excess return divided by realized tracking error. This presents a perspective on risk adjusted performance. The metric is not meaningful for illiquid assets where realized volatility tends to be muted by valuation based pricing and benchmark issues.

## Public Employees' Retirement Fund (PERF)

As of August 31, 2019

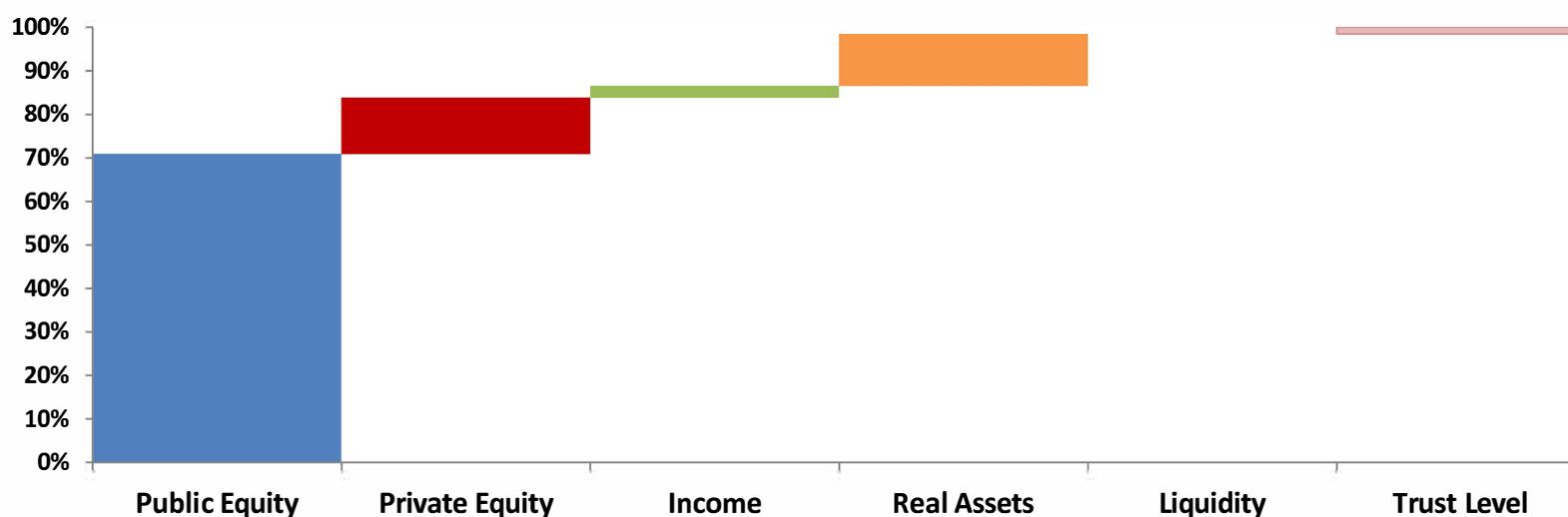
### Total PERF Risk

Risk Measure	8/31/2019	7/31/2019	Explanation of Risk Measures:
<b>Forecast Volatility</b>			
Portfolio	7.7%	7.7%	The total (absolute) volatility is the annualized standard deviation of the PERF's total return distribution and is indicative of the plan's short-term return dispersion given the current environment. The metric is model-based and could underestimate potential drawdowns.
Benchmark	7.7%	7.6%	
<b>Forecast Tracking Error</b>			
Portfolio	0.8%	0.8%	Forecast tracking error is the annualized standard deviation of the differential return between the portfolio and an equal investment in the benchmark.

August 31, 2019	Portfolio Volatility		Tracking Error	
	Projected	Realized	Projected	Realized
Asset Class	Annualized Projected Volatility (%)	5-Year Realized Volatility (%) <sup>1</sup>	Annualized Projected Tracking Error (%)	5-Year Realized Tracking Error (%) <sup>1</sup>
<b>Public Equity</b>	<b>11.4%</b>	<b>11.5%</b>	<b>0.2%</b>	<b>0.3%</b>
Cap Weighted	12.4%	11.8%	0.2%	0.3%
Factor Weighted	9.3%	-	0.0%	-
<b>Private Equity</b>	<b>17.3%</b>	<b>4.2%</b>	<b>10.2%</b>	<b>8.7%</b>
<b>Income</b>	<b>5.1%</b>	<b>5.0%</b>	<b>0.4%</b>	<b>0.4%</b>
Long Spread	4.0%	-	0.5%	-
Long Treasury	8.5%	-	0.6%	-
High Yield	3.3%	-	0.2%	-
<b>Real Assets</b>	<b>10.8%</b>	<b>3.5%</b>	<b>2.0%</b>	<b>3.5%</b>
<b>Liquidity</b>	<b>0.1%</b>	<b>0.7%</b>	<b>0.0%</b>	<b>0.4%</b>
<b>Trust Level</b>	<b>9.6%</b>	<b>-</b>	<b>3.1%</b>	<b>-</b>
<b>Total PERF</b>	<b>7.7%</b>	<b>6.1%</b>	<b>0.8%</b>	<b>1.1%</b>

<sup>1</sup>Realized Volatility and Tracking Error for private asset classes are computed from quarterly net returns.

### Contribution to Total PERF Volatility



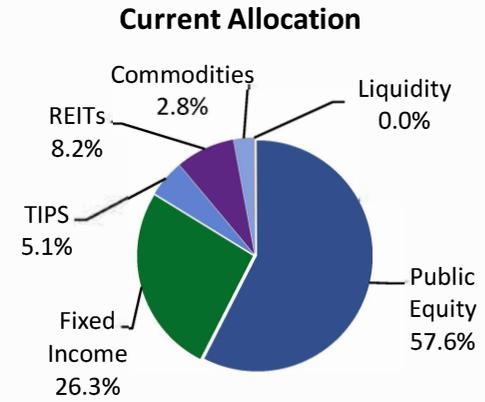
# Affiliate Investment Programs

## CERBT Strategy 1 Fund (CERBT 1) & CERBT Strategy 2 Fund (CERBT 2)

As of August 31, 2019

### Asset Allocation, Performance & Realized Risk Summary - CERBT 1

Asset Allocation	EMV (mil)	Current Allocation (%)	Policy Weight (%) <sup>1</sup>	Variance (%)	Policy Range
Public Equity	\$ 4,678.1	57.6%	59%	(1.4%)	± 5%
Fixed Income	\$ 2,133.4	26.3%	25%	1.3%	± 5%
TIPS	\$ 416.5	5.1%	5%	0.1%	± 3%
REITs	\$ 664.5	8.2%	8%	0.2%	± 5%
Commodities	\$ 229.1	2.8%	3%	(0.2%)	± 3%
Liquidity	\$ 4.1	0.0%	0%	0.0%	+ 2%
<b>Total CERBT 1</b>	<b>\$ 8,125.7</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	



Performance Summary <sup>2</sup>	10-Yr			5-Yr			3-Yr			1-Yr			FYTD		
	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps
Public Equity	9.1%	8.9%	24	5.8%	5.4%	36	9.2%	8.9%	35	(1.1%)	(1.4%)	33	(2.1%)	(2.2%)	8
Fixed Income	6.7%	5.8%	91	5.3%	4.7%	54	4.6%	4.2%	41	15.0%	15.0%	1	5.2%	5.2%	(5)
TIPS	-	-	-	2.2%	2.2%	(1)	2.9%	2.9%	2	7.4%	7.5%	(3)	2.8%	2.7%	1
REITs	9.2%	8.7%	49	5.5%	4.6%	84	5.2%	4.4%	85	9.5%	8.9%	66	2.5%	2.4%	7
Commodities	-	-	-	(13.1%)	(13.1%)	6	2.5%	2.3%	13	(14.5%)	(14.5%)	(2)	(5.8%)	(5.8%)	3
<b>Total CERBT 1</b>	<b>8.1%</b>	<b>7.9%</b>	<b>27</b>	<b>4.9%</b>	<b>4.5%</b>	<b>38</b>	<b>7.2%</b>	<b>6.8%</b>	<b>34</b>	<b>3.8%</b>	<b>3.7%</b>	<b>16</b>	<b>0.2%</b>	<b>0.1%</b>	<b>2</b>

5-Yr Realized Volatility:

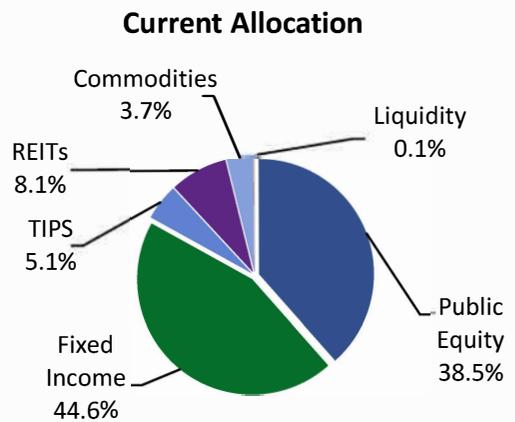
8.0%

5-Yr Realized Tracking Error:

0.1%

### Asset Allocation, Performance & Realized Risk Summary - CERBT 2

Asset Allocation	EMV (mil)	Current Allocation (%)	Policy Weight (%) <sup>1</sup>	Variance (%)	Policy Range
Public Equity	\$ 512.2	38.5%	40%	(1.5%)	± 5%
Fixed Income	\$ 592.6	44.6%	43%	1.6%	± 5%
TIPS	\$ 67.3	5.1%	5%	0.1%	± 3%
REITs	\$ 107.3	8.1%	8%	0.1%	± 5%
Commodities	\$ 49.3	3.7%	4%	(0.3%)	± 3%
Liquidity	\$ 1.0	0.1%	0%	0.1%	+ 2%
<b>Total CERBT 2</b>	<b>\$ 1,329.6</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	



Performance Summary <sup>2</sup>	10-Yr			5-Yr			3-Yr			1-Yr			FYTD		
	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps
Public Equity	-	-	-	5.7%	5.4%	34	9.2%	8.9%	36	(1.1%)	(1.4%)	34	(2.1%)	(2.2%)	8
Fixed Income	-	-	-	5.2%	4.7%	54	4.6%	4.2%	41	15.0%	15.0%	(0)	5.2%	5.2%	(6)
TIPS	-	-	-	2.2%	2.2%	(2)	2.9%	2.9%	5	7.5%	7.5%	7	2.8%	2.7%	1
REITs	-	-	-	5.5%	4.6%	82	5.3%	4.4%	88	9.6%	8.9%	71	2.5%	2.4%	7
Commodities	-	-	-	(12.9%)	(13.1%)	21	2.7%	2.3%	35	(14.0%)	(14.5%)	54	(5.8%)	(5.8%)	4
<b>Total CERBT 2</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>4.7%</b>	<b>4.3%</b>	<b>35</b>	<b>6.4%</b>	<b>6.1%</b>	<b>34</b>	<b>6.6%</b>	<b>6.5%</b>	<b>9</b>	<b>1.5%</b>	<b>1.5%</b>	<b>1</b>

5-Yr Realized Volatility:

6.4%

5-Yr Realized Tracking Error:

0.2%

<sup>1</sup> Allocations approved by the Board at the May 2018 IC Meeting.

<sup>2</sup> Liquidity is for operational purposes rather than a strategic allocation target and is not included in the performance summary table due to negligible impact on performance.

# Affiliate Investment Programs

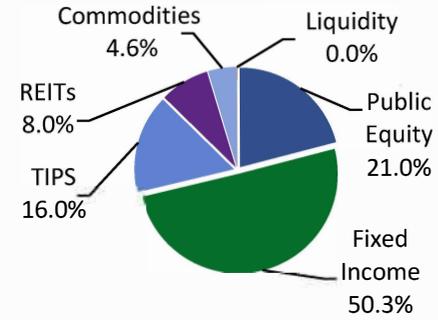
## CERBT Strategy 3 Fund (CERBT 3) & Legislators' Retirement System Fund (LRF)

As of August 31, 2019

### Asset Allocation, Performance & Realized Risk Summary - CERBT 3

Asset Allocation	EMV (mil)	Current Allocation (%)	Policy Weight (%) <sup>1</sup>	Variance (%)	Policy Range
Public Equity	\$ 135.6	21.0%	22%	(1.0%)	± 5%
Fixed Income	\$ 324.9	50.3%	49%	1.3%	±5%
TIPS	\$ 103.6	16.0%	16%	0.0%	± 3%
REITs	\$ 51.6	8.0%	8%	0.0%	± 5%
Commodities	\$ 29.7	4.6%	5%	(0.4%)	± 3%
Liquidity	\$ 0.2	0.0%	0%	0.0%	+ 2%
<b>Total CERBT 3</b>	<b>\$ 645.6</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	

Current Allocation



Performance Summary <sup>2</sup>	10-Yr			5-Yr			3-Yr			1-Yr			FYTD		
	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps
Public Equity	-	-	-	5.7%	5.4%	35	9.2%	8.9%	33	(1.1%)	(1.4%)	35	(2.1%)	(2.2%)	8
Fixed Income	-	-	-	5.2%	4.7%	48	4.6%	4.2%	37	15.0%	15.0%	(3)	5.2%	5.2%	(5)
TIPS	-	-	-	2.2%	2.2%	2	2.9%	2.9%	4	7.5%	7.5%	7	2.8%	2.7%	1
REITs	-	-	-	5.5%	4.6%	81	5.2%	4.4%	82	9.7%	8.9%	79	2.5%	2.4%	7
Commodities	-	-	-	(12.7%)	(13.1%)	46	3.1%	2.3%	72	(13.4%)	(14.5%)	113	(5.8%)	(5.8%)	2
<b>Total CERBT 3</b>	-	-	-	<b>4.3%</b>	<b>3.9%</b>	<b>32</b>	<b>5.5%</b>	<b>5.2%</b>	<b>27</b>	<b>8.3%</b>	<b>8.3%</b>	<b>7</b>	<b>2.4%</b>	<b>2.4%</b>	<b>(1)</b>

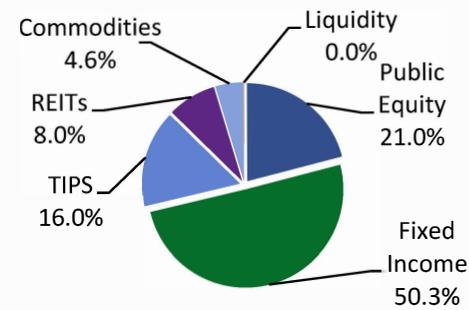
5-Yr Realized Volatility: **5.1%**

5-Yr Realized Tracking Error: **0.2%**

### Asset Allocation, Performance & Realized Risk Summary - LRF

Asset Allocation	EMV (mil)	Current Allocation (%)	Policy Weight (%) <sup>1</sup>	Variance (%)	Policy Range
Public Equity	\$ 24.4	21.0%	22%	(1.0%)	± 5%
Fixed Income	\$ 58.4	50.3%	49%	1.3%	± 5%
TIPS	\$ 18.6	16.0%	16%	0.0%	± 3%
REITs	\$ 9.3	8.0%	8%	0.0%	± 5%
Commodities	\$ 5.3	4.6%	5%	(0.4%)	± 3%
Liquidity	\$ 0.0	0.0%	0%	0.0%	+ 2%
<b>Total LRF</b>	<b>\$ 116.0</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	

Current Allocation



Performance Summary <sup>2</sup>	10-Yr			5-Yr			3-Yr			1-Yr			FYTD		
	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps
Public Equity	9.4%	9.3%	12	5.9%	5.8%	18	9.5%	9.3%	23	(1.0%)	(1.4%)	42	(2.2%)	(2.2%)	6
Fixed Income	6.7%	5.8%	90	5.2%	4.7%	53	4.6%	4.2%	39	14.9%	15.0%	(4)	5.2%	5.2%	(5)
TIPS	3.8%	3.8%	(3)	2.2%	2.2%	1	2.9%	2.9%	5	7.5%	7.5%	7	2.8%	2.7%	2
REITs	-	-	-	6.0%	5.8%	19	5.6%	5.3%	35	9.5%	8.9%	59	2.5%	2.4%	7
Commodities	-	-	-	(12.7%)	(13.1%)	47	2.9%	2.3%	57	(13.4%)	(14.5%)	114	(5.8%)	(5.8%)	2
<b>Total LRF</b>	<b>7.1%</b>	<b>6.7%</b>	<b>37</b>	<b>4.4%</b>	<b>4.1%</b>	<b>24</b>	<b>5.7%</b>	<b>5.4%</b>	<b>25</b>	<b>8.4%</b>	<b>8.3%</b>	<b>18</b>	<b>2.4%</b>	<b>2.4%</b>	<b>(1)</b>

5-Yr Realized Volatility: **5.1%**

5-Yr Realized Tracking Error: **0.2%**

<sup>1</sup> Allocations approved by the Board at the May 2018 IC Meeting.

<sup>2</sup> Liquidity is for operational purposes rather than a strategic allocation target and is not included in the performance summary table due to negligible impact on performance.

# Affiliate Investment Programs

## Judges' Retirement Fund (JRF) & Judges' Retirement System Fund II (JRF II)

As of August 31, 2019

### Asset Allocation, Performance & Realized Risk Summary - JRF

Asset Allocation	EMV (mil)	Current Allocation (%)	Policy Weight (%)	Variance (%)	Policy Range
Cash	\$ 37.0	100.0%	100%	0.0%	± 0%
<b>Total JRF</b>	<b>\$ 37.0</b>	<b>100.0%</b>	<b>100%</b>	<b>0.0%</b>	

#### Current Allocation



Performance Summary	10-Yr			5-Yr			3-Yr			1-Yr			FYTD		
	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps
Cash	0.6%	0.5%	8	1.1%	0.9%	14	1.6%	1.5%	15	2.5%	2.4%	9	0.4%	0.4%	2
<b>Total JRF</b>	<b>0.6%</b>	<b>0.5%</b>	<b>8</b>	<b>1.1%</b>	<b>0.9%</b>	<b>14</b>	<b>1.6%</b>	<b>1.5%</b>	<b>15</b>	<b>2.5%</b>	<b>2.4%</b>	<b>9</b>	<b>0.4%</b>	<b>0.4%</b>	<b>2</b>

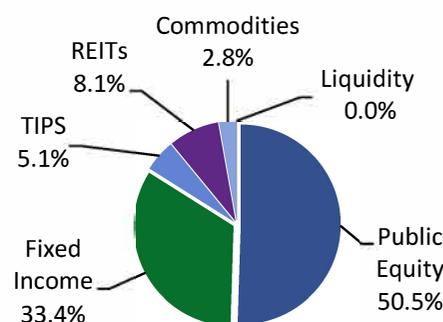
5-Yr Realized Volatility: **0.3%**

5-Yr Realized Tracking Error: **0.0%**

### Asset Allocation, Performance Realized Risk Summary - JRF II

Asset Allocation	EMV (mil)	Current Allocation (%)	Policy Weight (%) <sup>1</sup>	Variance (%)	Policy Range
Public Equity	\$ 870.8	50.5%	52%	(1.5%)	± 5%
Fixed Income	\$ 576.8	33.4%	32%	1.4%	± 5%
TIPS	\$ 88.0	5.1%	5%	0.1%	± 3%
REITs	\$ 140.4	8.1%	8%	0.1%	± 5%
Commodities	\$ 48.4	2.8%	3%	(0.2%)	± 3%
Liquidity	\$ 0.0	0.0%	0%	0.0%	+ 2%
<b>Total JRF II</b>	<b>\$ 1,724.3</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	

#### Current Allocation



Performance Summary <sup>2</sup>	10-Yr			5-Yr			3-Yr			1-Yr			FYTD		
	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps
Public Equity	9.2%	9.1%	12	5.9%	5.8%	17	9.5%	9.3%	23	(1.0%)	(1.4%)	43	(2.2%)	(2.2%)	6
Fixed Income	6.7%	5.8%	91	5.2%	4.7%	53	4.6%	4.2%	41	15.0%	15.0%	3	5.2%	5.2%	(5)
TIPS	-	-	-	2.2%	2.2%	(1)	2.9%	2.9%	3	7.5%	7.5%	0	2.8%	2.7%	2
REITs	9.6%	9.6%	8	6.0%	5.8%	19	5.6%	5.3%	35	9.5%	8.9%	60	2.5%	2.4%	7
Commodities	-	-	-	(12.9%)	(13.1%)	27	2.5%	2.3%	17	(14.5%)	(14.5%)	5	(5.8%)	(5.8%)	2
<b>Total JRF II</b>	<b>8.3%</b>	<b>8.0%</b>	<b>24</b>	<b>5.0%</b>	<b>4.7%</b>	<b>25</b>	<b>7.1%</b>	<b>6.8%</b>	<b>30</b>	<b>5.1%</b>	<b>4.8%</b>	<b>29</b>	<b>0.7%</b>	<b>0.7%</b>	<b>1</b>

5-Yr Realized Volatility: **7.3%**

5-Yr Realized Tracking Error: **0.2%**

<sup>1</sup> Allocations approved by the Board at the May 2018 IC Meeting.

<sup>2</sup> Liquidity is for operational purposes rather than a strategic allocation target and is not included in the performance summary table due to negligible impact on performance.

# Affiliate Investment Programs

## Health Care Fund (HCF) & Long-Term Care Fund (LTCF)

As of August 31, 2019

### Asset Allocation, Performance & Realized Risk Summary - HCF

Asset Allocation	EMV (mil)	Current Allocation (%)	Policy Weight (%) <sup>1</sup>	Variance (%)	Policy Range
Fixed Income	\$ 491.7	100.0%	100%	0.0%	± 0%
<b>Total HCF</b>	<b>\$ 491.7</b>	<b>100.0%</b>	<b>100%</b>	<b>0.0%</b>	

#### Current Allocation



Performance Summary	10-Yr			5-Yr			3-Yr			1-Yr			FYTD		
	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps
Fixed Income	4.4%	3.9%	48	3.5%	3.3%	16	3.1%	3.1%	4	10.2%	10.2%	1	2.8%	2.8%	1
<b>Total HCF</b>	<b>4.4%</b>	<b>3.9%</b>	<b>48</b>	<b>3.5%</b>	<b>3.3%</b>	<b>16</b>	<b>3.1%</b>	<b>3.1%</b>	<b>4</b>	<b>10.2%</b>	<b>10.2%</b>	<b>1</b>	<b>2.8%</b>	<b>2.8%</b>	<b>1</b>

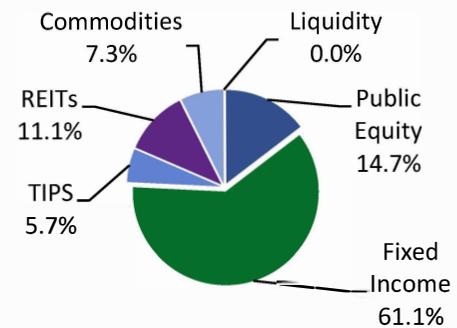
5-Yr Realized Volatility: **3.1%**

5-Yr Realized Tracking Error: **0.2%**

### Asset Allocation, Performance & Realized Risk Summary - LTCF

Asset Allocation	EMV (mil)	Current Allocation (%)	Policy Weight (%) <sup>1</sup>	Variance (%)	Policy Range
Public Equity	\$ 717.5	14.7%	15%	(0.3%)	± 4%
Fixed Income	\$ 2,987.6	61.1%	60%	1.1%	± 5%
TIPS	\$ 279.5	5.7%	6%	(0.3%)	± 2%
REITs	\$ 544.1	11.1%	11%	0.1%	± 4%
Commodities	\$ 358.0	7.3%	8%	(0.7%)	± 2%
Liquidity	\$ 0.0	0.0%	0%	0.0%	± 2%
<b>Total LTCF</b>	<b>\$ 4,886.6</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>	

#### Current Allocation



Performance Summary <sup>2</sup>	10-Yr			5-Yr			3-Yr			1-Yr			FYTD		
	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps
Public Equity	9.2%	9.0%	19	5.7%	5.4%	31	9.2%	8.9%	31	(1.1%)	(1.4%)	30	(2.2%)	(2.2%)	6
Fixed Income	6.2%	5.8%	44	4.7%	4.7%	1	4.2%	4.2%	3	15.0%	15.0%	3	5.2%	5.2%	(5)
TIPS	3.8%	3.8%	(3)	2.2%	2.2%	0	2.9%	2.9%	(0)	7.5%	7.5%	0	2.8%	2.7%	1
REITs	9.2%	8.7%	48	5.5%	4.6%	80	5.2%	4.4%	84	9.6%	8.9%	68	2.5%	2.4%	7
Commodities	-	-	-	(13.1%)	(13.1%)	(0)	2.2%	2.3%	(16)	(14.5%)	(14.5%)	0	(5.8%)	(5.8%)	2
<b>Total LTCF</b>	<b>6.2%</b>	<b>6.0%</b>	<b>22</b>	<b>3.7%</b>	<b>3.6%</b>	<b>10</b>	<b>4.7%</b>	<b>4.7%</b>	<b>0</b>	<b>8.8%</b>	<b>9.0%</b>	<b>(23)</b>	<b>2.7%</b>	<b>2.8%</b>	<b>(4)</b>

5-Yr Realized Volatility: **5.2%**

5-Yr Realized Tracking Error: **0.3%**

<sup>1</sup> Allocations approved by the Board at the June 2018 IC Meeting.

<sup>2</sup> Liquidity is for operational purposes rather than a strategic allocation target and is not included in the performance summary table due to negligible impact on performance.

# Affiliate Investment Programs

## Supplemental Income Plans (SIP)

As of August 31, 2019

### Asset Allocation - SIP

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Asset Allocation	EMV (mil)	Global Equity			US Fixed Income			Real Assets			Cash and Cash Equivalents		
		Actual	Policy	Policy Range	Actual	Policy	Policy Range	Actual	Policy	Policy Range	Actual	Policy	Policy Range
Target Income Fund	\$ 108.1	29.1%	30.0%	± 4%	61.1%	60.0%	± 4%	4.9%	5.0%	± 1%	5.0%	5.0%	± 1%
Target 2015 Fund	\$ 92.1	36.0%	37.0%	± 4%	55.2%	54.0%	± 4%	4.9%	5.0%	± 1%	4.0%	4.0%	± 1%
Target 2020 Fund	\$ 169.2	48.9%	50.0%	± 4%	44.2%	43.0%	± 4%	3.9%	4.0%	± 1%	3.0%	3.0%	± 1%
Target 2025 Fund	\$ 171.0	61.0%	62.0%	± 4%	33.1%	32.0%	± 4%	3.9%	4.0%	± 1%	2.0%	2.0%	± 1%
Target 2030 Fund	\$ 145.9	74.2%	75.0%	± 4%	20.8%	20.0%	± 2%	4.0%	4.0%	± 1%	1.0%	1.0%	± 1%
Target 2035 Fund	\$ 85.8	86.6%	87.0%	± 4%	10.5%	10.0%	± 2%	3.0%	3.0%	± 1%	-	-	+ 0.25%
Target 2040 Fund	\$ 76.3	91.8%	92.0%	± 4%	5.2%	5.0%	± 1%	3.0%	3.0%	± 1%	-	-	+ 0.25%
Target 2045 Fund	\$ 40.0	91.8%	92.0%	± 4%	5.2%	5.0%	± 1%	3.0%	3.0%	± 1%	-	-	+ 0.25%
Target 2050 Fund	\$ 20.6	91.8%	92.0%	± 4%	5.2%	5.0%	± 1%	3.0%	3.0%	± 1%	-	-	+ 0.25%
Target 2055 Fund	\$ 8.7	91.8%	92.0%	± 4%	5.2%	5.0%	± 1%	3.0%	3.0%	± 1%	-	-	+ 0.25%
Target 2060 Fund	\$ 2.0	91.8%	92.0%	± 4%	5.2%	5.0%	± 1%	3.0%	3.0%	± 1%	-	-	+ 0.25%
SSgA STIF	\$ 106.6	-	-	-	-	-	-	-	-	-	100.0%	100.0%	-
SIP US ST Bond Core	\$ 35.6	-	-	-	100.0%	100.0%	-	-	-	-	-	-	-
SIP US Bond Core	\$ 63.0	-	-	-	100.0%	100.0%	-	-	-	-	-	-	-
SIP Real Asset Core	\$ 7.2	-	-	-	-	-	-	100.0%	100.0%	-	-	-	-
SIP Russell All Cap Core	\$ 545.8	100.0%	100.0%	-	-	-	-	-	-	-	-	-	-
SIP Gbl All Cap EX-US	\$ 64.1	100.0%	100.0%	-	-	-	-	-	-	-	-	-	-

### Performance Summary - SIP

Performance Summary	10-Yr			5-Yr			3-Yr			1-Yr			FYTD		
	Net Return <sup>1</sup>	BM Return	Excess Bps												
Target Income Fund	5.1%	5.1%	(7)	3.3%	3.2%	12	4.1%	4.0%	9	6.3%	6.2%	10	1.0%	0.9%	1
Target 2015 Fund	5.8%	6.0%	(13)	3.2%	3.1%	11	3.9%	3.8%	9	5.6%	5.5%	10	0.6%	0.6%	1
Target 2020 Fund	6.2%	6.3%	(10)	3.0%	2.9%	11	3.9%	3.9%	9	4.2%	4.1%	11	0.0%	0.0%	1
Target 2025 Fund	6.8%	6.9%	(8)	3.4%	3.3%	12	4.9%	4.8%	10	2.9%	2.8%	13	(0.5%)	(0.6%)	1
Target 2030 Fund	7.4%	7.5%	(9)	3.5%	3.4%	12	5.3%	5.2%	9	1.4%	1.3%	13	(1.2%)	(1.2%)	2
Target 2035 Fund	7.9%	8.0%	(14)	3.8%	3.6%	12	5.9%	5.8%	9	0.1%	(0.0%)	14	(1.7%)	(1.7%)	2
Target 2040 Fund	8.3%	8.4%	(11)	4.1%	4.0%	13	6.8%	6.7%	9	(0.4%)	(0.6%)	15	(2.0%)	(2.0%)	2
Target 2045 Fund	8.5%	8.7%	(12)	4.6%	4.5%	13	7.7%	7.6%	9	(0.3%)	(0.5%)	16	(2.0%)	(2.0%)	2
Target 2050 Fund	8.5%	8.7%	(14)	4.6%	4.5%	13	7.7%	7.6%	9	(0.3%)	(0.5%)	16	(2.0%)	(2.0%)	2
Target 2055 Fund	-	-	-	4.6%	4.5%	14	7.7%	7.6%	9	(0.4%)	(0.5%)	15	(2.0%)	(2.0%)	2
Target 2060 Fund	-	-	-	-	-	-	-	-	-	-	-	-	(2.0%)	(2.0%)	2
SSgA STIF	-	-	-	1.1%	0.9%	20	1.7%	1.5%	24	2.5%	2.4%	15	0.4%	0.4%	5
SIP US ST Bond Core	-	-	-	1.5%	1.6%	(12)	1.8%	1.9%	(10)	4.5%	4.6%	(7)	0.7%	0.7%	(1)
SIP US Bond Core	-	-	-	3.4%	3.3%	6	3.1%	3.1%	2	10.2%	10.2%	4	2.8%	2.8%	(1)
SIP Real Asset Core	-	-	-	(0.4%)	(0.3%)	(8)	3.6%	3.7%	(11)	1.2%	1.3%	(13)	(1.7%)	(1.8%)	6
SIP Russell All Cap Core	-	-	-	9.6%	9.6%	3	12.2%	12.2%	(1)	1.4%	1.3%	8	(0.6%)	(0.6%)	2
SIP Gbl All Cap EX-US	-	-	-	1.7%	1.5%	23	5.9%	5.7%	25	(3.8%)	(4.1%)	32	(4.1%)	(4.2%)	2

<sup>1</sup> Performance is net of the average investment management fees & expenses incurred by the 457/SCP plans.

## Affiliate Investment Programs

### Supplemental Income Plans (SIP)

As of August 31, 2019

#### Realized Risk - SIP

Realized Risk	Annualized 5-Yr Realized Volatility	Tracking Error <sup>1</sup>
Target Income Fund	3.4%	0.1%
Target 2015 Fund	3.8%	0.1%
Target 2020 Fund	4.9%	0.1%
Target 2025 Fund	6.3%	0.1%
Target 2030 Fund	7.7%	0.1%
Target 2035 Fund	9.1%	0.1%
Target 2040 Fund	10.1%	0.2%
Target 2045 Fund	10.5%	0.2%
Target 2050 Fund	10.5%	0.2%
Target 2055 Fund	10.5%	0.2%
Target 2060 Fund	-	-
SSgA STIF	0.3%	0.1%
SIP US ST Bond Core	0.9%	0.0%
SIP US Bond Core	3.1%	0.1%
SIP Real Asset Core	8.5%	0.2%
SIP Russell All Cap Core	12.2%	0.1%
SIP Gbl All Cap EX-US	12.5%	0.3%

<sup>1</sup> Due to the impact of Fair Value Pricing adjustment, the tracking error is based on a rolling 12 month calculation.

# CalPERS Trust Level

## Trust Level Benchmarks

As of August 31, 2019

### Public Employees' Retirement Fund and Affiliate Investment Programs Policy Benchmarks

Trust	Asset Class	Policy Benchmark
Public Employees' Retirement Fund	Public Equity - Cap Weighted	Custom FTSE All World, All Cap Equity
	Public Equity - Factor Weighted	MSCI ACWI Select Factor Weighted Index
	Private Equity	Custom FTSE All World, All Cap Equity + 150 bps, Quarter Lag
	Income - Long Spread	Custom Bloomberg Barclays Long Spread
	Income - Long Treasury	Custom Bloomberg Barclays Long Government
	Income - High Yield	Custom Bloomberg Barclays High Yield
	Real Assets	MSCI/PREA U.S. ACOE Quarterly Property Fund Index (Unfrozen)
	Liquidity	30-Day Treasury Bill
Judges' Retirement System Fund	Cash	91-Day Treasury Bill
Judges' Retirement System II Fund	Global Equity	MSCI ACWI IMI (Net)
	U.S. Fixed Income	Bloomberg Barclays Long Liability Index
	TIPS	Bloomberg Barclays U.S. TIPS Index, Series L
	Commodities	S&P GSCI Total Return Daily
	REITs	FTSE EPRA/NAREIT Developed Liquid (Net)
Legislators' Retirement System Fund	Global Equity	MSCI ACWI IMI (Net)
	U.S. Fixed Income	Bloomberg Barclays Long Liability Index
	TIPS	Bloomberg Barclays U.S. TIPS Index, Series L
	Commodities	S&P GSCI Total Return Daily
	REITs	FTSE EPRA/NAREIT Developed Liquid (Net)
Public Employees' Health Care Fund	U.S. Fixed Income	Bloomberg Barclays U.S. Aggregate Bond Index
Long-Term Care Fund	Global Equity	MSCI ACWI IMI (Net)
	U.S. Fixed Income	Bloomberg Barclays Long Liability Index
	TIPS	Bloomberg Barclays U.S. Treasury Inflation Protected Securities (TIPS) Index
	Commodities	S&P GSCI Total Return Daily
	REITs	FTSE EPRA/NAREIT Developed Liquid (Net)
California Employers' Retiree Benefit Trust (CERBT) Funds 1, 2 & 3	Global Equity	MSCI ACWI IMI (Net)
	U.S. Fixed Income	Bloomberg Barclays Long Liability Index
	TIPS	Bloomberg Barclays U.S. TIPS Index, Series L
	Commodities	S&P GSCI Total Return Daily
	REITs	FTSE EPRA/NAREIT Developed Liquid (Net)

# CalPERS Trust Level

## Trust Level Benchmarks

As of August 31, 2019

### Supplemental Income Plans Policy Benchmarks

Policy Weights							
Supplemental Income Plans	Global Equity	US Equity	Int'l Equity	US Income		Real Assets	Cash & Cash Equivalents
	Russell 3000 / MSCI ACWI ex US	Russell 3000	MSCI ACWI ex US	Bloomberg Barclays US Ag Bond Index	Bloomberg Barclays US 1-3 Year Govt/Credit Bond Index	SSGA Real Asset	BofA ML 3 mo T-bill
Target Income Fund	30.0%	16.0%	14.0%	60.0%	-	5.0%	5.0%
Target 2015 Fund	37.0%	20.0%	17.0%	54.0%	-	5.0%	4.0%
Target 2020 Fund	50.0%	27.0%	23.0%	43.0%	-	4.0%	3.0%
Target 2025 Fund	62.0%	33.0%	29.0%	32.0%	-	4.0%	2.0%
Target 2030 Fund	75.0%	40.0%	35.0%	20.0%	-	4.0%	1.0%
Target 2035 Fund	87.0%	46.0%	41.0%	10.0%	-	3.0%	-
Target 2040 Fund	92.0%	49.0%	43.0%	5.0%	-	3.0%	-
Target 2045 Fund	92.0%	49.0%	43.0%	5.0%	-	3.0%	-
Target 2050 Fund	92.0%	49.0%	43.0%	5.0%	-	3.0%	-
Target 2055 Fund	92.0%	49.0%	43.0%	5.0%	-	3.0%	-
Target 2060 Fund	92.0%	49.0%	43.0%	5.0%	-	3.0%	-
SSgA STIF	-	-	-	-	-	-	100.0%
SIP US ST Bond Core	-	-	-	-	100.0%	-	-
SIP US Bond Core	-	-	-	100.0%	-	-	-
SIP Real Asset Core	-	-	-	-	-	100.0%	-
SIP Russell All Cap Core	100.0%	100.0%	-	-	-	-	-
SIP Global All Cap ex US	100.0%	-	100.0%	-	-	-	-