



QUARTERLY PERFORMANCE REPORT

CITY OF FRESNO RETIREMENT
SYSTEMS

JUNE 30, 2021

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PROPRIETARY & CONFIDENTIAL

SECOND QUARTER 2021 SUMMARY

- **The US economy expanded at an annual rate of 6.5% in the second quarter**
- **The Fed kept rates unchanged, and the target Fed Funds rate remains 0.00% - 0.25%**
- **US stocks outperformed Non-US stocks as all public equities performed positively during the quarter**
- **US bonds were positive during the quarter as the yield curve flattened**
- **Net performance over the last 25 years is 8.0%, ahead of the assumed rate of 7.25%**
 - Performance is just above the policy index over the last 25 years but trails since inception
- **Manager selection remains a positive contributor to relative performance long-term**



SECOND QUARTER 2021 SUMMARY

- **In the one-year ended June 30, 2021, the Total Fund returned 30.4%, outperforming the benchmark (net of fees) and ranking in the first quartile of peers**
 - Overweight positioning to Large Cap Equity and International Equity along with underweight positioning to Private Real Estate and Private Credit contributed to relative performance
 - Private Credit and Core Fixed Income manager selection contributed to relative performance
 - Public Equity, Midstream Energy, and Private Equity performance has contributed to overall plan returns over the trailing 1-year period
- **Over the most recent quarter, the Total Fund increased 5.9%, outperforming the policy benchmark (net of fees) and ranking in the first quartile of peers**
 - Overweight positioning to Large Cap Equity contributed to relative performance
 - Private Equity outperformance relative to Public Equity contributed to relative performance
- **Total fund volatility remained elevated relative to peers**



ECONOMIC ENVIRONMENT

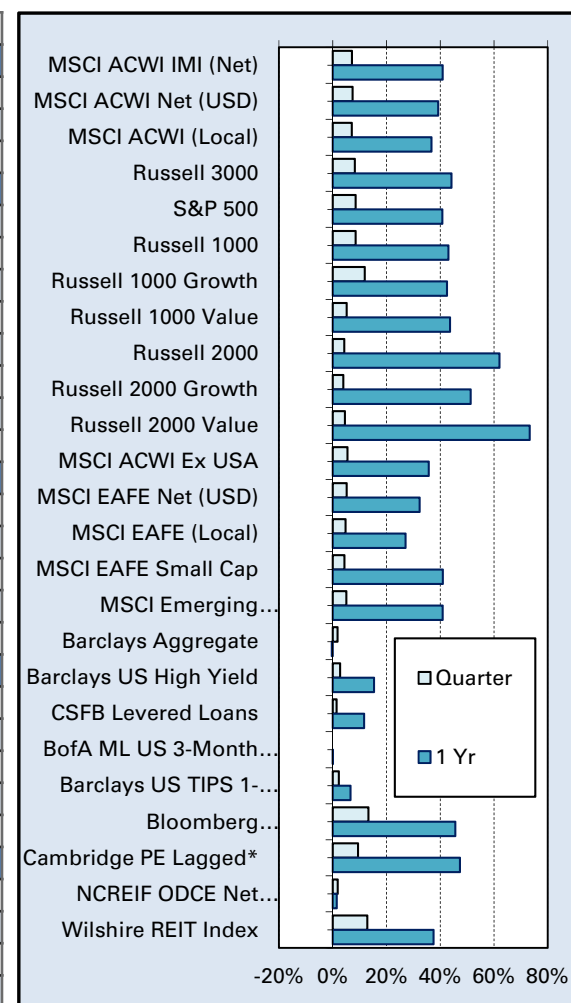
- **Q2 Real GDP (advanced estimate) grew at an annual rate of +6.5%.**
 - Retail sales ended May at +15.3% on a YoY basis. In the same period last year the YoY growth rate was -1.4%.
 - Corporate profits as a percent of GDP ended Q4 2020 at 10.1%, up from 8.1% on a YoY basis and remain elevated relative to historical levels.
 - The inventory-to-sales ratio ended May was 1.3. Levels have remained relatively constant since early 2010 with a spike to 1.7 in April 2020.
 - The U.S. trade deficit widened by 3.1% (ended May) as imports rose 1.2%.
- **The unemployment rate was 5.9% in Q2, down from 6.0% in Q1; U-6, a broader measure of unemployment, decreased to 9.8% in Q2 from 10.4% in Q1.**
 - The labor force participation rate ended Q2 at 61.6% up slightly from Q1's 61.5% after declining to 60.2% in April 2020 and is at levels below the 10 year pre-pandemic average of 63.0%.
- **The Case-Shiller Home Price Index (ended April) increased to 249.0 from 234.5 (in December) and remains at levels higher than that of pre-financial crisis levels of 150.9.**
- **Rolling 12-month seasonally-adjusted CPI saw an uptick to 5.44% in Q2 from 2.74% in Q1; Capacity Utilization increased to 75.4% from 74.6% in Q1.**
- **Fed Funds rate remains at a targeted range of 0.00%-to-0.25%. The 10-year Treasury Yield (constant maturity) finished Q2 at 1.5% down from 1.6% in Q1.**
- **The Fed remains committed to continuing stimulative action as needed to support the US economy. The Fed's balance sheet continues to grow in the wake of the pandemic.**
- **S&P valuations increased in Q2 to 37.92 from 36.77 in Q1 and remains higher than the 10-year average of 27.2x.**
 - Cyclically adjusted Shiller PE ratio remains above the long-term average of 16.8x



MARKET ENVIRONMENT

Q2 2021 OVERVIEW

		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
World Equity Benchmarks						
MSCI ACWI IMI (Net)	World with Small Cap	7.18%	40.94%	14.24%	14.55%	9.90%
MSCI ACWI Net (USD)	World W/O Small Cap	7.39%	39.26%	14.57%	14.61%	9.90%
MSCI ACWI (Local)	World (Local Currency)	7.09%	36.77%	14.19%	14.47%	11.16%
Domestic Equity Benchmarks						
Russell 3000	Domestic All Cap	8.24%	44.16%	18.73%	17.88%	14.70%
S&P 500	Large Core	8.55%	40.79%	18.67%	17.65%	14.84%
Russell 1000	Large Core	8.54%	43.07%	19.16%	17.99%	14.90%
Russell 1000 Growth	Large Growth	11.93%	42.50%	25.14%	23.66%	17.87%
Russell 1000 Value	Large Value	5.21%	43.68%	12.42%	11.87%	11.61%
Russell 2000	Small Core	4.29%	62.02%	13.52%	16.47%	12.34%
Russell 2000 Growth	Small Growth	3.92%	51.36%	15.94%	18.76%	13.52%
Russell 2000 Value	Small Value	4.56%	73.28%	10.27%	13.62%	10.85%
International Equity Benchmarks						
MSCI ACWI Ex USA	World ex-US	5.48%	35.72%	9.38%	11.08%	5.45%
MSCI EAFE Net (USD)	Int'l Developed	5.17%	32.35%	8.27%	10.28%	5.89%
MSCI EAFE (Local)	Int'l Developed (Local Currency)	4.79%	27.08%	7.53%	10.01%	8.09%
MSCI EAFE Small Cap	Small Cap Int'l	4.34%	40.98%	8.40%	12.03%	8.38%
MSCI Emerging Markets	Emerging Equity	5.05%	40.90%	11.27%	13.03%	4.29%
Domestic Fixed Income Benchmarks						
Barclays Aggregate	Core Bonds	1.83%	-0.33%	5.34%	3.03%	3.39%
Barclays US High Yield	High Yield	2.74%	15.37%	7.44%	7.48%	6.66%
CSFB Levered Loans	Bank Loans	1.44%	11.67%	4.36%	5.04%	4.52%
BofA ML US 3-Month T-Bill	Cash	0.00%	0.09%	1.34%	1.17%	0.63%
Barclays US TIPS 1-10 Yr	Inflation	2.30%	6.60%	5.67%	3.61%	2.58%
Alternative Benchmarks						
Bloomberg Commodity Index	Commodities	13.30%	45.61%	3.90%	2.40%	-4.44%
Cambridge PE Lagged*	Private Equity	9.45%	47.37%	17.56%	17.23%	14.29%
NCREIF ODCE Net Lagged*	Real Estate	1.89%	1.48%	3.97%	5.26%	8.67%
Wilshire REIT Index	REIT	12.85%	37.54%	10.06%	6.36%	9.38%



* As of 3/31/2021

City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE SUMMARY - NET OF FEES

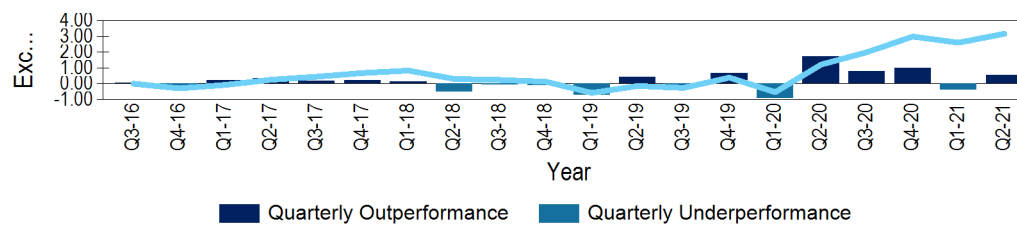
	Market Value	3 Mo Rank	YTD Rank	1 Yr Rank	3 Yrs Rank	5 Yrs Rank	7 Yrs Rank	10 Yrs Rank	15 Yrs Rank	20 Yrs Rank	25 Yrs Rank	Inception	Inception Date										
Total Fund	\$3,801,093,940	5.9%	25	10.2%	24	30.4%	18	11.6%	23	11.5%	23	8.6%	18	8.9%	23	7.3%	33	7.3%	26	8.0%	26	9.2%	Oct-85
<i>Policy Index</i>		5.3%	48	10.0%	26	28.1%	30	10.7%	49	10.9%	35	8.1%	39	8.6%	31	7.4%	28	7.4%	21	7.9%	27	9.6%	Oct-85
<i>60% MSCI ACWI (Gross)/40% FTSE WGBI</i>		4.9%	73	5.4%	99	23.0%	94	10.8%	45	9.9%	77	6.9%	88	7.0%	94	6.6%	77	6.9%	49	6.7%	86	--	Oct-85
<i>InvMetrics Public DB > \$1B Net Median</i>		5.3%		9.1%		27.0%		10.6%		10.5%		7.8%		8.2%		6.9%		6.8%		7.4%		8.8%	Oct-85

Over the past five years, the Fund returned 11.52% per annum, ranking in the 23rd percentile of the Investment Metrics Public Funds > \$1 Billion net of fee universe. The Fund's return outperformed the actuarial rate of 7.25% and outperformed the policy index by 58 basis points. The Fund's volatility was 9.96%, which ranks in the 86th percentile of its peers over this period. The Fund's risk-adjusted performance, as measured by the Sharpe Ratio, ranks in the 60th percentile of its peers.

Over the past three years, the Fund returned 11.60% per annum, outperforming the policy index by 87 basis points and ranking in the 23rd percentile of its peer group. Over the past three years, the Fund's Sharpe Ratio of 1.184 ranks in the 57th percentile.

For the year ending June 30, 2021, the Fund returned 30.40%, outperforming the policy index by 220 basis points and ranking in the 18th percentile of its peers.

Quarterly and Cumulative Excess Performance



5 Years Ending June 30, 2021

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio	Rank
Total Fund	11.5%	23	10.0%	86	1.0	60	1.1	61
Policy Index	10.9%	35	9.5%	78	1.0	63	1.1	62

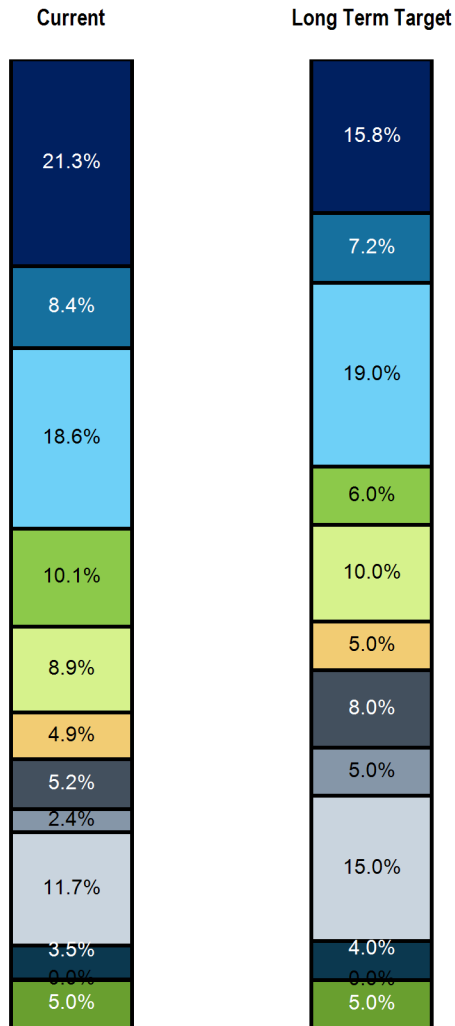
7 Years Ending June 30, 2021

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio	Rank
Total Fund	8.6%	18	9.6%	89	0.8	52	1.0	54
Policy Index	8.1%	39	9.3%	82	0.8	64	1.0	56



City of Fresno Retirement Systems

TOTAL FUND ASSET ALLOCATION VS. POLICY TARGETS



Asset Allocation vs. Target						
	Current	Current	Policy	Difference*	Policy Range	Within Range
Large Cap Equity	\$809,444,095	21.3%	15.8%	5.5%	10.0% - 26.0%	Yes
Small Cap Equity	\$320,564,117	8.4%	7.2%	1.2%	2.0% - 12.0%	Yes
Developed International Equity	\$708,743,994	18.6%	19.0%	-0.4%	14.0% - 24.0%	Yes
Emerging Markets Equity	\$384,122,589	10.1%	7.0%	3.1%	3.0% - 9.0%	No
Core Fixed Income	\$337,070,368	8.9%	10.0%	-1.1%	6.0% - 15.0%	Yes
High Yield	\$184,846,818	4.9%	5.0%	-0.1%	2.0% - 8.0%	Yes
Private Credit	\$195,880,254	5.2%	8.0%	-2.8%	4.0% - 12.0%	Yes
Private Equity	\$91,345,609	2.4%	4.0%	-1.6%	0.0% - 10.0%	Yes
Real Estate - Private	\$444,807,434	11.7%	15.0%	-3.3%	9.0% - 24.0%	Yes
Infrastructure	\$132,078,512	3.5%	4.0%	-0.5%	2.0% - 6.0%	Yes
Cash	\$845,743	0.0%	0.0%	0.0%	0.0% - 2.0%	Yes
Energy Infrastructure	\$191,344,028	5.0%	5.0%	0.0%	2.0% - 8.0%	Yes
Total	\$3,801,093,940	100.0%	100.0%			

*Difference between Current and Current Allocation

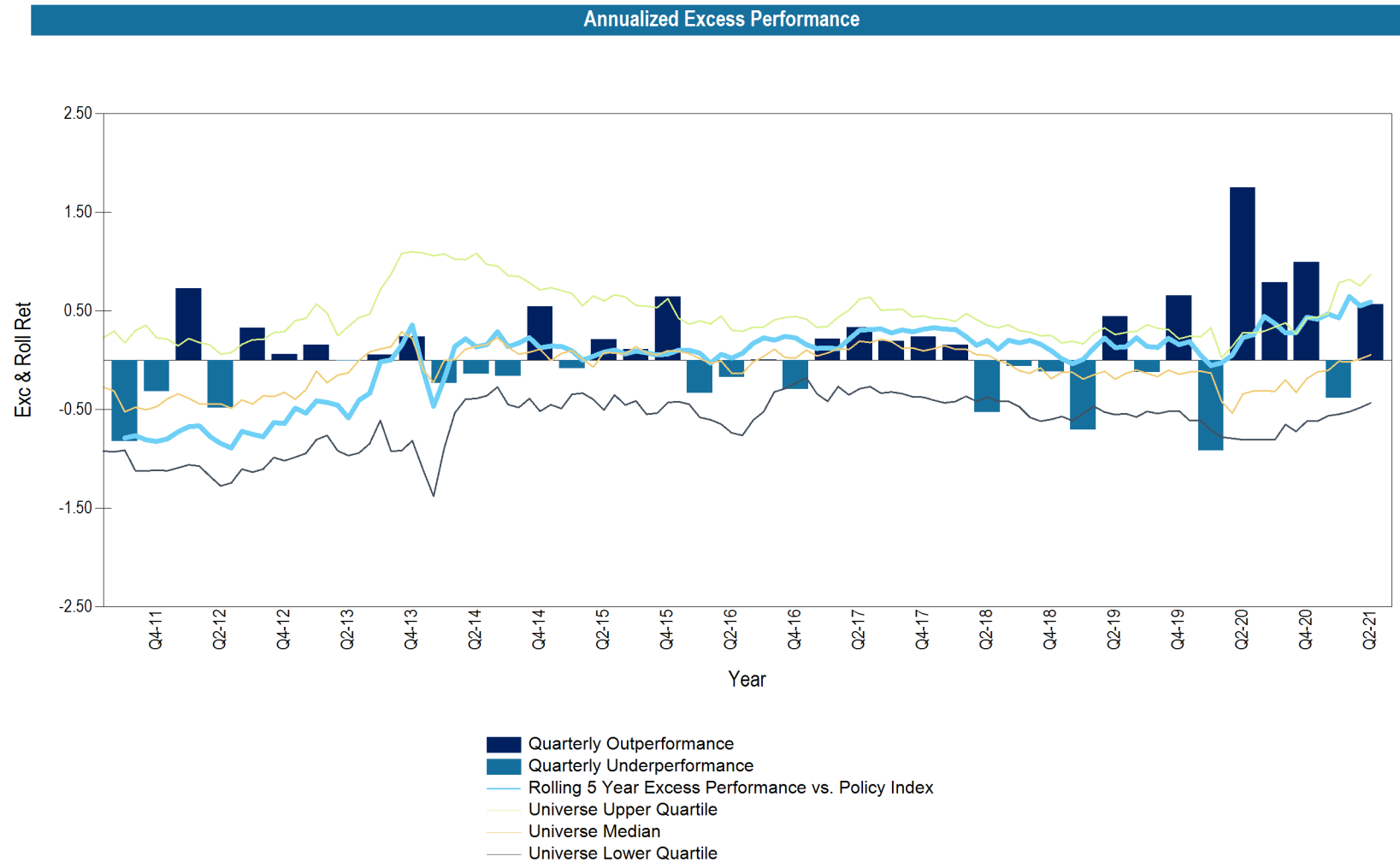
*Policy column reflects targets in the Policy Index.

**Does not include HY Bonds in Core Fixed income mandates.



City of Fresno Retirement Systems

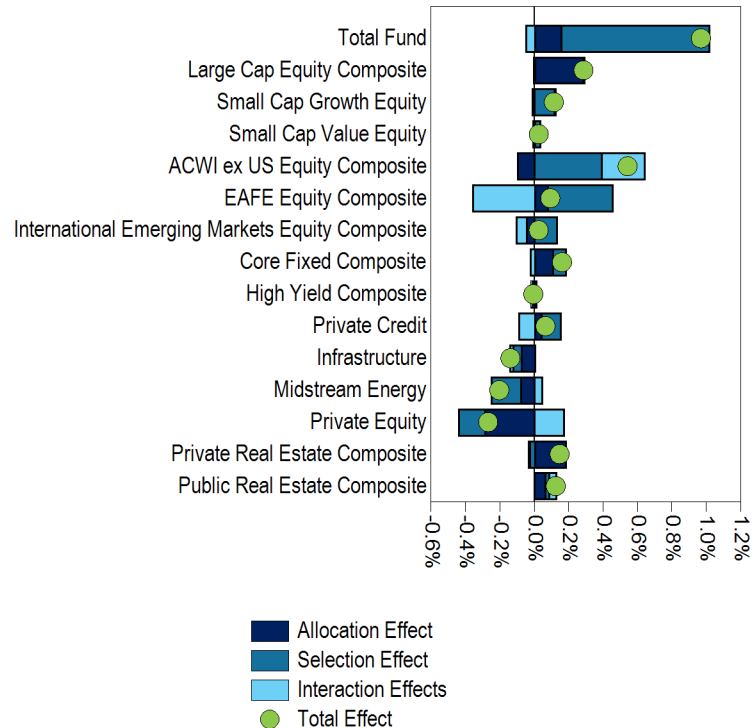
ROLLING 5 YEAR EXCESS RETURNS- NET OF FEES



City of Fresno Retirement Systems

TOTAL FUND ATTRIBUTION ANALYSIS

Attribution Effects
3 Years Ending June 30, 2021



Attribution Summary
3 Years Ending June 30, 2021

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Large Cap Equity Composite	19.2%	19.2%	0.0%	0.0%	0.3%	0.0%	0.3%
Small Cap Growth Equity	19.4%	15.9%	3.4%	0.1%	0.0%	0.0%	0.1%
Small Cap Value Equity	10.9%	10.3%	0.6%	0.0%	0.0%	0.0%	0.0%
ACWI ex US Equity Composite	12.9%	9.9%	3.0%	0.4%	-0.1%	0.3%	0.5%
EAFE Equity Composite	--	-3.6%	--	0.4%	0.1%	-0.4%	0.1%
International Emerging Markets Equity Composite	13.7%	11.7%	2.1%	0.1%	0.0%	-0.1%	0.0%
Core Fixed Composite	6.0%	5.3%	0.7%	0.1%	0.1%	0.0%	0.2%
High Yield Composite	7.6%	7.4%	0.2%	0.0%	0.0%	0.0%	0.0%
Private Credit	8.8%	7.6%	1.3%	0.1%	0.0%	-0.1%	0.0%
Infrastructure	--	6.4%	--	0.0%	0.0%	0.0%	-0.1%
Midstream Energy	--	2.6%	--	-0.2%	-0.1%	0.0%	-0.2%
Private Equity	--	13.9%	--	-0.2%	-0.3%	0.2%	-0.3%
Private Real Estate Composite	4.7%	4.9%	-0.1%	0.0%	0.2%	0.0%	0.1%
Public Real Estate Composite	--	-0.7%	--	0.0%	0.1%	0.0%	0.1%
Total	11.7%	10.7%	1.0%	0.9%	0.1%	-0.1%	1.0%

Totals may be off slightly due to rounding.



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Total Fund	3,801,093,940	100.0	5.9	25	10.2	24	30.4	18	11.6	23	11.5	23	8.9	23	9.2	Oct-85
<i>Policy Index</i>			<u>5.3</u>	48	<u>10.0</u>	26	<u>28.1</u>	30	<u>10.7</u>	49	<u>10.9</u>	35	<u>8.6</u>	31	<u>9.6</u>	Oct-85
Over/Under			0.6		0.2		2.3		0.9		0.6		0.3		-0.4	
<i>60% MSCI ACWI (Gross)/40% FTSE WGBI</i>			4.9	73	5.4	99	23.0	94	10.8	45	9.9	77	7.0	94	--	Oct-85
<i>InvMetrics Public DB > \$1B Net Median</i>			5.3		9.1		27.0		10.6		10.5		8.2		8.8	Oct-85
Total Equity Composite	2,222,874,934	58.5	6.4	84	11.6	72	42.2	16	15.1	9	15.6	3	10.8	1	8.9	Oct-95
<i>MSCI ACWI</i>			<u>7.4</u>	80	<u>12.3</u>	66	<u>39.3</u>	31	<u>14.6</u>	36	<u>14.6</u>	39	<u>9.9</u>	29	<u>7.7</u>	Oct-95
Over/Under			-1.0		-0.7		2.9		0.5		1.0		0.9		1.2	
<i>InvMetrics Public DB Gbl Eq Net Median</i>			8.0		13.1		38.6		13.7		14.1		7.0		--	Oct-95
Domestic Equity Composite	1,130,008,324	29.7	7.8	43	15.3	60	46.6	16	17.6	36	17.6	27	14.1	39	--	Nov-95
<i>Domestic Equity Index</i>			<u>7.2</u>	72	<u>15.9</u>	39	<u>49.1</u>	8	<u>17.3</u>	49	<u>17.4</u>	32	<u>14.3</u>	24	<u>10.2</u>	Nov-95
Over/Under			0.6		-0.6		-2.5		0.3		0.2		-0.2			
<i>InvMetrics Public DB US Eq Net Median</i>			7.6		15.5		44.3		17.2		16.8		13.8		9.8	Nov-95
Large Cap Equity Composite	809,444,030	21.3	8.5	35	15.0	52	43.0	37	19.2	35	18.1	32	14.9	29	10.0	Oct-95
<i>Large Cap Equity Index</i>			<u>8.5</u>	35	<u>15.0</u>	52	<u>43.1</u>	37	<u>19.2</u>	35	<u>18.0</u>	33	<u>15.0</u>	28	<u>10.2</u>	Oct-95
Over/Under			0.0		0.0		-0.1		0.0		0.1		-0.1		-0.2	
<i>eV US Large Cap Equity Net Median</i>			7.5		15.0		40.5		16.8		15.9		13.3		10.4	Oct-95
NTAM Russell 1000 Index Fund	809,444,030	21.3	8.5	27	15.0	50	43.0	23	19.2	21	--	--	--	--	18.1	Oct-16
<i>Russell 1000</i>			<u>8.5</u>	26	<u>15.0</u>	51	<u>43.1</u>	23	<u>19.2</u>	22	<u>18.0</u>	15	<u>14.9</u>	13	<u>18.0</u>	Oct-16
Over/Under			0.0		0.0		-0.1		0.0						0.1	
<i>eV US Large Cap Core Equity Net Median</i>			7.7		15.0		39.5		16.9		16.1		13.6		16.2	Oct-16

Fiscal year end: June 30



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Small Cap Equity Composite	320,564,294	8.4	5.9	33	16.3	62	57.4	57	15.6	37	17.5	37	12.6	45	9.6	Oct-95
<i>Russell 2000</i>			<u>4.3</u>	58	<u>17.5</u>	57	<u>62.0</u>	45	<u>13.5</u>	48	<u>16.5</u>	45	<u>12.3</u>	47	<u>9.8</u>	Oct-95
Over/Under			1.6		-1.2		-4.6		2.1		1.0		0.3		-0.2	
<i>eV US Small Cap Equity Net Median</i>			4.6		18.7		59.6		13.2		15.4		12.1		11.9	Oct-95
Eagle Asset Management	158,157,840	4.2	6.6	36	5.0	90	44.3	82	19.4	59	20.9	57	14.1	68	15.9	Nov-10
<i>Russell 2000 Growth</i>			<u>3.9</u>	78	<u>9.0</u>	69	<u>51.4</u>	62	<u>15.9</u>	81	<u>18.8</u>	73	<u>13.5</u>	77	<u>14.7</u>	Nov-10
Over/Under			2.7		-4.0		-7.1		3.5		2.1		0.6		1.2	
<i>eV US Small Cap Growth Equity Net Median</i>			5.8		11.2		53.7		21.2		22.3		15.0		16.3	Nov-10
Kennedy Capital Mgmt	162,406,454	4.3	5.1	32	28.6	21	70.8	34	10.9	41	13.4	39	11.5	34	12.3	May-03
<i>Russell 2000 Value</i>			<u>4.6</u>	39	<u>26.7</u>	33	<u>73.3</u>	26	<u>10.3</u>	47	<u>13.6</u>	38	<u>10.8</u>	48	<u>10.6</u>	May-03
Over/Under			0.5		1.9		-2.5		0.6		-0.2		0.7		1.7	
<i>eV US Small Cap Value Equity Net Median</i>			3.9		23.9		65.5		10.2		12.9		10.7		11.4	May-03



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
International Equity Composite	1,092,866,610	28.8	5.0	83	7.8	82	37.7	47	12.7	7	13.8	8	7.5	10	--	Apr-94
<i>International Equity Index</i>			<u>5.5</u>	53	<u>9.0</u>	59	<u>37.7</u>	44	<u>10.5</u>	36	<u>11.8</u>	31	<u>6.1</u>	55	<u>6.2</u>	<i>Apr-94</i>
Over/Under			-0.5		-1.2		0.0		2.2		2.0		1.4			
<i>InvMetrics Public DB ex-US Eq Net Median</i>			5.5		9.3		37.5		9.9		11.3		6.2		6.3	<i>Apr-94</i>
ACWI ex US Equity Composite	946,295,632	24.9	4.8	75	7.5	56	36.5	64	12.9	42	14.1	36	7.8	55	8.2	Sep-08
<i>MSCI ACWI ex USA Gross</i>			<u>5.6</u>	50	<u>9.4</u>	43	<u>36.3</u>	64	<u>9.9</u>	71	<u>11.6</u>	72	<u>5.9</u>	87	<u>6.7</u>	<i>Sep-08</i>
Over/Under			-0.8		-1.9		0.2		3.0		2.5		1.9		1.5	
<i>eV ACWI ex-US All Cap Equity Net Median</i>			5.6		8.1		39.0		12.3		12.8		8.1		8.4	<i>Sep-08</i>
Baillie Gifford	385,960,094	10.2	4.4	80	5.9	82	35.1	73	15.7	16	16.6	15	9.7	17	9.9	Oct-08
<i>MSCI ACWI ex USA Gross</i>			<u>5.6</u>	56	<u>9.4</u>	50	<u>36.3</u>	66	<u>9.9</u>	61	<u>11.6</u>	64	<u>5.9</u>	78	<u>6.7</u>	<i>Oct-08</i>
Over/Under			-1.2		-3.5		-1.2		5.8		5.0		3.8		3.2	
<i>MSCI ACWI ex USA</i>			5.5	60	9.2	54	35.7	70	9.4	66	11.1	68	5.4	83	6.2	<i>Oct-08</i>
<i>eV All ACWI ex-US Equity Net Median</i>			6.1		9.4		39.6		11.1		12.6		7.4		7.8	<i>Oct-08</i>
BlackRock ACWI ex US	264,816,152	7.0	5.6	58	9.3	51	35.9	69	9.6	63	11.3	66	5.7	81	5.5	Mar-11
<i>MSCI ACWI ex USA Gross</i>			<u>5.6</u>	56	<u>9.4</u>	50	<u>36.3</u>	66	<u>9.9</u>	61	<u>11.6</u>	64	<u>5.9</u>	78	<u>5.8</u>	<i>Mar-11</i>
Over/Under			0.0		-0.1		-0.4		-0.3		-0.3		-0.2		-0.3	
<i>MSCI ACWI ex USA</i>			5.5	60	9.2	54	35.7	70	9.4	66	11.1	68	5.4	83	5.3	<i>Mar-11</i>
<i>eV All ACWI ex-US Equity Net Median</i>			6.1		9.4		39.6		11.1		12.6		7.4		7.3	<i>Mar-11</i>
Principal Global	295,519,386	7.8	4.6	78	8.2	60	38.9	55	10.7	54	11.7	62	7.7	47	7.2	Sep-08
<i>MSCI ACWI ex USA Gross</i>			<u>5.6</u>	56	<u>9.4</u>	50	<u>36.3</u>	66	<u>9.9</u>	61	<u>11.6</u>	64	<u>5.9</u>	78	<u>5.3</u>	<i>Sep-08</i>
Over/Under			-1.0		-1.2		2.6		0.8		0.1		1.8		1.9	
<i>MSCI EAFE</i>			5.2	68	8.8	55	32.3	83	8.3	73	10.3	76	5.9	79	4.7	<i>Sep-08</i>
<i>eV All ACWI ex-US Equity Net Median</i>			6.1		9.4		39.6		11.1		12.6		7.4		6.6	<i>Sep-08</i>



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
International Emerging Markets Equity Composite	146,570,976	3.9	6.5	41	9.3	56	45.5	45	13.7	23	14.9	21	5.0	24	9.3	Apr-99
<i>MSCI Emerging Markets Gross</i>			<u>5.1</u>	69	<u>7.6</u>	71	<u>41.4</u>	79	<u>11.7</u>	41	<u>13.4</u>	34	<u>4.7</u>	29	<u>9.4</u>	<i>Apr-99</i>
Over/Under			1.4		1.7		4.1		2.0		1.5		0.3		-0.1	
<i>InvMetrics Public DB Emg Mkt Eq Net Median</i>			5.9		9.6		44.0		11.1		12.2		3.6		--	<i>Apr-99</i>
Acadian Emerging Market	75,547,320	2.0	6.4	36	13.1	25	47.7	31	12.7	39	14.4	31	--	--	7.7	Aug-14
<i>MSCI Emerging Markets Gross</i>			<u>5.1</u>	52	<u>7.6</u>	59	<u>41.4</u>	64	<u>11.7</u>	47	<u>13.4</u>	45	<u>4.7</u>	61	<u>6.5</u>	<i>Aug-14</i>
Over/Under			1.3		5.5		6.3		1.0		1.0				1.2	
<i>MSCI Emerging Markets</i>			5.0	52	7.4	61	40.9	65	11.3	50	13.0	53	4.3	70	6.1	<i>Aug-14</i>
<i>eV Emg Mkts Equity Net Median</i>			5.2		8.8		43.8		11.2		13.1		5.0		6.8	<i>Aug-14</i>
Axiom Intl Investors	71,023,656	1.9	6.6	34	5.6	76	43.1	53	14.6	24	15.3	25	--	--	8.7	Aug-14
<i>MSCI Emerging Markets Gross</i>			<u>5.1</u>	52	<u>7.6</u>	59	<u>41.4</u>	64	<u>11.7</u>	47	<u>13.4</u>	45	<u>4.7</u>	61	<u>6.5</u>	<i>Aug-14</i>
Over/Under			1.5		-2.0		1.7		2.9		1.9				2.2	
<i>MSCI Emerging Markets</i>			5.0	52	7.4	61	40.9	65	11.3	50	13.0	53	4.3	70	6.1	<i>Aug-14</i>
<i>eV Emg Mkts Equity Net Median</i>			5.2		8.8		43.8		11.2		13.1		5.0		6.8	<i>Aug-14</i>



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Total Fixed Income Composite	521,917,249	13.7	2.4	21	0.6	21	7.3	20	6.8	8	5.4	7	4.9	14	--	Nov-95
Fixed Income Index			<u>2.2</u>	37	<u>0.2</u>	29	<u>5.0</u>	33	<u>6.2</u>	23	<u>4.8</u>	24	<u>4.6</u>	26	<u>5.5</u>	Nov-95
Over/Under			0.2		0.4		2.3		0.6		0.6		0.3			
BBgBarc US Aggregate TR			<u>1.8</u>	68	<u>-1.6</u>	93	<u>-0.3</u>	93	<u>5.3</u>	63	<u>3.0</u>	70	<u>3.4</u>	81	5.1	Nov-95
InvMetrics Public DB Total Fix Inc Net Median			<u>2.0</u>		<u>-0.5</u>		<u>3.5</u>		<u>5.6</u>		<u>3.8</u>		<u>4.1</u>		<u>5.3</u>	Nov-95
Core Fixed Composite	337,070,525	8.9	2.1	21	-0.9	55	2.6	35	6.0	23	4.3	17	4.1	30	--	Apr-94
BBgBarc US Aggregate TR			<u>1.8</u>	50	<u>-1.6</u>	93	<u>-0.3</u>	95	<u>5.3</u>	43	<u>3.0</u>	55	<u>3.4</u>	55	<u>5.3</u>	Apr-94
Over/Under			0.3		0.7		2.9		0.7		1.3		0.7			
InvMetrics Public DB US Fix Inc Net Median			<u>1.8</u>		<u>-0.9</u>		<u>0.8</u>		<u>5.1</u>		<u>3.1</u>		<u>3.6</u>		<u>5.4</u>	Apr-94
Dodge & Cox	166,088,303	4.4	<u>2.1</u>	44	<u>-0.4</u>	8	<u>4.0</u>	4	<u>6.9</u>	3	<u>4.8</u>	3	<u>4.7</u>	3	<u>5.0</u>	Jan-03
BBgBarc US Aggregate TR			<u>1.8</u>	78	<u>-1.6</u>	72	<u>-0.3</u>	82	<u>5.3</u>	78	<u>3.0</u>	77	<u>3.4</u>	79	<u>4.1</u>	Jan-03
Over/Under			0.3		1.2		4.3		1.6		1.8		1.3		0.9	
eV US Core Fixed Inc Net Median			<u>2.0</u>		<u>-1.3</u>		<u>0.7</u>		<u>5.7</u>		<u>3.4</u>		<u>3.7</u>		<u>4.4</u>	Jan-03
PGIM	170,982,222	4.5	<u>2.2</u>	28	<u>-1.5</u>	59	<u>1.2</u>	33	<u>5.7</u>	52	<u>3.2</u>	65	<u>3.6</u>	66	<u>4.4</u>	Apr-03
BBgBarc US Aggregate TR			<u>1.8</u>	78	<u>-1.6</u>	72	<u>-0.3</u>	82	<u>5.3</u>	78	<u>3.0</u>	77	<u>3.4</u>	79	<u>4.1</u>	Apr-03
Over/Under			0.4		0.1		1.5		0.4		0.2		0.2		0.3	
eV US Core Fixed Inc Net Median			<u>2.0</u>		<u>-1.3</u>		<u>0.7</u>		<u>5.7</u>		<u>3.4</u>		<u>3.7</u>		<u>4.4</u>	Apr-03
High Yield Composite	184,846,724	4.9	2.8	6	3.5	2	16.5	1	7.6	2	7.3	1	6.3	1	7.5	Aug-04
BBgBarc US High Yield TR			<u>2.7</u>	7	<u>3.6</u>	2	<u>15.4</u>	1	<u>7.4</u>	2	<u>7.5</u>	1	<u>6.7</u>	1	<u>7.4</u>	Aug-04
Over/Under			0.1		<u>-0.1</u>		1.1		0.2		<u>-0.2</u>		<u>-0.4</u>		0.1	
InvMetrics Public DB US Fix Inc Net Median			<u>1.8</u>		<u>-0.9</u>		<u>0.8</u>		<u>5.1</u>		<u>3.1</u>		<u>3.6</u>		<u>4.1</u>	Aug-04
Loomis Sayles	184,846,724	4.9	<u>2.8</u>	37	<u>3.5</u>	53	<u>16.5</u>	27	<u>7.6</u>	23	<u>7.3</u>	32	<u>6.5</u>	29	<u>7.7</u>	Aug-04
BBgBarc US High Yield TR			<u>2.7</u>	39	<u>3.6</u>	48	<u>15.4</u>	37	<u>7.4</u>	29	<u>7.5</u>	26	<u>6.7</u>	19	<u>7.4</u>	Aug-04
Over/Under			0.1		<u>-0.1</u>		1.1		0.2		<u>-0.2</u>		<u>-0.2</u>		0.3	
eV US High Yield Fixed Inc Net Median			<u>2.6</u>		<u>3.5</u>		<u>14.4</u>		<u>6.8</u>		<u>6.9</u>		<u>6.2</u>		<u>6.9</u>	Aug-04



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Alternatives	610,648,258	16.1	9.3	--	17.9	--	27.5	--	7.3	--	--	--	--	--	7.8	Apr-18
<i>Alternatives Index</i>			<u>6.5</u>	--	<u>15.4</u>	--	<u>29.2</u>	--	<u>9.9</u>	--	--	--	--	--	<u>10.7</u>	<i>Apr-18</i>
Over/Under			2.8		2.5		-1.7		-2.6						-2.9	
Private Credit	195,880,151	5.2	4.8	--	9.3	--	19.7	--	8.8	--	9.2	--	--	--	8.3	Aug-15
<i>Private Credit Index</i>			<u>2.5</u>	--	<u>1.5</u>	--	<u>8.3</u>	--	<u>7.6</u>	--	<u>7.6</u>	--	--	--	<u>7.6</u>	<i>Aug-15</i>
Over/Under			2.3		7.8		11.4		1.2		1.6				0.7	
Crescent Capital	55,618,936	1.5	6.5	--	6.5	--	13.0	--	7.4	--	8.1	--	--	--	7.2	Sep-15
<i>Private Credit Index</i>			<u>2.5</u>	--	<u>1.5</u>	--	<u>8.3</u>	--	<u>7.6</u>	--	<u>7.6</u>	--	--	--	<u>7.6</u>	<i>Sep-15</i>
Over/Under			4.0		5.0		4.7		-0.2		0.5				-0.4	
Arcmont Euro Private Debt	16,477,094	0.4	4.4	--	--	--	--	--	--	--	--	--	--	--	4.4	Apr-21
<i>Private Credit Index</i>			<u>2.5</u>	--	<u>1.5</u>	--	<u>8.3</u>	--	<u>7.6</u>	--	<u>7.6</u>	--	--	--	<u>2.5</u>	<i>Apr-21</i>
Over/Under			1.9												1.9	
Monroe Capital	82,843,637	2.2	3.5	--	7.3	--	17.6	--	9.1	--	9.5	--	--	--	9.9	Apr-16
<i>Private Credit Index</i>			<u>2.5</u>	--	<u>1.5</u>	--	<u>8.3</u>	--	<u>7.6</u>	--	<u>7.6</u>	--	--	--	<u>7.6</u>	<i>Apr-16</i>
Over/Under			1.0		5.8		9.3		1.5		1.9				2.3	
PIMCO COF II	40,940,485	1.1	5.0	--	20.1	--	39.0	--	12.7	--	--	--	--	--	12.4	Aug-16
<i>Private Credit Index</i>			<u>2.5</u>	--	<u>1.5</u>	--	<u>8.3</u>	--	<u>7.6</u>	--	<u>7.6</u>	--	--	--	<u>7.6</u>	<i>Aug-16</i>
Over/Under			2.5		18.6		30.7		5.1						4.8	



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Infrastructure	132,078,427	3.5	0.3	--	3.3	--	8.1	--	--	--	--	--	--	--	5.1	Oct-18
CPI + 4% (Unadjusted)			<u>3.6</u>	--	<u>6.4</u>	--	<u>9.6</u>	--	<u>6.6</u>	--	<u>6.5</u>	--	<u>5.9</u>	--	<u>6.8</u>	Oct-18
Over/Under			-3.3		-3.1		-1.5								-1.7	
JP Morgan IIF	71,169,871	1.9	-0.5	--	4.8	--	12.4	--	--	--	--	--	--	--	6.4	Oct-18
CPI + 4% (Unadjusted)			<u>3.6</u>	--	<u>6.4</u>	--	<u>9.6</u>	--	<u>6.6</u>	--	<u>6.5</u>	--	<u>5.9</u>	--	<u>6.8</u>	Oct-18
Over/Under			-4.1		-1.6		2.8								-0.4	
Ullico UIF	60,908,556	1.6	1.4	--	1.6	--	3.4	--	--	--	--	--	--	--	3.8	Dec-18
CPI + 4% (Unadjusted)			<u>3.6</u>	--	<u>6.4</u>	--	<u>9.6</u>	--	<u>6.6</u>	--	<u>6.5</u>	--	<u>5.9</u>	--	<u>7.1</u>	Dec-18
Over/Under			-2.2		-4.8		-6.2								-3.3	
Midstream Energy	191,344,120	5.0	17.9	--	39.2	--	51.4	--	--	--	--	--	--	--	-0.2	Jul-19
Alerian Midstream Energy Index			<u>16.4</u>	--	<u>40.7</u>	--	<u>53.2</u>	--	<u>4.9</u>	--	<u>4.3</u>	--	--	--	<u>3.9</u>	Jul-19
Over/Under			1.5		-1.5		-1.8								-4.1	
Harvest	118,707,768	3.1	18.0	--	39.8	--	54.6	--	--	--	--	--	--	--	0.1	Jul-19
Alerian Midstream Energy Index			<u>16.4</u>	--	<u>40.7</u>	--	<u>53.2</u>	--	<u>4.9</u>	--	<u>4.3</u>	--	--	--	<u>3.9</u>	Jul-19
Over/Under			1.6		-0.9		1.4								-3.8	
Tortoise	72,636,352	1.9	17.8	--	38.2	--	46.5	--	--	--	--	--	--	--	-0.4	Aug-19
Alerian Midstream Energy Index			<u>16.4</u>	--	<u>40.7</u>	--	<u>53.2</u>	--	<u>4.9</u>	--	<u>4.3</u>	--	--	--	<u>5.0</u>	Aug-19
Over/Under			1.4		-2.5		-6.7								-5.4	
Private Equity	91,345,560	2.4														
Pantheon PE Fund of 1	91,345,560	2.4	17.8	--	24.8	--	34.8	--	--	--	--	--	--	--	17.1	Apr-19
Private Equity Index			<u>5.5</u>	--	<u>22.5</u>	--	<u>59.9</u>	--	<u>16.1</u>	--	--	--	--	--	<u>17.6</u>	Apr-19
Over/Under			12.3		2.3		-25.1								-0.5	



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Real Estate Composite	444,807,588	11.7	3.4	68	5.5	71	9.4	39	5.3	58	5.3	78	8.8	56	8.8	Jan-96
Real Estate Index			3.8	38	5.8	63	7.4	71	5.2	58	5.0	83	8.9	50	9.3	Jan-96
Over/Under			-0.4		-0.3		2.0		0.1		0.3		-0.1		-0.5	
InvMetrics Public DB Real Estate Pub+Priv Net Median			3.6		6.1		7.9		5.4		6.5		8.8		8.7	Jan-96
Private Real Estate Composite	444,807,588	11.7	3.4	--	5.5	--	9.4	--	4.7	--	5.8	--	8.8	--	8.6	Jan-96
NCREIF ODCE			3.9	--	6.1	--	8.0	--	5.5	--	6.6	--	9.6	--	8.9	Jan-96
Over/Under			-0.5		-0.6		1.4		-0.8		-0.8		-0.8		-0.3	
JP Morgan RE	191,629,473	5.0	2.7	--	4.4	--	6.0	--	3.9	--	5.1	--	8.4	--	8.5	Jan-96
NCREIF ODCE Net			3.7	--	5.7	--	7.1	--	4.6	--	5.6	--	8.6	--	7.9	Jan-96
Over/Under			-1.0		-1.3		-1.1		-0.7		-0.5		-0.2		0.6	
CFRSR-Carlyle CPI Fund	123,499,597	3.2	2.3	--	3.1	--	3.2	--	--	--	--	--	--	--	3.2	Jul-20
NCREIF ODCE Net			3.7	--	5.7	--	7.1	--	4.6	--	5.6	--	8.6	--	7.1	Jul-20
Over/Under			-1.4		-2.6		-3.9		--		--		--		-3.9	
Oaktree Value Add	10,054,819	0.3	2.7	--	1.4	--	-1.4	--	8.4	--	--	--	--	--	14.6	Dec-16
NCREIF ODCE + 1%			4.0	--	6.2	--	8.2	--	5.7	--	6.7	--	9.7	--	6.8	Dec-16
Over/Under			-1.3		-4.8		-9.6		2.7		--		--		7.8	
PCCP Value Add	21,733,002	0.6	8.3	--	9.6	--	27.2	--	12.4	--	--	--	--	--	15.9	Oct-16
NCREIF ODCE + 1%			4.0	--	6.2	--	8.2	--	5.7	--	6.7	--	9.7	--	6.6	Oct-16
Over/Under			4.3		3.4		19.0		6.7		--		--		9.3	
PIMCO Bravo III	50,299,549	1.3	4.0	--	7.7	--	19.1	--	7.2	--	--	--	--	--	8.1	Nov-16
NCREIF ODCE + 1%			4.0	--	6.2	--	8.2	--	5.7	--	6.7	--	9.7	--	6.7	Nov-16
Over/Under			0.0		1.5		10.9		1.5		--		--		1.4	
Artemis AREPF III	7,767,840	0.2	6.0	--	7.4	--	28.2	--	--	--	--	--	--	--	1.7	Jan-19
NCREIF ODCE + 1%			4.0	--	6.2	--	8.2	--	5.7	--	6.7	--	9.7	--	5.2	Jan-19
Over/Under			2.0		1.2		20.0		--		--		--		-3.5	
Brookfield SREP III	32,050,769	0.8	5.0	--	12.9	--	15.4	--	--	--	--	--	--	--	2.9	Apr-19
NCREIF ODCE + 1%			4.0	--	6.2	--	8.2	--	5.7	--	6.7	--	9.7	--	5.3	Apr-19
Over/Under			1.0		6.7		7.2		--		--		--		-2.4	
Blue Vista BVREP V	7,772,540	0.2	15.5	--	15.5	--	17.9	--	--	--	--	--	--	--	-5.8	Mar-20
NCREIF ODCE + 1%			4.0	--	6.2	--	8.2	--	5.7	--	6.7	--	9.7	--	5.5	Mar-20
Over/Under			11.5		9.3		9.7		--		--		--		-11.3	



City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE DETAIL - NET OF FEES

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Cash & Equivalents Composite	845,911	0.0	2.8	--	2.9	--	2.9	--	2.2	--	1.7	--	1.0	--	1.7	Sep-03
91 Day T-Bills			<u>0.0</u>	--	<u>0.0</u>	--	<u>0.1</u>	--	<u>1.2</u>	--	<u>1.1</u>	--	<u>0.6</u>	--	<u>1.2</u>	Sep-03
Over/Under			2.8		2.9		2.8		1.0		0.6		0.4		0.5	
Payroll Account	258,398	0.0	3.9	--	3.9	--	4.0	--	2.5	--	2.0	--	1.1	--	2.1	Apr-99
91 Day T-Bills			<u>0.0</u>	--	<u>0.0</u>	--	<u>0.1</u>	--	<u>1.2</u>	--	<u>1.1</u>	--	<u>0.6</u>	--	<u>1.7</u>	Apr-99
Over/Under			3.9		3.9		3.9		1.3		0.9		0.5		0.4	
Operating Funds	587,513	0.0	0.0	--	0.0	--	0.1	--	1.3	--	1.2	--	0.7	--	1.4	Oct-03
91 Day T-Bills			<u>0.0</u>	--	<u>0.0</u>	--	<u>0.1</u>	--	<u>1.2</u>	--	<u>1.1</u>	--	<u>0.6</u>	--	<u>1.2</u>	Oct-03
Over/Under			0.0		0.0		0.0		0.1		0.1		0.1		0.2	

Fiscal year end: June 30

Composite rankings are used for Total Equity Composite (InvMetrics Public DB US Eq), Domestic Equity Composite (InvMetrics Public DB Total Eq), International Equity Composite (InvMetrics Public DB ex-US Eq), International Developed Equity Composite (InvMetrics Public DB Dev Mkt ex-US), International Emerging Markets Equity (InvMetrics Public DB Emg Mkt Eq), Total Fixed Income (InvMetrics Public DB Total Fix Inc), Core Fixed Composite (InvMetrics Public DB US Fix Inc), High Yield Composite (InvMetrics Public DB US Fix Inc) and Total Real Estate (InvMetrics Public DB Real Estate Pub+Priv).

Manager rankings are used for Large Cap Equity Composite (eA US Large Cap Equity), Small Cap Equity Composite (eA US Small Cap Equity), ACWI ex US Equity Composite (eA ACWI ex-US Equity), EAFE Equity Composite (eA All EAFE Equity) and Public Real Estate Composite (eA US REIT).





APPENDIX

CALENDAR YEAR INDEX PERFORMANCE

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Jun	QTD	YTD
S&P 500	2.1%	16.0%	32.4%	13.7%	1.4%	12.0%	21.8%	-4.4%	31.5%	18.4%	2.3%	8.5%	15.3%
Russell 1000	1.5%	16.4%	33.1%	13.2%	0.9%	12.1%	21.7%	-4.8%	31.4%	21.0%	2.5%	8.5%	15.0%
Russell 2000	-4.2%	16.3%	38.8%	4.9%	-4.4%	21.3%	14.6%	-11.0%	25.5%	20.0%	1.9%	4.3%	17.5%
Russell 2500	-2.5%	17.9%	36.8%	7.1%	-2.9%	17.6%	16.8%	-10.0%	27.8%	20.0%	1.2%	5.4%	17.0%
MSCI EAFE	-12.1%	17.3%	22.8%	-4.9%	-0.8%	1.0%	25.0%	-13.8%	22.0%	7.8%	-1.1%	5.2%	8.8%
MSCI EM	-18.4%	18.2%	-2.6%	-2.2%	-14.9%	11.2%	37.3%	-14.6%	18.4%	18.3%	0.2%	5.0%	7.4%
MSCI ACWI	-7.3%	16.1%	22.8%	4.2%	-2.4%	7.9%	24.0%	-9.4%	26.6%	16.3%	1.3%	7.4%	12.3%
Private Equity	9.5%	12.6%	22.3%	14.6%	10.4%	10.3%	21.0%	13.1%	17.2%	38.2%	-	-	-
BC TIPS	13.6%	7.0%	-8.6%	3.6%	-1.4%	4.7%	3.0%	-1.3%	8.4%	11.0%	0.6%	3.2%	1.7%
BC Municipal	10.7%	6.8%	-2.6%	9.1%	3.3%	0.2%	5.4%	1.3%	7.5%	5.2%	0.3%	1.4%	1.1%
BC Muni High Yield	9.2%	18.1%	-5.5%	13.8%	1.8%	3.0%	9.7%	4.8%	10.7%	4.9%	1.3%	3.9%	6.1%
BC US Corporate HY	5.0%	15.8%	7.4%	2.5%	-4.5%	17.1%	7.5%	-2.1%	14.3%	7.1%	1.3%	2.7%	3.6%
BC US Agg Bond	7.8%	4.2%	-2.0%	6.0%	0.5%	2.6%	3.5%	0.0%	8.7%	7.5%	0.7%	1.8%	-1.6%
BC Global Agg	5.6%	4.3%	-2.6%	0.6%	-3.2%	2.1%	7.4%	-1.2%	6.8%	9.2%	-0.9%	1.3%	-3.2%
BC Long Treasuries	29.9%	3.6%	-12.7%	25.1%	-1.2%	1.3%	8.5%	-1.8%	14.8%	17.7%	3.6%	6.5%	-7.9%
BC US Long Credit	17.1%	12.7%	-6.6%	16.4%	-4.6%	10.2%	12.2%	-6.8%	23.4%	13.3%	3.6%	6.4%	-2.5%
BC US STRIPS 20+ Yr	58.5%	3.0%	-21.0%	46.4%	-3.7%	1.4%	13.7%	-4.1%	20.9%	24.0%	5.5%	9.6%	-10.7%
JPM GBI-EM Global Div	-1.8%	16.8%	-9.0%	-5.7%	-14.9%	9.9%	15.2%	-6.2%	13.5%	2.7%	-1.2%	3.5%	-3.4%
JPM EMBI Glob Div	7.3%	17.4%	-5.3%	7.4%	1.2%	10.2%	10.3%	-4.3%	15.0%	5.3%	0.7%	4.1%	-0.7%
CS Hedge Fund	0.5%	5.9%	10.0%	5.4%	0.2%	-0.6%	7.2%	-1.1%	6.3%	4.1%	1.1%	4.5%	10.7%
BBG Commodity	-13.3%	-1.1%	-9.5%	-17.0%	-24.7%	11.8%	1.7%	-11.2%	7.7%	-3.1%	1.9%	13.3%	21.1%
Alerian Midstream	-	-	-	16.4%	-37.3%	33.8%	-2.4%	-13.3%	24.0%	-23.4%	3.4%	16.4%	40.7%
FTSE NAREIT Equity REITs	8.3%	18.1%	2.5%	30.1%	3.2%	8.5%	5.2%	-4.6%	26.0%	-8.0%	2.6%	12.0%	22.0%

*Private Equity return represents calendar year pooled IRR and is subject to a one quarter lag
Source: FactSet, Barclays, Thomson One



TRAILING ANNUAL INDEX PERFORMANCE

Equity							
	Jun-21	QTD	YTD	1 YR	3 YR	5 YR	10 YR
MSCI ACWI	1.3%	7.4%	12.3%	39.3%	14.6%	14.6%	9.9%
S&P 500	2.3%	8.4%	15.0%	40.1%	18.0%	17.0%	14.1%
Russell 1000	2.5%	8.4%	14.7%	42.4%	18.5%	17.4%	14.2%
Russell 2000	1.9%	4.2%	17.4%	61.5%	13.1%	16.0%	11.9%
Russell 2500	1.1%	5.4%	16.8%	57.2%	14.7%	15.8%	12.4%
MSCI EAFE	-1.1%	5.2%	8.8%	32.4%	8.3%	10.3%	5.9%
MSCI EM	0.2%	5.0%	7.4%	40.9%	11.3%	13.0%	4.3%

Credit							
	Jun-21	QTD	YTD	1 YR	3 YR	5 YR	10 YR
BC Global Agg	-0.9%	1.3%	-3.2%	2.6%	4.2%	2.3%	2.1%
BC US Agg	0.7%	1.8%	-1.6%	-0.3%	5.3%	3.0%	3.4%
BC Credit	1.5%	3.3%	-1.3%	3.0%	7.4%	4.6%	4.9%
BC US HY	1.3%	2.7%	3.6%	15.4%	7.4%	7.5%	6.7%
BC Muni	0.3%	1.4%	1.1%	4.2%	5.1%	3.2%	4.3%
BC Muni HY	1.3%	3.9%	6.1%	14.3%	7.6%	6.2%	7.0%
BC TIPS	0.6%	3.2%	1.7%	6.5%	6.5%	4.2%	3.4%
BC 20+ STRIPS	5.5%	9.6%	-10.7%	-13.9%	10.1%	3.9%	10.4%
BC Long Treasuries	3.6%	6.5%	-7.9%	-10.6%	8.0%	3.1%	6.7%
BC Long Credit	3.6%	6.4%	-2.5%	4.3%	10.7%	6.6%	7.5%
BC Govt/Credit 1-3 Yr	-0.2%	0.0%	0.0%	0.4%	3.0%	1.9%	1.5%
JPM EMBI Glob Div	0.7%	4.1%	-0.7%	7.5%	6.7%	4.9%	5.7%
JPM GBI-EM Glob Div	-1.2%	3.5%	-3.4%	6.6%	4.1%	3.2%	0.5%

Real Assets							
	Jun-21	QTD	YTD	1 YR	3 YR	5 YR	10 YR
BBG Commodity	1.9%	13.3%	21.1%	45.6%	3.9%	2.4%	-4.4%
Alerian Midstream Index	3.4%	16.4%	40.7%	53.2%	4.9%	4.3%	-
FTSE NAREIT Equity REITs	2.6%	12.0%	22.0%	38.0%	10.1%	6.3%	9.4%



Source: S&P, MSCI, Russell, Barclays, JPM, Alerian, FTSE, FactSet

City of Fresno Retirement Systems

TOTAL FUND PERFORMANCE NOTES

Policy Index consists of 15.8% Russell 1000, 3.6% Russell 2000 Growth, 3.6% Russell 2000 Value, 19% MSCI ACWI ex USA Gross, 6% MSCI Emerging Markets Gross, 10% BBgBarc US Aggregate TR, 5% BBgBarc US High Yield TR, 8% 50% BBgBarc US Agg / 50% BBgBarc US High Yield + 1%, 11% NCREIF ODCE Net, 4% NCREIF ODCE + 1%, 5% Alerian Midstream Energy Index, 5% Private Equity Index, 4% CPI + 4% (Unadjusted).

Domestic Equity Index consists of 15.65% Russell 2000 Value, 15.65% Russell 2000 Growth, 68.7% Russell 1000.

Large Cap Equity Index consists of 100% Russell 1000.

International Equity Index consists of 73.08% MSCI ACWI ex USA Gross and 26.92% MSCI Emerging Markets Gross.

Fixed Income Index consists of 64.71% BBgBarc US Aggregate TR and 35.29% BBgBarc US High Yield TR.

Alternatives Index consists of 36.4% 50% BBgBarc US Agg / 50% BBgBarc US High Yield + 1%, 22.7% Private Equity Index, 22.7% Alerian Midstream Energy Index, 18.4% CPI + 4% (Unadjusted).

Private Credit Index consists of 100% 50% BBgBarc US Agg / 50% BBgBarc US High Yield + 1%.

Private Equity Index consists of ACWI IMI + 150 quarter lag.



GLOSSARY OF INVESTMENT TERMINOLOGY— RISK STATISTICS

- **Alpha**
 - Measures the relationship between the fund performance and the performance of another fund or benchmark index and equals the excess return while the other fund or benchmark index is zero.
- **Alpha Jensen**
 - The average return on a portfolio over and above that predicted by the capital asset pricing model (CAPM), given the portfolio's beta and the average market return. Also known as the abnormal return or the risk adjusted excess return.
- **Annualized Excess Return over Benchmark**
 - Annualized fund return minus the annualized benchmark return for the calculated return.
- **Annualized Return**
 - A statistical technique whereby returns covering periods greater than one year are converted to cover a 12 month time span.
- **Beta**
 - Measures the volatility or systematic risk and is equal to the change in the fund's performance in relation to the change in the assigned index's performance.
- **Information Ratio**
 - A measure of the risk adjusted return of a financial security, asset, or portfolio.
Formula:
(Annualized Return of Portfolio - Annualized Return of Benchmark) / Annualized Standard Deviation (Period Portfolio Return - Period Benchmark Return). To annualize standard deviation, multiply the deviation by the square root of the number of periods per year where monthly returns per year equals 12 and quarterly returns is four periods per year.
- **R-Squared**
 - Represents the percentage of a fund's movements that can be explained by movements in an index. R-Squared values range from 0 to 100. An R-Squared of 100 denotes that all movements of a fund are completely explained by movements in the index.
- **Sharpe Ratio**
 - A measure of the excess return or risk premium per unit of risk in an investment asset or trading strategy.
Formula:
(Annualized Return of Portfolio - Annualized Return of Risk Free) / Annualized Standard Deviation (Portfolio Returns)
- **Sortino Ratio**
 - A method to differentiate between good and bad volatility in the Sharpe Ratio. The differentiation of up and down volatility allows the calculation to provide a risk adjusted measure of a security or fund's performance without upward price change penalties.
Formula:
*Calculation Average (X-Y) / Downside Deviation (X-Y) * 2*
Where X = Return Series X Y = Return Series Y which is the risk free return (91 day T-bills)
- **Standard Deviation**
 - The standard deviation is a statistical term that describes the distribution of results. It is a commonly used measure of volatility of returns of a portfolio, asset class, or security. The higher the standard deviation the more volatile the returns are.
Formula:
(Annualized Return of Portfolio - Annualized Arithmetic Average of the Portfolio Returns) Squared / The number of periods - 1

GLOSSARY OF INVESTMENT TERMINOLOGY— RISK STATISTICS

▪ Tracking Error

- Tracking error, also known as residual risk, is a measure of the degree to which a portfolio tracks its benchmark. It is also a measure of consistency of excess returns. Tracking error is computed as the annualized standard deviation of the difference between a portfolio's return and that of its benchmark.

Formula:

*Tracking Error = Standard Deviation (X-Y) * $\sqrt{\text{# of periods per year}}$*
Where X = periods portfolio return and Y = the period's BM return
For monthly returns, the periods per year = 12
For quarterly returns, the periods per year = 4

▪ Treynor Ratio

- A risk-adjusted measure of return based on systematic risk. Similar to the Sharpe ratio with the difference being the Treynor ratio uses beta as the measurement of volatility.

Formula:

(Portfolio Average Return - Average Return of Risk-Free Rate)/Portfolio Beta

▪ Up/Down Capture Ratio

- A measure of what percentage of a market's returns is "captured" by a portfolio. For example, if the market declines 10% over some period, and the manager declines only 9%, then his or her capture ratio is 90%. In down markets, it is advantageous for a manager to have as low a capture ratio as possible. For up markets, the higher the capture ratio the better. Looking at capture ratios can provide insight into how a manager achieves excess returns. A value manager might typically have a lower capture ratio in both up and down markets, achieving excess returns by protecting on the downside, whereas a growth manager might fall more than the overall market in down markets, but achieve above-market returns in a rising market.

Upside Capture:

Total Return (Fund Returns) / Total Returns (BM Return) when Period Benchmark Return is $> = 0$

Downside Capture:

Total Return (Fund Returns) / Total Returns (BM Return) when Benchmark Return < 0

Source: InvestorForce



DISCLAIMERS & DISCLOSURES

Past performance is no guarantee of future results.

Returns for pooled funds, e.g. mutual funds and collective investment trusts, are collected from third parties; they are not generally calculated by NEPC. Returns for separate accounts, with some exceptions, are calculated by NEPC. Returns are reported net of manager fees unless otherwise noted.

A “since inception” return, if reported, begins with the first full month after funding, although actual inception dates (e.g. the middle of a month) and the timing of cash flows are taken into account in Composite return calculations.

NEPC’s preferred data source is the plan’s custodian bank or record-keeper. If data cannot be obtained from one of the preferred data sources, data provided by investment managers may be used. Information on market indices and security characteristics is received from additional providers. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within. In addition, some index returns displayed in this report or used in calculation of a policy index, allocation index or other custom benchmark may be preliminary and subject to change.

All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.

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Source of private fund performance benchmark data: Cambridge Associates, via Refinitiv

