



Board of Retirement Regular Meeting

Sacramento County Employees' Retirement System

Agenda Item 19

MEETING DATE: December 19, 2018

SUBJECT: Quarterly Investment Performance Report
Alternative Assets

SUBMITTED FOR: ___ Consent ___ Deliberation and Action X Receive and File

RECOMMENDATION

Staff recommends the Board receive and file the Cliffwater Quarterly Performance Review presentation for the period ending September 30, 2018 for the Absolute Return portfolio, and the period ending June 30, 2018 for the Private Equity, Private Credit, Real Assets, and Opportunities portfolios.

PURPOSE

This agenda item does not specifically support the 2018 - 2019 Strategic Management Plan but complies with SCERS' investment policy statement reporting requirements and contributes to the effective management and oversight of investment activities.

SCERS ALTERNATIVE ASSETS PORTFOLIO RETURNS

This memorandum provides a summarized table of SCERS' Alternative Assets period returns, which complements Cliffwater's Quarterly Performance Review and it highlights notable manager performance, along with any recent alternative investments made by SCERS.

SCERS' alternative asset class period returns are as follows:

SCERS ALTERNATIVE ASSETS PERFORMANCE SUMMARY
Quarter Reporting Periods Ending September 30, 2018

SCERS ASSET CLASS	Quarter*	1-Year*	3-Year*	5-Year*	Since Inception*	Since Inception Date*
SCERS Absolute Return	0.3%	2.3%	3.5%	3.3%	4.2%	Sep-04
HFRI FoF Conservative	1.0%	3.8%	2.9%	3.0%	3.5%	
HFRI FoF Composite + 1%	0.7%	4.3%	4.4%	4.2%	4.2%	
SCERS Private Equity	6.1%	24.3%	16.2%	16.5%	13.9%	Feb-08
Cambridge Private Equity/Venture Capi	4.6%	18.6%	12.7%	14.8%	12.9%	
SCERS Private Credit	1.4%	7.1%	8.8%	8.7%	8.8%	Oct-11
Credit Suisse Leveraged Loan + 2%	1.3%	6.7%	6.3%	6.2%	7.4%	
SCERS Real Assets	2.7%	13.0%	15.1%	15.6%	15.5%	Jan-13
(45%) Cambridge Private Infrastructure; (35%) Cambridge Private Energy; (20%) NCREIF Agriculture/Timber	1.9%	10.4%	7.9%	7.2%	7.1%	
SCERS Opportunities	1.9%	1.3%	7.0%	7.4%	18.5%	Jan-08
SCERS Portfolio Actuarial Rate of Return	1.8%	7.0%	7.0%	7.0%	7.0%	
<i>*Note: Periods ending 6/30/18 for Private Equity, Private Credit, Real Assets, and Opportunities Periods ending 9/30/18 for Absolute Return All returns are net IRR, except Absolute Return which is time-weighted</i>						

SCERS PORTFOLIO RESULTS

For the quarter ended September 30, 2018, SCERS' Private Equity portfolio significantly outperformed its benchmark, 6.1% versus 4.6%, primarily due to the outperformance of the buyout investment strategies, with significant return contribution from the venture capital strategies. Also outperforming its benchmark was SCERS' Real Assets portfolio, 2.7% versus 1.9%, driven mostly by SCERS' energy investment strategies. Although outperforming, SCERS' Real Assets portfolio continues to mature, with several funds still in the j-curve period.

Underperforming its benchmark during the quarter was SCERS' Absolute Return portfolio, 0.3% versus 1.0%, where the event-driven and systematic multi-strategy diversifying investments hindered returns.

Below are notable top and bottom performing funds among SCERS' Alternative Assets during the quarter ended September 30, 2018:

- Top performing funds:
 - Absolute Return:
 - Graham Global Investment Fund SPC Ltd. (systematic macro): +5.6%

- JANA Partners Qualified, LP (event driven): +4.6%
- Private Equity portfolio:
 - Summit Partners Europe Growth Equity II (buyout): +151.5%
 - Accel-KKR Capital Partners IV (buyout): +22.8%
 - Thoma Bravo XI (buyout): +19.0%
- Private Credit portfolio:
 - Summit Partners Credit Fund (direct lending): +6.9%
- Real Assets portfolio:
 - Meridiam Infrastructure North America III (infrastructure): +35.8%
 - ArcLight Energy Partners VI (energy): +13.9%
 - Carlyle Power Partners II (energy): +7.4%
- Bottom performing funds:
 - Absolute Return portfolio:
 - AQR Delta Fund II, LP (multi-strategy systematic): -2.1%
 - OZ Domestic Partners II, LP (multi-strategy): -1.1%
 - Private Equity portfolio:
 - Wayzata Opportunities III (distressed debt): -6.6%
 - Marlin Equity V (buyout): -4.0%
 - Private Credit portfolio:
 - Athyrium Opportunities II (opportunistic credit): +0.8%
 - Benefit Street Partners Senior Secured Opportunities (direct lending): +0.8%
 - Real Assets portfolio:
 - EnCap Flatrock Midstream IV (energy): -9.3%
 - Quantum Energy Partners VII (energy): -2.3%

NEW INVESTMENTS

During the quarter ended September 30, 2018, SCERS made the following new investments:

- Accel-KKR Growth Capital Partners III, LP (Private Equity - Buyout) - \$35 million

New investments made after the quarter:

- RCP Direct III, LP (Private Equity - Buyout Co-Investments) - \$25 million
- RCP Fund XIII, LP (Private Equity - Fund-of-Funds) - \$50 million
- Thoma Bravo Fund XIII, LP (Private Equity - Buyout) - \$35 million
- TSG8, LP (Private Equity - Buyout) - \$45 million

ATTACHMENT

Cliffwater's Quarterly Performance Report for Alternative Assets for the Quarter ended September 30, 2018

Prepared by:

/S/

JR Pearce
Investment Officer

Reviewed by:

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Steve Davis
Chief Investment Officer

/S/

Eric Stern
Chief Executive Officer



INVESTMENT ADVISORY SERVICES

Los Angeles • New York

Sacramento County Employees' Retirement System Quarterly Performance Review

December 19, 2018



Executive Summary

Absolute Return Portfolio Performance Summary – as of September 30, 2018

Growth Oriented Strategies

- The Growth Oriented Portfolio returned 0.68% in Q3 and 4.43% for the 1 year period ending September 30, 2018
 - Outperforming the HFRI FoF Index + 1% benchmark by 1 bp in Q3 and 18 bps for the 1 year period
 - Underperforming the T-bills + 5% long term objective by 65 bps (annualized) over the trailing 5 year period
- Generally good performance across the portfolio though Lakewood has been a laggard this year

Diversifying Strategies

- The Diversifying Portfolio returned 0.07% in Q3 and 0.88% for the 1 year period ending September 30, 2018
 - Trailing the HFRI Conservative FoF Index benchmark by 91 bps in Q3 and 296 bps for the 1 year period
 - Underperforming the T-bills + 2% long term objective by 71 bps (annualized) over the trailing 5 year period
- Performance was primarily hurt by AQR DELTA; the Grosvenor portfolios have lagged as well over these periods

Portfolio risk and market sensitivity has been within expectations for the Growth Oriented and Diversifying portfolios

- Growth Oriented
 - Portfolio standard deviation of 4.51% compared to the ACWI standard deviation of 10.34% since December 2011
 - Portfolio equity beta of 0.35 with an equity correlation of 0.80
 - Target standard deviation < 50% of global equities, with an equity beta < 0.5 and equity correlation < 0.8
- Diversifying
 - Portfolio standard deviation of 2.53% compared to the ACWI standard deviation of 10.34% since December 2011
 - Portfolio equity beta of 0.03 with an equity correlation of 0.11
 - Target standard deviation < 25% of global equities, with an equity beta < 0.1 and equity correlation < 0.1

Relative differences between the Growth Oriented and Diversifying portfolios reflect objectives and design

- Expect higher returns over the long-term from the Growth Oriented portfolio, though with more volatility
 - Both portfolios expected to provide diversification and risk reduction benefits for the overall SCERS portfolio

Growth Oriented Absolute Return Portfolio Performance – as of September 30, 2018

Fund	Market Value	Actual %	Returns								Std Dev	Sharpe Ratio	Incep Date
			Sep	QTD	YTD	FYTD	1 Year	3 Year	5 Year	Incep			
Growth-Oriented Portfolio													
Event Driven													
JANA Partners Qualified, L.P.	44,826,244	5.1%	0.05%	4.65%	9.37%	4.65%	8.39%	6.63%	4.32%	4.83%	7.60%	0.55	Jul-13
Third Point Partners Qualified L.P.	49,798,801	5.6%	0.10%	0.03%	1.01%	0.03%	3.97%	9.35%	7.23%	10.33%	6.97%	1.34	May-12
Event Driven - HF Total	94,625,045	10.7%	0.08%	2.17%	4.80%	2.17%	6.02%	8.03%	5.76%	9.07%	6.92%	1.18	May-12
Equity Long/Short													
Lakewood Capital Partners, LP	43,288,642	4.9%	-1.69%	-0.26%	-4.81%	-0.26%	-4.72%	6.57%	6.12%	5.71%	7.20%	0.69	Jul-13
Equity Long/Short - HF Total	43,288,642	4.9%	-1.69%	-0.26%	-4.81%	-0.26%	-4.72%	6.57%	6.12%	5.71%	7.20%	0.69	Jul-13
Multi-Strategy													
OZ Domestic Partners II, L.P.	48,209,955	5.5%	0.13%	-1.09%	3.08%	-1.09%	4.38%	6.73%	5.36%	7.28%	4.59%	1.40	Jan-12
Multi-Strategy - HF Total	48,209,955	5.5%	0.13%	-1.09%	3.08%	-1.09%	4.38%	6.73%	5.36%	7.28%	4.59%	1.40	Jan-12
Fund of Funds													
Grosvenor SC Absolute Return Fund LLC	141,462,347	16.0%	-0.24%	0.68%	3.71%	0.68%	6.26%	6.14%	4.59%	6.50%	4.35%	1.30	Dec-11
Grosvenor SC Absolute Return Fund LLC Series B	190,043	0.0%	2.33%	3.29%	5.98%	3.29%	7.76%	6.23%	4.71%	5.59%	4.10%	1.16	Feb-13
Fund of Funds - HF Total	141,652,390	16.0%	-0.24%	0.68%	3.66%	0.68%	5.93%	5.98%	4.50%	4.79%	5.98%	0.53	Sep-04
Growth-Oriented Portfolio Total	327,776,033	37.1%	-0.29%	0.68%	2.80%	0.68%	4.43%	6.36%	4.87%	5.04%	6.10%	0.56	Sep-04
HFRI FoF Composite + 1%			0.08%	0.67%	1.85%	0.67%	4.25%	4.35%	4.21%	4.21%	4.95%	0.52	Sep-04
3 Month T-Bills+5%			0.56%	1.69%	5.00%	1.69%	6.59%	5.84%	5.52%	6.32%	0.49%	-	Sep-04
Market Indices													
Libor3Month			0.19%	0.59%	1.67%	0.59%	2.06%	1.28%	0.87%	1.69%	0.51%	-	Sep-04
Bloomberg Barclays US Aggregate Bond Index			-0.64%	0.02%	-1.60%	0.02%	-1.22%	1.32%	2.16%	3.79%	3.11%	0.66	Sep-04
Bloomberg Barclays US High Yield Bond Index			0.56%	2.41%	2.57%	2.41%	3.04%	8.15%	5.55%	7.47%	9.21%	0.64	Sep-04
S&P 500 TR			0.57%	7.71%	10.56%	7.71%	17.91%	17.31%	13.95%	9.38%	13.42%	0.61	Sep-04
MSCI AC World Index Free - Net			0.44%	4.28%	3.83%	4.28%	9.77%	13.40%	8.67%	7.59%	14.96%	0.45	Sep-04
MSCI EAFE - Net			0.87%	1.35%	-1.43%	1.35%	2.74%	9.23%	4.42%	5.94%	16.55%	0.33	Sep-04
MSCI EMF (Emerging Markets Free) - Net			-0.53%	-1.09%	-7.68%	-1.09%	-0.81%	12.36%	3.61%	8.94%	21.65%	0.43	Sep-04

Diversifying Absolute Return Portfolio Performance – as of September 30, 2018

Fund	Market Value	Actual %	Returns								Std Dev	Sharpe Ratio	Incep Date
			Sep	QTD	YTD	FYTD	1 Year	3 Year	5 Year	Incep			
Diversifying Portfolio													
Market Neutral													
Laurion Capital, Ltd.	45,833,441	5.2%	0.86%	-0.02%	6.57%	-0.02%	10.40%	5.88%	-	6.06%	5.16%	0.99	Mar-14
Market Neutral - HF Total	45,833,441	5.2%	0.86%	-0.02%	6.57%	-0.02%	10.40%	5.88%	-	6.06%	5.16%	0.99	Mar-14
Event Driven													
Elliott International Limited	54,180,103	6.1%	-0.40%	-0.80%	2.23%	-0.80%	4.36%	7.56%	6.60%	7.46%	3.41%	1.91	Apr-12
Event Driven - HF Total	54,180,103	6.1%	-0.40%	-0.80%	2.23%	-0.80%	4.36%	7.56%	6.60%	7.46%	3.41%	1.91	Apr-12
Macro-Discretionary													
Brevan Howard LP	18,744,973	2.1%	0.00%	1.61%	10.08%	1.61%	9.19%	1.62%	-	1.44%	6.34%	0.11	Mar-14
Macro-Discretionary - HF Total	18,744,973	2.1%	0.00%	1.61%	10.08%	1.61%	9.19%	1.64%	0.96%	0.97%	5.19%	0.07	May-12
Macro-Systematic													
Graham Global Investment Fund II SPC Ltd. - Tactical Tre	34,425,314	3.9%	3.16%	5.64%	-2.49%	5.64%	6.72%	-	-	-0.99%	11.28%	-0.19	Feb-17
Winton Diversified Futures Fund L.P.	37,839,972	4.3%	-0.21%	0.98%	1.68%	0.98%	8.91%	-	-	4.56%	7.48%	0.41	Jan-17
Macro-Systematic - HF Total	72,265,286	8.2%	1.37%	3.15%	-0.35%	3.15%	7.86%	-	-	1.61%	8.77%	0.03	Jan-17
Multi-Strategy													
AQR DELTA Fund II, LP	64,145,979	7.3%	0.38%	-2.12%	-11.55%	-2.12%	-10.67%	-1.27%	3.34%	2.47%	5.61%	0.31	May-13
Multi-Strategy - HF Total	64,145,979	7.3%	0.38%	-2.12%	-11.55%	-2.12%	-10.67%	-1.27%	3.34%	2.47%	5.61%	0.31	May-13
Fund of Funds													
Grosvenor SC Absolute Return Fund LLC	131,005,665	14.8%	0.13%	0.16%	0.03%	0.16%	-1.46%	-1.14%	0.32%	1.57%	3.09%	0.28	Dec-11
Grosvenor SC Absolute Return Fund LLC Series B	169,173,500	19.2%	0.32%	-0.36%	-1.16%	-0.36%	-2.00%	-2.96%	-0.45%	0.37%	2.66%	-0.14	Feb-13
Fund of Funds - HF Total	300,179,165	34.0%	0.24%	-0.14%	-0.77%	-0.14%	-2.11%	-1.92%	-0.01%	1.34%	2.84%	0.22	Dec-11
Diversifying Portfolio Total	555,348,947	62.9%	0.38%	0.07%	-0.73%	0.07%	0.88%	0.88%	1.81%	2.21%	2.53%	0.58	Dec-11
HFRI FOF: Conservative Index			0.55%	0.98%	2.65%	0.98%	3.84%	2.88%	2.97%	3.45%	2.10%	1.27	Dec-11
3 Month T-Bills+2%			0.32%	0.98%	2.79%	0.98%	3.59%	2.84%	2.52%	2.40%	0.16%	-	Dec-11
SCERS Absolute Return Portfolio	883,124,980	100.0%	0.13%	0.31%	0.70%	0.31%	2.31%	3.51%	3.29%	4.19%	5.70%	0.45	Sep-04
3 Month T-Bills+5%			0.56%	1.69%	5.00%	1.69%	6.59%	5.84%	5.52%	6.32%	0.49%	-	Sep-04
HFRI Fund of Funds Composite Index			-0.02%	0.44%	1.16%	0.44%	3.25%	3.35%	3.21%	3.21%	4.99%	0.32	Sep-04

* Included the SCERS Total Absolute Return Portfolio performance for reference

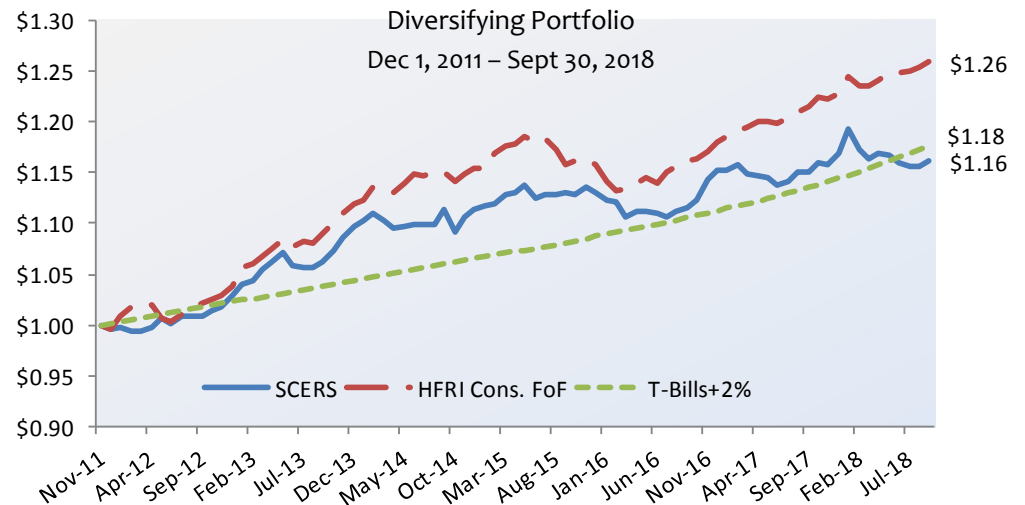
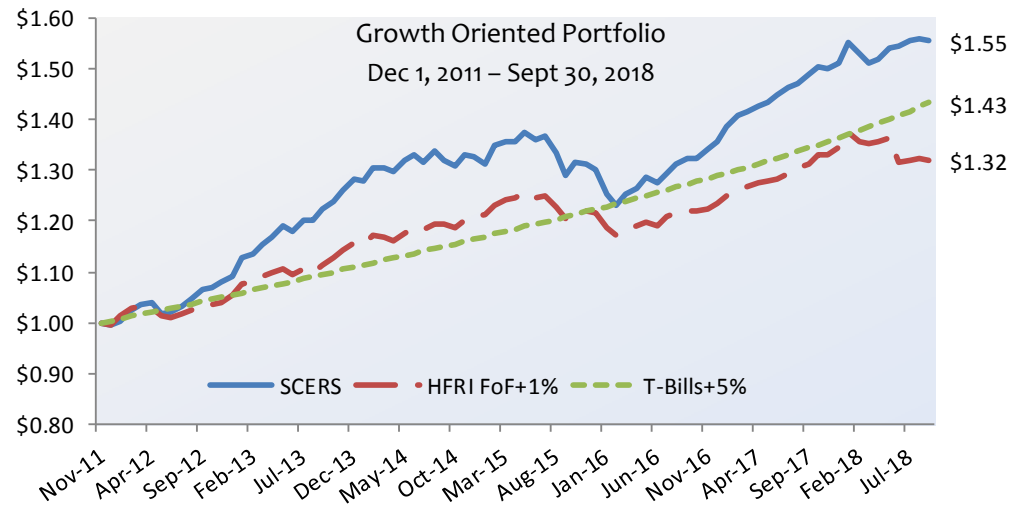
Absolute Return Portfolios Cumulative Performance – Dec 2011 to September 2018

The Growth Oriented portfolio has outperformed the Fund of Funds Index + 1% benchmark and the T-bills + 5% long term objective

The Diversifying portfolio has tracked the T-bills + 2% long term objective, but underperformed the HFRI Fund of Funds Conservative Index

Showing cumulative performance (growth of \$1) for each portfolio since the initial restructuring of the Absolute Return portfolio in December 2011

- The prior exposure of the Absolute Return portfolio was only Equity Long/Short fund of funds investments



Private Equity Portfolio – as of June 30, 2018

The Private Equity portfolio's net IRR since inception is 13.86%, versus the Cambridge Associates benchmark IRR of 12.94%

- The long-term Policy objective (Russell 3000 + 3%) has a 15.91% IRR over this period

The private equity portfolio produced sharp gains during the quarter despite a slight decline in global equities

- Most of the funds once again generated positive quarterly returns, with several greater than 10%
 - Summit Europe Gr II, AKKR IV, Thoma Bravo XI, Dyal III, Spectrum VII, and Trinity Ventures XI reported the largest gains in Q2
- Continued meaningful distributions among the direct fund investments (\$33.8 million) and fund of funds (\$10.3 million)
 - Thoma Bravo XI, NEA 14, Summit Europe Gr II, Waterland V, and NEA 15 led distributions within directs

Continued strong performance across most of the private equity funds

- Double-digit net IRRs for all vintage years prior to 2017
- Waterland V (36.0%), Marlin Heritage (35.5%), Summit VC IV (33.6%), and Spectrum VII (30.2%) are leading performance

The fund of funds also reported gains during the quarter

- Aggregate since inception net IRR increased to 11.76% from 11.43% during the quarter
 - The aggregate total value (TVPI) improved to 1.63x from 1.58x
- HarbourVest International has generated the best absolute and relative performance among the fund of funds
- The fund of funds comprise nearly 20% of the current fair value of the Private Equity portfolio

Changes during the quarter

- SCERS committed \$35 million to Khosla Ventures VI (venture capital) during Q2
 - SCERS also committed \$35 million to TOP IV (distressed) and \$33.3 million to AKKR Growth III (growth equity) in Q3 2018
- \$46.5 million in new contributions, \$44.1 million in distributions
- Total portfolio gain increased by \$45.8 million while the total portfolio IRR increased 0.61%

Private Equity Portfolio Characteristics as of June 30, 2018

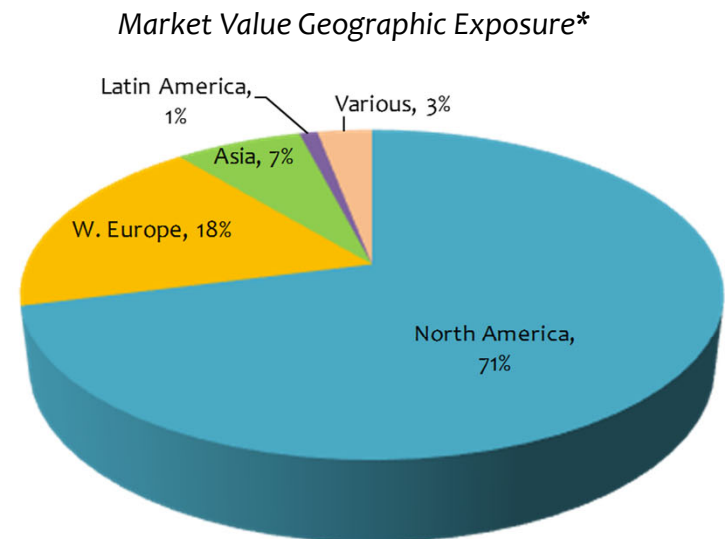
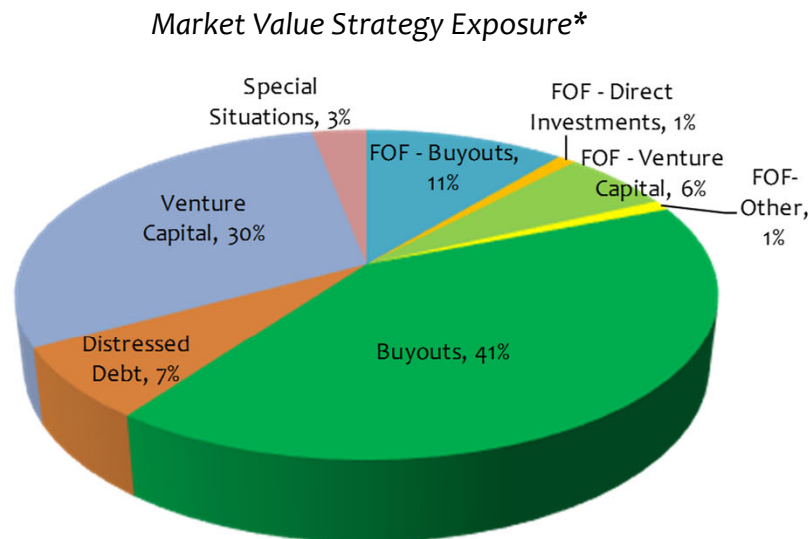
The SCERS Private Equity portfolio is diversified by strategy and geography

- Investments remain focused in North America, with meaningful exposure to Europe

The fund of funds exposure remains relatively small as a percentage of the total portfolio's value

- Investments from direct private equity funds represent roughly 80% of the total portfolio's value as of June 30, 2018

Portfolio strategy and geographic allocations, based on fair market value of invested capital, shown below



* Exposures are based on the market values of investments as of 6/30/18.

Private Equity Portfolio Performance Details – as of June 30, 2018

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Vintage Year 2006												
HarbourVest Partners VIII - Buyout Fund L.P.	Fund of Funds	37,500	1,688	35,813	96%	46,456	15,130	61,586	25,774	10.99%	7.68%	1.72x
HarbourVest Partners VIII - Mezzanine and Distressed Debt Fund L.P.	Fund of Funds	5,000	200	4,800	96%	5,556	1,135	6,691	1,891	7.77%	7.68%	1.39x
HarbourVest Partners VIII - Venture Fund L.P.	Fund of Funds	7,500	150	7,350	98%	8,688	4,855	13,543	6,193	10.83%	7.68%	1.84x
Vintage Year 2006 Total		50,000	2,038	47,963	96%	60,700	21,121	81,821	33,859	10.70%	7.48%	1.71x
Vintage Year 2008												
Abbott Capital Private Equity Fund VI, L.P.	Fund of Funds	75,000	1,875	73,125	98%	54,751	60,278	115,029	41,904	12.38%	13.42%	1.57x
Goldman Sachs Private Equity Partners X, L.P.	Fund of Funds	75,000	12,494	68,958	83%	77,161	37,823	114,984	46,026	11.99%	13.42%	1.67x
HarbourVest International Private Equity Partners VI-Partnership Fund L.P.	Fund of Funds	37,634	3,011	36,874	92%	19,084	37,891	56,976	20,102	12.53%	9.39%	1.55x
Vintage Year 2008 Total		187,634	17,380	178,957	91%	150,996	135,992	286,989	108,032	12.22%	8.34%	1.60x
Vintage Year 2011												
Waterland Private Equity Fund V C.V.	Buyout	18,700	3,932	15,441	79%	24,678	11,233	35,911	20,470	35.98%	13.57%	2.33x
Khosla Ventures IV, L.P.	Venture Capital	10,000	190	9,810	98%	5,755	17,025	22,780	12,970	21.47%	14.90%	2.32x
Vintage Year 2011 Total		28,700	4,122	25,251	86%	30,433	28,258	58,691	33,440	29.10%	13.61%	2.32x
Vintage Year 2012												
Garrison Opportunity Fund III A LLC	Distressed Debt	20,000	0	20,000	100%	6,725	14,582	21,307	1,307	1.54%	9.69%	1.07x
New Enterprise Associates 14, L.P.	Venture Capital	25,000	1,500	23,500	94%	9,784	36,063	45,847	22,347	17.93%	13.10%	1.95x
Summit Partners Venture Capital III-A, LP	Venture Capital	16,350	2,214	18,525	86%	17,129	16,351	33,479	14,955	18.39%	13.10%	1.81x
Vintage Year 2012 Total		61,350	3,714	62,025	94%	33,638	66,996	100,633	38,609	13.01%	13.10%	1.62x
Vintage Year 2013												
Accel-KKR Capital Partners IV, L.P.	Buyout	15,000	2,600	12,400	83%	6,650	15,369	22,020	9,620	26.62%	16.00%	1.78x
H.I.G. Capital Partners V, L.P.	Buyout	14,000	4,710	9,290	66%	2,771	10,648	13,418	4,129	26.59%	16.00%	1.44x
Marlin Equity IV, L.P.	Buyout	20,000	1,517	18,483	92%	191	20,234	20,424	1,942	4.66%	16.00%	1.11x
RRJ Capital Master Fund II, L.P.	Buyout	35,000	4,786	34,964	86%	25,421	19,808	45,228	10,264	10.37%	15.87%	1.29x
H.I.G. Bayside Loan Opportunity Fund III (Europe-US\$), L.P.	Distressed Debt	30,000	5,769	24,231	81%	9,151	23,025	32,177	7,946	10.62%	6.41%	1.33x
Wayzata Opportunities Fund III, L.P.	Distressed Debt	30,000	22,835	14,718	24%	7,581	6,726	14,307	-411	-1.14%	8.26%	0.97x

¹Benchmarks:

Private Equity Investments: Cambridge Associates median return for the respective strategies and vintage years

Vintage Year Comparison: Cambridge Associates Global Private Equity & Venture Capital median return for the respective vintage years

Private Equity Portfolio: Cambridge Associates Global Private Equity & Venture Capital pooled internal rate of return

Private Equity Portfolio Performance Details – as of June 30, 2018 (continued)

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Trinity Ventures XI, L.P.	Venture Capital	25,000	4,563	20,438	82%	0	31,004	31,004	10,567	13.46%	13.78%	1.52x
Vintage Year 2013 Total		169,000	46,781	134,523	72%	51,764	126,814	178,579	44,056	11.44%	13.20%	1.33x
Vintage Year 2014												
Dyal Capital Partners II	Buyout	35,000	16,295	19,501	53%	3,069	14,518	17,587	-1,915	-6.69%	17.05%	0.90x
H.I.G. Europe Capital Partners II, L.P.	Buyout	16,363	5,864	10,593	64%	362	10,514	10,876	283	3.43%	14.07%	1.03x
Marlin Heritage Fund	Buyout	10,000	1,346	8,654	87%	7,382	8,903	16,285	7,631	35.47%	17.05%	1.88x
Thoma Bravo XI	Buyout	30,000	3,430	30,952	89%	13,431	45,527	58,958	28,006	25.35%	17.05%	1.90x
TPG Opportunities Partners III	Distressed Debt	40,000	20,584	32,627	49%	15,406	23,959	39,365	6,738	12.19%	9.94%	1.21x
Khosla Ventures V	Venture Capital	20,000	4,540	15,460	77%	1,013	18,096	19,109	3,649	10.90%	11.50%	1.24x
Spectrum Equity Investors VII, L.P.	Venture Capital	25,000	2,875	22,125	89%	9,318	28,074	37,392	15,267	30.20%	11.50%	1.69x
Vintage Year 2014 Total		176,363	54,934	139,912	69%	49,980	149,592	199,572	59,659	19.33%	14.93%	1.43x
Vintage Year 2015												
RRJ Capital Master Fund III, LP	Buyout	40,000	11,031	29,808	72%	1,474	31,256	32,730	2,922	11.56%	12.79%	1.10x
WPEF VI Feeder, L.P.	Buyout	28,050	12,835	14,597	54%	0	16,542	16,542	1,945	12.05%	12.79%	1.13x
WPEF VI Overflow Fund C.V.	Buyout	7,013	7,002	10	0%	0	1	1	-9	-73.22%	12.79%	0.09x
Accel-KKR Growth Capital Partners II	Mezzanine	15,000	7,807	7,193	48%	1,675	6,526	8,201	1,008	8.80%	10.97%	1.14x
New Enterprise Associates 15, L.P.	Venture Capital	35,000	7,875	27,129	78%	3,103	38,502	41,605	14,475	23.68%	12.37%	1.53x
Summit Partners Venture Capital Fund IV-A, L.P.	Venture Capital	35,000	23,341	16,595	33%	4,936	17,651	22,587	5,992	33.61%	12.37%	1.36x
Vintage Year 2015 Total		160,063	69,890	95,332	56%	11,187	110,479	121,666	26,334	20.02%	14.27%	1.28x
Vintage Year 2016												
Accel-KKR Capital Partners V, L.P.	Buyout	25,000	18,404	6,596	26%	137	6,705	6,843	246	N/M	N/M	1.04x
Dyal III Pension Investors LP	Buyout	35,000	23,094	14,792	34%	2,419	17,458	19,877	5,085	N/M	N/M	1.34x
Linden Capital Partners III	Buyout	35,000	2,381	32,619	93%	141	41,044	41,185	8,567	20.82%	8.49%	1.26x
Marlin Heritage Europe, L.P.	Buyout	15,194	10,415	4,882	31%	0	4,609	4,609	-273	N/M	N/M	0.94x
Thoma Bravo Fund XII, L.P.	Buyout	30,000	11,083	22,615	63%	3,701	21,059	24,759	2,144	8.78%	8.49%	1.09x
TSG7 A L.P.	Buyout	16,000	8,826	7,174	45%	0	8,058	8,058	884	9.96%	8.49%	1.12x
TSG7 B L.P.	Buyout	4,000	3,331	669	17%	0	479	479	-190	-22.30%	8.49%	0.72x

¹Benchmarks:

Private Equity Investments: Cambridge Associates median return for the respective strategies and vintage years

Vintage Year Comparison: Cambridge Associates Global Private Equity & Venture Capital median return for the respective vintage years

Private Equity Portfolio: Cambridge Associates Global Private Equity & Venture Capital pooled internal rate of return

Private Equity Portfolio Performance Details – as of June 30, 2018 (continued)

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Atalaya Special Opportunities Fund VI, L.P.	Distressed Debt	25,000	5,392	26,003	78%	7,916	21,487	29,403	3,401	9.77%	8.89%	1.13x
Trinity Ventures XII, L.P.	Venture Capital	30,000	15,750	14,250	48%	0	16,979	16,979	2,729	18.75%	9.23%	1.19x
Vintage Year 2016 Total		215,194	98,676	129,600	54%	14,314	137,878	152,192	22,592	14.97%	9.10%	1.17x
Vintage Year 2017												
Marlin Heritage II	Buyout	10,000	7,215	2,785	28%	0	2,593	2,593	-193	N/M	N/M	0.93x
New Enterprise Associates 16, L.P.	Venture Capital	35,000	25,813	9,188	26%	0	9,075	9,075	-112	N/M	N/M	0.99x
Vintage Year 2017 Total		45,000	33,027	11,973	27%	0	11,668	11,668	-305	N/M	N/M	0.97x
Vintage Year 2018												
Linden Capital Partners IV LP	Buyout	44,330	44,330	0	0%	0	0	0	0	N/M	N/M	N/A
Marlin Equity V	Buyout	25,000	20,283	4,717	19%	0	4,463	4,463	-253	N/M	N/M	0.95x
Summit Partners Europe Growth Equity Fund II, SCSP	Buyout	30,000	28,753	6,735	4%	5,488	4,602	10,090	3,355	N/M	N/M	1.50x
Davidson Kempner Long-Term Distressed Opportunities Fund IV LP	Distressed Debt	35,000	31,500	3,500	10%	0	3,803	3,803	303	N/M	N/M	1.09x
Khosla Ventures VI, L.P.	Venture Capital	35,000	35,000	0	0%	0	0	0	0	N/M	N/M	N/A
Spectrum Equity VIII, L.P.	Venture Capital	25,000	25,000	0	0%	0	0	0	0	N/M	N/M	N/A
Vintage Year 2018 Total		194,330	184,866	14,952	5%	5,488	12,868	18,356	3,404	N/M	N/M	1.23x
Portfolio Total :		1,287,635	515,428	840,486	60%	408,500	801,666	1,210,166	369,680	13.86%	12.94%	1.44x
Portfolio Strategy Totals												
Buyout		538,650	253,464	308,277	53%	97,313	315,623	412,936	104,659	18.97%		1.34x
Distressed Debt		180,000	86,080	121,078	52%	46,779	93,582	140,361	19,283	6.58%		1.16x
Fund of Funds		237,634	19,417	226,919	92%	211,697	157,113	368,810	141,891	11.76%		1.63x
Mezzanine		15,000	7,807	7,193	48%	1,675	6,526	8,201	1,008	8.80%		1.14x
Venture Capital		316,350	148,660	177,019	53%	51,037	228,821	279,858	102,839	19.34%		1.58x
Portfolio Total :		1,287,635	515,428	840,486	60%	408,500	801,666	1,210,166	369,680	13.86%	12.94%	1.44x

¹Benchmarks:

Private Equity Investments: Cambridge Associates median return for the respective strategies and vintage years

Vintage Year Comparison: Cambridge Associates Global Private Equity & Venture Capital median return for the respective vintage years

Private Equity Portfolio: Cambridge Associates Global Private Equity & Venture Capital pooled internal rate of return

Private Credit Portfolio – as of June 30, 2018

The Private Credit portfolio's net IRR since inception is 8.79%, versus the benchmark return of 7.37%

- The benchmark is the Credit Suisse Leveraged Loan Index + 2%

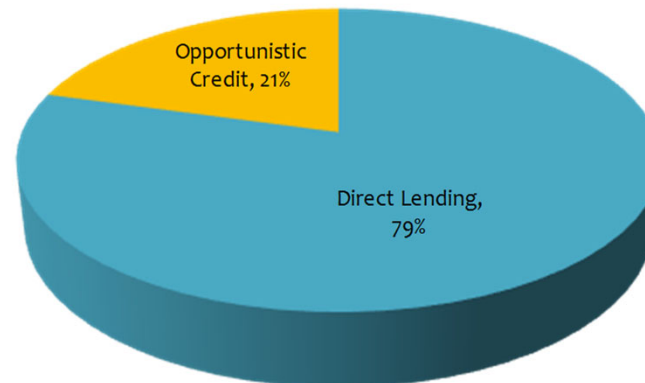
The Private Credit portfolio includes seven lending-oriented funds; three were previously included within Private Equity

- Five of the funds pursue Direct Lending strategies; Athyrium II & III are Opportunistic Credit
- The Private Credit funds continued to generate steady performance during Q2
 - Overall return of 1.4% in Q2 and 7.1% for the trailing 1 year period ending June 30, 2018
 - Recent performance being held back slightly by the younger portfolios of the newer fund commitments

Changes during the quarter

- SCERS made no new commitments to Private Credit funds during Q2
- \$27.6 million in new contributions, \$5.3 million in distributions
- Portfolio IRR decreased 0.33% while the total portfolio gain increased by \$1.4 million

*Market Value Strategy Exposure
(based on fair value of investments)
as of June 30, 2018*



Private Credit Portfolio Details – as of June 30, 2018

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Vintage Year 2011												
Summit Partners Credit Fund, LP	Direct Lending	20,000	0	20,697	100%	22,919	3,944	26,862	6,166	9.46%	N/A	1.30x
Vintage Year 2011 Total		20,000	0	20,697	100%	22,919	3,944	26,862	6,166	9.46%	13.61%	1.30x
Vintage Year 2014												
Summit Partners Credit Fund II, L.P.	Direct Lending	35,000	15,857	35,960	55%	20,284	21,559	41,844	5,883	9.82%	3.78%	1.16x
Vintage Year 2014 Total		35,000	15,857	35,960	55%	20,284	21,559	41,844	5,883	9.82%	14.93%	1.16x
Vintage Year 2015												
Athyrium Opportunities Fund II	Opportunistic Credit	32,000	9,793	35,123	69%	23,489	15,948	39,437	4,314	8.01%	10.97%	1.12x
Vintage Year 2015 Total		32,000	9,793	35,123	69%	23,489	15,948	39,437	4,314	8.01%	14.27%	1.12x
Vintage Year 2017												
Athyrium Opportunities Fund III	Opportunistic Credit	25,000	17,406	8,829	30%	1,200	7,474	8,674	-155	N/M	N/M	0.98x
Vintage Year 2017 Total		25,000	17,406	8,829	30%	1,200	7,474	8,674	-155	N/M	N/M	0.98x
Vintage Year 2018												
Benefit Street Partners Senior Secured Opportunities Fund L.P.	Direct Lending	50,000	11,489	40,021	77%	1,678	39,572	41,250	1,228	N/M	N/M	1.03x
Summit Partners Credit Fund III, L.P.	Direct Lending	50,000	50,000	0	0%	0	0	0	0	N/M	N/M	N/A
TCP Direct Lending Fund VIII-S, LLC	Direct Lending	100,000	75,362	24,638	25%	0	24,801	24,801	163	N/M	N/M	1.01x
Vintage Year 2018 Total		200,000	136,851	64,659	32%	1,678	64,373	66,050	1,391	N/M	N/M	1.02x
Portfolio Total :		312,000	179,908	165,267	42%	69,569	113,298	182,867	17,600	8.79%	7.37%	1.11x

¹Benchmarks:

Private Credit Investments: Cambridge Associates median return for the respective debt strategies and vintage years

Private Credit Portfolio: Credit Suisse Leveraged Loan Index + 2%

Real Assets Portfolio – as of June 30, 2018

The Real Assets portfolio's net IRR since inception is 15.45%, versus the blended benchmark return of 7.06%

- The Real Assets portfolio includes private Infrastructure, Energy, and Agriculture, Timber and Other
 - This is consistent with SCERS' 2017 asset class structures
- Real Assets is part of the broader Real Return asset category

The Real Assets portfolio is primarily Energy and Infrastructure partnerships

- Both Energy and Infrastructure partnerships have performed well since inception
 - Since inception net IRRs of 17.3% for Energy and 15.0% for Infrastructure
- The Real Asset Debt separate account, though smaller, has also performed well with an 11.0% since inception net IRR

The portfolio generated a 2.7% net return during a quarter that saw the Energy sector rally after a difficult Q1

- Early gains from some of the newer Energy and Infrastructure funds led performance
- The Quantum funds, ACM and Wastewater were the laggards and saw modest declines during the quarter
 - The Wastewater fund has had a relatively slow investment pace with weak performance thus far

Changes during the quarter

- SCERS made no new commitments to Real Assets funds during Q2
 - SCERS committed a total of \$122 million across three funds (Energy, Infrastructure, and Agriculture funds) in Q3 2018
- \$23.2 million in new contributions, \$7.9 million in distributions
- Portfolio IRR decreased 0.65% while the total portfolio gain increased by \$10.4 million

Real Assets Portfolio Performance Details – as of June 30, 2018

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Vintage Year 2013												
EnCap Energy Capital Fund IX, L.P.	Energy	33,000	3,053	35,831	91%	22,914	24,820	47,734	11,903	14.67%	8.05%	1.33x
Vintage Year 2013 Total		33,000	3,053	35,831	91%	22,914	24,820	47,734	11,903	14.67%		1.33x
Vintage Year 2014												
Carlyle Power Partners II, L.P.	Energy	40,000	23,398	19,830	42%	3,091	17,258	20,348	518	1.47%	12.59%	1.03x
EnCap Flatrock Midstream III	Energy	20,000	11,528	12,240	42%	8,154	7,786	15,941	3,701	22.71%	12.59%	1.30x
Global Energy & Power Infrastructure Fund II	Energy	35,000	11,938	25,416	66%	16,104	19,643	35,747	10,332	42.55%	12.59%	1.41x
Quantum Energy Partners VI, LP	Energy	35,000	16,406	23,588	53%	11,839	24,513	36,352	12,764	37.03%	12.59%	1.54x
Pantheon SCERS SIRF MM, LLC	Infrastructure	100,000	46,668	53,332	53%	2,800	71,839	74,639	21,307	18.12%	6.16%	1.40x
Wastewater Opportunity Fund	Infrastructure	25,000	15,304	9,703	39%	0	7,913	7,913	-1,790	-17.42%	6.16%	0.82x
Vintage Year 2014 Total		255,000	125,242	144,108	51%	41,987	148,953	190,940	46,832	19.70%		1.32x
Vintage Year 2015												
Arclight Energy Partners Fund VI	Energy	40,000	8,292	37,470	79%	8,670	36,259	44,929	7,459	12.66%	18.83%	1.20x
EnCap Energy Capital Fund X, L.P.	Energy	40,000	12,022	30,478	70%	6,093	28,650	34,743	4,265	11.41%	18.83%	1.14x
Atalaya Real Assets SMA	Real Asset Debt	100,000	75,152	35,624	25%	13,339	27,008	40,347	4,723	10.95%	N/A	1.13x
Vintage Year 2015 Total		180,000	95,466	103,573	47%	28,102	91,917	120,019	16,446	11.80%		1.16x
Vintage Year 2016												
ACM Fund II, LLC	Agriculture	25,000	11,148	17,998	55%	4,194	12,903	17,097	-901	N/M	N/M	0.95x
Brookfield Infrastructure Fund III, L.P.	Infrastructure	40,000	24,818	15,171	38%	1,621	16,015	17,635	2,464	12.47%	N/A	1.16x
IFM Global Infrastructure Fund	Infrastructure	125,000	25,000	100,000	80%	13,315	102,229	115,544	15,544	N/M	N/M	1.16x
Vintage Year 2016 Total		190,000	60,966	133,170	68%	19,130	131,146	150,276	17,106	12.98%		1.13x
Vintage Year 2017												
Quantum Energy Partners VII, LP	Energy	40,000	29,748	12,384	26%	2,183	10,183	12,366	-18	N/M	N/M	1.00x
Mendiam Infrastructure North America Fund III	Infrastructure	50,000	49,197	803	2%	1	245	246	-557	N/M	N/M	0.31x
Vintage Year 2017 Total		90,000	78,945	13,188	12%	2,183	10,428	12,612	-576	N/M		0.96x
Vintage Year 2018												
EnCap Flatrock Midstream IV, L.P.	Energy	22,500	21,504	996	4%	0	830	830	-166	N/M	N/M	0.83x

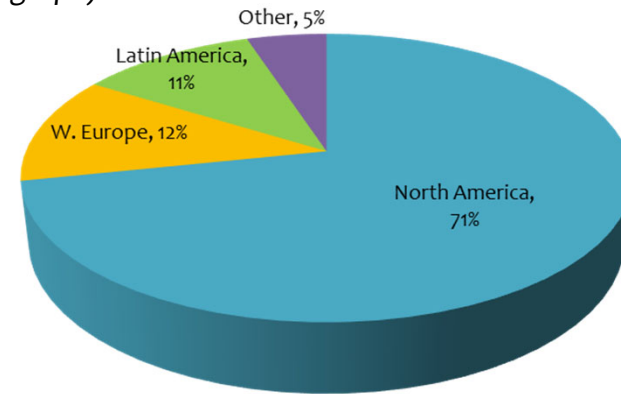
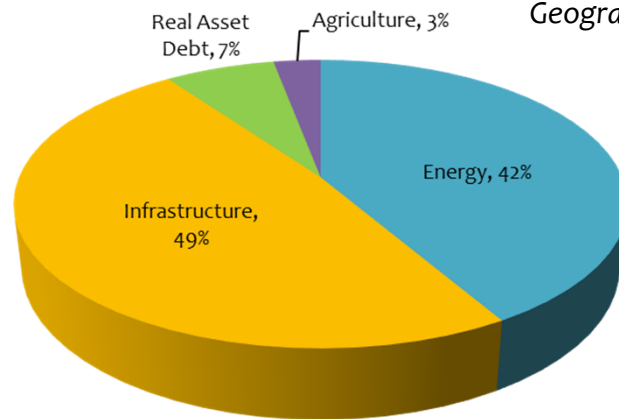
¹ Benchmarks:

Real Assets Portfolio: 45% Cambridge Infrastructure, 35% Cambridge Energy, 10% NCREIF Timberland, 10% NCREIF Farmland
 Energy Investments: Cambridge Associates median return for the respective vintage years.
 Infrastructure Investments: Cambridge Associates median return for the respective vintage years.

Real Assets Portfolio Performance Details – as of June 30, 2018 (continued)

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Vintage Year 2018 Total		22,500	21,504	996	4%	0	830	830	-166	N/M		0.83x
Portfolio Total :		770,500	385,176	430,865	50%	114,317	408,094	522,411	91,546	15.45%	7.06%	1.21x
Portfolio Strategy Totals												
Agriculture		25,000	11,148	17,998	55%	4,194	12,903	17,097	-901	N/M		0.95x
Energy		305,500	137,888	198,233	55%	79,047	169,943	248,990	50,757	17.26%		1.26x
Infrastructure		340,000	160,987	179,009	53%	17,736	198,241	215,977	36,967	15.01%		1.21x
Real Asset Debt		100,000	75,152	35,624	25%	13,339	27,008	40,347	4,723	10.95%		1.13x
Portfolio Total :		770,500	385,176	430,865	50%	114,317	408,094	522,411	91,546	15.45%	7.06%	1.21x

Portfolio Exposures*
Strategy Exposure (left graph)
Geographic Exposure (right graph)



* Exposures are based on the market values of investments as of 6/30/18

¹ Benchmarks:

Real Assets Portfolio: 45% Cambridge Infrastructure, 35% Cambridge Energy, 10% NCREIF Timberland, 10% NCREIF Farmland

Energy Investments: Cambridge Associates median return for the respective vintage years.

Infrastructure Investments: Cambridge Associates median return for the respective vintage years.

Opportunities Portfolio – as of June 30, 2018

The Opportunities portfolio's net IRR since inception is 18.46%

- The long-term benchmark is SCERS' 7.00% total portfolio actuarial return objective
- Also tracking the portfolio's 3 year IRR versus an intermediate-term benchmark
 - 7.02% portfolio IRR v 4.81% IRR for the SCERS' total portfolio policy weighted benchmark over the last 3 years
- The portfolio only includes legacy distressed debt funds (fully liquidated) and one post-2009 distressed fund (Atalaya V)
 - Previously-reported real estate funds are included within Real Estate
 - This is consistent with SCERS' 2017 asset class structures

The legacy distressed funds performed very well, the current fund is performing at expectations

- SCERS' earlier vintage distressed debt funds are liquidated and have distributed significant capital back to SCERS
 - Stone Tower, MetWest TALF, and PIMCO have distributed \$129.3 million
- Atalaya SOF V, a vintage 2013 fund, has produced a 7.99% net IRR since inception

Changes during the quarter

- SCERS made no new commitments categorized as Opportunities funds during Q2 2018
- No new contributions, \$7 thousand in distributions
- Portfolio IRR decreased 0.02%, total portfolio gain increased slightly

As mentioned, the Opportunities portfolio only includes certain distressed debt funds

- SCERS has additional distressed debt investments within its Private Equity portfolio
- Categorizations were made at the time of each investment

Opportunities Portfolio Performance Details – as of June 30, 2018

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Vintage Year 2007												
* PIMCO Distressed Mortgage Fund, LP	Distressed Debt	18,000	0	18,000	100%	25,384	0	25,384	7,384	8.96%	8.62%	1.41x
Vintage Year 2007 Total		18,000	0	18,000	100%	25,384	0	25,384	7,384	8.96%		1.41x
Vintage Year 2008												
* PIMCO Distressed Mortgage Fund II, L.P.	Distressed Debt	12,000	0	12,000	100%	35,277	0	35,277	23,277	34.39%	12.64%	2.94x
Vintage Year 2008 Total		12,000	0	12,000	100%	35,277	0	35,277	23,277	34.39%		2.94x
Vintage Year 2009												
* MetWest Enhanced TALF Strategy Fund LP	Distressed Debt	20,000	0	20,000	100%	25,304	0	25,304	5,304	11.21%	14.94%	1.27x
* Stone Tower Structured Credit Recovery Fund LP	Distressed Debt	25,000	0	25,248	100%	43,383	0	43,383	18,135	25.30%	14.94%	1.72x
Vintage Year 2009 Total		45,000	0	45,248	100%	68,687	0	68,687	23,439	19.71%		1.52x
Vintage Year 2013												
Atalaya Special Opportunities Fund V, L.P.	Distressed Debt	25,000	1,117	24,875	96%	20,755	9,478	30,233	5,358	7.99%	8.26%	1.22x
Vintage Year 2013 Total		25,000	1,117	24,875	96%	20,755	9,478	30,233	5,358	7.99%		1.22x
Portfolio Total :		100,000	1,117	100,123	99%	150,103	9,478	159,581	59,459	18.46%	7.00%	1.59x

* Liquidated partnership

¹ Benchmarks:

Opportunities Investments: Cambridge Associates median return for the respective strategies and vintage years
Opportunities Portfolio: 7.00% actuarial return objective

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