



# Board of Retirement Regular Meeting

## Sacramento County Employees' Retirement System

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### Agenda Item 15

**MEETING DATE:** March 21, 2018

**SUBJECT:** Quarterly Investment Performance Report  
Alternative Assets

**SUBMITTED FOR:** \_\_\_ Consent      \_\_\_ Deliberation and Action       X  Receive and File

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#### **RECOMMENDATION**

Staff recommends the Board receive and file the Cliffwater Quarterly Performance Review presentation for the period ending December 31, 2017 for the Absolute Return portfolio, and the period ending September 30, 2017 for the Private Equity, Private Credit, Real Assets, and Opportunities portfolios.

#### **PURPOSE**

This agenda item complies with SCERS' investment policy statement reporting requirements and provides a summary of SCERS' Alternative Assets portfolio returns, and Cliffwater's quarterly alternative assets portfolio performance report.

#### **SCERS ALTERNATIVE ASSETS PORTFOLIO RETURNS**

This memorandum will provide a recap of SCERS' Alternative Assets period returns as presented within Cliffwater's Quarterly Performance Review. This memorandum will also highlight any recent alternative asset class investments made by SCERS. You will note the Cliffwater report has been reformatted to conform to SCERS' revised asset classes as contained in the Board's current strategic asset allocation.

SCERS' alternative asset class period returns are as follows:

**SCERS ALTERNATIVE ASSETS PERFORMANCE SUMMARY**  
**Quarter Reporting Periods Ending December 31, 2017**

SCERS ASSET CLASS	Quarter*	1-Year*	3-Year*	5-Year*	Since Inception*	Since Inception Date*
<b>SCERS Absolute Return</b>	<b>1.6%</b>	<b>6.3%</b>	<b>3.0%</b>	<b>5.0%</b>	<b>4.4%</b>	Sep-04
HFRI FoF Conservative	2.3%	8.7%	3.6%	5.0%	4.3%	
HFRI FoF Composite + 1%	1.5%	5.9%	5.4%	5.3%	6.3%	
<b>SCERS Private Equity</b>	<b>5.6%</b>	<b>18.2%</b>	<b>13.5%</b>	<b>14.4%</b>	<b>12.2%</b>	Feb-08
Cambridge Private Equity/Venture C	4.5%	17.3%	12.4%	14.6%	12.3%	
<b>SCERS Private Credit</b>	<b>1.5%</b>	<b>8.9%</b>	<b>8.6%</b>	<b>9.3%</b>	<b>9.2%</b>	Oct-11
Credit Suisse Leveraged Loan + 2%	1.6%	7.4%	6.0%	6.4%	7.4%	
<b>SCERS Real Assets</b>	<b>1.3%</b>	<b>15.7%</b>	<b>13.7%</b>	<b>NA</b>	<b>15.6%</b>	Jan-13
(45%) Cambridge Private Infrastructure + (35%) Cambridge Private Energy + (20%) NCREIF Agriculture/Timber	2.8%	12.1%	4.8%	NA	6.6%	
<b>SCERS Opportunities</b>	<b>-0.3%</b>	<b>5.8%</b>	<b>8.7%</b>	<b>11.4%</b>	<b>18.6%</b>	Jan-08
SCERS Total Fund Policy Index	1.9%	7.5%	7.5%	7.5%	7.5%	

*\*Note: Periods ending 9/30/17 for Private Equity, Private Credit, Real Assets, and Opportunities  
Periods ending 12/31/17 for Absolute Return  
All returns are net IRR, except Absolute Return which is time-weighted*

## SCERS ABSOLUTE RETURN PORTFOLIO

SCERS' Absolute Return portfolio is broken up into two segments: (1) Growth-Oriented Absolute Return; and (2) Diversifying Absolute Return. The distinction is to separate growth-oriented strategies that typically do well during a more favorable economic environment, and have higher correlations and betas to equity and credit markets, from diversifying strategies that have low to negative correlation to equity markets and serve as a diversifier to SCERS' broader portfolio.

SCERS takes a diversified approach to implementing the Absolute Return portfolio, by investing through: (1) A direct absolute return portfolio; and (2) A diversified separate account managed by Grosvenor Capital Management (GCM). The direct absolute return portfolio is a portfolio of individual absolute return/hedge funds that is managed by SCERS and SCERS' alternative assets consultant, Cliffwater. The GCM separate account, named SC Absolute Return Fund, LLC (SCARF), is a multi-strategy absolute return fund-of-funds (FoFs) portfolio managed by GCM.

In addition to SCARF, GCM also manages an additional FoFs portfolio for SCERS, SCARF B, which is a more liquid version of SCARF, and is intended to provide SCERS with interim underlying absolute return exposure while SCERS' direct absolute return portfolio is being built

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out, rather than relying on SCERS' Overlay Program to fill the gap between actual and target Absolute Return allocations. While SCRAF B is intended to be a liquidating portfolio, SCARF is considered a long-term strategic allocation within SCERS' Absolute Return portfolio.

Quarter ended December 31, 2017:

- SCERS' Growth Absolute Return portfolio returned +1.6%:
  - Top performing managers:
    - Third Point Partners Qualified, LP (event driven): +3.1%
  - Bottom performing managers:
    - JANA Partners Qualified, LP (event driven): -0.9%
    - Lakewood Capital Partners, LP (equity long/short): +0.1%
- SCERS' Diversifying Absolute Return portfolio returned +1.6%:
  - Top performing managers:
    - Graham Global Investment Fund II, Ltd. (macro-systematic): +9.4%
    - Winton Diversified Futures Fund, LP (macro-systematic): +7.1%
    - Laurion Capital, Ltd. (market neutral): +3.7%
  - Bottom performing managers:
    - Grosvenor SCARF (fund-of-funds): -1.5%
    - Brevan Howard, LP (macro-discretionary): -0.8%

One-year ended December 31, 2017:

- SCERS' Growth Absolute Return portfolio returned +11.4%:
  - Top performing managers:
    - Third Point Partners Qualified, LP (event driven): +17.9%
    - Grosvenor SCARF (fund-of-funds): +11.9%
    - OZ Domestic Partners II, LP (multi-strategy): +11.9%
  - Bottom performing managers:
    - JANA Partners Qualified, LP (event driven): +6.6
    - Lakewood Capital partners, LP (equity long/short): +8.3%
- SCERS' Diversifying Absolute Return portfolio returned +1.6%:
  - Top performing managers:
    - Elliott International Limited (event driven): +8.6%
    - Winton Diversified Futures Fund, LP (macro-systematic): +6.3%

➤ Bottom performing managers:

- Brevan Howard, LP (macro-discretionary): -5.3%
- Grosvenor SCARF B (fund-of-funds): -3.5%

SCERS ABSOLUTE RETURN Performance Summary for the periods ending 12/31/17	Quarter	1-Year	3-Year	5-Year	Since Inception	Since Inception Date
<b>SCERS ABSOLUTE RETURN PORTFOLIO</b>	1.6%	6.3%	3.0%	5.0%	4.4%	Sep-04
91 Day T-Bill + 5%	1.5%	5.9%	5.4%	5.3%	6.3%	
<b>Growth-Oriented Funds</b>	1.6%	11.4%	4.5%	6.7%	5.1%	Sep-04
HFRI FoF Composite + 1%	2.3%	8.7%	3.6%	5.0%	4.3%	
<b>Diversifying-Oriented Funds</b>	1.6%	1.6%	1.7%	2.6%	2.6%	Dec-11
HFRI FoF Conservative Index	1.1%	4.1%	2.1%	3.4%	3.4%	

No new investments were made in the SCERS Absolute Return portfolio during Q4 2017.

## SCERS PRIVATE EQUITY PORTFOLIO

Page 8 of Cliffwater's quarterly report presents market values of SCERS' Private Equity investments across strategy and regions as of September 30, 2017. Pages 9 and 11 provide details for commitments by vintage years, cumulative contributions/distributions to date, percent of commitment drawn, and net returns since inception.

Since inception, SCERS' Private Equity portfolio has generated a +12.2% net IRR and continues to improve versus the Cambridge PE/VC Index benchmark net IRR of +12.3%, but as you will recall, SCERS' Private Equity portfolio is still maturing (J-curve effect), compared to the index, especially for the direct program, which was initiated in 2011. SCERS Private Equity portfolio also contains several legacy Fund-of-Funds (FoFs) investments that were made in 2006-2008. As of September 30, 2017:

- SCERS' actual Private Equity allocation is 7.1% versus the target allocation of 9.0%.
- The fair value of SCERS' actual Private Equity portfolio is \$659.9 million, compared to the target allocation of \$832.8 million.
- SCERS' Private Equity portfolio drawdowns compared to SCERS' commitments:
  - Direct portfolio: \$483.8 million drawn versus \$946.4 million committed, or 51.1% drawn.
  - Fund-of-Funds: \$223.2 million drawn versus \$238.1 million committed, or 93.7% drawn.

It is industry practice to measure private equity returns over vintage years. SCERS' Private Equity portfolio vintage year since inception net IRRs versus the respective Cambridge PE/VC vintage year benchmarks:

- Fund-of-Funds portfolio net IRRs since inception versus the respective Cambridge PE/VC vintage year benchmarks:
  - 2006: +10.4% versus +7.2%
  - 2008: +11.5% versus +8.5%
- Direct portfolio net IRRs since inception versus the respective Cambridge PE/VC vintage year benchmarks:
  - 2011: +29.4% versus +12.5%
  - 2012: +11.8% versus +12.7%
  - 2013: +9.3% versus +11.2%
  - 2014: +13.0% versus +12.1%
  - 2015: +20.0% versus +8.4%

Although private equity returns are typically evaluated on a since inception basis, Cliffwater has provided net IRRs over multiple time periods for SCERS’ Private Equity portfolio, as follows:

SCERS PRIVATE EQUITY Performance Summary for the periods ending 9/30/17	Quarter	1-Year	3-Year	5-Year	Since Inception	Since Inception Date
SCERS Private Equity	5.6%	18.2%	13.5%	14.4%	12.2%	Feb-08
Cambridge Private Equity/Venture C	4.5%	17.3%	12.4%	14.6%	12.3%	

In Q4 2017, SCERS made a \$35 million commitment to Spectrum Equity Fund VIII, LP (growth equity).

**SCERS PRIVATE CREDIT PORTFOLIO**

Page 12 of Cliffwater’s quarterly report presents market values of SCERS’ Private Credit investments across strategy as of September 30, 2017. Page 13 provides details for commitments by vintage years, cumulative contributions/distributions to date, percent of commitment drawn and net returns since inception.

SCERS’ Private Credit portfolio is early in its development; however, it has less of a J-curve effect compared to Private Equity, given the faster cash flow characteristics of the asset class. Since inception, SCERS’ Private Credit portfolio has generated a +9.2% net IRR, exceeding the Credit Suisse Leverage Loan Index + 2% return of +7.4%. As of September 30, 2017:

- SCERS’ actual Private Credit allocation is 0.6% versus the target allocation of 4.0%.
- The fair value of SCERS’ actual Private Credit portfolio is \$54.6 million, compared to the target allocation of \$370.1 million.
- SCERS’ Private Credit portfolio has drawn \$86.8 million of its \$112.0 million commitment, or 77.5% drawn.

It is industry practice to measure private credit returns over vintage years. SCERS' net IRRs since inception versus the respective Cambridge Associates vintage year benchmarks returns are as follows:

- 2011: +9.5% versus +12.5%
- 2014: +10.3% versus +12.1%
- 2015: +8.2% versus +8.4%

Although private credit returns are typically evaluated on a since inception basis, Cliffwater has provided net IRRs over multiple time periods for SCERS' Private Credit portfolio, as follows:

SCERS PRIVATE CREDIT Performance Summary for the periods ending 9/30/17	Quarter	1-Year	3-Year	5-Year	Since Inception	Since Inception Date
SCERS Private Credit	1.5%	8.9%	8.6%	9.3%	9.2%	Oct-11
Credit Suisse Leveraged Loan + 2%	1.6%	7.4%	6.0%	6.4%	7.4%	

During Q4 2017, SCERS made a \$50 million commitment to Benefit Street Partners Senior Secured Opportunities Fund, LP (direct lending) and a \$100 million separate account commitment to Tennenbaum Capital Partners Direct Lending Fund VIII-S (direct lending). After the quarter, SCERS made a \$50 million commitment to Summit Partners Credit Fund III, LP (direct lending).

**SCERS REAL ASSETS PORTFOLIO**

Page 14 of Cliffwater's quarterly report provides details for commitments by vintage years, cumulative contributions/distributions to date, percent of commitment drawn, and net returns since inception for SCERS' Real Assets portfolio.

Since inception, SCERS' Real Assets portfolio has generated a +15.6% net IRR, exceeding the custom benchmark of blended indexes return of +6.6%. SCERS' Real Assets results are strong, especially since the portfolio, which was initiated in 2013, is still maturing (J-curve effect). As of September 30, 2017:

- SCERS' actual Real Assets allocation is 3.8% versus the target allocation of 7.0%.
- The fair value of SCERS' actual Real Assets portfolio is \$285.8 million, compared to the target allocation of \$647.7 million.
- SCERS' Real Assets portfolio has drawn \$306.7 million of its \$723.0 million commitment or 42.4% drawn.

It is industry practice to measure real assets returns over vintage years. SCERS' net IRRs since inception by vintage year (Cliffwater does not provide vintage year IRR benchmarks for real assets) are as follows:

- 2013: +16.5%

- 2014: +20.7%
- 2015: +9.6%

Although real asset returns are typically evaluated on a since inception basis, Cliffwater has provided net IRRs over multiple time periods for SCERS' Real Assets portfolio, as follows:

SCERS REAL ASSETS Performance Summary for the periods ending 9/30/17	Quarter	1-Year	3-Year	5-Year	Since Inception	Since Inception Date
SCERS Real Assets	1.3%	15.7%	13.7%	NA	15.6%	Jan-13
(60%) Cambridge Private Infrastructure + (50%) Cambridge Private Energy + (30%) NCREIF Agriculture/Timber	2.8%	12.1%	4.8%	NA	6.6%	

During Q4 2017, SCERS did not make any commitments. After the quarter, SCERS made a \$22.5 million commitment to EnCap Flatrock Midstream Fund IV, LP (energy infrastructure).

**SCERS REAL ASSETS PROXY**

The SSgA Real Assets proxy within the Overlay Program is used to close the gap between SCERS' Real Return asset category actual and target allocation, which Real Assets is a part. As of September 30, 2017, SCERS held \$239.0 million in the SSgA proxy. As additional commitments are made over time, the gap will begin to decrease. SCERS has committed approximately 8.0% towards the Real Assets allocation compared to 3.8% invested and 7.0% target.

**SCERS OPPORTUNITIES PORTFOLIO**

Page 17 of Cliffwater's quarterly report provides details for commitments by vintage years, cumulative contributions/distributions to date, percent of commitment drawn, and net returns since inception for SCERS' Opportunities portfolio.

SCERS' Opportunities portfolio excludes non-core real estate commitments, which were formerly part of the Opportunities portfolio in the prior asset allocation, but which are now part of the Real Estate asset class within the new strategic asset allocation, and reported separately by Townsend.

Since inception, SCERS' Opportunities portfolio has generated a +18.6% net IRR, exceeding SCERS' Total Fund Policy Index return of +7.5%. Although Opportunities returns are typically evaluated on a since inception basis, Cliffwater has provided net IRRs over multiple time periods for SCERS' Opportunities portfolio, as follows:

SCERS OPPORTUNITIES Performance Summary for the periods ending 9/30/17	Quarter	1-Year	3-Year	5-Year	Since Inception	Since Inception Date
SCERS Opportunities	-0.3%	5.8%	8.7%	11.4%	18.6%	Jan-08
SCERS Total Fund Policy Index	1.9%	7.5%	7.5%	7.5%	7.5%	

No new commitments were made in the SCERS Opportunities portfolio during Q3 2017.

**ATTACHMENT**

Cliffwater's Quarterly Performance Report for Alternative Assets

Prepared by:

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INVESTMENT ADVISORY SERVICES

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## Sacramento County Employees' Retirement System Quarterly Performance Review

March 21, 2018



## *Executive Summary*

## Absolute Return Portfolio Performance Summary – as of December 31, 2017

### Growth Oriented Strategies

- The Growth Oriented Portfolio returned 1.47% in Q4 and 11.27% for the 1 year period ending December 31, 2017
  - Underperforming the HFRI FoF Index + 1% benchmark by 81 bps in Q4, outperforming by 258 bps for the year
  - Also outperforming the T-bills + 5% long term objective by 142 bps (annualized) over the trailing 5 year period
- Good performance across most funds and strategies over these periods, though JANA was a laggard

### Diversifying Strategies

- The Diversifying Portfolio returned 1.74% in Q4 and 1.67% for the 1 year period ending December 31, 2017
  - Outperforming the HFRI Conservative FoF Index benchmark by 69 bps in Q4, trailing by 233 bps for the year
  - Outperforming the T-bills + 2% long term objective by 36 bps (annualized) over the trailing 5 year period
- Performance was primarily hurt by Brevan Howard and the Grosvenor portfolios 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 4.57% compared to the ACWI standard deviation of 10.46% since December 2011
  - Portfolio equity beta of 0.34 with an equity correlation of 0.79
    - Target standard deviation < 50% of global equities, with an equity beta < 0.5 and equity correlation < 0.8
- Diversifying
  - Portfolio standard deviation of 2.38% compared to the ACWI standard deviation of 10.46% since December 2011
  - Portfolio equity beta of 0.00 with an equity correlation of -0.02
    - 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 December 31, 2017

Fund	Market Value	Actual %	Returns								Std Dev	Sharpe Ratio	Incep Date
			Dec	QTD	YTD	FYTD	1 Year	3 Year	5 Year	Incep			
<b>Growth-Oriented Portfolio</b>													
<b>Event Driven</b>													
JANA Partners Qualified, L.P.	40,987,586	5.2%	0.17%	-0.89%	6.57%	-0.13%	6.57%	1.16%	-	3.57%	7.68%	0.42	Jul-13
Third Point Partners Qualified L.P.	49,301,153	6.2%	-0.15%	2.93%	17.77%	6.37%	17.77%	7.61%	10.51%	11.58%	7.03%	1.52	May-12
<b>Event Driven - HF Total</b>	<b>90,288,739</b>	<b>11.3%</b>	<b>0.00%</b>	<b>1.16%</b>	<b>12.41%</b>	<b>3.32%</b>	<b>12.41%</b>	<b>4.49%</b>	<b>8.09%</b>	<b>9.42%</b>	<b>7.04%</b>	<b>1.24</b>	<b>May-12</b>
<b>Equity Long/Short</b>													
Lakewood Capital Partners, LP	45,477,958	5.7%	0.02%	0.10%	8.32%	3.99%	8.32%	7.37%	-	7.87%	6.84%	1.06	Jul-13
<b>Equity Long/Short - HF Total</b>	<b>45,477,958</b>	<b>5.7%</b>	<b>0.02%</b>	<b>0.10%</b>	<b>8.32%</b>	<b>3.99%</b>	<b>8.32%</b>	<b>7.37%</b>	<b>-</b>	<b>7.87%</b>	<b>6.84%</b>	<b>1.06</b>	<b>Jul-13</b>
<b>Multi-Strategy</b>													
OZ Domestic Partners II, L.P.	46,768,479	5.9%	0.81%	1.26%	12.05%	3.65%	12.05%	4.73%	6.79%	7.68%	4.54%	1.54	Jan-12
<b>Multi-Strategy - HF Total</b>	<b>46,768,479</b>	<b>5.9%</b>	<b>0.81%</b>	<b>1.26%</b>	<b>12.05%</b>	<b>3.65%</b>	<b>12.05%</b>	<b>4.73%</b>	<b>6.79%</b>	<b>7.68%</b>	<b>4.54%</b>	<b>1.54</b>	<b>Jan-12</b>
<b>Fund of Funds</b>													
Grosvenor Institutional US Hedged Fund	190,870	0.0%	-1.54%	-53.55%	-53.30%	-52.46%	-53.30%	-11.05%	-4.40%	0.19%	26.15%	0.07	Sep-04
Grosvenor SC Absolute Return Fund LLC	163,527,919	20.6%	0.88%	2.17%	11.67%	5.18%	11.67%	3.90%	6.23%	6.64%	4.45%	1.35	Dec-11
Grosvenor SC Absolute Return Fund LLC Series B	39,299,496	4.9%	0.90%	1.68%	10.43%	3.90%	10.43%	3.96%	-	5.22%	4.14%	1.11	Feb-13
<b>Fund of Funds - HF Total</b>	<b>203,018,285</b>	<b>25.5%</b>	<b>0.89%</b>	<b>1.96%</b>	<b>11.28%</b>	<b>4.81%</b>	<b>11.28%</b>	<b>3.98%</b>	<b>6.09%</b>	<b>4.77%</b>	<b>6.10%</b>	<b>0.52</b>	<b>Sep-04</b>
<b>Growth-Oriented Portfolio Total</b>	<b>385,553,461</b>	<b>48.5%</b>	<b>0.57%</b>	<b>1.47%</b>	<b>11.27%</b>	<b>4.22%</b>	<b>11.27%</b>	<b>4.44%</b>	<b>6.69%</b>	<b>5.10%</b>	<b>6.20%</b>	<b>0.57</b>	<b>Sep-04</b>
HFRI FoF Composite + 1%			0.97%	2.28%	8.69%	4.86%	8.69%	3.58%	4.99%	4.30%	5.02%	0.54	Sep-04
3 Month T-Bills+5%			0.52%	1.51%	5.86%	3.01%	5.86%	5.41%	5.27%	6.30%	0.50%	-	Sep-04
<b>Market Indices</b>													
Libor3Month			0.14%	0.38%	1.29%	0.71%	1.29%	0.79%	0.58%	1.66%	0.52%	-	Sep-04
Barclays Aggregate Bond Index			0.46%	0.39%	3.55%	1.24%	3.55%	2.25%	2.10%	4.13%	3.12%	0.78	Sep-04
Barclays High Yield Credit Bond Index			0.30%	0.46%	7.50%	2.45%	7.50%	6.36%	5.78%	7.71%	9.45%	0.66	Sep-04
S&P 500 TR			1.11%	6.64%	21.83%	11.42%	21.83%	11.41%	15.79%	9.11%	13.60%	0.59	Sep-04
MSCI AC World Index Free - Net			1.61%	5.73%	23.97%	11.21%	23.97%	9.30%	10.80%	7.73%	15.22%	0.46	Sep-04
MSCI EAFE - Net			1.61%	4.23%	25.03%	9.86%	25.03%	7.80%	7.90%	6.40%	16.84%	0.36	Sep-04
MSCI EMF (Emerging Markets Free) - Net			3.59%	7.44%	37.28%	15.92%	37.28%	9.10%	4.35%	10.12%	21.99%	0.48	Sep-04

# Diversifying Absolute Return Portfolio Performance – as of December 31, 2017

Fund	Market Value	Actual %	Returns								Std Dev	Sharpe Ratio	Incep Date
			Dec	QTD	YTD	FYTD	1 Year	3 Year	5 Year	Incep			
<b>Diversifying Portfolio</b>													
<b>Market Neutral</b>													
Laurion Capital, Ltd.	43,008,387	5.4%	1.38%	3.59%	2.65%	3.98%	2.65%	6.18%	-	5.52%	5.17%	0.94	Mar-14
Market Neutral - HF Total	43,008,387	5.4%	1.38%	3.59%	2.65%	3.98%	2.65%	6.18%	-	5.52%	5.17%	0.94	Mar-14
<b>Credit/Distressed</b>													
Claren Road Credit Partners, LP	141,746	0.0%	-1.42%	-17.39%	-13.30%	-19.39%	-13.30%	-6.23%	-4.84%	-3.71%	11.65%	-0.31	Feb-12
Credit/Distressed - HF Total	141,746	0.0%	-1.42%	-17.39%	-13.30%	-19.39%	-13.30%	-6.23%	-4.84%	-3.71%	11.65%	-0.31	Feb-12
<b>Event Driven</b>													
Elliott International Limited	53,016,692	6.7%	1.73%	2.12%	8.60%	4.91%	8.60%	7.42%	8.06%	8.07%	3.46%	2.11	Apr-12
Event Driven - HF Total	53,016,692	6.7%	1.73%	2.12%	8.60%	4.91%	8.60%	7.42%	8.06%	8.07%	3.46%	2.11	Apr-12
<b>Macro-Discretionary</b>													
Brevan Howard LP	33,943,932	4.3%	0.00%	-0.81%	-5.32%	-0.16%	-5.32%	-1.51%	-	-0.80%	5.45%	-0.24	Mar-14
Macro-Discretionary - HF Total	33,943,932	4.3%	0.00%	-0.81%	-5.32%	-0.16%	-5.32%	-2.10%	-1.30%	-0.60%	4.26%	-0.25	May-12
<b>Macro-Systematic</b>													
Graham Global Investment Fund II Ltd. - Tactical Trend SF	35,303,646	4.4%	2.94%	9.45%	-	7.62%	-	-	-	0.87%	9.05%	-	Feb-17
Winton Diversified Futures Fund L.P.	37,216,076	4.7%	3.09%	7.12%	6.33%	7.90%	6.33%	-	-	6.33%	6.47%	0.79	Jan-17
Macro-Systematic - HF Total	72,519,722	9.1%	3.02%	8.24%	3.19%	7.76%	3.19%	-	-	3.19%	7.03%	0.30	Jan-17
<b>Multi-Strategy</b>													
AQR DELTA Fund II, LP	72,524,364	9.1%	1.35%	1.00%	4.48%	4.49%	4.48%	5.43%	-	5.62%	5.04%	0.99	May-13
Multi-Strategy - HF Total	72,524,364	9.1%	1.35%	1.00%	4.48%	4.49%	4.48%	5.43%	-	5.62%	5.04%	0.99	May-13
<b>Fund of Funds</b>													
Grosvenor SC Absolute Return Fund LLC	103,140,431	13.0%	-0.17%	-1.07%	-1.12%	-0.31%	-1.12%	-1.00%	1.60%	1.84%	3.21%	0.41	Dec-11
Grosvenor SC Absolute Return Fund LLC Series B	31,783,847	4.0%	0.00%	-0.85%	-3.45%	-1.03%	-3.45%	-2.29%	-	0.67%	2.74%	0.04	Feb-13
Fund of Funds - HF Total	134,924,278	-0.13%	-1.02%	-1.72%	-0.49%	-1.72%	-1.44%	1.42%	1.70%	2.94%	0.40	Dec-11	
Diversifying Portfolio Total	410,079,120	51.5%	1.08%	1.74%	1.67%	2.89%	1.67%	1.70%	2.63%	2.63%	2.38%	0.87	Dec-11
HFRI FOF: Conservative Index			0.46%	1.05%	4.00%	2.38%	4.00%	2.08%	3.39%	3.42%	2.14%	1.33	Dec-11
3 Month T-Bills+2%			0.28%	0.78%	2.86%	1.54%	2.86%	2.41%	2.27%	2.24%	0.09%	-	Dec-11
SCERS Absolute Return Portfolio	795,632,581	100.0%	0.83%	1.61%	6.26%	3.53%	6.26%	2.96%	5.01%	4.37%	5.80%	0.48	Sep-04
3 Month T-Bills+5%			0.52%	1.51%	5.86%	3.01%	5.86%	5.41%	5.27%	6.30%	0.50%	-	Sep-04
HFRI Fund of Funds Composite Index			0.88%	1.98%	7.69%	4.34%	7.69%	2.58%	3.99%	3.29%	5.07%	0.34	Sep-04

\* Included the SCERS Total Absolute Return Portfolio performance for reference

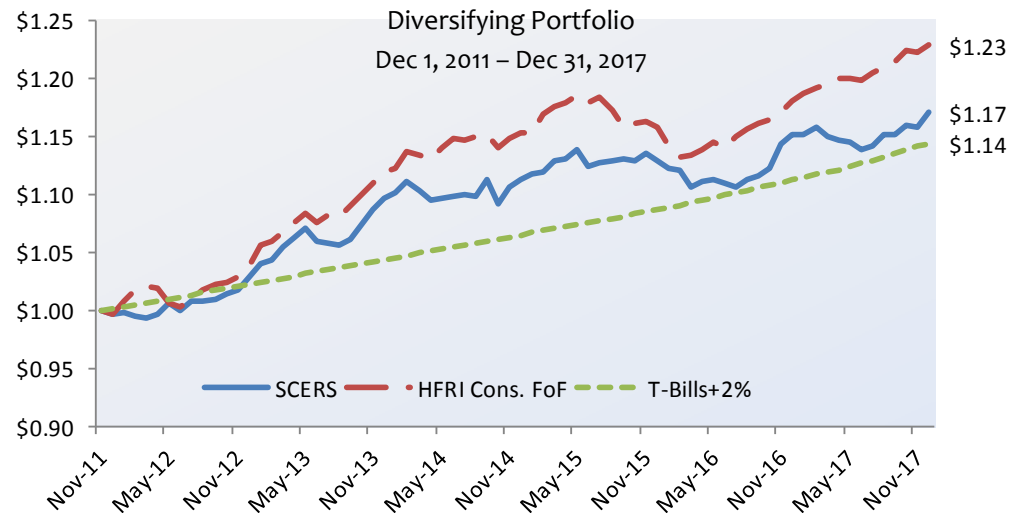
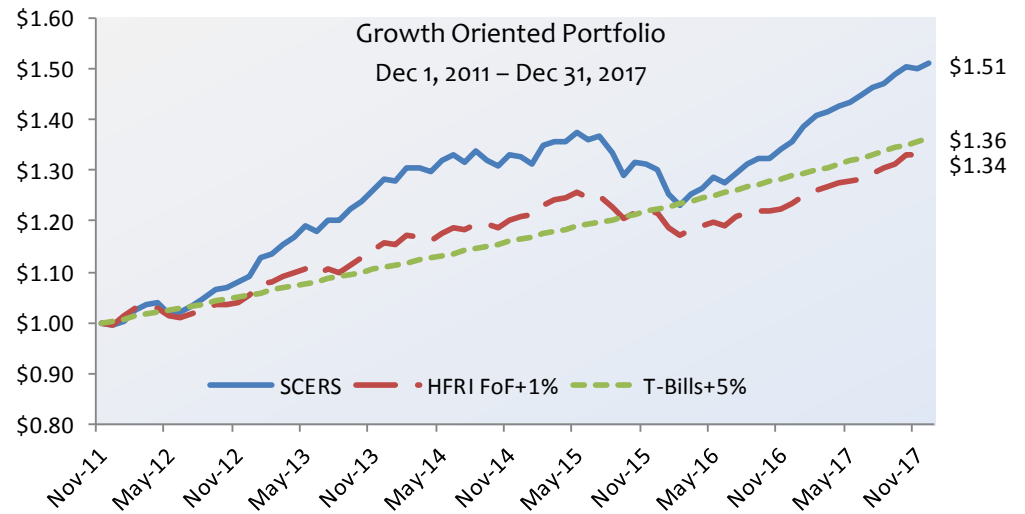
# Absolute Return Portfolios Cumulative Performance – Dec. 2011 to Dec. 2017

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 outperformed 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 September 30, 2017

The Private Equity portfolio's net IRR since inception is 12.20%, versus the Cambridge Associates benchmark IRR of 12.29%

- The long-term Policy benchmark (Russell 3000 + 3%) has a 15.86% IRR over this period

The private equity portfolio once again generated strong gains during the quarter

- Many of the buyout and venture capital funds generated quarterly returns greater than 10%
  - HIG V, Summit VC IV, Marlin Heritage, Accel-KKR IV, Khosla V, and the Waterland funds reported the largest gains in Q3
- Continued meaningful distributions, particularly among the direct fund investments
  - Marlin Heritage, RRJ II, TOP III, and Thoma Bravo XI led distributions within direct; FoFs distributed \$15.4 million in Q3

Continued strong performance of the direct fund investments

- Double-digit net IRRs for nearly all vintage years of direct
- Marlin Heritage (40.2%), Waterland V (37.7%) and VI (26.8%), and Accel-KKR IV (22.5%) are leading performance

The fund of funds also reported gains during the quarter

- Aggregate since inception net IRR increased to 11.18% from 10.88% during the quarter
  - The aggregate total value (TVPI) improved to 1.53x from 1.50x
- HarbourVest VIII has generated the best relative performance, HarbourVest International also leads its benchmark
- Abbott Capital and Goldman Sachs improved but continue to lag peer vintage year fund of funds
- The fund of funds comprise approximately 25% of the current fair value of the Private Equity portfolio

Changes during the quarter

- SCERS committed \$65 million across a European growth equity and a distressed opportunities fund during Q3
  - SCERS also committed \$25 million to Spectrum Equity VIII (growth equity) in Q4 2017
- \$31.6 million in new contributions, \$53.0 million in distributions
- Total portfolio gain increased by \$35.7 million while the total portfolio IRR increased 0.69%

## Private Equity Portfolio Characteristics as of September 30, 2017

The SCERS Private Equity portfolio is diversified by strategy and geography

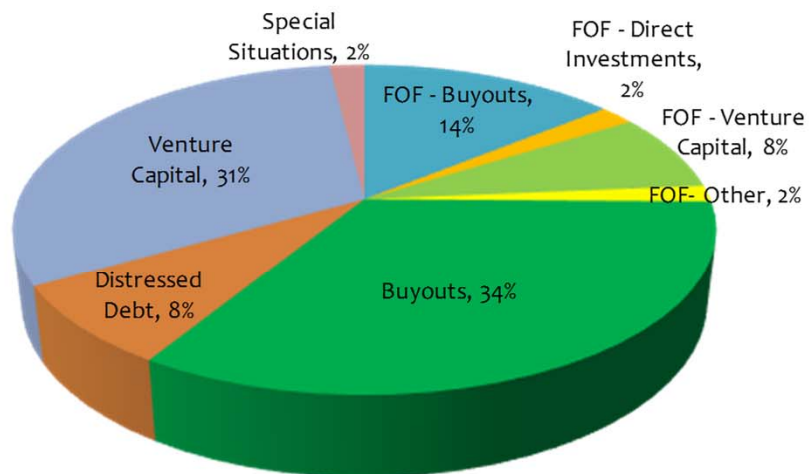
- Investments remain focused in North America, with meaningful exposure to Europe

Fund of funds exposure continues to decrease

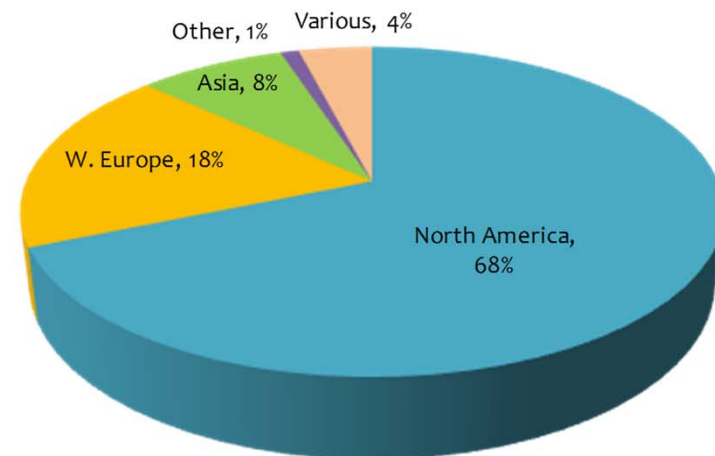
- Investments from direct private equity funds represent roughly 75% of the total portfolio's value as of September 30, 2017

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

Market Value Strategy Exposure\*



Market Value Geographic Exposure\*



\* Exposures are based on the market values of investments as of 9/30/17.



## Private Equity Portfolio Performance Details – as of September 30, 2017

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
<b>Vintage Year 2006</b>												
HarbourVest Partners VIII - Buyout Fund L.P.	Fund of Funds	37,500	2,063	35,438	95%	40,229	18,802	59,032	23,594	10.75%	7.67%	1.67x
HarbourVest Partners VIII - Mezzanine and Distressed Debt Fund L.P.	Fund of Funds	5,000	200	4,800	96%	5,115	1,517	6,632	1,832	7.82%	7.67%	1.38x
HarbourVest Partners VIII - Venture Fund L.P.	Fund of Funds	7,500	150	7,350	98%	7,372	5,336	12,708	5,358	10.30%	7.67%	1.73x
<b>Vintage Year 2006 Total</b>		<b>50,000</b>	<b>2,413</b>	<b>47,588</b>	<b>95%</b>	<b>52,717</b>	<b>25,655</b>	<b>78,372</b>	<b>30,784</b>	<b>10.43%</b>	<b>7.21%</b>	<b>1.65x</b>
<b>Vintage Year 2008</b>												
Abbott Capital Private Equity Fund VI, L.P.	Fund of Funds	75,000	4,500	70,500	94%	39,376	64,416	103,792	33,292	11.58%	12.80%	1.47x
Goldman Sachs Private Equity Partners X, L.P.	Fund of Funds	75,000	12,949	68,433	83%	63,962	44,374	108,336	39,903	11.45%	12.80%	1.58x
HarbourVest International Private Equity Partners VI-Partnership Fund L.P.	Fund of Funds	38,062	3,426	36,708	91%	15,385	36,510	51,895	15,187	11.68%	9.06%	1.41x
<b>Vintage Year 2008 Total</b>		<b>188,062</b>	<b>20,874</b>	<b>175,641</b>	<b>89%</b>	<b>118,723</b>	<b>145,300</b>	<b>264,023</b>	<b>88,382</b>	<b>11.52%</b>	<b>8.49%</b>	<b>1.50x</b>
<b>Vintage Year 2011</b>												
Waterland Private Equity Fund V C.V.	Buyout	18,913	4,519	14,915	76%	19,412	14,538	33,950	19,035	37.65%	13.84%	2.28x
Khosla Ventures IV, L.P.	Venture Capital	10,000	190	9,810	98%	1,239	17,516	18,755	8,945	19.19%	14.65%	1.91x
<b>Vintage Year 2011 Total</b>		<b>28,913</b>	<b>4,709</b>	<b>24,725</b>	<b>84%</b>	<b>20,651</b>	<b>32,055</b>	<b>52,705</b>	<b>27,980</b>	<b>29.43%</b>	<b>12.49%</b>	<b>2.13x</b>
<b>Vintage Year 2012</b>												
Garrison Opportunity Fund III A LLC	Distressed Debt	20,000	0	20,000	100%	6,220	13,633	19,853	-147	-0.21%	12.42%	0.99x
New Enterprise Associates 14, L.P.	Venture Capital	25,000	1,500	23,500	94%	2,945	36,421	39,366	15,866	16.55%	12.57%	1.68x
Summit Partners Venture Capital III-A, LP	Venture Capital	16,350	2,000	18,525	88%	9,095	22,378	31,473	12,949	18.61%	12.57%	1.70x
<b>Vintage Year 2012 Total</b>		<b>61,350</b>	<b>3,500</b>	<b>62,025</b>	<b>94%</b>	<b>18,260</b>	<b>72,432</b>	<b>90,692</b>	<b>28,668</b>	<b>11.85%</b>	<b>12.66%</b>	<b>1.46x</b>
<b>Vintage Year 2013</b>												
Accel-KKR Capital Partners IV, L.P.	Buyout	15,000	3,713	11,287	75%	5,949	11,134	17,083	5,796	22.48%	14.83%	1.51x
H.I.G. Capital Partners V, L.P.	Buyout	14,000	9,407	4,593	33%	1,437	4,691	6,128	1,536	17.01%	14.83%	1.33x
Marlin Equity IV, L.P.	Buyout	20,000	6,512	13,488	67%	191	14,718	14,909	1,421	4.96%	14.83%	1.11x
RRJ Capital Master Fund II, L.P.	Buyout	35,000	4,838	34,913	86%	21,794	20,989	42,783	7,871	9.44%	13.38%	1.23x
H.I.G. Bayside Loan Opportunity Fund III (Europe-US\$), L.P.	Distressed Debt	30,000	5,769	24,231	81%	7,442	22,330	29,771	5,541	9.67%	5.78%	1.23x
Wayzata Opportunities Fund III, L.P.	Distressed Debt	30,000	22,037	14,718	27%	6,782	8,076	14,858	140	0.45%	8.67%	1.01x

<sup>1</sup>Benchmarks:

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 September 30, 2017 (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	6,063	18,938	76%	0	23,797	23,797	4,859	8.75%	10.98%	1.26x
<b>Vintage Year 2013 Total</b>		<b>169,000</b>	<b>58,339</b>	<b>122,167</b>	<b>65%</b>	<b>43,594</b>	<b>105,735</b>	<b>149,329</b>	<b>27,163</b>	<b>9.30%</b>	<b>11.19%</b>	<b>1.22x</b>
<b>Vintage Year 2014</b>												
Dyal Capital Partners II	Buyout	35,000	22,786	12,865	35%	2,856	8,435	11,291	-1,574	-7.65%	15.40%	0.88x
H.I.G. Europe Capital Partners II, L.P.	Buyout	16,549	11,740	4,782	29%	0	4,082	4,082	-700	-35.62%	12.17%	0.85x
Marlin Heritage Fund	Buyout	10,000	1,235	8,765	88%	7,075	8,439	15,515	6,750	40.23%	15.40%	1.77x
Thoma Bravo XI	Buyout	30,000	3,325	30,787	89%	4,112	35,494	39,606	8,819	12.31%	15.40%	1.29x
TPG Opportunities Partners III	Distressed Debt	40,000	22,687	29,285	43%	13,706	19,099	32,805	3,520	9.16%	9.84%	1.12x
Khosla Ventures V	Venture Capital	20,000	7,660	12,340	62%	1,013	14,634	15,646	3,306	14.48%	10.39%	1.27x
Spectrum Equity Investors VII, L.P.	Venture Capital	25,000	4,938	20,063	80%	5,463	21,165	26,628	6,566	20.61%	10.39%	1.33x
<b>Vintage Year 2014 Total</b>		<b>176,549</b>	<b>74,371</b>	<b>118,886</b>	<b>58%</b>	<b>34,226</b>	<b>111,348</b>	<b>145,574</b>	<b>26,688</b>	<b>13.04%</b>	<b>12.11%</b>	<b>1.22x</b>
<b>Vintage Year 2015</b>												
RRJ Capital Master Fund III, LP	Buyout	40,000	26,740	13,786	33%	689	14,519	15,208	1,422	N/M	N/M	1.10x
WPEF VI Feeder, L.P.	Buyout	28,369	18,379	9,400	35%	0	11,370	11,370	1,970	26.79%	14.50%	1.21x
WPEF VI Overflow Fund C.V.	Buyout	7,092	7,083	9	0%	0	0	0	-8	N/M	N/M	0.05x
Accel-KKR Growth Capital Partners II	Mezzanine	15,000	10,260	4,740	32%	0	4,644	4,644	-96	-1.39%	12.26%	0.98x
New Enterprise Associates 15, L.P.	Venture Capital	35,000	10,500	24,504	70%	0	31,500	31,500	6,996	19.61%	5.77%	1.29x
Summit Partners Venture Capital Fund IV-A, L.P.	Venture Capital	35,000	26,263	8,737	25%	0	12,952	12,952	4,215	N/M	N/M	1.48x
<b>Vintage Year 2015 Total</b>		<b>160,461</b>	<b>99,225</b>	<b>61,177</b>	<b>38%</b>	<b>689</b>	<b>74,987</b>	<b>75,676</b>	<b>14,499</b>	<b>20.00%</b>	<b>8.44%</b>	<b>1.24x</b>
<b>Vintage Year 2016</b>												
Accel-KKR Capital Partners V, L.P.	Buyout	25,000	20,491	4,509	18%	0	4,230	4,230	-279	N/M	N/M	0.94x
Dyal III Pension Investors LP	Buyout	35,000	25,476	11,886	27%	1,640	11,390	13,029	1,143	N/M	N/M	1.10x
Linden Capital Partners III	Buyout	35,000	10,808	24,192	69%	58	28,617	28,675	4,483	N/M	N/M	1.19x
Marlin Heritage Europe, L.P.	Buyout	15,367	12,365	3,002	20%	0	2,828	2,828	-174	N/M	N/M	0.94x
Thoma Bravo Fund XII, L.P.	Buyout	30,000	17,850	14,929	40%	2,781	12,163	14,945	15	N/M	N/M	1.00x
TSG7 A L.P.	Buyout	16,000	10,550	5,450	34%	0	5,283	5,283	-167	N/M	N/M	0.97x
TSG7 B L.P.	Buyout	4,000	3,568	432	11%	0	261	261	-171	N/M	N/M	0.60x

<sup>1</sup>Benchmarks:

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 September 30, 2017 (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	9,101	19,753	64%	4,668	16,631	21,299	1,546	N/M	N/M	1.08x
Trinity Ventures XII, L.P.	Venture Capital	30,000	21,750	8,250	28%	0	8,690	8,690	440	N/M	N/M	1.05x
<b>Vintage Year 2016 Total</b>		<b>215,367</b>	<b>131,957</b>	<b>92,404</b>	<b>39%</b>	<b>9,147</b>	<b>90,093</b>	<b>99,241</b>	<b>6,837</b>	<b>N/M</b>	<b>N/M</b>	<b>1.07x</b>
<b>Vintage Year 2017</b>												
Marlin Equity V	Buyout	25,000	25,000	0	0%	0	0	0	0	N/M	N/M	N/A
Marlin Heritage II	Buyout	10,000	10,000	0	0%	0	0	0	0	N/M	N/M	N/A
Summit Partners Europe Growth Equity Fund II, SCSP	Buyout	30,000	30,000	0	0%	0	0	0	0	N/M	N/M	N/A
Davidson Kempner Long-Term Distressed Opportunities Fund IV LP	Distressed Debt	35,000	35,000	0	0%	0	0	0	0	N/M	N/M	N/A
New Enterprise Associates 16, L.P.	Venture Capital	35,000	32,550	2,450	7%	0	2,329	2,329	-121	N/M	N/M	0.95x
<b>Vintage Year 2017 Total</b>		<b>135,000</b>	<b>132,550</b>	<b>2,450</b>	<b>2%</b>	<b>0</b>	<b>2,329</b>	<b>2,329</b>	<b>-121</b>	<b>N/M</b>	<b>N/M</b>	<b>0.95x</b>
<b>Portfolio Total :</b>		<b>1,184,702</b>	<b>527,937</b>	<b>707,062</b>	<b>55%</b>	<b>298,007</b>	<b>659,934</b>	<b>957,941</b>	<b>250,879</b>	<b>12.20%</b>	<b>12.29%</b>	<b>1.35x</b>
<b>Portfolio Strategy Totals</b>												
Buyout		495,290	286,384	223,991	42%	67,995	213,182	281,177	57,186	16.04%		1.26x
Distressed Debt		180,000	94,594	107,986	47%	38,818	79,769	118,587	10,601	4.74%		1.10x
Fund of Funds		238,062	23,287	223,229	90%	171,440	170,955	342,395	119,166	11.18%		1.53x
Mezzanine		15,000	10,260	4,740	32%	0	4,644	4,644	-96	-1.39%		0.98x
Venture Capital		256,350	113,412	147,116	56%	19,755	191,382	211,137	64,021	17.04%		1.44x
<b>Portfolio Total :</b>		<b>1,184,702</b>	<b>527,937</b>	<b>707,062</b>	<b>55%</b>	<b>298,007</b>	<b>659,934</b>	<b>957,941</b>	<b>250,879</b>	<b>12.20%</b>	<b>12.29%</b>	<b>1.35x</b>

<sup>1</sup>Benchmarks:

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 September 30, 2017

The Private Credit portfolio's net IRR since inception is 9.24%, versus the benchmark return of 7.43%

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

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

- Summit Credit I & II are Direct Lending strategies; Athyrium II & III are Opportunistic Credit
  - Athyrium III was a new commitment made in May 2017
- The Private Credit funds continued to generate steady performance during Q3
  - Overall return of 1.5% in Q3 and 8.9% for the trailing 1 year period ending September 30, 2017

### Changes during the quarter

- SCERS made no new Private Credit commitments during Q3
  - SCERS committed \$100 million in Q4 2017 to a direct lending separate account managed by Tennenbaum Capital
- \$5.5 million in new contributions, \$1.4 million in distributions
- Portfolio IRR decreased 0.26% while the total portfolio gain increased by \$0.8 million

*Market Value Strategy Exposure  
(based on fair value of investments)  
as of September 30, 2017*



## Private Credit Portfolio Details – as of September 30, 2017

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
<b>Vintage Year 2011</b>												
Summit Partners Credit Fund, LP	Direct Lending	20,000	0	20,697	100%	20,523	5,998	26,521	5,824	9.47%	N/A	1.28x
<b>Vintage Year 2011 Total</b>		<b>20,000</b>	<b>0</b>	<b>20,697</b>	<b>100%</b>	<b>20,523</b>	<b>5,998</b>	<b>26,521</b>	<b>5,824</b>	<b>9.47%</b>	<b>12.49%</b>	<b>1.28x</b>
<b>Vintage Year 2014</b>												
Summit Partners Credit Fund II, L.P.	Direct Lending	35,000	13,966	31,080	60%	13,015	22,595	35,610	4,530	10.28%	3.65%	1.15x
<b>Vintage Year 2014 Total</b>		<b>35,000</b>	<b>13,966</b>	<b>31,080</b>	<b>60%</b>	<b>13,015</b>	<b>22,595</b>	<b>35,610</b>	<b>4,530</b>	<b>10.28%</b>	<b>12.11%</b>	<b>1.15x</b>
<b>Vintage Year 2015</b>												
Athyrium Opportunities Fund II	Opportunistic Credit	32,000	12,815	31,406	60%	12,112	22,612	34,724	3,319	8.18%	12.26%	1.11x
<b>Vintage Year 2015 Total</b>		<b>32,000</b>	<b>12,815</b>	<b>31,406</b>	<b>60%</b>	<b>12,112</b>	<b>22,612</b>	<b>34,724</b>	<b>3,319</b>	<b>8.18%</b>	<b>8.44%</b>	<b>1.11x</b>
<b>Vintage Year 2017</b>												
Athyrium Opportunities Fund III	Opportunistic Credit	25,000	21,541	3,652	14%	151	3,372	3,523	-129	N/M	N/M	0.96x
<b>Vintage Year 2017 Total</b>		<b>25,000</b>	<b>21,541</b>	<b>3,652</b>	<b>14%</b>	<b>151</b>	<b>3,372</b>	<b>3,523</b>	<b>-129</b>	<b>N/M</b>	<b>N/M</b>	<b>0.96x</b>
<b>Portfolio Total :</b>		<b>112,000</b>	<b>48,321</b>	<b>86,834</b>	<b>57%</b>	<b>45,801</b>	<b>54,577</b>	<b>100,378</b>	<b>13,544</b>	<b>9.24%</b>	<b>7.43%</b>	<b>1.16x</b>

<sup>1</sup>Benchmarks:

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 September 30, 2017

The Real Assets portfolio's net IRR since inception is 15.63%, versus the blended benchmark return of 6.59%

- 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 18.0% for Energy and 14.4% for Infrastructure
- Generally positive performance across the Real Assets funds during the quarter
  - EnCap Flatrock Midstream III was the strongest performing fund in Q3
  - EnCap's upstream energy funds (IX and X) and Brookfield Infrastructure also produced returns greater than 3% in Q3
  - Carlyle Power Partners II and Wastewater saw modest declines in Q3
    - Both funds have been laggards in the portfolio and have had relatively slow investment paces

Changes during the quarter

- SCERS committed \$90 million across an infrastructure fund and an upstream energy fund in Q3
- \$24.8 million in new contributions, \$11.8 million in distributions
- Portfolio IRR decreased 2.13% while the total portfolio gain increased by \$3.4 million

## Real Assets Portfolio Performance Details – as of September 30, 2017

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
<b>Vintage Year 2013</b>												
EnCap Energy Capital Fund IX, L.P.	Energy	33,000	4,676	34,208	86%	20,988	24,089	45,077	10,869	16.49%	3.33%	1.32x
<b>Vintage Year 2013 Total</b>		<b>33,000</b>	<b>4,676</b>	<b>34,208</b>	<b>86%</b>	<b>20,988</b>	<b>24,089</b>	<b>45,077</b>	<b>10,869</b>	<b>16.49%</b>		<b>1.32x</b>
<b>Vintage Year 2014</b>												
Carlyle Power Partners II, L.P.	Energy	40,000	27,435	15,666	31%	2,964	11,326	14,290	-1,377	-6.07%	9.14%	0.91x
EnCap Flatrock Midstream III	Energy	20,000	11,155	9,416	44%	1,597	9,973	11,569	2,153	21.40%	9.14%	1.23x
Global Energy & Power Infrastructure Fund II	Energy	35,000	22,481	14,015	36%	14,446	8,400	22,846	8,831	53.00%	9.14%	1.63x
Quantum Energy Partners VI, LP	Energy	35,000	15,710	21,387	55%	7,210	22,640	29,849	8,462	41.11%	9.14%	1.40x
Pantheon SCERS SIRF MM, LLC	Infrastructure	100,000	62,700	37,300	37%	0	52,044	52,044	14,744	19.15%	N/A	1.40x
Wastewater Opportunity Fund	Infrastructure	25,000	18,832	6,175	25%	0	4,821	4,821	-1,354	N/M	N/M	0.78x
<b>Vintage Year 2014 Total</b>		<b>255,000</b>	<b>158,312</b>	<b>103,959</b>	<b>38%</b>	<b>26,216</b>	<b>109,203</b>	<b>135,419</b>	<b>31,460</b>	<b>20.68%</b>		<b>1.30x</b>
<b>Vintage Year 2015</b>												
ArcLight Energy Partners Fund VI	Energy	40,000	15,064	29,672	62%	6,879	25,021	31,900	2,228	6.41%	22.13%	1.08x
EnCap Energy Capital Fund X, L.P.	Energy	40,000	18,445	24,055	54%	5,576	21,879	27,455	3,400	17.24%	22.13%	1.14x
Atalaya Real Assets SMA	Real Asset Debt	100,000	86,814	18,200	13%	6,528	13,597	20,125	1,925	7.93%	N/A	1.11x
<b>Vintage Year 2015 Total</b>		<b>180,000</b>	<b>120,322</b>	<b>71,927</b>	<b>33%</b>	<b>18,982</b>	<b>60,498</b>	<b>79,480</b>	<b>7,553</b>	<b>9.56%</b>		<b>1.11x</b>
<b>Vintage Year 2016</b>												
ACM Fund II, LLC	Agriculture	25,000	21,516	7,631	14%	4,194	2,924	7,118	-513	N/M	N/M	0.93x
Brookfield Infrastructure Fund III, L.P.	Infrastructure	40,000	29,170	10,819	27%	674	11,189	11,863	1,044	N/M	N/M	1.10x
IFM Global Infrastructure Fund	Infrastructure	100,000	25,000	75,000	75%	2,929	75,345	78,275	3,275	N/M	N/M	1.04x
<b>Vintage Year 2016 Total</b>		<b>165,000</b>	<b>75,686</b>	<b>93,450</b>	<b>54%</b>	<b>7,798</b>	<b>89,458</b>	<b>97,256</b>	<b>3,806</b>	<b>N/M</b>		<b>1.04x</b>
<b>Vintage Year 2017</b>												
Quantum Energy Partners VII, LP	Energy	40,000	37,498	2,502	6%	0	2,242	2,242	-259	N/M	N/M	0.90x
Meridiam Infrastructure North America Fund III	Infrastructure	50,000	49,353	647	1%	0	347	347	-300	N/M	N/M	0.54x
<b>Vintage Year 2017 Total</b>		<b>90,000</b>	<b>86,851</b>	<b>3,149</b>	<b>3%</b>	<b>0</b>	<b>2,589</b>	<b>2,589</b>	<b>-560</b>	<b>N/M</b>		<b>0.82x</b>
<b>Portfolio Total :</b>		<b>723,000</b>	<b>445,847</b>	<b>306,694</b>	<b>38%</b>	<b>73,985</b>	<b>285,837</b>	<b>359,822</b>	<b>53,128</b>	<b>15.63%</b>	<b>6.59%</b>	<b>1.17x</b>

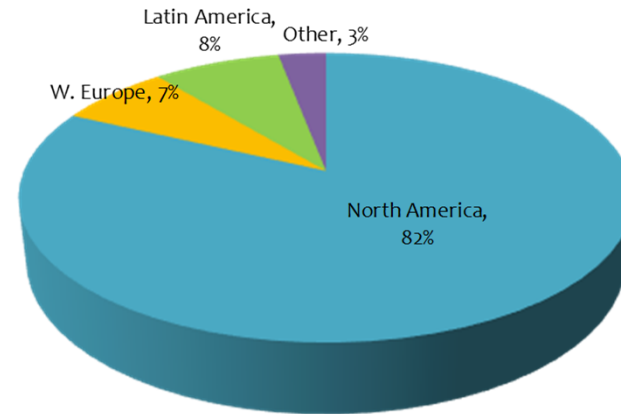
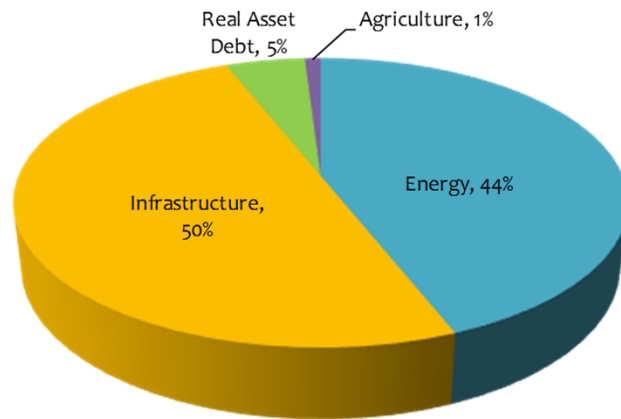
<sup>1</sup> Benchmarks:

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 September 30, 2017 (continued)

Partnership Name	(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
<b>Portfolio Strategy Totals</b>											
Agriculture	25,000	21,516	7,631	14%	4,194	2,924	7,118	-513	N/M		0.93x
Energy	283,000	152,463	150,921	46%	59,659	125,570	185,229	34,308	17.96%		1.23x
Infrastructure	315,000	185,055	129,942	41%	3,604	143,746	147,350	17,408	14.35%		1.13x
Real Asset Debt	100,000	86,814	18,200	13%	6,528	13,597	20,125	1,925	7.93%		1.11x
<b>Portfolio Total :</b>	<b>723,000</b>	<b>445,847</b>	<b>306,694</b>	<b>38%</b>	<b>73,985</b>	<b>285,837</b>	<b>359,822</b>	<b>53,128</b>	<b>15.63%</b>	<b>6.59%</b>	<b>1.17x</b>

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



\* Exposures are based on the market values of investments as of 9/30/17

<sup>1</sup> 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 September 30, 2017

### The Opportunities portfolio's net IRR since inception is 18.58%

- 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
  - 8.66% portfolio IRR v 4.98% 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 now 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 an 8.57% net IRR since inception

### Changes during the quarter

- SCERS made no new commitments categorized as Opportunities funds during Q3 2017
- No new contributions, \$2.3 million in distributions
- Portfolio IRR decreased 0.06%, total portfolio gain decreased 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 September 30, 2017

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
<b>Vintage Year 2007</b>												
* PIMCO Distressed Mortgage Fund, LP	Distressed Debt	18,000	0	18,000	100%	25,384	0	25,384	7,384	8.96%	8.61%	1.41x
<b>Vintage Year 2007 Total</b>		<b>18,000</b>	<b>0</b>	<b>18,000</b>	<b>100%</b>	<b>25,384</b>	<b>0</b>	<b>25,384</b>	<b>7,384</b>	<b>8.96%</b>		<b>1.41x</b>
<b>Vintage Year 2008</b>												
* PIMCO Distressed Mortgage Fund II, L.P.	Distressed Debt	12,000	0	12,000	100%	35,277	0	35,277	23,277	34.39%	12.01%	2.94x
<b>Vintage Year 2008 Total</b>		<b>12,000</b>	<b>0</b>	<b>12,000</b>	<b>100%</b>	<b>35,277</b>	<b>0</b>	<b>35,277</b>	<b>23,277</b>	<b>34.39%</b>		<b>2.94x</b>
<b>Vintage Year 2009</b>												
* MetWest Enhanced TALF Strategy Fund LP	Distressed Debt	20,000	0	20,000	100%	25,304	0	25,304	5,304	11.21%	14.96%	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%	14.96%	1.72x
<b>Vintage Year 2009 Total</b>		<b>45,000</b>	<b>0</b>	<b>45,248</b>	<b>100%</b>	<b>68,687</b>	<b>0</b>	<b>68,687</b>	<b>23,439</b>	<b>19.71%</b>		<b>1.52x</b>
<b>Vintage Year 2013</b>												
Atalaya Special Opportunities Fund V, L.P.	Distressed Debt	25,000	1,117	24,875	96%	19,528	10,547	30,076	5,201	8.57%	8.67%	1.21x
<b>Vintage Year 2013 Total</b>		<b>25,000</b>	<b>1,117</b>	<b>24,875</b>	<b>96%</b>	<b>19,528</b>	<b>10,547</b>	<b>30,076</b>	<b>5,201</b>	<b>8.57%</b>		<b>1.21x</b>
<b>Portfolio Total :</b>		<b>100,000</b>	<b>1,117</b>	<b>100,123</b>	<b>99%</b>	<b>148,876</b>	<b>10,547</b>	<b>159,423</b>	<b>59,301</b>	<b>18.58%</b>	<b>7.00%</b>	<b>1.59x</b>

\* Liquidated partnership

<sup>1</sup> 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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