



# Board of Retirement Regular Meeting

## Sacramento County Employees' Retirement System

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### Agenda Item 17

**MEETING DATE:** June 20, 2018

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

**SUBMITTED FOR:**  Consent  Deliberation  
and Action  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 March 31, 2018 for the Absolute Return portfolio, and the period ending December 31, 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.

SCERS' alternative asset class period returns are as follows:

**SCERS ALTERNATIVE ASSETS PERFORMANCE SUMMARY**  
**Quarter Reporting Periods Ending March 31, 2018**

SCERS ASSET CLASS	Quarter*	1-Year*	3-Year*	5-Year*	Since Inception*	Since Inception Date*
<b>SCERS Absolute Return</b>	<b>-0.3%</b>	<b>3.9%</b>	<b>2.2%</b>	<b>4.0%</b>	<b>4.3%</b>	Sep-04
HFRI FoF Conservative	0.4%	3.3%	1.6%	2.9%	3.4%	
HFRI FoF Composite + 1%	0.8%	6.9%	3.0%	4.4%	4.3%	
<b>SCERS Private Equity</b>	<b>5.6%</b>	<b>21.5%</b>	<b>14.8%</b>	<b>15.0%</b>	<b>12.8%</b>	Feb-08
Cambridge Private Equity/Venture Capi	5.3%	20.0%	13.3%	14.9%	12.6%	
<b>SCERS Private Credit</b>	<b>2.6%</b>	<b>9.1%</b>	<b>9.0%</b>	<b>9.4%</b>	<b>9.3%</b>	Oct-11
Credit Suisse Leveraged Loan + 2%	1.7%	6.3%	6.5%	6.3%	7.4%	
<b>SCERS Real Assets</b>	<b>7.1%</b>	<b>16.4%</b>	<b>17.7%</b>	<b>18.0%</b>	<b>18.0%</b>	Jan-13
(45%) Cambridge Private Infrastructure + (35%) Cambridge Private Energy + (20%) NCREIF Agriculture/Timber	3.5%	12.3%	6.9%	6.7%	7.0%	
<b>SCERS Opportunities</b>	<b>0.6%</b>	<b>5.0%</b>	<b>8.2%</b>	<b>10.6%</b>	<b>18.5%</b>	Jan-08
SCERS Portfolio Actuarial Rate of Return	1.8%	7.0%	7.0%	7.0%	7.0%	
*Note: Periods ending 12/31/17 for Private Equity, Private Credit, Real Assets, and Opportunities Periods ending 3/31/18 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 and credit 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 series of separate accounts 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 primary GCM separate account, named SC Absolute Return Fund, LLC (SCARF), is a multi-strategy absolute return fund-of-funds (FoFs), that is allocated to both growth-oriented and diversifying absolute return strategies.

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 out, rather than relying on SCERS' Overlay Program to fill the gap between actual and target

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Absolute Return allocations. While SCARF B is intended to be a liquidating portfolio, SCARF is considered a long-term strategic allocation within SCERS' Absolute Return portfolio. SCARF B transitioned during the first quarter to only managing diversifying absolute return strategies.

Quarter ended March 31, 2018:

- SCERS' Growth Absolute Return portfolio returned +0.0%:
  - Top performing managers:
    - OZ Domestic Partners II, LP (multi-strategy): +2.2%
  - Bottom performing managers:
    - Lakewood Capital Partners, LP (equity long/short): -3.4%
    - JANA Partners Qualified, LP (event driven): -2.3%
- SCERS' Diversifying Absolute Return portfolio returned -0.5%:
  - Top performing managers:
    - Laurion Capital, Ltd. (market neutral): +4.7%
    - Elliott International Limited (event driven): +2.0%
  - Bottom performing managers:
    - Graham Global Investment Fund II, Ltd. (macro-systematic): -5.6%
    - Winton Diversified Futures Fund, LP (macro-systematic): -2.2%

One-year ended March 31, 2018:

- SCERS' Growth Absolute Return portfolio returned +6.7%:
  - Top performing managers:
    - Third Point Partners Qualified, LP (event driven): +10.7%
    - OZ Domestic Partners II, LP (multi-strategy): +9.8%
    - Grosvenor SCARF (fund-of-funds): +8.2%
  - Bottom performing managers:
    - JANA Partners Qualified, LP (event driven): -1.0%
    - Lakewood Capital partners, LP (equity long/short): +1.9%

- SCERS' Diversifying Absolute Return portfolio returned +1.3%:
  - Top performing managers:
    - Laurion Capital, Ltd. (market neutral): +10.2%
    - Elliott International Limited (event driven): +7.2%
  - Bottom performing managers:
    - Brevan Howard, LP (macro-discretionary): -2.8%
    - Grosvenor SCARF B (fund-of-funds): -2.5%

No new investments were made in the SCERS Absolute Return portfolio during Q1 2018 or after the quarter.

SCERS ABSOLUTE RETURN Performance Summary for the periods ending 3/31/18	Quarter	1-Year	3-Year	5-Year	Since Inception	Since Inception Date
SCERS ABSOLUTE RETURN PORTFOLIO	-0.3%	3.9%	2.2%	4.0%	4.3%	Sep-04
<b>Growth-Oriented Funds</b>	<b>0.0%</b>	<b>6.7%</b>	<b>3.7%</b>	<b>5.5%</b>	<b>5.0%</b>	Sep-04
HFRI FoF Composite + 1%	0.8%	6.9%	3.0%	4.4%	4.3%	
<b>Diversifying-Oriented Funds</b>	<b>-0.6%</b>	<b>1.3%</b>	<b>1.0%</b>	<b>2.0%</b>	<b>2.4%</b>	Dec-11
HFRI FoF Conservative Index	0.4%	3.3%	1.6%	2.9%	3.4%	

## 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 December 31, 2017. Pages 9 - 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 +12.8% net IRR and continues to improve versus the Cambridge PE/VC Index benchmark net IRR of +12.6%. SCERS' Private Equity portfolio continues to mature (J-curve effect) but is still less seasoned than 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 December 31, 2017:

- SCERS' actual Private Equity allocation is 7.8% versus the target allocation of 9.0%.
- The fair value of SCERS' actual Private Equity portfolio is \$695.6 million, compared to the target allocation of \$829.5 million.
- SCERS' Private Equity portfolio drawdowns compared to SCERS' commitments:
  - Direct portfolio: \$523.6 million drawn versus \$973.0 million committed, or 53.8% drawn.

- Fund-of-Funds: \$226.1 million drawn versus \$238.6 million committed, or 94.7% 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: +11.6% versus +8.5%
- Direct portfolio net IRRs since inception versus the respective Cambridge PE/VC vintage year benchmarks:
  - 2011: +32.8% versus +13.6%
  - 2012: +11.9% versus +12.9%
  - 2013: +9.8% versus +12.5%
  - 2014: +17.0% versus +13.8%
  - 2015: +16.1% versus +11.0%
  - 2016: +10.6% versus +6.7%

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 12/31/17	Quarter	1-Year	3-Year	5-Year	Since Inception	Since Inception Date
SCERS Private Equity	5.6%	21.5%	14.8%	15.0%	12.8%	Feb-08
Cambridge Private Equity/Venture C	5.3%	20.0%	13.3%	14.9%	12.6%	

In Q4 2017, SCERS made a \$35 million commitment to Spectrum Equity Fund VIII, LP (growth equity). After the quarter, SCERS made a \$44 million commitment to Linden Capital Partners IV, LP (healthcare middle-market buyout).

**SCERS PRIVATE CREDIT PORTFOLIO**

Page 12 of Cliffwater's quarterly report presents market values of SCERS' Private Credit investments across strategy as of December 31, 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 +9.3% net IRR, exceeding the Credit Suisse Leverage Loan Index + 2% return of +7.4%. As of December 31, 2017:

- SCERS' actual Private Credit allocation is 1.0% versus the target allocation of 4.0%.
- The fair value of SCERS' actual Private Credit portfolio is \$72.4 million, compared to the target allocation of \$368.7 million.
- SCERS' Private Credit portfolio has drawn \$112.3 million of its \$262.0 million commitment, or 42.9% drawn.

It is industry practice to measure private credit returns over vintage years. SCERS' net IRRs since inception versus the respective Credit Suisse Leverage Loan Index + 2% vintage year benchmarks returns are as follows:

- 2011: +9.4% versus Not Available
- 2014: +10.6% versus +3.7%
- 2015: +8.0% versus +11.3%

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 12/31/17	Quarter	1-Year	3-Year	5-Year	Since Inception	Since Inception Date
SCERS Private Credit	2.6%	9.1%	9.0%	9.4%	9.3%	Oct-11
Credit Suisse Leveraged Loan + 2%	1.7%	6.3%	6.5%	6.3%	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 15 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 +18.0% net IRR, significantly exceeding the custom benchmark of blended indexes return of +7.0%. SCERS' Real Assets results are strong, especially since the portfolio, which was initiated in 2013, is still maturing (J-curve effect). As of December 31, 2017:

- SCERS' actual Real Assets allocation is 4.1% versus the target allocation of 7.0%.

- The fair value of SCERS’ actual Real Assets portfolio is \$372.3 million, compared to the target allocation of \$645.1 million.
- SCERS’ Real Assets portfolio has drawn \$375.3 million of its \$723.0 million commitment or 51.9% 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: +16.8%
- 2014: +24.9%
- 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 12/31/17	Quarter	1-Year	3-Year	5-Year	Since Inception	Since Inception Date
SCERS Real Assets	7.1%	16.4%	17.7%	18.0%	18.0%	Jan-13
(60%) Cambridge Private Infrastructure + (50%) Cambridge Private Energy + (30%) NCREIF Agriculture/Timber	3.5%	12.3%	6.9%	6.7%	7.0%	

During Q4 2017, SCERS did not make any new 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 December 31, 2017, SCERS held \$306.4 million in the SSgA proxy. As additional commitments are made over time, the gap will to decrease. SCERS has committed approximately 7.8% towards the Real Assets allocation compared to 4.1% invested and 7.0% target.

**SCERS OPPORTUNITIES PORTFOLIO**

Page 18 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 +18.5% net IRR, exceeding SCERS’ Total Portfolio Actuarial Rate of return of +7.0%. 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 12/31/17	Quarter	1-Year	3-Year	5-Year	Since Inception	Since Inception Date
SCERS Opportunities	0.6%	5.0%	8.2%	10.6%	18.5%	Jan-08
SCERS Total Fund Policy Index	1.8%	7.0%	7.0%	7.0%	7.0%	

No new commitments were made in the SCERS Opportunities portfolio during Q4 2017 or after the quarter.

**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

June 20, 2018



## *Executive Summary*

## Absolute Return Portfolio Performance Summary – as of March 31, 2018

### Growth Oriented Strategies

- The Growth Oriented Portfolio returned -0.02% in Q1 and 6.71% for the 1 year period ending March 31, 2018
  - Underperforming the HFRI FoF Index + 1% benchmark by 81 bps in Q1 and 15 bps for the 1 year period
  - Outperforming the T-bills + 5% long term objective by 17 bps (annualized) over the trailing 5 year period
- The recent underperformance was driven by JANA and Lakewood

### Diversifying Strategies

- The Diversifying Portfolio returned -0.55% in Q1 and 1.30% for the 1 year period ending March 31, 2018
  - Trailing the HFRI Conservative FoF Index benchmark by 98 bps in Q1 and 201 bps for the 1 year period
  - Underperforming the T-bills + 2% long term objective by 34 bps (annualized) over the trailing 5 year period
- Performance was primarily hurt by Macro strategies 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 4.66% compared to the ACWI standard deviation of 10.69% 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 2.60% compared to the ACWI standard deviation of 10.69% 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 March 31, 2018

Fund	Market Value	Actual %	Returns								Std Dev	Sharpe Ratio	Incep Date
			Mar	QTD	YTD	FYTD	1 Year	3 Year	5 Year	Incep			
<b>Growth-Oriented Portfolio</b>													
<b>Event Driven</b>													
JANA Partners Qualified, L.P.	40,038,737	5.0%	-1.60%	-2.31%	-2.31%	-2.44%	-1.04%	-0.09%	-	2.87%	7.73%	0.32	Jul-13
Third Point Partners Qualified L.P.	49,082,101	6.2%	-1.22%	-0.44%	-0.44%	5.90%	10.75%	6.27%	8.57%	10.98%	7.21%	1.40	May-12
<b>Event Driven - HF Total</b>	<b>89,120,838</b>	<b>11.2%</b>	<b>-1.39%</b>	<b>-1.29%</b>	<b>-1.29%</b>	<b>1.98%</b>	<b>5.12%</b>	<b>3.22%</b>	<b>6.01%</b>	<b>8.76%</b>	<b>7.18%</b>	<b>1.12</b>	<b>May-12</b>
<b>Equity Long/Short</b>													
Lakewood Capital Partners, LP	43,923,452	5.5%	-2.94%	-3.42%	-3.42%	0.43%	1.90%	5.88%	-	6.66%	6.96%	0.86	Jul-13
<b>Equity Long/Short - HF Total</b>	<b>43,923,452</b>	<b>5.5%</b>	<b>-2.94%</b>	<b>-3.42%</b>	<b>-3.42%</b>	<b>0.43%</b>	<b>1.90%</b>	<b>5.88%</b>	<b>-</b>	<b>6.66%</b>	<b>6.96%</b>	<b>0.86</b>	<b>Jul-13</b>
<b>Multi-Strategy</b>													
OZ Domestic Partners II, L.P.	47,816,595	6.0%	-1.30%	2.24%	2.24%	5.97%	9.78%	4.21%	6.33%	7.74%	4.67%	1.50	Jan-12
<b>Multi-Strategy - HF Total</b>	<b>47,816,595</b>	<b>6.0%</b>	<b>-1.30%</b>	<b>2.24%</b>	<b>2.24%</b>	<b>5.97%</b>	<b>9.78%</b>	<b>4.21%</b>	<b>6.33%</b>	<b>7.74%</b>	<b>4.67%</b>	<b>1.50</b>	<b>Jan-12</b>
<b>Fund of Funds</b>													
Grosvenor Institutional US Hedged Fund	98,012	0.0%	-0.82%	-1.64%	-1.64%	-53.77%	-54.49%	-11.79%	-5.54%	-0.02%	25.92%	0.06	Sep-04
Grosvenor SC Absolute Return Fund LLC	156,239,165	19.7%	-0.69%	0.85%	0.85%	6.07%	8.16%	3.61%	5.28%	6.51%	4.48%	1.30	Dec-11
Grosvenor SC Absolute Return Fund LLC Series B	34,244,466	4.3%	-0.49%	0.87%	0.87%	4.80%	7.50%	3.22%	4.83%	5.13%	4.19%	1.07	Feb-13
<b>Fund of Funds - HF Total</b>	<b>190,581,643</b>	<b>24.0%</b>	<b>-0.65%</b>	<b>0.85%</b>	<b>0.85%</b>	<b>5.70%</b>	<b>7.89%</b>	<b>3.54%</b>	<b>5.15%</b>	<b>4.74%</b>	<b>6.08%</b>	<b>0.52</b>	<b>Sep-04</b>
<b>Growth-Oriented Portfolio Total</b>	<b>371,442,528</b>	<b>46.8%</b>	<b>-1.19%</b>	<b>-0.02%</b>	<b>-0.02%</b>	<b>4.20%</b>	<b>6.71%</b>	<b>3.67%</b>	<b>5.51%</b>	<b>5.00%</b>	<b>6.20%</b>	<b>0.55</b>	<b>Sep-04</b>
HFRI FoF Composite + 1%			-0.30%	0.79%	0.79%	5.77%	6.86%	2.96%	4.44%	4.29%	5.03%	0.53	Sep-04
3 Month T-Bills+5%			0.54%	1.57%	1.57%	4.63%	6.11%	5.53%	5.34%	6.30%	0.50%	-	Sep-04
<b>Market Indices</b>													
Libor3Month			0.19%	0.50%	0.50%	1.22%	1.52%	0.94%	0.66%	1.66%	0.51%	-	Sep-04
Bloomberg Barclays US Aggregate Bond Index			0.64%	-1.46%	-1.46%	-0.24%	1.20%	1.21%	1.83%	3.94%	3.14%	0.71	Sep-04
Bloomberg Barclays US High Yield Bond Index			-0.60%	-0.85%	-0.85%	1.57%	3.78%	5.18%	5.00%	7.49%	9.38%	0.64	Sep-04
S&P 500 TR			-2.54%	-0.76%	-0.76%	10.58%	13.99%	10.78%	13.31%	8.87%	13.62%	0.57	Sep-04
MSCI AC World Index Free - Net			-2.14%	-0.96%	-0.96%	10.14%	14.85%	8.12%	9.20%	7.51%	15.22%	0.45	Sep-04
MSCI EAFE - Net			-1.80%	-1.53%	-1.53%	8.18%	14.80%	5.55%	6.49%	6.16%	16.80%	0.34	Sep-04
MSCI EMF (Emerging Markets Free) - Net			-1.86%	1.42%	1.42%	17.56%	24.93%	8.81%	4.99%	10.04%	21.94%	0.47	Sep-04

# Diversifying Absolute Return Portfolio Performance – as of March 31, 2018

Fund	Market Value	Actual %	Returns								Std Dev	Sharpe Ratio	Incep Date
			Mar	QTD	YTD	FYTD	1 Year	3 Year	5 Year	Incep			
<b>Diversifying Portfolio</b>													
<b>Market Neutral</b>													
Laurion Capital, Ltd.	45,050,301	5.7%	-0.28%	4.75%	4.75%	8.92%	10.23%	5.41%	-	6.38%	5.34%	1.05	Mar-14
Market Neutral - HF Total	45,050,301	5.7%	-0.28%	4.75%	4.75%	8.92%	10.23%	5.41%	-	6.38%	5.34%	1.05	Mar-14
<b>Credit/Distressed</b>													
Claren Road Credit Partners, LP	143,727	0.0%	0.85%	1.40%	1.40%	-18.26%	-13.45%	-6.15%	-5.39%	-3.34%	11.42%	-0.29	Feb-12
Credit/Distressed - HF Total	143,727	0.0%	0.85%	1.40%	1.40%	-18.26%	-13.45%	-6.15%	-5.39%	-3.34%	11.42%	-0.29	Feb-12
<b>Event Driven</b>													
Elliott International Limited	53,939,590	6.8%	-0.77%	2.01%	2.01%	6.74%	7.25%	8.16%	7.73%	8.03%	3.46%	2.08	Apr-12
Event Driven - HF Total	53,939,590	6.8%	-0.77%	2.01%	2.01%	6.74%	7.25%	8.16%	7.73%	8.03%	3.46%	2.08	Apr-12
<b>Macro-Discretionary</b>													
Brevan Howard LP	34,015,703	4.3%	-1.65%	0.21%	0.21%	0.06%	-2.80%	-2.34%	-	-0.70%	5.48%	-0.24	Mar-14
Macro-Discretionary - HF Total	34,015,703	4.3%	-1.65%	0.21%	0.21%	0.06%	-2.80%	-1.59%	-1.30%	-0.54%	4.34%	-0.24	May-12
<b>Macro-Systematic</b>													
Graham Global Investment Fund II SPC Ltd. - Tactical Tre	33,319,369	4.2%	-1.04%	-5.62%	-5.62%	1.57%	-0.61%	-	-	-4.13%	12.68%	-0.39	Feb-17
Winton Diversified Futures Fund L.P.	36,387,423	4.6%	-0.27%	-2.23%	-2.23%	5.50%	3.01%	-	-	3.16%	8.62%	0.24	Jan-17
Macro-Systematic - HF Total	69,706,793	8.8%	-0.64%	-3.88%	-3.88%	3.58%	1.25%	-	-	-0.65%	10.09%	-0.16	Jan-17
<b>Multi-Strategy</b>													
AQR DELTA Fund II, LP	69,737,787	8.8%	-0.96%	-3.84%	-3.84%	0.48%	-0.83%	3.34%	-	4.49%	5.38%	0.72	May-13
Multi-Strategy - HF Total	69,737,787	8.8%	-0.96%	-3.84%	-3.84%	0.48%	-0.83%	3.34%	-	4.49%	5.38%	0.72	May-13
<b>Fund of Funds</b>													
Grosvenor SC Absolute Return Fund LLC	111,762,700	14.1%	-0.83%	-0.10%	-0.10%	-0.40%	-1.13%	-1.42%	1.01%	1.75%	3.18%	0.37	Dec-11
Grosvenor SC Absolute Return Fund LLC Series B	37,260,191	4.7%	-0.69%	0.26%	0.26%	-0.78%	-2.46%	-2.77%	0.44%	0.68%	2.73%	0.03	Feb-13
Fund of Funds - HF Total	149,022,891		-0.79%	-0.01%	-0.01%	-0.50%	-1.47%	-1.90%	0.83%	1.63%	2.92%	0.36	Dec-11
Diversifying Portfolio Total	421,616,792	53.2%	-0.81%	-0.55%	-0.55%	2.29%	1.30%	1.02%	2.00%	2.43%	2.60%	0.70	Dec-11
HFRI FOF: Conservative Index			-0.06%	0.43%	0.43%	2.93%	3.31%	1.61%	2.94%	3.37%	2.18%	1.25	Dec-11
3 Month T-Bills+2%			0.30%	0.85%	0.85%	2.40%	3.11%	2.53%	2.34%	2.28%	0.11%	-	Dec-11
SCERS Absolute Return Portfolio	793,059,319	100.0%	-0.99%	-0.29%	-0.29%	3.21%	3.88%	2.21%	3.98%	4.27%	5.80%	0.46	Sep-04
3 Month T-Bills+5%			0.54%	1.57%	1.57%	4.63%	6.11%	5.53%	5.34%	6.30%	0.50%	-	Sep-04
HFRI Fund of Funds Composite Index			-0.37%	0.57%	0.57%	5.01%	5.86%	1.96%	3.44%	3.28%	5.07%	0.34	Sep-04

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

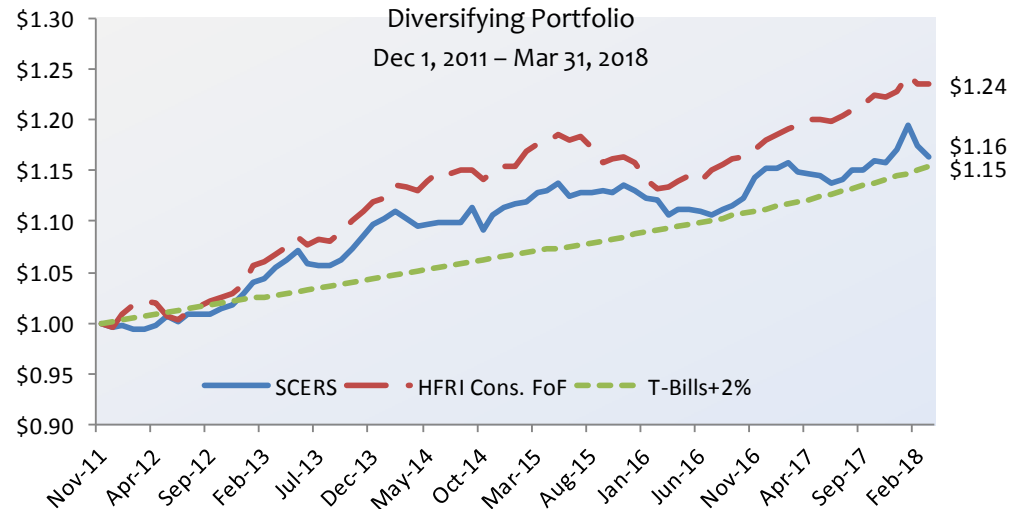
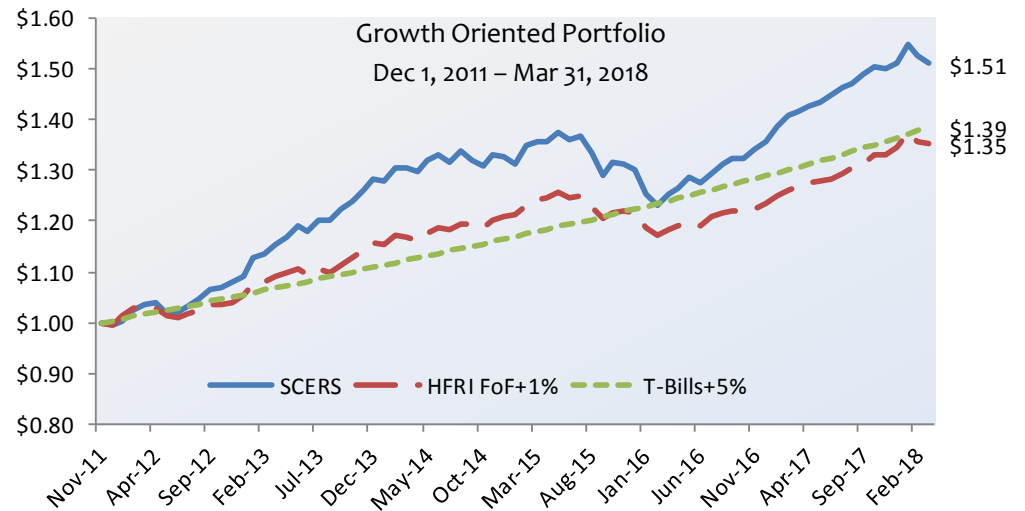
# Absolute Return Portfolios Cumulative Performance – Dec 2011 to March 2018

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 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 December 31, 2017

The Private Equity portfolio's net IRR since inception is 12.79%, versus the Cambridge Associates benchmark IRR of 12.62%

- The long-term Policy benchmark (Russell 3000 + 3%) has a 16.59% IRR over this period

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

- Several of the buyout and venture capital funds generated quarterly returns greater than 10%
  - Waterland V, Thoma Bravo XI, Accel-KKR Growth II, Spectrum VII, and Khosla IV reported the largest gains in Q4
- Continued meaningful distributions among the direct fund investments and fund of funds
  - Summit VC III & IV, Thoma Bravo XI, Khosla IV, and RRJ II led distributions within directs; FoFs distributed \$20.8 million in Q4

Continued strong performance of the direct fund investments

- Double-digit net IRRs for nearly all vintage years of directs
- Waterland V (41.9%), Marlin Heritage (40.3%), Summit VC IV (35.9%), and Spectrum VII (24.8%) are leading performance

The fund of funds also reported gains during the quarter

- Aggregate since inception net IRR increased to 11.25% from 11.18% during the quarter
  - The aggregate total value (TVPI) improved to 1.55x from 1.53x
- HarbourVest International has generated the best relative performance, HarbourVest VIII 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 23% of the current fair value of the Private Equity portfolio

Changes during the quarter

- SCERS committed \$25 million to Spectrum Equity VIII (growth equity) during Q4
  - SCERS also committed \$44.3 million to Linden IV (healthcare-focused buyouts) in Q1 2018
- \$42.6 million in new contributions, \$43.9 million in distributions
- Total portfolio gain increased by \$36.9 million while the total portfolio IRR increased 0.59%

## Private Equity Portfolio Characteristics as of December 31, 2017

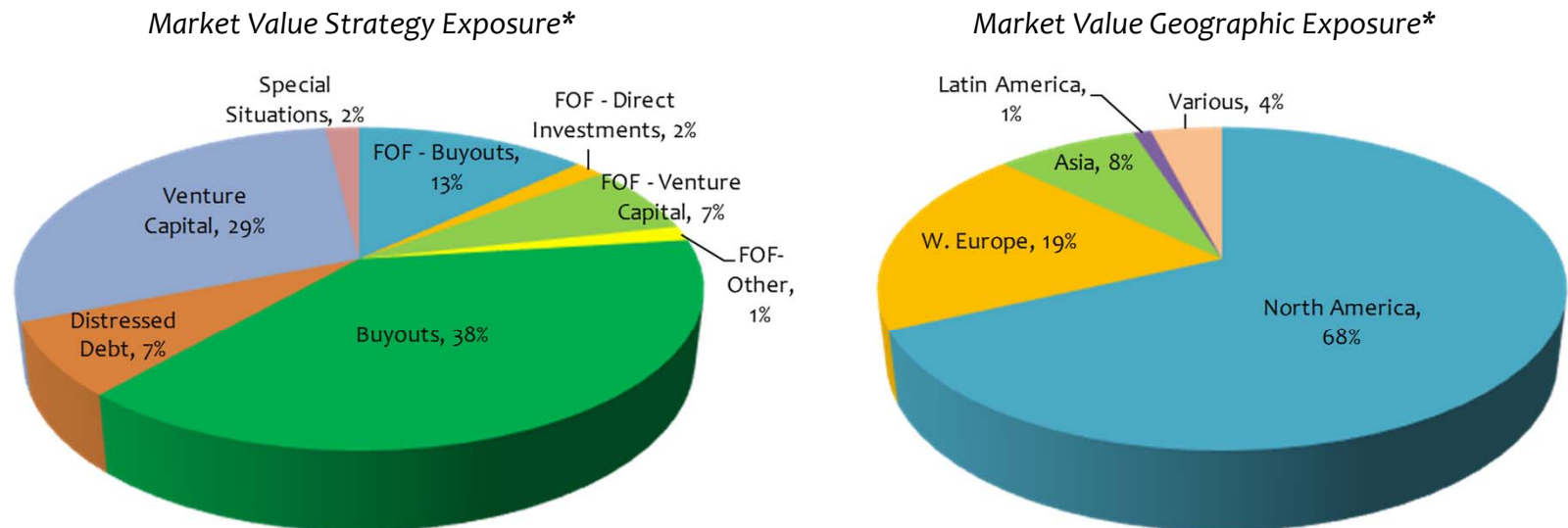
The SCERS Private Equity portfolio is diversified by strategy and geography

- 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 77% of the total portfolio's value as of December 31, 2017

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 12/31/17.



# Private Equity Portfolio Performance Details – as of December 31, 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	1,688	35,813	96%	42,910	16,953	59,863	24,051	10.75%	9.16%	1.67x
HarbourVest Partners VIII - Mezzanine and Distressed Debt Fund L.P.	Fund of Funds	5,000	200	4,800	96%	5,259	1,367	6,626	1,826	7.72%	9.16%	1.38x
HarbourVest Partners VIII - Venture Fund L.P.	Fund of Funds	7,500	150	7,350	98%	7,911	4,886	12,797	5,447	10.24%	9.16%	1.74x
<b>Vintage Year 2006 Total</b>		<b>50,000</b>	<b>2,038</b>	<b>47,963</b>	<b>96%</b>	<b>56,081</b>	<b>23,206</b>	<b>79,287</b>	<b>31,324</b>	<b>10.41%</b>	<b>7.20%</b>	<b>1.65x</b>
<b>Vintage Year 2008</b>												
Abbott Capital Private Equity Fund VI, L.P.	Fund of Funds	75,000	3,000	72,000	96%	48,001	60,278	108,278	36,278	11.89%	15.64%	1.50x
Goldman Sachs Private Equity Partners X, L.P.	Fund of Funds	75,000	12,485	68,958	83%	71,937	38,266	110,203	41,245	11.49%	15.64%	1.60x
HarbourVest International Private Equity Partners VI-Partnership Fund L.P.	Fund of Funds	38,648	3,092	37,149	92%	16,250	36,798	53,048	15,899	11.49%	9.24%	1.43x
<b>Vintage Year 2008 Total</b>		<b>188,648</b>	<b>18,577</b>	<b>178,106</b>	<b>90%</b>	<b>136,188</b>	<b>135,342</b>	<b>271,529</b>	<b>93,423</b>	<b>11.63%</b>	<b>8.50%</b>	<b>1.52x</b>
<b>Vintage Year 2011</b>												
Waterland Private Equity Fund V C.V.	Buyout	19,204	4,127	15,381	79%	19,700	21,470	41,169	25,788	41.93%	14.01%	2.68x
Khosla Ventures IV, L.P.	Venture Capital	10,000	190	9,810	98%	3,154	17,367	20,521	10,711	20.65%	14.77%	2.09x
<b>Vintage Year 2011 Total</b>		<b>29,204</b>	<b>4,317</b>	<b>25,191</b>	<b>85%</b>	<b>22,853</b>	<b>38,837</b>	<b>61,690</b>	<b>36,499</b>	<b>32.83%</b>	<b>13.61%</b>	<b>2.45x</b>
<b>Vintage Year 2012</b>												
Garrison Opportunity Fund III A LLC	Distressed Debt	20,000	0	20,000	100%	6,220	13,727	19,947	-53	-0.07%	9.29%	1.00x
New Enterprise Associates 14, L.P.	Venture Capital	25,000	1,500	23,500	94%	3,099	37,015	40,114	16,614	16.03%	13.01%	1.71x
Summit Partners Venture Capital III-A, LP	Venture Capital	16,350	2,193	18,525	87%	15,113	17,577	32,690	14,166	18.95%	13.01%	1.76x
<b>Vintage Year 2012 Total</b>		<b>61,350</b>	<b>3,693</b>	<b>62,025</b>	<b>94%</b>	<b>24,433</b>	<b>68,319</b>	<b>92,752</b>	<b>30,727</b>	<b>11.87%</b>	<b>12.92%</b>	<b>1.50x</b>
<b>Vintage Year 2013</b>												
Accel-KKR Capital Partners IV, L.P.	Buyout	15,000	2,693	12,307	82%	6,498	12,037	18,535	6,228	21.96%	15.38%	1.51x
H.I.G. Capital Partners V, L.P.	Buyout	14,000	7,329	6,671	48%	1,437	7,285	8,722	2,051	19.49%	15.38%	1.31x
Marlin Equity IV, L.P.	Buyout	20,000	3,226	16,774	84%	191	17,961	18,152	1,378	4.26%	15.38%	1.08x
RRJ Capital Master Fund II, L.P.	Buyout	35,000	4,838	34,913	86%	23,544	20,804	44,348	9,436	10.52%	14.48%	1.27x
H.I.G. Bayside Loan Opportunity Fund III (Europe-US\$), L.P.	Distressed Debt	30,000	5,769	24,231	81%	7,442	22,288	29,729	5,499	8.87%	5.79%	1.23x
Wayzata Opportunities Fund III, L.P.	Distressed Debt	30,000	22,835	14,718	24%	7,581	7,100	14,681	-37	-0.11%	8.49%	1.00x

<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 December 31, 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	5,500	19,500	78%	0	26,179	26,179	6,679	10.64%	12.25%	1.34x
<b>Vintage Year 2013 Total</b>		<b>169,000</b>	<b>52,191</b>	<b>129,113</b>	<b>69%</b>	<b>46,692</b>	<b>113,654</b>	<b>160,347</b>	<b>31,233</b>	<b>9.76%</b>	<b>12.51%</b>	<b>1.24x</b>
<b>Vintage Year 2014</b>												
Dyal Capital Partners II	Buyout	35,000	22,841	12,865	35%	2,978	8,420	11,398	-1,466	-6.39%	15.94%	0.89x
H.I.G. Europe Capital Partners II, L.P.	Buyout	16,803	8,870	7,895	47%	0	7,133	7,133	-762	-16.19%	14.39%	0.90x
Marlin Heritage Fund	Buyout	10,000	1,235	8,765	88%	7,093	9,182	16,275	7,510	40.27%	15.94%	1.86x
Thoma Bravo XI	Buyout	30,000	3,426	30,952	89%	6,337	42,612	48,950	17,998	20.98%	15.94%	1.58x
TPG Opportunities Partners III	Distressed Debt	40,000	20,966	32,627	48%	15,406	21,743	37,149	4,522	10.34%	10.43%	1.14x
Khosla Ventures V	Venture Capital	20,000	6,400	13,600	68%	1,013	15,946	16,959	3,359	12.88%	11.13%	1.25x
Spectrum Equity Investors VII, L.P.	Venture Capital	25,000	4,063	20,938	84%	5,463	24,852	30,315	9,377	24.82%	11.13%	1.45x
<b>Vintage Year 2014 Total</b>		<b>176,803</b>	<b>67,800</b>	<b>127,641</b>	<b>62%</b>	<b>38,290</b>	<b>129,888</b>	<b>168,178</b>	<b>40,537</b>	<b>16.97%</b>	<b>13.84%</b>	<b>1.32x</b>
<b>Vintage Year 2015</b>												
RRJ Capital Master Fund III, LP	Buyout	40,000	26,287	14,508	34%	1,221	14,979	16,200	1,692	11.06%	18.12%	1.12x
WPEF VI Feeder, L.P.	Buyout	28,806	17,614	10,501	39%	0	11,192	11,192	691	9.13%	18.12%	1.07x
WPEF VI Overflow Fund C.V.	Buyout	7,201	7,191	10	0%	0	11	11	1	4.89%	18.12%	1.09x
Accel-KKR Growth Capital Partners II	Mezzanine	15,000	9,176	5,824	39%	511	6,006	6,517	693	7.98%	11.31%	1.12x
New Enterprise Associates 15, L.P.	Venture Capital	35,000	9,100	25,904	74%	0	32,919	32,919	7,014	16.48%	7.62%	1.27x
Summit Partners Venture Capital Fund IV-A, L.P.	Venture Capital	35,000	26,806	13,130	23%	4,936	12,463	17,399	4,269	35.88%	7.62%	1.33x
<b>Vintage Year 2015 Total</b>		<b>161,007</b>	<b>96,174</b>	<b>69,876</b>	<b>40%</b>	<b>6,667</b>	<b>77,570</b>	<b>84,237</b>	<b>14,360</b>	<b>16.11%</b>	<b>10.99%</b>	<b>1.21x</b>
<b>Vintage Year 2016</b>												
Accel-KKR Capital Partners V, L.P.	Buyout	25,000	20,276	4,724	19%	0	4,609	4,609	-115	N/M	N/M	0.98x
Dyal III Pension Investors LP	Buyout	35,000	24,076	13,513	31%	1,910	12,616	14,526	1,013	N/M	N/M	1.07x
Linden Capital Partners III	Buyout	35,000	7,802	27,198	78%	81	32,758	32,839	5,640	23.45%	5.02%	1.21x
Marlin Heritage Europe, L.P.	Buyout	15,603	12,555	3,048	20%	0	2,795	2,795	-253	N/M	N/M	0.92x
Thoma Bravo Fund XII, L.P.	Buyout	30,000	15,629	18,070	48%	3,701	15,741	19,442	1,372	N/M	N/M	1.08x
TSG7 A L.P.	Buyout	16,000	10,466	5,534	35%	0	5,755	5,755	221	N/M	N/M	1.04x
TSG7 B L.P.	Buyout	4,000	3,535	465	12%	0	261	261	-204	-34.88%	5.02%	0.56x

<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 December 31, 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	6,726	22,128	73%	5,043	19,131	24,174	2,046	N/M	N/M	1.09x
Trinity Ventures XII, L.P.	Venture Capital	30,000	20,025	9,975	33%	0	10,173	10,173	198	N/M	N/M	1.02x
<b>Vintage Year 2016 Total</b>		<b>215,603</b>	<b>121,088</b>	<b>104,656</b>	<b>44%</b>	<b>10,735</b>	<b>103,839</b>	<b>114,574</b>	<b>9,918</b>	<b>10.65%</b>	<b>6.75%</b>	<b>1.09x</b>
<b>Vintage Year 2017</b>												
Marlin Heritage II	Buyout	10,000	9,098	902	9%	0	794	794	-108	N/M	N/M	0.88x
New Enterprise Associates 16, L.P.	Venture Capital	35,000	30,800	4,200	12%	0	4,105	4,105	-95	N/M	N/M	0.98x
<b>Vintage Year 2017 Total</b>		<b>45,000</b>	<b>39,898</b>	<b>5,102</b>	<b>11%</b>	<b>0</b>	<b>4,899</b>	<b>4,899</b>	<b>-203</b>	<b>N/M</b>	<b>N/M</b>	<b>0.96x</b>
<b>Vintage Year 2018</b>												
Marlin Equity V	Buyout	25,000	25,000	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
Spectrum Equity VIII, L.P.	Venture Capital	25,000	25,000	0	0%	0	0	0	0	N/M	N/M	N/A
<b>Vintage Year 2018 Total</b>		<b>115,000</b>	<b>115,000</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>N/M</b>	<b>N/M</b>	<b>N/A</b>
<b>Portfolio Total :</b>		<b>1,211,616</b>	<b>520,776</b>	<b>749,673</b>	<b>57%</b>	<b>341,939</b>	<b>695,553</b>	<b>1,037,493</b>	<b>287,819</b>	<b>12.79%</b>	<b>12.62%</b>	<b>1.38x</b>
<b>Portfolio Strategy Totals</b>												
Buyout		496,618	268,113	244,996	46%	74,691	248,415	323,106	78,110	18.60%		1.32x
Distressed Debt		180,000	91,296	113,703	49%	41,691	83,989	125,681	11,977	4.91%		1.11x
Fund of Funds		238,648	20,614	226,069	91%	192,268	158,548	350,816	124,747	11.25%		1.55x
Mezzanine		15,000	9,176	5,824	39%	511	6,006	6,517	693	7.98%		1.12x
Venture Capital		281,350	131,577	159,081	53%	32,778	198,596	231,374	72,293	17.15%		1.45x
<b>Portfolio Total :</b>		<b>1,211,616</b>	<b>520,776</b>	<b>749,673</b>	<b>57%</b>	<b>341,939</b>	<b>695,553</b>	<b>1,037,493</b>	<b>287,819</b>	<b>12.79%</b>	<b>12.62%</b>	<b>1.38x</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 December 31, 2017

The Private Credit portfolio's net IRR since inception is 9.33%, versus the benchmark return of 7.41%

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

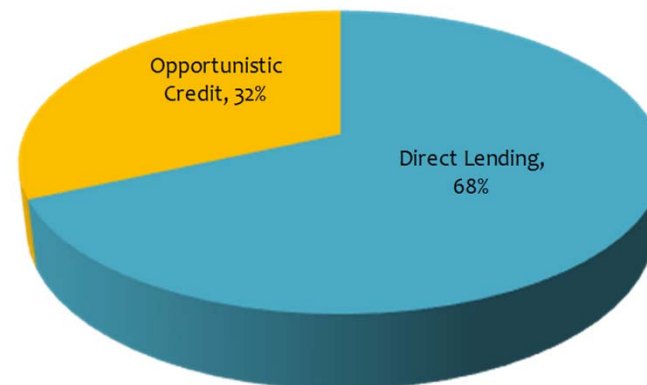
The Private Credit portfolio includes six lending-oriented funds; three were previously included within Private Equity

- Four of the funds pursue Direct Lending strategies; Athyrium II & III are Opportunistic Credit
- The Private Credit funds continued to generate steady performance during Q4
  - Overall return of 2.6% in Q4 and 9.1% for the trailing 1 year period ending December 31, 2017

### Changes during the quarter

- SCERS committed \$100 million to a direct lending separate account managed by Tennenbaum Capital during Q4
  - SCERS also committed \$50 million in Q4 to Benefit Street Senior Secured Opportunities Fund (direct lending)
- \$25.4 million in new contributions, \$9.0 million in distributions
- Portfolio IRR increased 0.09% while the total portfolio gain increased by \$1.4 million

*Market Value Strategy Exposure  
(based on fair value of investments)  
as of December 31, 2017*



## Private Credit Portfolio Details – as of December 31, 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%	20,746	5,829	26,575	5,878	9.36%	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>20,746</b>	<b>5,829</b>	<b>26,575</b>	<b>5,878</b>	<b>9.36%</b>		<b>1.28x</b>
<b>Vintage Year 2014</b>												
Summit Partners Credit Fund II, L.P.	Direct Lending	35,000	13,534	31,602	61%	13,598	23,264	36,862	5,261	10.59%	3.71%	1.17x
<b>Vintage Year 2014 Total</b>		<b>35,000</b>	<b>13,534</b>	<b>31,602</b>	<b>61%</b>	<b>13,598</b>	<b>23,264</b>	<b>36,862</b>	<b>5,261</b>	<b>10.59%</b>		<b>1.17x</b>
<b>Vintage Year 2015</b>												
Athyrium Opportunities Fund II	Opportunistic Credit	32,000	11,442	33,287	64%	18,790	18,154	36,945	3,658	8.01%	11.31%	1.11x
<b>Vintage Year 2015 Total</b>		<b>32,000</b>	<b>11,442</b>	<b>33,287</b>	<b>64%</b>	<b>18,790</b>	<b>18,154</b>	<b>36,945</b>	<b>3,658</b>	<b>8.01%</b>		<b>1.11x</b>
<b>Vintage Year 2017</b>												
Athyrium Opportunities Fund III	Opportunistic Credit	25,000	19,875	5,822	20%	662	4,849	5,511	-311	N/M	N/M	0.95x
<b>Vintage Year 2017 Total</b>		<b>25,000</b>	<b>19,875</b>	<b>5,822</b>	<b>20%</b>	<b>662</b>	<b>4,849</b>	<b>5,511</b>	<b>-311</b>	<b>N/M</b>		<b>0.95x</b>
<b>Vintage Year 2018</b>												
Benefit Street Partners Senior Secured Opportunities Fund L.P.	Direct Lending	50,000	30,412	20,871	39%	1,008	20,326	21,334	462	N/M	N/M	1.02x
TCP Direct Lending Fund VIII-S, LLC	Direct Lending	100,000	100,000	0	0%	0	0	0	0	N/M	N/M	N/A
<b>Vintage Year 2018 Total</b>		<b>150,000</b>	<b>130,412</b>	<b>20,871</b>	<b>13%</b>	<b>1,008</b>	<b>20,326</b>	<b>21,334</b>	<b>462</b>	<b>N/M</b>		<b>1.02x</b>
<b>Portfolio Total :</b>		<b>262,000</b>	<b>175,263</b>	<b>112,278</b>	<b>33%</b>	<b>54,804</b>	<b>72,423</b>	<b>127,226</b>	<b>14,948</b>	<b>9.33%</b>	<b>7.41%</b>	<b>1.13x</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 December 31, 2017

The Real Assets portfolio's net IRR since inception is 17.96%, versus the blended benchmark return of 6.97%

- 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 21.5% for Energy and 15.5% for Infrastructure
- Strong positive performance across nearly all of the Real Assets funds during the quarter
  - Energy performed the best, led by Quantum VI & VII, Carlyle Power, and EnCap Flatrock Midstream III
  - The BlackRock Global Energy & Power Infrastructure fund also produced a gain greater than 10% in Q4
  - Wastewater saw modest declines in Q4
    - The fund has been lagging in the portfolio and has had a relatively slow investment pace

Changes during the quarter

- SCERS made no new Real Assets commitments during Q4
  - SCERS committed \$22.5 million to EnCap Flatrock IV (midstream energy) in Q1 2018
- \$68.6 million in new contributions, \$4.9 million in distributions
- Portfolio IRR increased 2.33% while the total portfolio gain increased by \$22.8 million

## Real Assets Portfolio Performance Details – as of December 31, 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	3,900	34,984	88%	21,251	25,830	47,081	12,097	16.80%	6.15%	1.35x
<b>Vintage Year 2013 Total</b>		<b>33,000</b>	<b>3,900</b>	<b>34,984</b>	<b>88%</b>	<b>21,251</b>	<b>25,830</b>	<b>47,081</b>	<b>12,097</b>	<b>16.80%</b>		<b>1.35x</b>
<b>Vintage Year 2014</b>												
Carlisle Power Partners II, L.P.	Energy	40,000	27,435	15,666	31%	2,964	15,793	18,757	3,091	11.10%	12.39%	1.20x
EnCap Flatrock Midstream III	Energy	20,000	10,780	9,791	46%	1,597	11,863	13,460	3,669	28.68%	12.39%	1.37x
Global Energy & Power Infrastructure Fund II	Energy	35,000	15,136	21,762	57%	14,849	17,113	31,962	10,199	53.33%	12.39%	1.47x
Quantum Energy Partners VI, LP	Energy	35,000	17,413	21,897	50%	9,557	25,228	34,784	12,887	49.09%	12.39%	1.59x
Pantheon SCERS SIRF MM, LLC	Infrastructure	100,000	57,900	42,100	42%	0	59,582	59,582	17,482	19.44%	N/A	1.42x
Wastewater Opportunity Fund	Infrastructure	25,000	18,832	6,175	25%	0	4,656	4,656	-1,519	-22.43%	N/A	0.75x
<b>Vintage Year 2014 Total</b>		<b>255,000</b>	<b>147,495</b>	<b>117,392</b>	<b>42%</b>	<b>28,966</b>	<b>134,235</b>	<b>163,201</b>	<b>45,809</b>	<b>24.91%</b>		<b>1.39x</b>
<b>Vintage Year 2015</b>												
ArcLight Energy Partners Fund VI	Energy	40,000	10,048	34,688	75%	6,879	30,602	37,480	2,792	6.78%	21.75%	1.08x
EnCap Energy Capital Fund X, L.P.	Energy	40,000	15,423	27,077	61%	5,576	25,504	31,080	4,002	15.86%	21.75%	1.15x
Atalaya Real Assets SMA	Real Asset Debt	100,000	76,997	28,100	23%	6,879	23,656	30,534	2,434	8.23%	N/A	1.09x
<b>Vintage Year 2015 Total</b>		<b>180,000</b>	<b>102,467</b>	<b>89,865</b>	<b>43%</b>	<b>19,333</b>	<b>79,761</b>	<b>99,094</b>	<b>9,229</b>	<b>9.58%</b>		<b>1.10x</b>
<b>Vintage Year 2016</b>												
ACM Fund II, LLC	Agriculture	25,000	17,545	11,602	30%	4,194	6,790	10,984	-617	N/M	N/M	0.95x
Brookfield Infrastructure Fund III, L.P.	Infrastructure	40,000	26,745	13,244	33%	967	13,964	14,931	1,687	N/M	N/M	1.13x
IFM Global Infrastructure Fund	Infrastructure	100,000	0	100,000	100%	3,379	104,437	107,816	7,816	N/M	N/M	1.08x
<b>Vintage Year 2016 Total</b>		<b>165,000</b>	<b>44,290</b>	<b>124,845</b>	<b>73%</b>	<b>8,539</b>	<b>125,192</b>	<b>133,731</b>	<b>8,886</b>	<b>N/M</b>		<b>1.07x</b>
<b>Vintage Year 2017</b>												
Quantum Energy Partners VII, LP	Energy	40,000	33,150	7,628	17%	777	7,190	7,967	340	N/M	N/M	1.04x
Meridiam Infrastructure North America Fund III	Infrastructure	50,000	49,413	587	1%	1	108	108	-478	N/M	N/M	0.18x
<b>Vintage Year 2017 Total</b>		<b>90,000</b>	<b>82,563</b>	<b>8,214</b>	<b>8%</b>	<b>778</b>	<b>7,298</b>	<b>8,076</b>	<b>-139</b>	<b>N/M</b>		<b>0.98x</b>
<b>Portfolio Total :</b>		<b>723,000</b>	<b>380,716</b>	<b>375,301</b>	<b>47%</b>	<b>78,868</b>	<b>372,314</b>	<b>451,182</b>	<b>75,881</b>	<b>17.96%</b>	<b>6.97%</b>	<b>1.20x</b>

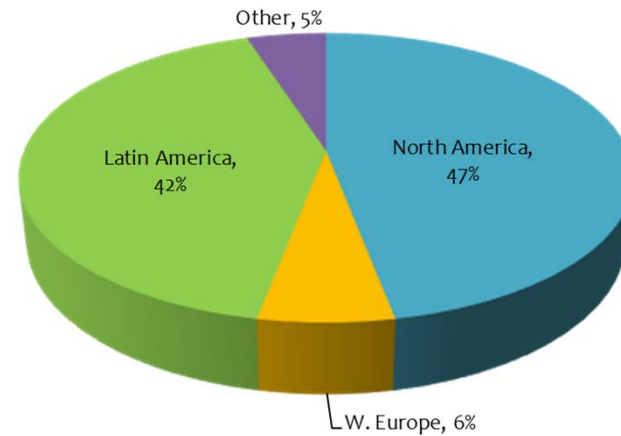
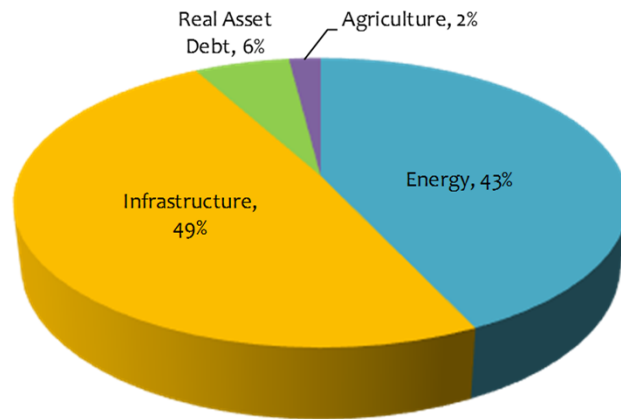
<sup>1</sup> Benchmarks:

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 December 31, 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
<b>Portfolio Strategy Totals</b>												
Agriculture		25,000	17,545	11,602	30%	4,194	6,790	10,984	-617	N/M		0.95x
Energy		283,000	133,284	173,493	53%	63,449	159,122	222,570	49,077	21.51%		1.28x
Infrastructure		315,000	152,891	162,105	51%	4,346	182,747	187,093	24,988	15.50%		1.15x
Real Asset Debt		100,000	76,997	28,100	23%	6,879	23,656	30,534	2,434	8.23%		1.09x
<b>Portfolio Total :</b>		<b>723,000</b>	<b>380,716</b>	<b>375,301</b>	<b>47%</b>	<b>78,868</b>	<b>372,314</b>	<b>451,182</b>	<b>75,881</b>	<b>17.96%</b>	<b>6.97%</b>	<b>1.20x</b>

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



\* Exposures are based on the market values of investments as of 12/31/17

<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 December 31, 2017

### The Opportunities portfolio's net IRR since inception is 18.53%

- 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
  - 8.19% portfolio IRR v 5.52% 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 8.35% net IRR since inception

### Changes during the quarter

- SCERS made no new commitments categorized as Opportunities funds during Q4 2017
- No new contributions, \$0.7 million in distributions
- Portfolio IRR decreased 0.05%, 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 December 31, 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%	8.46%	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%	12.04%	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%	14.95%	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%	14.95%	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%	20,212	9,921	30,134	5,259	8.35%	8.49%	1.21x
<b>Vintage Year 2013 Total</b>		<b>25,000</b>	<b>1,117</b>	<b>24,875</b>	<b>96%</b>	<b>20,212</b>	<b>9,921</b>	<b>30,134</b>	<b>5,259</b>	<b>8.35%</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>149,560</b>	<b>9,921</b>	<b>159,481</b>	<b>59,359</b>	<b>18.53%</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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