



# Board of Retirement Regular Meeting

## Sacramento County Employees' Retirement System

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### Agenda Item 17

**MEETING DATE:** June 19, 2019

**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 March 31, 2019 for the Absolute Return portfolio, and the period ending December 31, 2018 for the Private Equity, Private Credit, Real Assets, and Opportunities portfolios.

#### **PURPOSE**

This agenda item does not specifically support the 2018-19 Strategic Management Plan, but complies with SCERS' investment policy statement reporting requirements and contributes to the effective management and oversight of investment activities.

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

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

SCERS' alternative asset class period returns are as follows:

**SCERS ALTERNATIVE ASSETS PERFORMANCE SUMMARY**  
**Quarter Reporting Periods Ending March 31, 2019**

SCERS ASSET CLASS	Quarter*	1-Year*	3-Year*	5-Year*	Since Inception*	Since Inception Date*
<b>SCERS Absolute Return</b>	<b>2.7%</b>	<b>-1.3%</b>	<b>3.7%</b>	<b>1.7%</b>	<b>3.9%</b>	Sep-04
HFRI FoF Conservative	4.0%	2.5%	3.7%	2.2%	3.3%	
HFRI FoF Composite + 1%	5.2%	1.5%	5.1%	3.3%	4.1%	
<b>SCERS Private Equity</b>	<b>3.0%</b>	<b>23.2%</b>	<b>18.7%</b>	<b>16.6%</b>	<b>14.5%</b>	Feb-08
Cambridge Private Equity/Venture Capi	-0.5%	11.4%	14.4%	13.2%	12.7%	
<b>SCERS Private Credit</b>	<b>-0.8%</b>	<b>3.9%</b>	<b>7.7%</b>	<b>7.1%</b>	<b>7.5%</b>	Oct-11
Credit Suisse Leveraged Loan + 2%	-2.5%	3.1%	7.0%	5.3%	6.8%	
<b>SCERS Real Assets</b>	<b>2.5%</b>	<b>12.6%</b>	<b>15.3%</b>	<b>15.2%</b>	<b>15.2%</b>	Jan-13
(45%) Cambridge Private Infrastructure; (35%) Cambridge Private Energy; (20%) NCREIF Agriculture/Timber	-1.6%	5.0%	10.2%	6.2%	6.8%	
<b>SCERS Opportunities</b>	<b>2.0%</b>	<b>5.0%</b>	<b>6.0%</b>	<b>7.8%</b>	<b>18.4%</b>	Jan-08
SCERS Portfolio Actuarial Rate of Return	1.7%	6.8%	6.8%	6.8%	6.8%	
<i>*Note: Periods ending 12/31/18 for Private Equity, Private Credit, Real Assets, and Opportunities  Periods ending 3/31/19 for Absolute Return  All returns are net IRR, except Absolute Return which is time-weighted</i>						

## **SCERS PORTFOLIO RESULTS**

For the reporting quarter ended March 31, 2019, SCERS' Private Equity portfolio meaningfully outperformed its benchmark, +3.0% versus -0.5%, due to the outperformance of the buyout investment strategies. Also outperforming its benchmark was SCERS' Real Assets portfolio, +2.5% versus -1.6%, driven by SCERS' energy investment strategies. While outperforming, SCERS' Real Assets portfolio is still maturing, with several funds working through the j-curve period.

Underperforming its benchmark during the quarter was SCERS' Absolute Return portfolio, +2.7% versus +4.0%, where the diversifying orientated funds' performance, primarily multi-strategy (-1.8%), hindered returns.

Below are notable top and bottom performing funds among SCERS' Alternative Assets during the quarter ended March 31, 2019:

- Top performing funds:
  - Absolute Return:
    - Lakewood Capital Partners (equity long/short): +13.0%

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- Third Point Partners Qualified (event driven): +9.0%
  - OZ Domestic Partners II (multi-strategy): +8.1%
  - Private Equity portfolio:
    - Linden Capital Partners IV (buyout): +55.4%
    - Trinity Ventures XII (venture capital): +27.5%
    - Summit Partners Venture Capital Fund IV-A (venture capital): +16.9%
  - Private Credit portfolio:
    - TCP Direct Lending Fund VIII-S (direct lending): +1.2%
    - Athyrium Opportunities Fund II (opportunistic credit): +0.2%
  - Real Assets portfolio:
    - Wastewater Opportunity Fund (wastewater): +12.5%
    - EnCap Energy Capital Fund X (upstream energy): +8.5%
    - Quantum Energy Partners VI (energy): +7.1%
  - Bottom performing funds:
    - Absolute Return portfolio:
      - AQR Delta Fund II (multi-strategy): -1.8%
      - KLS Diversified Fund (market neutral): +0.7%
      - Grosvenor SCARF A (diversifying fund-of-funds): +0.8%
    - Private Equity portfolio:
      - Dyal Capital Partners II (buyout): -18.3%
      - Spectrum Equity VIII (venture capital): -11.3%
      - Kholsa Ventures VI (venture capital): -6.3%
    - Private Credit portfolio:
      - Summit Partners Credit Fund (direct lending): -11.1%
      - Benefit Street Partners Senior Secured Opportunities Fund (direct lending): -2.6%
      - Summit Partners Credit Fund II (direct lending): -2.2%

➤ Real Assets portfolio:

- EnCap Energy Capital Fund IX (upstream energy): -8.8%
- ArcLight Energy Partners Fund VI Fund (energy): -1.9%
- EnCap Flatrock Midstream IV (midstream energy): -1.25%

## **NEW INVESTMENTS**

During the quarter ended March 31, 2019, SCERS made the following new investments:

- EQT Infrastructure Fund IV, SCSp (Real Assets - Infrastructure) - \$35 million
- OrbiMed Royalty and Credit Opportunities Fund III (Private Credit – Opportunistic) - \$35 million

New investments made after the quarter:

- Brookfield Infrastructure Fund IV (Real Assets - Infrastructure) - \$40 million
- Davidson Kempner Institutional Partners (Absolute Return – Diversifying) - \$32 million

## **ATTACHMENT**

Cliffwater's Quarterly Performance Report for Alternative Assets for the Quarter ended March 31, 2019.

Prepared by:

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JR Pearce  
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INVESTMENT ADVISORY SERVICES

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## Sacramento County Employees' Retirement System Quarterly Performance Review

June 19, 2019



## *Executive Summary*

## Absolute Return Portfolio Performance Summary – as of March 31, 2019

### Growth Oriented Strategies

- The Growth Oriented Portfolio returned 6.26% in Q1 and -0.15% for the 1 year period ending March 31, 2019
  - Outperforming the HFRI FoF Index + 1% benchmark by 108 bps in Q1 though trailing by 164 bps for the 1 year period
  - Underperforming the T-bills + 5% long term objective by 276 bps (annualized) over the trailing 5 year period
- The portfolio's most recent outperformance was driven by Lakewood, Third Point, and Och-Ziff

### Diversifying Strategies

- The Diversifying Portfolio returned 1.01% in Q1 and -1.75% for the 1 year period ending March 31, 2019
  - Underperforming the HFRI Conservative FoF Index benchmark by 294 bps in Q1 and 423 bps for the 1 year period
  - Underperforming the T-bills + 2% long term objective by 203 bps (annualized) over the trailing 5 year period
- AQR DELTA has been the primary detractor from performance 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 5.18% compared to the ACWI standard deviation of 11.19% since December 2011
  - Portfolio equity beta of 0.39 with an equity correlation of 0.84
    - Target standard deviation < 50% of global equities, with an equity beta < 0.5 and equity correlation < 0.8
- Diversifying
  - Portfolio standard deviation of 2.55% compared to the ACWI standard deviation of 11.19% since December 2011
  - Portfolio equity beta of 0.04 with an equity correlation of 0.19
    - 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
  - However, risk and correlations certainly increased with the broad market downturn seen in Q4 2018

# Growth Oriented Absolute Return Portfolio Performance – as of March 31, 2019

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.	4,144,713	0.5%	-0.03%	2.16%	2.16%	-9.99%	-3.70%	3.09%	-0.13%	1.70%	8.92%	0.12	Jul-13
Third Point Partners Qualified L.P.	47,838,314	5.4%	2.80%	8.95%	8.95%	-3.91%	-2.53%	7.49%	4.42%	8.91%	7.94%	1.00	May-12
<b>Event Driven - HF Total</b>	<b>51,983,027</b>	<b>5.8%</b>	<b>2.57%</b>	<b>7.25%</b>	<b>7.25%</b>	<b>-5.45%</b>	<b>-1.74%</b>	<b>5.91%</b>	<b>2.50%</b>	<b>7.18%</b>	<b>8.04%</b>	<b>0.79</b>	<b>May-12</b>
<b>Equity Long/Short</b>													
Lakewood Capital Partners, LP	44,058,633	4.9%	0.47%	13.03%	13.03%	1.51%	0.31%	5.60%	4.93%	5.53%	8.78%	0.54	Jul-13
<b>Equity Long/Short - HF Total</b>	<b>44,058,633</b>	<b>4.9%</b>	<b>0.47%</b>	<b>13.03%</b>	<b>13.03%</b>	<b>1.51%</b>	<b>0.31%</b>	<b>5.60%</b>	<b>4.93%</b>	<b>5.53%</b>	<b>8.78%</b>	<b>0.54</b>	<b>Jul-13</b>
<b>Multi-Strategy</b>													
OZ Domestic Partners II, L.P.	49,388,105	5.5%	0.86%	8.07%	8.07%	1.32%	3.29%	8.39%	5.00%	7.12%	5.00%	1.23	Jan-12
<b>Multi-Strategy - HF Total</b>	<b>49,388,105</b>	<b>5.5%</b>	<b>0.86%</b>	<b>8.07%</b>	<b>8.07%</b>	<b>1.32%</b>	<b>3.29%</b>	<b>8.39%</b>	<b>5.00%</b>	<b>7.12%</b>	<b>5.00%</b>	<b>1.23</b>	<b>Jan-12</b>
<b>Fund of Funds</b>													
Grosvenor SC Absolute Return Fund LLC (Growth)	146,481,032	16.4%	0.45%	3.75%	3.75%	-1.74%	0.35%	7.14%	2.75%	5.69%	4.57%	1.04	Dec-11
<b>Fund of Funds - HF Total</b>	<b>146,481,032</b>	<b>16.4%</b>	<b>0.45%</b>	<b>3.75%</b>	<b>3.75%</b>	<b>-1.73%</b>	<b>0.31%</b>	<b>6.74%</b>	<b>2.77%</b>	<b>4.45%</b>	<b>6.01%</b>	<b>0.47</b>	<b>Sep-04</b>
<b>Growth-Oriented Portfolio Total</b>	<b>291,910,798</b>	<b>32.7%</b>	<b>0.89%</b>	<b>6.26%</b>	<b>6.26%</b>	<b>-2.22%</b>	<b>-0.15%</b>	<b>6.43%</b>	<b>2.98%</b>	<b>4.65%</b>	<b>6.31%</b>	<b>0.48</b>	<b>Sep-04</b>
HFRI FoF Composite + 1%			1.33%	5.18%	5.18%	0.80%	1.49%	5.06%	3.27%	4.07%	5.01%	0.48	Sep-04
3 Month T-Bills+5%			0.62%	1.81%	1.81%	5.38%	7.12%	6.19%	5.74%	6.36%	0.48%	-	Sep-04
<b>Market Indices</b>													
Libor3Month			0.22%	0.65%	0.65%	1.92%	2.51%	1.63%	1.11%	1.72%	0.50%	-	Sep-04
Bloomberg Barclays US Aggregate Bond Index			1.92%	2.94%	2.94%	4.65%	4.48%	2.03%	2.74%	3.98%	3.13%	0.71	Sep-04
Bloomberg Barclays US High Yield Bond Index			0.94%	7.25%	7.25%	4.86%	5.93%	8.57%	4.68%	7.38%	9.17%	0.63	Sep-04
S&P 500 TR			1.94%	13.65%	13.65%	5.87%	9.50%	13.51%	10.91%	8.92%	13.74%	0.57	Sep-04
MSCI AC World Index Free - Net			1.26%	12.18%	12.18%	2.06%	2.60%	10.67%	6.45%	7.17%	15.13%	0.42	Sep-04
MSCI EAFE - Net			0.63%	9.98%	9.98%	-2.51%	-3.71%	7.27%	2.33%	5.45%	16.56%	0.30	Sep-04
MSCI EMF (Emerging Markets Free) - Net			0.84%	9.93%	9.93%	0.60%	-7.41%	10.68%	3.68%	8.74%	21.56%	0.42	Sep-04



## Diversifying Absolute Return Portfolio Performance – as of March 31, 2019

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.	46,923,943	5.3%	1.08%	1.32%	1.32%	2.36%	4.16%	5.40%	5.97%	5.94%	4.95%	0.97	Mar-14
KLS Diversified Fund LP	40,264,664	4.5%	-0.66%	0.66%	0.66%	-	-	-	-	0.66%	-	-	Jan-19
Market Neutral - HF Total	87,188,607	9.8%	0.27%	1.01%	1.01%	2.05%	3.85%	5.29%	5.91%	5.87%	4.91%	0.97	Mar-14
<b>Event Driven</b>													
Elliott International Limited	54,933,579	6.2%	1.00%	1.29%	1.29%	0.58%	1.88%	7.29%	6.04%	7.12%	3.37%	1.78	Apr-12
Event Driven - HF Total	54,933,579	6.2%	1.00%	1.29%	1.29%	0.58%	1.88%	7.29%	6.04%	7.12%	3.37%	1.78	Apr-12
<b>Equity Long/Short</b>													
Marshall Wace Funds LP - MW Global Opportunities (US)	40,412,543	4.5%	1.98%	1.03%	1.03%	-	-	-	-	1.03%	-	-	Jan-19
Equity Long/Short - HF Total	40,412,543	4.5%	1.98%	1.03%	1.03%	1.03%	4.19%	4.19%	4.19%	4.19%	5.75%	0.29	Apr-12
<b>Macro-Systematic</b>													
Graham Global Investment Fund II SPC Ltd. - Tactical Treas	31,612,922	3.5%	8.01%	4.12%	4.12%	-2.99%	-5.12%	-	-	-4.59%	12.51%	-0.47	Feb-17
Winton Diversified Futures Fund L.P.	37,343,001	4.2%	1.77%	1.22%	1.22%	-0.34%	2.63%	-	-	2.92%	7.45%	0.17	Jan-17
Macro-Systematic - HF Total	68,955,923	7.7%	4.54%	2.53%	2.53%	-1.57%	-1.08%	-	-	-0.84%	9.05%	-0.26	Jan-17
<b>Multi-Strategy</b>													
AQR DELTA Fund II, LP	60,026,382	6.7%	0.26%	-1.83%	-1.83%	-8.41%	-13.93%	-3.75%	1.31%	1.12%	5.85%	0.05	May-13
Multi-Strategy - HF Total	60,026,382	6.7%	0.26%	-1.83%	-1.83%	-8.41%	-13.93%	-3.75%	1.31%	1.12%	5.85%	0.05	May-13
<b>Fund of Funds</b>													
Grosvenor SC Absolute Return Fund LLC (Diversifying)	120,560,232	13.5%	-0.19%	0.80%	0.80%	-1.51%	-1.53%	0.18%	-1.01%	1.23%	3.06%	0.13	Dec-11
Grosvenor SC Absolute Return Fund LLC Series B	167,853,800	18.8%	0.03%	1.51%	1.51%	-1.25%	-2.29%	-1.69%	-1.41%	0.19%	2.69%	-0.26	Feb-13
Fund of Funds - HF Total	288,414,032	32.3%	-0.06%	1.20%	1.20%	-1.37%	-1.97%	-0.59%	-1.16%	1.08%	2.84%	0.09	Dec-11
<b>Diversifying Portfolio Total</b>													
HFRI FOF: Conservative Index	599,931,066	67.3%	0.76%	1.01%	1.01%	-1.54%	-1.75%	1.09%	0.71%	1.83%	2.55%	0.38	Dec-11
3 Month T-Bills+2%			1.13%	3.95%	3.95%	1.38%	2.48%	3.74%	2.24%	3.27%	2.33%	1.01	Dec-11
			0.38%	1.09%	1.09%	3.15%	4.12%	3.19%	2.74%	2.53%	0.21%	-	Dec-11
<b>SCERS Absolute Return Portfolio</b>													
3 Month T-Bills+5%	891,841,864	100.0%	0.80%	2.70%	2.70%	-1.95%	-1.27%	3.68%	1.73%	3.88%	5.70%	0.40	Sep-04
HFRI Fund of Funds Composite Index			0.62%	1.81%	1.81%	5.38%	7.12%	6.19%	5.74%	6.36%	0.48%	-	Sep-04
			1.27%	4.99%	4.99%	0.03%	0.49%	4.06%	2.27%	3.07%	5.05%	0.28	Sep-04

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

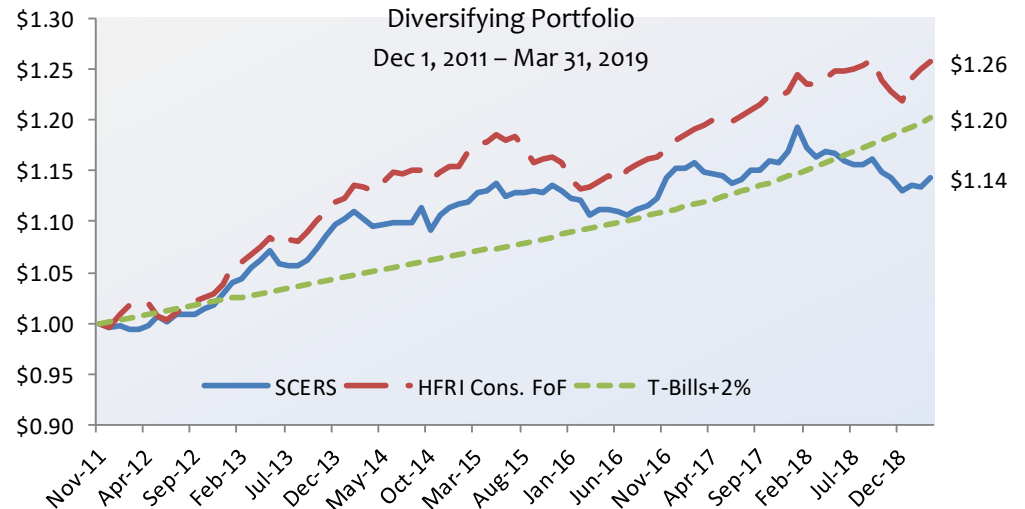
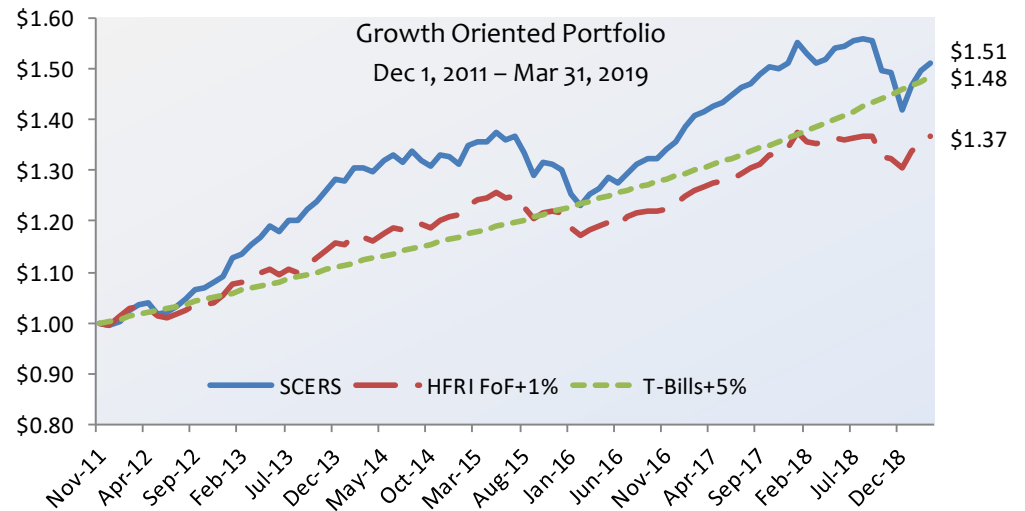
# Absolute Return Portfolios Cumulative Performance – Dec 2011 to March 2019

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

The Diversifying portfolio was tracking the T-bills + 2% long term objective until the Q4 downturn; the portfolio has underperformed the HFRI Fund of Funds Conservative Index over this period

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, 2018

The Private Equity portfolio's net IRR since inception is 14.54%, versus the Cambridge Associates benchmark IRR of 12.65%

- The long-term Policy objective (Russell 3000 + 3%) has a 13.08% IRR over this period

The private equity portfolio generated meaningful gains during a quarter that saw a sharp global equity sell-off

- Several of the funds generated quarterly returns greater than 5% despite a nearly 13% decline in global equities
  - Linden IV, Trinity Ventures XII, Summit VC IV, and several of the Marlin funds reported the largest gains in Q4
- Continued meaningful distributions among the direct fund investments (\$48.5 million) and fund of funds (\$9.2 million)
  - AKKR IV, Summit VC IV, Spectrum VII, Thoma Bravo XI, NEA 14, and TOP III led distributions within directs

Continued strong longer-term performance across most of the private equity funds

- Double-digit net IRRs for all vintage years prior to 2017
- Summit VC IV (46.1%), Waterland V (37.6%), AKKR IV (37.3%), and Marlin Heritage (36.0%) are leading performance

The legacy fund of funds reported modest declines during the quarter

- Aggregate since inception net IRR fell slightly, to 11.49% from 11.80%, during the quarter
  - The aggregate total value (TVPI) slipped to 1.63x from 1.65x
- The legacy fund of funds comprise only 15% of the current fair value of the Private Equity portfolio

Changes during the quarter

- SCERS committed \$115 million across three funds (specialty buyouts and small buyout co-invest) during Q4
  - SCERS did not make any new commitments in Q1 2019
- \$44.5 million in new contributions, \$57.7 million in distributions
- Total portfolio gain increased by \$24.6 million while the total portfolio IRR declined by 0.10%

## Private Equity Portfolio Characteristics as of December 31, 2018

The SCERS Private Equity portfolio is diversified by strategy and geography

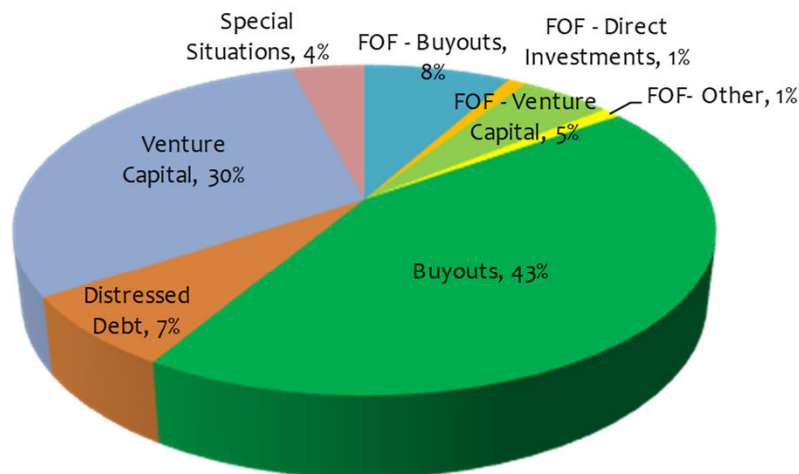
- Investments remain focused in North America, with meaningful exposure to Europe

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

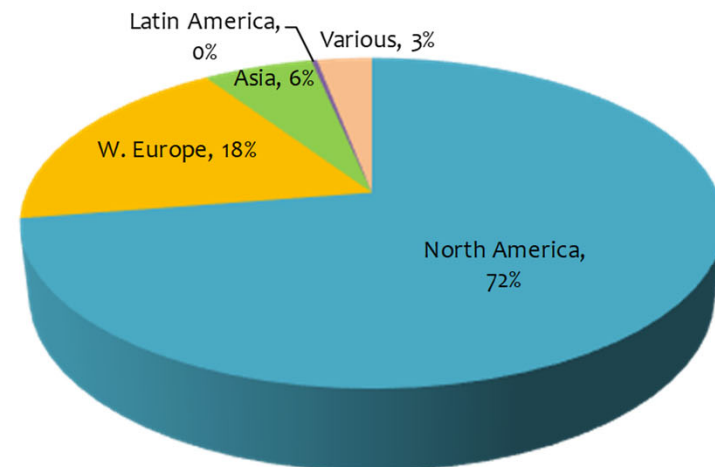
- Investments from direct private equity funds represent 85% of the total portfolio's value as of December 31, 2018

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 12/31/18.

## Private Equity Portfolio Performance Details – as of December 31, 2018

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
<b>Vintage Year 2006</b>												
HarbourVest Partners VIII - Buyout Fund L.P.	Fund of Funds	37,500	1,688	35,813	96%	49,353	12,318	61,671	25,858	10.82%	9.02%	1.72x
HarbourVest Partners VIII - Mezzanine and Distressed Debt Fund L.P.	Fund of Funds	5,000	200	4,800	96%	5,675	941	6,616	1,816	7.45%	9.02%	1.38x
HarbourVest Partners VIII - Venture Fund L.P.	Fund of Funds	7,500	150	7,350	98%	9,318	4,303	13,620	6,270	10.66%	9.02%	1.85x
<b>Vintage Year 2006 Total</b>		<b>50,000</b>	<b>2,038</b>	<b>47,963</b>	<b>96%</b>	<b>64,346</b>	<b>17,562</b>	<b>81,907</b>	<b>33,945</b>	<b>10.53%</b>	<b>7.35%</b>	<b>1.71x</b>
<b>Vintage Year 2008</b>												
Abbott Capital Private Equity Fund VI, L.P.	Fund of Funds	75,000	1,500	73,500	98%	63,376	54,037	117,413	43,913	12.11%	15.11%	1.60x
Goldman Sachs Private Equity Partners X, L.P.	Fund of Funds	75,000	13,068	68,958	83%	85,020	30,702	115,722	46,764	11.79%	15.11%	1.68x
HarbourVest International Private Equity Partners VI-Partnership Fund L.P.	Fund of Funds	37,183	2,231	37,619	94%	22,392	36,012	58,405	20,786	11.86%	8.17%	1.55x
<b>Vintage Year 2008 Total</b>		<b>187,183</b>	<b>16,799</b>	<b>180,077</b>	<b>91%</b>	<b>170,788</b>	<b>120,752</b>	<b>291,540</b>	<b>111,463</b>	<b>11.92%</b>	<b>8.23%</b>	<b>1.62x</b>
<b>Vintage Year 2011</b>												
Waterland Private Equity Fund V C.V.	Buyout	18,476	3,824	15,501	79%	24,678	15,968	40,646	25,145	37.64%	13.54%	2.62x
Khosla Ventures IV, L.P.	Venture Capital	10,000	190	9,810	98%	5,755	18,308	24,064	14,254	21.02%	16.49%	2.45x
<b>Vintage Year 2011 Total</b>		<b>28,476</b>	<b>4,014</b>	<b>25,311</b>	<b>86%</b>	<b>30,433</b>	<b>34,276</b>	<b>64,709</b>	<b>39,399</b>	<b>29.90%</b>	<b>13.37%</b>	<b>2.56x</b>
<b>Vintage Year 2012</b>												
Garrison Opportunity Fund III A LLC	Distressed Debt	20,000	0	20,000	100%	7,483	13,559	21,041	1,041	1.15%	9.88%	1.05x
New Enterprise Associates 14, L.P.	Venture Capital	25,000	1,500	23,500	94%	16,548	31,297	47,845	24,345	17.44%	13.75%	2.04x
Summit Partners Venture Capital III-A, LP	Venture Capital	16,350	2,209	18,897	86%	17,902	16,185	34,087	15,190	17.43%	13.75%	1.80x
<b>Vintage Year 2012 Total</b>		<b>61,350</b>	<b>3,709</b>	<b>62,397</b>	<b>94%</b>	<b>41,932</b>	<b>61,041</b>	<b>102,973</b>	<b>40,576</b>	<b>12.51%</b>	<b>13.34%</b>	<b>1.65x</b>
<b>Vintage Year 2013</b>												
Accel-KKR Capital Partners IV, L.P.	Buyout	15,000	849	14,151	94%	18,211	14,257	32,468	18,317	37.25%	15.92%	2.29x
H.I.G. Capital Partners V, L.P.	Buyout	14,000	4,025	9,975	71%	3,317	11,782	15,098	5,123	25.45%	15.92%	1.51x
Marlin Equity IV, L.P.	Buyout	20,000	234	19,766	99%	7,957	15,628	23,585	3,819	7.43%	15.92%	1.19x
RRJ Capital Master Fund II, L.P.	Buyout	35,000	4,735	35,016	86%	26,237	21,318	47,555	12,540	11.32%	14.42%	1.36x
H.I.G. Bayside Loan Opportunity Fund III (Europe-US\$), L.P.	Distressed Debt	30,000	5,769	24,231	81%	13,305	20,236	33,541	9,310	10.87%	5.45%	1.38x
Wayzata Opportunities Fund III, L.P.	Distressed Debt	30,000	22,835	14,718	24%	7,911	6,206	14,116	-602	-1.54%	8.28%	0.96x

<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, 2018 (continued)

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Trinity Ventures XI, L.P.	Venture Capital	25,000	3,750	21,250	85%	4,242	32,172	36,414	15,164	15.77%	15.03%	1.71x
<b>Vintage Year 2013 Total</b>		<b>169,000</b>	<b>42,198</b>	<b>139,106</b>	<b>75%</b>	<b>81,180</b>	<b>121,598</b>	<b>202,778</b>	<b>63,672</b>	<b>13.85%</b>	<b>13.10%</b>	<b>1.46x</b>
<b>Vintage Year 2014</b>												
Dyal Capital Partners II	Buyout	35,000	12,441	23,680	64%	3,402	14,877	18,279	-5,402	-16.50%	19.45%	0.77x
H.I.G. Europe Capital Partners II, L.P.	Buyout	16,167	5,490	10,899	66%	1,321	9,780	11,101	201	1.49%	14.39%	1.02x
Marlin Heritage Fund	Buyout	10,000	760	9,359	92%	9,137	9,492	18,628	9,269	36.00%	19.45%	1.99x
Thoma Bravo XI	Buyout	30,000	3,430	32,305	89%	22,256	40,735	62,992	30,687	23.96%	19.45%	1.95x
TPG Opportunities Partners III	Distressed Debt	40,000	17,776	40,495	56%	22,551	24,461	47,011	6,516	10.07%	8.46%	1.16x
Khosla Ventures V	Venture Capital	20,000	2,640	17,360	87%	1,013	21,831	22,844	5,484	12.63%	14.24%	1.32x
Spectrum Equity Investors VII, L.P.	Venture Capital	25,000	2,375	22,625	91%	15,998	30,070	46,068	23,443	35.35%	14.24%	2.04x
<b>Vintage Year 2014 Total</b>		<b>176,167</b>	<b>44,912</b>	<b>156,724</b>	<b>75%</b>	<b>75,677</b>	<b>151,245</b>	<b>226,922</b>	<b>70,198</b>	<b>18.71%</b>	<b>14.73%</b>	<b>1.45x</b>
<b>Vintage Year 2015</b>												
* WPEF VI Overflow Fund C.V.	Buyout	6,929	6,918	10	0%	0	0	0	-10	N/A	11.81%	0.00x
RRJ Capital Master Fund III, LP	Buyout	40,000	12,203	28,855	69%	2,190	33,303	35,492	6,638	16.34%	11.81%	1.23x
WPEF VI Feeder, L.P.	Buyout	27,714	11,066	16,183	60%	0	22,400	22,400	6,217	24.09%	11.81%	1.38x
Accel-KKR Growth Capital Partners II	Mezzanine	15,000	4,219	10,781	72%	1,983	11,090	13,073	2,293	14.24%	10.80%	1.21x
New Enterprise Associates 15, L.P.	Venture Capital	35,000	5,600	29,404	84%	3,994	42,587	46,581	17,177	21.84%	13.56%	1.58x
Summit Partners Venture Capital Fund IV-A, L.P.	Venture Capital	35,000	28,506	18,786	19%	12,291	19,008	31,299	12,514	46.12%	13.56%	1.67x
<b>Vintage Year 2015 Total</b>		<b>159,643</b>	<b>68,511</b>	<b>104,018</b>	<b>57%</b>	<b>20,458</b>	<b>128,388</b>	<b>148,846</b>	<b>44,828</b>	<b>23.72%</b>	<b>13.87%</b>	<b>1.43x</b>
<b>Vintage Year 2016</b>												
Accel-KKR Capital Partners V, L.P.	Buyout	25,000	16,933	8,067	32%	256	8,265	8,521	455	5.02%	7.86%	1.06x
Dyal III Pension Investors LP	Buyout	35,000	22,696	16,115	35%	3,441	17,835	21,276	5,161	21.14%	7.86%	1.32x
Linden Capital Partners III	Buyout	35,000	4,613	32,853	87%	3,512	46,172	49,684	16,832	27.35%	7.86%	1.51x
Marlin Heritage Europe, L.P.	Buyout	15,012	10,201	4,970	32%	0	5,766	5,766	796	N/M	N/M	1.16x
Thoma Bravo Fund XII, L.P.	Buyout	30,000	3,437	34,012	89%	7,451	29,341	36,792	2,780	7.55%	7.86%	1.08x
TSG7 A L.P.	Buyout	16,000	5,539	10,461	65%	72	11,749	11,821	1,360	9.80%	7.86%	1.13x
TSG7 B L.P.	Buyout	4,000	2,880	1,120	28%	0	885	885	-235	-17.23%	7.86%	0.79x

<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, 2018 (continued)

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
Atalaya Special Opportunities Fund VI, L.P.	Distressed Debt	25,000	2,454	28,940	90%	10,685	23,160	33,845	4,905	10.61%	9.35%	1.17x
Trinity Ventures XII, L.P.	Venture Capital	30,000	13,725	16,275	54%	0	25,174	25,174	8,899	35.86%	15.21%	1.55x
<b>Vintage Year 2016 Total</b>		<b>215,012</b>	<b>82,479</b>	<b>152,812</b>	<b>62%</b>	<b>25,417</b>	<b>168,347</b>	<b>193,764</b>	<b>40,952</b>	<b>18.20%</b>	<b>11.20%</b>	<b>1.27x</b>
<b>Vintage Year 2017</b>												
Marlin Heritage II	Buyout	10,000	6,088	3,912	39%	0	3,646	3,646	-266	NM	NM	0.93x
New Enterprise Associates 16, L.P.	Venture Capital	35,000	22,663	12,338	35%	0	13,877	13,877	1,539	NM	NM	1.12x
<b>Vintage Year 2017 Total</b>		<b>45,000</b>	<b>28,750</b>	<b>16,250</b>	<b>36%</b>	<b>0</b>	<b>17,522</b>	<b>17,522</b>	<b>1,273</b>	<b>NM</b>	<b>NM</b>	<b>1.08x</b>
<b>Vintage Year 2018</b>												
Linden Capital Partners IV LP	Buyout	44,330	42,444	1,886	4%	0	3,014	3,014	1,128	NM	NM	1.60x
Marlin Equity V	Buyout	25,000	20,153	4,847	19%	375	4,853	5,228	381	NM	NM	1.08x
Summit Partners Europe Growth Equity Fund II, SCSP	Buyout	30,000	28,271	9,078	6%	7,349	6,439	13,788	4,710	NM	NM	1.52x
TSG8 L.P.	Buyout	45,000	45,000	0	0%	0	-142	-142	-142	NM	NM	N/A
Davidson Kempner Long-Term Distressed Opportunities Fund IV LP	Distressed Debt	35,000	24,150	10,850	31%	0	11,869	11,869	1,019	NM	NM	1.09x
TSSP Opportunities Partners IV (A), L.P.	Distressed Debt	35,000	35,000	0	0%	0	-36	-36	-36	NM	NM	N/A
RCP Fund XIII	Fund of Funds	50,000	49,500	500	1%	0	183	183	-317	NM	NM	0.37x
RCPDirect III	Fund of Funds	25,000	22,750	2,250	9%	0	2,250	2,250	0	NM	NM	1.00x
Accel-KKR Growth Capital Partners III	Mezzanine	33,320	33,320	0	0%	0	0	0	0	NM	NM	N/A
Khosla Ventures VI, L.P.	Venture Capital	35,000	27,020	7,980	23%	0	7,665	7,665	-315	NM	NM	0.96x
Spectrum Equity VIII, L.P.	Venture Capital	25,000	20,938	4,063	16%	0	3,540	3,540	-522	NM	NM	0.87x
<b>Vintage Year 2018 Total</b>		<b>382,650</b>	<b>348,546</b>	<b>41,453</b>	<b>9%</b>	<b>7,724</b>	<b>39,635</b>	<b>47,359</b>	<b>5,906</b>	<b>NM</b>	<b>NM</b>	<b>1.14x</b>
<b>Vintage Year 2019</b>												
Thoma Bravo Fund XIII, LP	Buyout	45,000	45,000	0	0%	0	-44	-44	-44	NM	NM	N/A
<b>Vintage Year 2019 Total</b>		<b>45,000</b>	<b>45,000</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>-44</b>	<b>-44</b>	<b>-44</b>	<b>NM</b>	<b>NM</b>	<b>N/A</b>
<b>Portfolio Strategy Totals</b>												
Buyout		627,627	319,231	343,020	49%	141,161	347,318	488,479	145,459	20.38%		1.42x
Distressed Debt		215,000	107,985	139,234	50%	61,934	99,454	161,388	22,154	6.52%		1.16x
Fund of Funds		312,183	91,086	230,789	71%	235,134	140,747	375,880	145,091	11.49%		1.63x
Mezzanine		48,320	37,539	10,781	22%	1,983	11,090	13,073	2,293	14.24%		1.21x
Venture Capital		316,350	131,115	202,287	59%	77,742	261,714	339,456	137,169	20.86%		1.68x
<b>Portfolio Total :</b>		<b>1,519,480</b>	<b>686,956</b>	<b>926,111</b>	<b>55%</b>	<b>517,954</b>	<b>860,322</b>	<b>1,378,277</b>	<b>452,166</b>	<b>14.54%</b>	<b>12.65%</b>	<b>1.49x</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, 2018

The Private Credit portfolio's net IRR since inception is 7.45%, versus the benchmark return of 6.81%

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

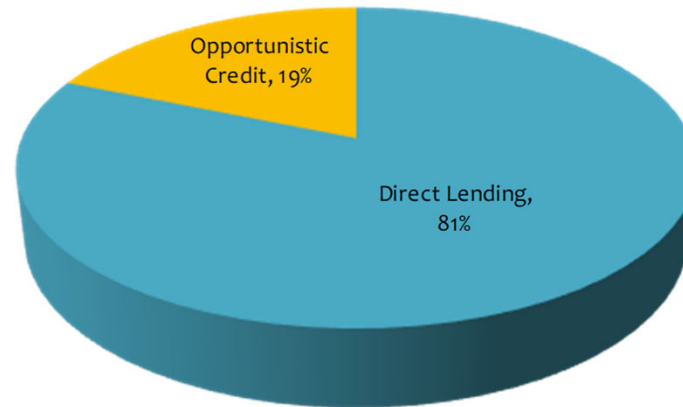
The Private Credit funds reported a slight decline during Q4 given the quarter's sharp sell-off across risk assets

- The portfolio returned -0.8% in Q4 and 3.9% for the trailing 1 year period ending December 31, 2018
  - Recent performance primarily hurt by Summit Credit II and Benefit Street
- Longer term performance remains solid, with annualized returns of more than 7% over multi-year periods

### Changes during the quarter

- SCERS made no new commitments to Private Credit funds during Q4
- \$25.7 million in new contributions, \$4.4 million in distributions
- Portfolio IRR declined by 1.26% while the total portfolio gain decreased by \$1.0 million

*Market Value Strategy Exposure  
(based on fair value of investments)  
as of December 31, 2018*





## Private Credit Portfolio Details – as of December 31, 2018

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
<b>Vintage Year 2011</b>												
Summit Partners Credit Fund, LP	Direct Lending	20,000	2,125	20,697	89%	23,535	3,050	26,585	5,888	8.96%	N/A	1.28x
<b>Vintage Year 2011 Total</b>		<b>20,000</b>	<b>2,125</b>	<b>20,697</b>	<b>89%</b>	<b>23,535</b>	<b>3,050</b>	<b>26,585</b>	<b>5,888</b>	<b>8.96%</b>	<b>13.37%</b>	<b>1.28x</b>
<b>Vintage Year 2014</b>												
Summit Partners Credit Fund II, L.P.	Direct Lending	35,000	12,510	39,587	64%	23,440	21,942	45,383	5,796	8.37%	3.69%	1.15x
<b>Vintage Year 2014 Total</b>		<b>35,000</b>	<b>12,510</b>	<b>39,587</b>	<b>64%</b>	<b>23,440</b>	<b>21,942</b>	<b>45,383</b>	<b>5,796</b>	<b>8.37%</b>	<b>14.73%</b>	<b>1.15x</b>
<b>Vintage Year 2015</b>												
Athyrium Opportunities Fund II	Opportunistic Credit	32,000	8,813	36,145	72%	26,756	14,546	41,302	5,157	8.39%	10.80%	1.14x
<b>Vintage Year 2015 Total</b>		<b>32,000</b>	<b>8,813</b>	<b>36,145</b>	<b>72%</b>	<b>26,756</b>	<b>14,546</b>	<b>41,302</b>	<b>5,157</b>	<b>8.39%</b>	<b>13.87%</b>	<b>1.14x</b>
<b>Vintage Year 2017</b>												
Athyrium Opportunities Fund III	Opportunistic Credit	25,000	13,774	13,279	45%	2,019	11,155	13,174	-106	N/M	N/M	0.99x
<b>Vintage Year 2017 Total</b>		<b>25,000</b>	<b>13,774</b>	<b>13,279</b>	<b>45%</b>	<b>2,019</b>	<b>11,155</b>	<b>13,174</b>	<b>-106</b>	<b>N/M</b>	<b>N/M</b>	<b>0.99x</b>
<b>Vintage Year 2018</b>												
Benefit Street Partners Senior Secured Opportunities Fund L.P.	Direct Lending	50,000	8,753	43,213	82%	3,048	41,150	44,198	985	N/M	N/M	1.02x
Summit Partners Credit Fund III, L.P.	Direct Lending	50,000	37,045	12,955	26%	0	13,074	13,074	120	N/M	N/M	1.01x
TCP Direct Lending Fund VIII-S, LLC	Direct Lending	100,000	67,763	32,237	32%	1,200	32,030	33,230	993	N/M	N/M	1.03x
<b>Vintage Year 2018 Total</b>		<b>200,000</b>	<b>113,561</b>	<b>88,405</b>	<b>43%</b>	<b>4,248</b>	<b>86,254</b>	<b>90,502</b>	<b>2,097</b>	<b>N/M</b>	<b>N/M</b>	<b>1.02x</b>
<b>Portfolio Total :</b>		<b>312,000</b>	<b>150,784</b>	<b>198,113</b>	<b>52%</b>	<b>79,997</b>	<b>136,948</b>	<b>216,945</b>	<b>18,832</b>	<b>7.45%</b>	<b>6.81%</b>	<b>1.10x</b>
<b>Portfolio Strategy Totals</b>												
Direct Lending		255,000	128,197	148,688	50%	51,223	111,246	162,470	13,781	7.56%		1.09x
Opportunistic Credit		57,000	22,587	49,424	60%	28,774	25,701	54,475	5,051	7.15%		1.10x
<b>Portfolio Total :</b>		<b>312,000</b>	<b>150,784</b>	<b>198,113</b>	<b>52%</b>	<b>79,997</b>	<b>136,948</b>	<b>216,945</b>	<b>18,832</b>	<b>7.45%</b>	<b>6.81%</b>	<b>1.10x</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, 2018

The Real Assets portfolio's net IRR since inception is 15.17%, versus the blended benchmark return of 6.80%

- The Real Assets portfolio includes private Infrastructure, Energy, and Agriculture, Timber and Other
- Real Assets is part of the broader Real Return asset category

The Real Assets portfolio is primarily Energy and Infrastructure partnerships

- Both Energy and Infrastructure partnerships have performed well since inception
  - Since inception net IRRs of 17.2% for Energy and 14.6% for Infrastructure
- The Real Asset Debt separate account has also performed well with a 10.2% since inception net IRR
  - That separate account remains small, with a fair market value of \$17.7 million

The portfolio generated a 2.5% net return during a quarter that saw another decline in the Energy sector

- Wastewater, EnCap X, Quantum VI & VII, and Tailwater III reported the largest gains in Q4
  - The portfolio's infrastructure funds also performed well, generating returns between 1% and 4% during the quarter
- EnCap IX and ArcLight Energy, along with the EnCap Flatrock funds, were the laggards during the quarter

Changes during the quarter

- SCERS made no new commitments to Real Assets funds during Q4
  - SCERS committed \$35 million to a global infrastructure fund (EQT Infrastructure IV) in Q1 2019
- \$45.4 million in new contributions, \$19.8 million in distributions
- Portfolio IRR declined by 0.68% while the total portfolio gain increased by \$10.8 million

## Real Assets Portfolio Performance Details – as of December 31, 2018

Partnership Name	Strategy	(A) Comm. 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	2,273	36,611	93%	25,583	22,855	48,438	11,827	13.15%	3.94%	1.32x
<b>Vintage Year 2013 Total</b>		<b>33,000</b>	<b>2,273</b>	<b>36,611</b>	<b>93%</b>	<b>25,583</b>	<b>22,855</b>	<b>48,438</b>	<b>11,827</b>	<b>13.15%</b>		<b>1.32x</b>
<b>Vintage Year 2014</b>												
Carlyle Power Partners II, L.P.	Energy	40,000	25,029	20,339	37%	5,210	16,392	21,602	1,264	2.88%	11.92%	1.06x
EnCap Flatrock Midstream III	Energy	20,000	5,556	18,213	72%	8,454	13,431	21,885	3,672	17.79%	11.92%	1.20x
Global Energy & Power Infrastructure Fund II	Energy	35,000	8,334	29,823	76%	16,908	24,234	41,142	11,319	36.00%	11.92%	1.38x
Quantum Energy Partners VI, LP	Energy	35,000	13,275	26,833	62%	13,651	32,704	46,354	19,521	40.85%	11.92%	1.73x
Pantheon SCERS SIRF MM, LLC	Infrastructure	100,000	33,068	66,932	67%	6,100	85,955	92,055	25,123	16.66%	N/A	1.38x
Wastewater Opportunity Fund	Infrastructure	25,000	8,646	16,361	65%	1,998	14,063	16,061	-300	-1.74%	N/A	0.98x
<b>Vintage Year 2014 Total</b>		<b>255,000</b>	<b>93,909</b>	<b>178,501</b>	<b>63%</b>	<b>52,321</b>	<b>186,778</b>	<b>239,100</b>	<b>60,599</b>	<b>19.37%</b>		<b>1.34x</b>
<b>Vintage Year 2015</b>												
ArcLight Energy Partners Fund VI	Energy	40,000	9,314	37,470	77%	12,253	35,392	47,645	10,174	13.37%	14.01%	1.27x
EnCap Energy Capital Fund X, L.P.	Energy	40,000	9,867	32,633	75%	6,307	33,526	39,833	7,200	13.67%	14.01%	1.22x
Atalaya Real Assets SMA	Real Asset Debt	100,000	83,877	36,169	16%	23,866	17,683	41,549	5,380	10.17%	N/A	1.15x
<b>Vintage Year 2015 Total</b>		<b>180,000</b>	<b>103,058</b>	<b>106,273</b>	<b>43%</b>	<b>42,425</b>	<b>86,601</b>	<b>129,027</b>	<b>22,754</b>	<b>12.51%</b>		<b>1.21x</b>
<b>Vintage Year 2016</b>												
ACM Fund II, LLC	Agriculture	25,000	11,148	17,998	55%	4,513	12,686	17,200	-799	-4.42%	6.37%	0.96x
Brookfield Infrastructure Fund III, L.P.	Infrastructure	40,000	14,568	25,421	64%	3,493	24,393	27,887	2,466	8.51%	N/A	1.10x
IFM Global Infrastructure Fund	Infrastructure	125,053	25,000	100,053	80%	31,995	91,879	123,874	23,821	N/M	N/M	1.24x
<b>Vintage Year 2016 Total</b>		<b>190,053</b>	<b>50,717</b>	<b>143,472</b>	<b>73%</b>	<b>40,001</b>	<b>128,959</b>	<b>168,960</b>	<b>25,488</b>	<b>13.23%</b>		<b>1.18x</b>
<b>Vintage Year 2017</b>												
Quantum Energy Partners VII, LP	Energy	40,000	25,346	17,011	37%	2,415	15,483	17,899	887	N/M	N/M	1.05x
Meridiam Infrastructure North America Fund III	Infrastructure	50,000	48,638	1,362	3%	1	137	138	-1,224	N/M	N/M	0.10x
<b>Vintage Year 2017 Total</b>		<b>90,000</b>	<b>73,984</b>	<b>18,373</b>	<b>18%</b>	<b>2,416</b>	<b>15,621</b>	<b>18,037</b>	<b>-337</b>	<b>N/M</b>		<b>0.98x</b>
<b>Vintage Year 2018</b>												
Paine Schwartz Food Chain Fund V, LP	Agriculture	40,000	40,000	0	0%	0	-311	-311	-311	N/M	N/M	N/A

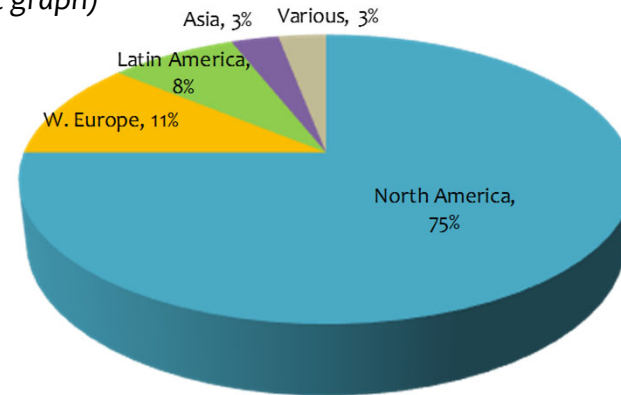
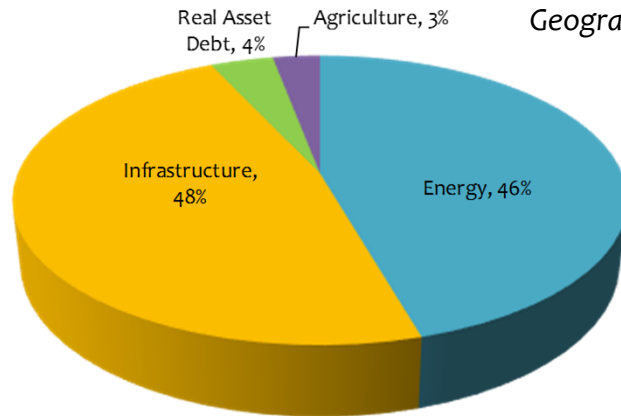
<sup>1</sup> Benchmarks:

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, 2018 (continued)

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
EnCap Flatrock Midstream IV, L.P.	Energy	22,500	16,142	6,358	28%	0	6,031	6,031	-327	N/M	N/M	0.95x
Tailwater Energy Fund III, LP	Energy	32,000	14,184	19,870	56%	1,662	18,881	20,542	672	N/M	N/M	1.03x
ISO Global Infrastructure Fund II	Infrastructure	50,000	37,093	13,452	26%	556	13,236	13,792	340	N/M	N/M	1.03x
Vintage Year 2018 Total		144,500	107,420	39,680	26%	2,217	37,837	40,054	374	N/M		1.01x
<b>Portfolio Total :</b>		<b>892,553</b>	<b>431,361</b>	<b>522,909</b>	<b>52%</b>	<b>164,965</b>	<b>478,651</b>	<b>643,615</b>	<b>120,706</b>	<b>15.17%</b>	<b>6.80%</b>	<b>1.23x</b>
<b>Portfolio Strategy Totals</b>												
Agriculture		65,000	51,148	17,998	21%	4,513	12,375	16,888	-1,110	-6.18%		0.94x
Energy		337,500	129,321	245,162	62%	92,443	218,928	311,371	66,209	17.21%		1.27x
Infrastructure		390,053	167,014	223,580	57%	44,143	229,664	273,807	50,226	14.64%		1.22x
Real Asset Debt		100,000	83,877	36,169	16%	23,866	17,683	41,549	5,380	10.17%		1.15x

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



\* Exposures are based on the market values of investments as of 12/31/18

<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, 2018

### The Opportunities portfolio's net IRR since inception is 18.42%

- 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
  - 6.02% portfolio IRR v 8.35% 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)

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

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

### Changes during the quarter

- SCERS made no new commitments categorized as Opportunities funds during Q4 2018
- No new contributions, \$0.3 million in distributions
- Portfolio IRR decreased 0.02%, total portfolio gain increased slightly

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

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

## Opportunities Portfolio Performance Details – as of December 31, 2018

Partnership Name	Strategy	(A) Commit. Amount	Unfund. Amount	(B) Cumulat. Cont.	% Drawn	(C) Cumulat. Dist.	(D) Fair Value	(C+D) Total Value	(C+D-B) Gain/Loss	Net IRR	IRR Bench.	TVPI
<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%	9.28%	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%	12.17%	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%	14.89%	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%	14.89%	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%	21,621	8,968	30,589	5,714	7.99%	8.28%	1.23x
<b>Vintage Year 2013 Total</b>		<b>25,000</b>	<b>1,117</b>	<b>24,875</b>	<b>96%</b>	<b>21,621</b>	<b>8,968</b>	<b>30,589</b>	<b>5,714</b>	<b>7.99%</b>		<b>1.23x</b>
<b>Portfolio Total :</b>		<b>100,000</b>	<b>1,117</b>	<b>100,123</b>	<b>99%</b>	<b>150,969</b>	<b>8,968</b>	<b>159,937</b>	<b>59,815</b>	<b>18.42%</b>	<b>7.00%</b>	<b>1.60x</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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