



# Private Equity PORTFOLIO

*Performance as of December 31, 2018*

The Colorado PERA Private Equity portfolio had an annualized net internal rate of return (IRR) of 10.5 percent since inception through December 31, 2018.

PERA uses dollar-weighted IRRs to measure portfolio performance for Private Equity, as recommended by the CFA Institute.

The limited partnership recordkeeping, including the IRR, is maintained internally by PERA for each limited partnership. The PERA IRR calculation method may differ from calculation methods used by the General Partners or other Limited Partners.

Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, partnership management fees, advisory fees, organization fees, other partnership expenses, sale of distributed stock, and valuations. Importantly, there is no industry-standardized method for valuation or reporting, which makes comparisons of these numbers difficult.

Additionally, the purchase or sale of secondary interests makes for unique comparison problems due to the specific pricing and timing characteristics of the transaction when contrasted with the Limited Partners Investment.

Until a partnership is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in the early years of a partnership is not meaningful given the J-curve effect. The actual IRR performance of any limited partnership is not known until all capital contributed and earnings have been distributed to the investor.

Finally, please note that none of the information contained herein has been reviewed or approved by the General Partners of the funds.

## ▶ PRIVATE EQUITY KEY TERMS

**Capital Contributed:** The amount of capital that has been paid into a partnership to date. Typically, partnerships call capital on a “just-in-time” basis as investment opportunities arise. Capital Contributed may exceed Capital Committed when partnerships are allowed to recycle capital or if fees are accounted for outside an investor’s commitment.

**Capital Distributed:** The amount of Contributed Capital and profits that have been returned to investors to date. This does not represent remaining net asset value in a partnership.

**Fund of Funds:** A single investment partnership that makes a series of commitments to other limited partnerships.

**IRR (Internal Rate of Return):** The discount rate that equates the net present value (NPV) of an investment’s cash inflows with its cash outflows. This is also known as the dollar-weighted rate of return.

**J-Curve Effect:** The curve realized by plotting the returns generated by a private equity fund against time (from inception to termination). Payment of fees and start-up costs in the early years of a partnership, prior to any returns to the investor, may cause capital invested to be higher than the book value of the investment. As a result, a private equity fund could initially show negative returns until realizations or capital appreciation occurs, which will cause the fund’s return to start to rise. In the final stages of a partnership, the interim IRR will give a reasonable indication of the definitive IRR. This period is generally shorter for buyout funds than for early-stage and expansion funds.

**Vintage Year:** The year in which PERA receives its first capital call for a particular investment.

# Private Equity PORTFOLIO

Performance as of December 31, 2018

Vintage Year	Partnership Name	Capital Committed	Capital Contributed	Capital Distributed	Colorado PERA's Since Inception IRR
1982	Centennial Fund Ltd	\$5,000,000	\$5,000,000	\$ 9,565,819	9.27%
1984	Centennial Fund II	5,000,000	5,000,000	6,801,204	6.43%
1985	Centennial Business Development Fund	2,000,000	2,000,000	3,347,063	8.01%
1987	Centennial Fund III	25,000,000	25,000,000	72,147,814	22.04%
1988	Columbine Venture Fund II	5,000,000	5,000,000	2,050,862	-9.28%
1988	Equitable Deal Flow Fund	50,000,000	72,181,515	82,843,187	4.09%
1988	HarbourVest III <sup>1</sup>	50,000,000	50,000,000	107,995,102	13.76%
1989	Accel Partners III	2,000,000	2,000,000	4,358,716	14.66%
1989	Colorado Venture Management III	1,500,000	1,500,000	3,938,250	14.63%
1989	Grotech Partners III	2,000,000	2,000,000	2,039,447	0.28%
1989	Lehman Brothers Merchant Banking Ptrnshp	50,000,000	42,256,540	145,058,417	30.50%
1989	Morgan Holland Fund II	2,000,000	2,000,000	4,196,309	17.45%
1989	Nazem & Company III	3,000,000	3,000,000	3,240,890	1.96%
1990	Brantley Venture Partners II	2,000,000	2,000,000	2,337,232	2.56%
1990	Equitable Capital Private Inc & Equity Fund II	50,000,000	72,059,423	107,372,058	13.60%
1990	Gateway Venture Partners III	2,000,000	2,000,000	4,007,174	16.85%
1990	HarbourVest International Private Equity Partners <sup>1</sup>	30,000,000	30,000,000	53,079,245	11.14%
1991	Joseph Littlejohn & Levy Fund	30,000,000	33,138,213	87,095,301	33.85%
1992	Forstmann Little Sub Debt & Equity V	100,000,000	95,785,413	113,598,501	36.86%
1992	Media/Communications Partners II	3,000,000	3,000,000	12,955,329	38.90%
1992	Mohr Davidow Ventures III	3,000,000	3,000,000	4,863,980	11.41%
1993	Accel Partners IV	2,000,000	2,000,000	13,929,817	77.90%
1993	Centennial Fund IV	45,000,000	45,000,000	147,744,721	38.06%
1993	Colorado Venture Management IV	1,700,000	1,696,000	1,921,392	2.60%
1993	Geocapital III	1,000,000	1,000,000	2,980,458	79.84%
1993	Grotech Partners IV	2,500,000	2,500,000	4,272,522	15.19%
1993	HarbourVest IV-Direct	20,000,000	20,000,000	24,566,820	5.57%
1993	HarbourVest IV-Partnership <sup>1</sup>	30,000,000	28,500,000	110,987,822	41.78%
1993	Phillips-Smith Specialty Retail Group III	2,000,000	2,000,000	4,123,186	22.77%
1994	Blackstone Capital Partners II	100,000,000	109,106,993	238,417,493	38.40%
1994	Brantley Venture Partners III	2,000,000	2,000,000	1,871,633	-0.88%
1994	Joseph Littlejohn & Levy Fund II	50,000,000	56,009,870	84,462,793	7.13%
1995	Apollo Investment Fund III	100,000,000	111,972,394	160,902,280	10.45%
1995	Cypress Merchant Banking Partners	100,000,000	103,808,696	126,333,190	2.66%
1995	Forstmann Little Sub Debt & Equity VI	130,000,000	139,410,810	171,713,229	8.93%
1995	Franklin Capital Associates III	3,000,000	3,000,000	1,970,477	-6.64%
1995	HarbourVest Intl Pvt Equity Ptnrs II-Direct	20,000,000	20,000,000	38,019,916	19.57%
1995	HarbourVest Intl Pvt Equity Ptnrs II-Partnership <sup>1</sup>	80,000,000	78,400,000	110,588,259	8.81%
1995	Mohr Davidow Ventures IV	3,000,000	3,000,000	41,070,513	108.43%
1995	Morgan Holland One Liberty III	2,000,000	2,000,000	7,488,386	28.26%
1995	Technology Crossover Ventures I	3,000,000	3,000,000	7,187,098	34.57%
1995	Warburg Pincus Ventures	100,000,000	100,000,000	517,781,935	49.73%
1996	Asia Pacific Growth Fund II	30,000,000	30,161,354	45,405,709	9.12%
1996	Centennial Fund V	50,000,000	50,000,000	45,102,640	-3.88%
1996	Doughty Hanson & Co Fund II	30,000,000	26,455,534	57,532,829	49.21%
1996	Euroknights III	30,103,200	30,048,433	20,817,856	-6.52%
1996	Forstmann Little Equity V	70,000,000	74,501,719	96,880,153	5.63%
1996	Hicks Muse Tate & Furst Equity Fund III	200,000,000	227,456,435	218,275,403	-0.87%

<sup>1</sup> Fund of Funds

<sup>2</sup> Assets transferred subsequent to 2010 merger of Denver Public Schools Retirement System (DPSRS) into PERA

<sup>3</sup> Not meaningful

The limited partnership recordkeeping, including the internal rate of return or IRR, is maintained internally by PERA for each limited partnership. The PERA IRR calculation method may differ from calculation methods used by the General Partners or other Limited Partners.

Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, partnership management fees, advisory fees, organization fees, other partnership expenses, sale of distributed stock, and valuations. Importantly, there is no industry-standardized method for valuation or reporting, which makes comparisons of these numbers difficult.

Additionally, the purchase or sale of secondary interests makes for unique comparison problems due to the specific pricing and timing characteristics of the transaction when contrasted with the Limited Partners Investment.

Until a partnership is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in the early years of a partnership is not meaningful given the J-curve effect. The actual IRR performance of any limited partnership is not known until all capital contributed and earnings have been distributed to the investor.

Please note that none of the information contained herein has been reviewed or approved by the General Partners of the funds.

# Private Equity PORTFOLIO

Performance as of December 31, 2018

Vintage Year	Partnership Name	Capital Committed	Capital Contributed	Capital Distributed	Colorado PERA's Since Inception IRR
1996	Westspere South America PE Growth Fund	\$30,000,000	\$30,000,000	\$22,368,426	-6.86%
1997	AIG Global Emerging Markets Fund <sup>1</sup>	100,000,000	82,814,391	109,414,737	7.07%
1997	Blackstone Capital Partners III	300,000,000	326,714,370	533,268,494	12.52%
1997	DLJ Merchant Banking Partners II	100,000,000	112,341,178	154,759,927	7.55%
1997	Doughty Hanson & Co Fund III	100,000,000	92,711,703	202,564,674	16.68%
1997	HarbourVest V-Direct	60,000,000	60,000,000	49,962,549	-3.44%
1997	HarbourVest V-Partnership <sup>1</sup>	40,000,000	39,400,000	66,882,826	14.47%
1997	HSBC Private Equity Fund II	100,000,000	79,300,145	117,048,741	8.06%
1997	Lehman Brothers Merchant Banking Ptnrshp II	100,000,000	86,700,231	107,080,450	4.81%
1997	Phoenix Equity Partners II	32,740,000	31,607,000	28,651,020	-2.05%
1997	Sequel Ventures	15,000,000	15,000,000	20,020,328	12.90%
1997	Technology Crossover Ventures II	500,000	500,000	1,801,246	75.93%
1997	Warburg Pincus Ventures International	100,000,000	100,000,000	185,531,249	11.27%
1998	Apollo Investment Fund IV	200,000,000	202,739,430	310,836,256	7.62%
1998	Beacon Energy II	55,343,340	55,740,371	82,093,998	8.49%
1998	CVC European Equity Partners II	100,000,000	110,571,270	236,341,545	20.05%
1998	Forstmann Little Sub Debt & Equity VII	185,000,000	196,116,025	62,514,033	-33.06%
1998	HarbourVest Intl Pvt Equity Ptnrs III-Direct	40,000,000	39,000,000	32,615,274	-1.97%
1998	HarbourVest Intl Pvt Equity Ptnrs III-Partnership <sup>1</sup>	60,000,000	59,100,000	91,638,247	8.56%
1998	Hicks Muse Tate & Furst Equity Fund IV	200,000,000	231,165,438	158,031,210	-9.56%
1998	HMTF Latin America	100,000,000	119,528,236	76,369,565	-7.32%
1998	Joseph Littlejohn & Levy Fund III	150,000,000	169,870,464	263,796,432	11.19%
1998	Rocky Mountain Mezzanine II	15,000,000	15,000,000	15,297,616	0.25%
1998	Warburg Pincus Equity Partners	100,000,000	100,000,000	165,234,528	10.26%
1998	Westspere Latin America PE Growth Fund II	35,928,145	35,928,145	0	NM <sup>3</sup>
1999	Asia Pacific Growth Fund III	25,000,000	25,002,174	14,043,751	-11.71%
1999	Brentwood Associates Private Equity III	25,000,000	29,683,295	43,636,804	9.20%
1999	Centennial Fund VI	50,000,000	47,500,000	10,237,381	-14.22%
1999	Columbia Capital Equity Partners II	20,000,000	19,991,587	15,820,996	-4.61%
1999	Cypress Merchant Banking Partners II	150,000,000	148,205,713	160,695,663	2.05%
1999	Forstmann Little Equity VI	115,000,000	118,452,469	33,721,835	-21.63%
1999	Goldman Sachs Special Opportunities Asia Fund	25,000,000	25,000,000	40,779,053	25.26%
1999	Gryphon Partners II	25,000,000	25,897,210	31,707,161	7.96%
1999	HarbourVest VI-Direct	25,000,000	24,125,000	24,630,259	0.36%
1999	HarbourVest VI-Partnership <sup>1</sup>	50,000,000	49,000,000	62,566,632	3.66%
1999	Mobius/Softbank Technology Ventures V	20,000,000	20,000,000	2,569,734	-12.15%
1999	Pegasus Partners II	25,000,000	32,509,479	52,514,570	15.95%
1999	Sequel II	25,000,000	23,750,000	12,853,645	-9.17%
1999	Spectrum Equity Investors III	25,000,000	24,752,510	23,729,786	-1.71%
2000	Blackstone Communications Partners	50,000,000	52,813,492	70,283,291	15.38%
2000	Colorado PERA Co-Investment 2000	66,302,500	63,899,740	127,867,466	12.38%
2000	Columbia Capital Equity Partners III	50,000,000	55,575,250	64,916,297	3.16%
2000	DLJ Merchant Banking Partners III	50,000,000	63,093,336	104,170,865	20.41%
2000	Doughty Hanson & Co Technology Fund	30,000,000	36,789,326	12,286,067	-23.23%
2000	Euroknights IV	30,213,000	34,659,517	79,125,228	28.17%
2000	Focus Ventures II	30,000,000	28,052,098	13,658,389	-19.09%
2000	Francisco Partners	50,000,000	46,875,000	60,568,186	4.42%
2000	HMTF Latin America II	60,000,000	60,142,905	14,884,721	-20.21%

<sup>1</sup> Fund of Funds

<sup>2</sup> Assets transferred subsequent to 2010 merger of Denver Public Schools Retirement System (DPSRS) into PERA

<sup>3</sup> Not meaningful

The limited partnership recordkeeping, including the internal rate of return or IRR, is maintained internally by PERA for each limited partnership. The PERA IRR calculation method may differ from calculation methods used by the General Partners or other Limited Partners.

Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, partnership management fees, advisory fees, organization fees, other partnership expenses, sale of distributed stock, and valuations. Importantly, there is no industry-standardized method for valuation or reporting, which makes comparisons of these numbers difficult.

Additionally, the purchase or sale of secondary interests makes for unique comparison problems due to the specific pricing and timing characteristics of the transaction when contrasted with the Limited Partners Investment.

Until a partnership is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in the early years of a partnership is not meaningful given the J-curve effect. The actual IRR performance of any limited partnership is not known until all capital contributed and earnings have been distributed to the investor.

Please note that none of the information contained herein has been reviewed or approved by the General Partners of the funds.

# Private Equity PORTFOLIO

Performance as of December 31, 2018

Vintage Year	Partnership Name	Capital Committed	Capital Contributed	Capital Distributed	Colorado PERA's Since Inception IRR
2000	JK&B Capital III	\$25,000,000	\$24,701,620	\$17,964,032	-5.26%
2000	Mobius/Softbank Technology Ventures VI	29,166,667	28,539,651	15,086,651	-6.20%
2000	Phoenix Equity Partners III	5,666,823	5,077,088	6,892,672	6.14%
2000	Sequel III	25,000,000	25,000,000	36,573,459	5.50%
2000	Spectrum Equity Investors IV	50,000,000	46,752,510	58,118,258	10.83%
2000	Sprout Capital IX	18,750,000	17,304,580	16,471,108	-1.09%
2000	Technology Crossover Ventures IV	25,000,000	24,400,000	39,392,865	8.88%
2000	Venture Strategy Partners II	20,000,000	17,900,000	9,293,033	-18.07%
2000	Warburg Pincus International Partners	75,000,000	75,004,545	118,698,521	9.97%
2001	Apollo Investment Fund V	100,000,000	149,793,891	288,248,850	38.26%
2001	Atlas Ventures VI	15,472,955	14,835,079	12,989,916	-4.83%
2001	Centennial Ventures VII	60,000,000	57,600,000	95,389,042	7.99%
2001	Colorado PERA Co-Investment 2001	62,429,999	61,975,349	64,222,552	0.95%
2001	CVC European Equity Partners III	75,000,000	71,629,744	204,383,642	42.23%
2001	Enterprise Partners VI	25,000,000	25,000,000	3,317,085	-18.60%
2001	Exxel Capital Partners VI	25,000,000	22,299,219	11,782,188	-22.45%
2001	Forstmann Little Equity VII	30,000,000	26,391,288	29,012,020	3.86%
2001	Forstmann Little MBO VIII	70,000,000	76,372,856	76,996,953	0.81%
2001	HarbourVest Intl Private Equity Partners IV—Partnership <sup>1</sup>	50,000,000	48,750,000	86,924,301	14.06%
2001	Highland Capital Partners VI	25,000,000	25,000,000	38,665,909	11.51%
2001	JK&B Capital IV	25,000,000	23,570,727	43,400,477	8.95%
2001	Pacven Walden Ventures V	16,737,000	16,000,000	15,277,385	2.57%
2001	Phoenix Equity Partners IV	23,842,318	28,984,827	63,116,691	32.44%
2001	Warburg Pincus Private Equity VIII	150,000,000	156,600,000	342,066,058	14.60%
2002	Blackstone Capital Partners IV	150,000,000	163,652,003	319,000,990	37.78%
2002	Coller International Partners IV	40,000,000	34,400,000	46,938,031	11.51%
2002	Colorado PERA Co-Investment 2002	8,000,000	8,000,000	22,725,345	52.62%
2002	Francisco Partners SP	15,000,000	13,603,861	21,144,288	8.48%
2002	ITU Ventures Colorado I	10,000,000	9,542,795	6,496,078	-14.83%
2002	ITU Ventures West I	10,000,000	9,475,287	2,275,219	-31.31%
2002	JLL Partners IV	50,000,000	56,397,075	72,642,573	6.36%
2002	Lime Rock II	35,000,000	34,144,462	101,574,021	54.95%
2002	TSG 4	40,000,000	39,652,655	110,294,243	36.35%
2002	Wellspring Capital Partners III	50,000,000	49,208,273	107,775,072	26.01%
2003	Galen Partners IV	30,000,000	30,981,935	38,015,682	9.14%
2003	HarbourVest VII—Venture Partnership Fund <sup>1</sup>	100,000,000	59,000,000	64,341,517	4.87%
2003	Headland Private Equity Fund 3	30,000,000	35,082,429	56,228,037	11.73%
2003	Jefferson Partners Fund IV	9,730,000	12,498,881	142	-69.20%
2003	Strategic Partners II	50,000,000	49,853,714	82,146,720	33.78%
2003	SunTX Fulcrum Fund	15,000,000	17,730,687	16,605,870	5.52%
2004	AIG Global Emerging Markets Fund II	75,000,000	2,594,821	2,594,821	0.00%
2004	Apollo Distressed Investment Fund (DIF)	35,000,000	35,000,000	50,632,043	8.05%
2004	Ares Corporate Opportunities Fund	45,000,000	54,652,791	83,838,016	13.32%
2004	Avenue Asia Special Situations Fund III	75,000,000	56,736,944	83,120,869	8.06%
2004	CMEA VI	30,000,000	28,110,000	11,747,846	-12.65%
2004	Founders Equity SBIC I	7,500,000	7,500,000	2,042,891	-27.61%
2004	Lime Rock III	42,000,000	45,130,187	22,769,668	-12.35%
2004	LLR Equity Partners II	40,000,000	40,000,000	71,878,036	12.22%

<sup>1</sup> Fund of Funds

<sup>2</sup> Assets transferred subsequent to 2010 merger of Denver Public Schools Retirement System (DPSRS) into PERA

<sup>3</sup> Not meaningful

The limited partnership recordkeeping, including the internal rate of return or IRR, is maintained internally by PERA for each limited partnership. The PERA IRR calculation method may differ from calculation methods used by the General Partners or other Limited Partners.

Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, partnership management fees, advisory fees, organization fees, other partnership expenses, sale of distributed stock, and valuations. Importantly, there is no industry-standardized method for valuation or reporting, which makes comparisons of these numbers difficult.

Additionally, the purchase or sale of secondary interests makes for unique comparison problems due to the specific pricing and timing characteristics of the transaction when contrasted with the Limited Partners Investment.

Until a partnership is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in the early years of a partnership is not meaningful given the J-curve effect. The actual IRR performance of any limited partnership is not known until all capital contributed and earnings have been distributed to the investor.

Please note that none of the information contained herein has been reviewed or approved by the General Partners of the funds.



# Private Equity PORTFOLIO

Performance as of December 31, 2018

Vintage Year	Partnership Name	Capital Committed	Capital Contributed	Capital Distributed	Colorado PERA's Since Inception IRR
2004	Permira Europe III	\$35,394,000	\$31,129,743	\$52,644,108	40.13%
2004	Shepherd Ventures II	5,000,000	4,350,000	2,639,205	-6.35%
2004	Technology Crossover Ventures V	50,000,000	49,575,000	73,738,788	10.86%
2004	TVV Equity Investors II	7,500,000	7,500,000	8,558,999	5.86%
2005	Columbia Capital Equity Partners IV	25,000,000	24,584,517	50,557,015	11.80%
2005	CVC European Equity Partners IV (D)	96,984,000	106,032,102	199,410,786	16.75%
2005	Elevation Partners LP	30,000,000	28,553,262	44,667,630	11.82%
2005	ITU Ventures III	2,256,338	2,287,588	19,210	-92.31%
2005	JLL Partners V	100,000,000	119,045,993	179,048,429	10.12%
2005	Kirtland Capital Partners IV	10,000,000	9,241,290	6,394,488	-2.47%
2005	Leapfrog Ventures II	15,000,000	14,460,000	10,217,346	2.05%
2005	Pegasus Partners III	50,000,000	66,521,427	49,353,039	0.62%
2005	Rho Ventures V	25,000,000	25,000,000	3,131,077	-7.26%
2005	Strategic Partners III	50,000,000	57,347,551	69,652,489	5.21%
2005	Warburg Pincus Private Equity IX	225,000,000	225,000,000	378,248,644	9.77%
2006	Apollo Investment Fund VI	150,000,000	198,916,702	278,071,281	8.61%
2006	Ares Corporate Opportunities Fund II	60,000,000	67,473,778	111,630,228	13.10%
2006	Avenue Asia Special Situations Fund II	60,000,000	47,342,520	50,422,075	1.45%
2006	Avenue Special Situations Fund IV	65,000,000	81,833,682	106,929,805	8.30%
2006	Blackstone Capital Partners V	150,000,000	154,620,468	239,100,200	7.59%
2006	Brentwood Associates Private Equity IV	40,000,000	48,754,078	78,499,194	12.56%
2006	Edison Venture Fund VI	15,000,000	15,000,000	16,612,803	3.35%
2006	Euroknights V	30,000,000	31,596,401	38,324,444	8.89%
2006	Francisco Partners II	50,000,000	46,550,000	66,310,946	10.15%
2006	Highland Capital Partners VII	25,000,000	25,000,000	23,911,410	4.78%
2006	Lime Rock IV	40,000,000	44,106,247	74,915,531	13.80%
2006	Pacven Walden Ventures VI	15,000,000	15,000,000	25,786,553	14.48%
2006	Phoenix Equity Partners V (Phoenix Equity 2006)	28,027,200	29,324,025	20,463,990	-9.66%
2006	Technology Crossover Ventures VI	50,000,000	49,765,000	71,059,387	13.22%
2006	Versa Capital Fund I	15,000,000	17,700,000	12,113,332	3.22%
2006	Wellspring Capital Partners IV	50,000,000	51,864,964	79,554,725	7.94%
2007	Avenue Special Situations Fund V	65,000,000	65,680,310	86,621,970	11.01%
2007	Avista Capital Partners	35,000,000	40,050,155	48,617,837	6.07%
2007	CMEA VII	20,000,000	20,048,280	23,865,983	7.67%
2007	Coller International Partners V, L.P	40,000,000	30,630,000	40,752,824	8.36%
2007	Galen Partners V	30,000,000	34,264,757	29,720,878	4.28%
2007	JC Flowers II	50,000,000	60,587,041	26,279,527	-10.83%
2007	Lighthouse Capital Partners VI	25,000,000	23,750,000	33,054,852	6.84%
2007	Noson Lawen Partners	15,000,000	12,822,246	3,077,683	2.53%
2007	Pegasus Partners IV	70,000,000	82,522,479	51,872,942	-2.05%
2007	Terra Firma Capital Partners III	65,835,000	68,350,182	18,740,591	-9.79%
2007	TSG 5	40,000,000	39,648,413	81,256,077	16.89%
2007	Warburg Pincus Private Equity X	200,000,000	200,000,000	232,020,907	8.00%
2008	Apollo Investment Fund VII	100,000,000	126,994,318	195,624,482	22.82%
2008	Ares Corporate Opportunities Fund III	75,000,000	91,454,520	194,316,018	20.97%
2008	Avenue Europe Special Situations Fund	50,000,000	41,976,224	57,738,258	11.74%
2008	CVC European Equity Partners V	98,820,000	74,819,341	152,718,293	15.81%
2008	Fortress Credit Opportunities Fund	75,000,000	185,770,527	238,941,600	23.72%

<sup>1</sup> Fund of Funds

<sup>2</sup> Assets transferred subsequent to 2010 merger of Denver Public Schools Retirement System (DPSRS) into PERA

<sup>3</sup> Not meaningful

The limited partnership recordkeeping, including the internal rate of return or IRR, is maintained internally by PERA for each limited partnership. The PERA IRR calculation method may differ from calculation methods used by the General Partners or other Limited Partners.

Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, partnership management fees, advisory fees, organization fees, other partnership expenses, sale of distributed stock, and valuations. Importantly, there is no industry-standardized method for valuation or reporting, which makes comparisons of these numbers difficult.

Additionally, the purchase or sale of secondary interests makes for unique comparison problems due to the specific pricing and timing characteristics of the transaction when contrasted with the Limited Partners Investment.

Until a partnership is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in the early years of a partnership is not meaningful given the J-curve effect. The actual IRR performance of any limited partnership is not known until all capital contributed and earnings have been distributed to the investor.

Please note that none of the information contained herein has been reviewed or approved by the General Partners of the funds.

# Private Equity PORTFOLIO

Performance as of December 31, 2018

Vintage Year	Partnership Name	Capital Committed	Capital Contributed	Capital Distributed	Colorado PERA's Since Inception IRR
2008	Headland Private Equity Fund 6	\$63,750,000	\$76,209,036	\$46,288,399	-5.64%
2008	JLL Partners VI	100,000,000	131,697,088	245,435,596	22.63%
2008	Lime Rock V	50,000,000	55,240,384	41,047,995	0.14%
2008	LLR Equity Partners III	50,000,000	48,500,824	87,432,967	14.02%
2008	Longitude Venture Partners	15,000,000	14,450,461	37,222,163	25.19%
2008	Strategic Partners IV	50,000,000	48,721,035	70,605,095	13.18%
2008	SunTX Capital Partners II GP	35,000,000	49,939,573	19,196,376	-19.92%
2008	Technology Crossover Ventures VII	75,000,000	73,800,000	148,687,349	23.05%
2008	Versa Capital Fund II	35,000,000	38,850,000	17,589,863	-0.17%
2010	Advanced Technology Ventures IV <sup>2</sup>	8,500,000	63,337	45,445	-8.15%
2010	Advanced Technology Ventures V <sup>2</sup>	10,000,000	1,569,822	2,049,861	16.79%
2010	Advanced Technology Ventures VI <sup>2</sup>	10,000,000	1,466,244	4,185,446	95.23%
2010	Advanced Technology Ventures VII <sup>2</sup>	10,000,000	6,253,592	6,754,789	2.81%
2010	APA Excelsior IV <sup>2</sup>	10,000,000	173,246	184,092	1.27%
2010	APA Excelsior V <sup>2</sup>	10,000,000	891,928	1,376,291	24.37%
2010	Apax Europe VI <sup>2</sup>	10,320,000	10,805,710	14,561,581	10.11%
2010	Apax Europe VII <sup>2</sup>	20,700,000	17,637,085	19,236,378	5.80%
2010	Apax Excelsior VI <sup>2</sup>	10,000,000	2,770,514	4,335,541	19.48%
2010	Apax US VII <sup>2</sup>	10,000,000	13,778,720	16,621,441	8.28%
2010	Avista Capital Partners II	40,000,000	51,478,973	79,484,775	16.60%
2010	Court Square Capital Partners <sup>2</sup>	10,000,000	8,521,348	10,193,709	8.94%
2010	Dover Street VII <sup>2</sup>	5,000,000	4,751,112	6,251,175	10.55%
2010	Edison Venture Fund VI <sup>2</sup>	10,000,000	11,068,196	11,075,202	0.04%
2010	Fortress Credit Opportunities Fund II	50,000,000	86,303,473	109,303,959	16.38%
2010	Gordon Morris Investment Partnership <sup>2</sup>	10,000,000	37,977	464,898	NM <sup>3</sup>
2010	Grey Mountain Partners II	25,000,000	27,022,341	12,531,378	-11.40%
2010	GSO Capital Solutions Fund	50,000,000	44,127,268	58,841,556	10.91%
2010	Haddington Energy Partners III <sup>2</sup>	10,000,000	13,604,891	9,306,160	6.74%
2010	HarbourVest International VI - Partnership <sup>1,2</sup>	20,100,000	17,099,182	10,106,315	11.53%
2010	HarbourVest Intl Private Equity Partners III—Direct <sup>2</sup>	4,000,000	359,008	1,190,852	27.33%
2010	HarbourVest Intl Private Equity Partners III—Partnership <sup>1,2</sup>	16,000,000	6,209,106	7,261,234	8.36%
2010	HarbourVest Intl Private Equity Partners IV—Partnership <sup>1,2</sup>	8,000,000	5,484,826	7,362,896	9.05%
2010	HarbourVest Intl Private Equity Partners IV—Direct <sup>2</sup>	2,000,000	978,923	1,361,109	14.26%
2010	HarbourVest Partners VI - Partnership Buyout <sup>1,2</sup>	10,000,000	5,842,022	7,835,956	10.71%
2010	HarbourVest Partners VII Buyout <sup>1,2</sup>	12,000,000	10,574,711	16,320,445	12.84%
2010	HarbourVest Partners VII-Venture Partnership Fund <sup>1,2</sup>	3,000,000	2,963,127	4,096,001	10.52%
2010	HgCapital 6	50,000,000	44,733,230	69,274,372	10.12%
2010	Insight Equity I <sup>2</sup>	10,000,000	14,000,581	17,831,185	10.99%
2010	Institutional Venture Partners XI <sup>2</sup>	5,000,000	4,190,855	4,353,538	1.06%
2010	Institutional Venture Partners XII <sup>2</sup>	10,000,000	11,637,599	23,109,472	23.97%
2010	KPS Special Situations Fund II <sup>2</sup>	10,000,000	9,703,281	18,139,017	50.04%
2010	KPS Special Situations Fund III <sup>2</sup>	15,000,000	18,083,739	21,331,033	15.15%
2010	KPS Special Situations Fund III—Supplemental <sup>2</sup>	5,000,000	6,335,087	6,507,258	3.33%
2010	McCowen DeLeeuw IV <sup>2</sup>	10,000,000	677,448	1,184,882	25.35%
2010	Morgenthaler Venture Partners V <sup>2</sup>	10,000,000	2,161,140	683,308	-48.46%
2010	Morgenthaler Venture Partners VI <sup>2</sup>	10,000,000	1,740,524	943,542	-12.11%
2010	OVP Venture Partners <sup>2</sup>	5,000,000	4,222,938	2,990,914	-10.98%
2010	Peloton	50,000,000	53,998,142	64,710,668	12.33%

<sup>1</sup> Fund of Funds

<sup>2</sup> Assets transferred subsequent to 2010 merger of Denver Public Schools Retirement System (DPSRS) into PERA

<sup>3</sup> Not meaningful

The limited partnership recordkeeping, including the internal rate of return or IRR, is maintained internally by PERA for each limited partnership. The PERA IRR calculation method may differ from calculation methods used by the General Partners or other Limited Partners.

Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, partnership management fees, advisory fees, organization fees, other partnership expenses, sale of distributed stock, and valuations. Importantly, there is no industry-standardized method for valuation or reporting, which makes comparisons of these numbers difficult.

Additionally, the purchase or sale of secondary interests makes for unique comparison problems due to the specific pricing and timing characteristics of the transaction when contrasted with the Limited Partners Investment.

Until a partnership is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in the early years of a partnership is not meaningful given the J-curve effect. The actual IRR performance of any limited partnership is not known until all capital contributed and earnings have been distributed to the investor.

Please note that none of the information contained herein has been reviewed or approved by the General Partners of the funds.

# Private Equity PORTFOLIO

Performance as of December 31, 2018

Vintage Year	Partnership Name	Capital Committed	Capital Contributed	Capital Distributed	Colorado PERA's Since Inception IRR
2010	Phoenix Equity Partners 2010	\$28,850,000	\$29,257,175	\$35,536,864	8.40%
2010	PMI Mezzanine Fund <sup>2</sup>	10,000,000	2,383	1,373	-24.39%
2010	Portfolio Advisors Private Equity Fund IV <sup>1,2</sup>	15,000,000	9,438,896	15,353,899	12.61%
2010	Portfolio Advisors Private Equity Fund V <sup>1,2</sup>	15,000,000	9,915,809	13,061,210	12.25%
2010	Siguler Guff Fund II <sup>1,2</sup>	10,000,000	9,670,965	10,900,625	4.66%
2010	Siguler Guff Fund III <sup>1,2</sup>	20,000,000	22,068,207	27,576,425	8.57%
2010	Technology for Information and Entertainment III <sup>2</sup>	5,598,000	830,900	824,928	-0.79%
2010	Tenaska Power Fund II <sup>2</sup>	10,000,000	8,719,005	8,182,353	-0.83%
2010	Windjammer Mezzanine and Equity Fund II <sup>2</sup>	10,000,000	4,748,969	4,766,392	0.29%
2010	Windjammer Senior Equity Fund III <sup>2</sup>	10,000,000	9,880,802	12,333,806	17.67%
2011	Arclight Energy Partners Fund V	50,000,000	50,687,062	48,396,811	9.46%
2011	Audax Mezzanine Fund III	40,000,000	37,068,390	39,124,713	8.96%
2011	Avenue Special Situations Fund VI	50,000,000	50,000,000	50,472,737	1.90%
2011	BC European Capital IX	50,000,000	48,839,335	32,350,156	10.31%
2011	Blackstone Capital Partners VI	75,000,000	77,282,102	53,106,766	13.30%
2011	Comvest Investment Partners IV	30,000,000	29,617,905	45,549,973	31.03%
2011	Euroknights VI	36,025,000	37,241,103	25,860,869	11.84%
2011	Francisco Partners III	50,000,000	45,675,000	68,373,103	20.60%
2011	Strategic Partners V	50,000,000	41,232,861	54,670,100	19.36%
2011	Wellspring Capital Partners V	50,000,000	50,651,272	57,822,698	16.85%
2012	Ares Corporate Opportunities Fund IV, L.P.	75,000,000	80,492,727	43,798,049	12.03%
2012	Avenue Europe Special Situations Fund II	50,000,000	50,000,000	55,729,875	7.86%
2012	Coller International Partners VI, L.P.	50,000,000	35,138,367	41,662,581	16.37%
2012	Colorado Mile High Fund	50,000,000	30,043,487	33,626,939	8.71%
2012	Court Square Capital Partners III	50,000,000	47,737,599	20,612,723	17.52%
2012	Fortress Credit Opportunities Fund III	50,000,000	63,753,054	64,008,340	10.86%
2012	Genstar Capital Partners VI	50,000,000	74,440,710	115,749,477	37.89%
2012	Lime Rock VI	50,000,000	54,876,965	41,828,733	3.38%
2012	Pegasus Partners V	50,000,000	61,424,929	33,956,127	13.31%
2012	Summit Partners Growth Equity VIII	75,000,000	82,594,104	106,841,592	26.04%
2012	TSG 6	50,000,000	38,694,235	45,001,356	31.47%
2012	Warburg Pincus Private Equity XI	100,000,000	106,750,000	68,858,363	13.67%
2012	Windjammer Senior Equity Fund IV	25,000,000	21,602,514	4,816,323	10.92%
2013	Apollo Investment Fund VIII	80,000,000	77,817,561	26,475,332	9.77%
2013	Avista Capital Partners III	50,000,000	54,122,327	59,862,662	3.21%
2013	Grey Mountain Partners III	25,000,000	20,874,840	10,107,333	17.51%
2013	HgCapital 7	50,000,000	44,356,191	17,942,938	15.35%
2013	Lexington Co-Investment Partners III	50,000,000	56,719,078	50,310,930	19.85%
2013	Longitude Venture Partners II	25,000,000	25,000,000	7,377,001	15.20%
2013	Marlin Equity IV	40,000,000	39,531,044	15,913,545	7.43%
2013	W Capital Partners III, L.P.	50,000,000	43,111,564	17,878,680	12.44%
2014	Brentwood Associates Private Equity V, L.P.	40,000,000	59,606,026	25,639,306	5.86%
2014	CVC European Equity Partners VI	99,741,000	85,391,952	22,607,712	14.44%
2014	Glendon Opportunities Fund, L.P.	50,000,000	40,000,000	0	4.66%
2014	GSO Capital Solutions Fund II	50,000,000	29,726,157	20,688,107	8.11%
2014	LADEN Co-Investment Fund, L.P.	22,000,000	21,945,661	2,453,744	-0.86%
2014	LLR Equity Partners IV	50,000,000	46,000,000	37,040,552	27.38%
2014	Marlin Heritage, L.P.	25,000,000	23,398,319	22,841,262	36.01%

<sup>1</sup> Fund of Funds

<sup>2</sup> Assets transferred subsequent to 2010 merger of Denver Public Schools Retirement System (DPSRS) into PERA

<sup>3</sup> Not meaningful

The limited partnership recordkeeping, including the internal rate of return or IRR, is maintained internally by PERA for each limited partnership. The PERA IRR calculation method may differ from calculation methods used by the General Partners or other Limited Partners.

Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, partnership management fees, advisory fees, organization fees, other partnership expenses, sale of distributed stock, and valuations. Importantly, there is no industry-standardized method for valuation or reporting, which makes comparisons of these numbers difficult.

Additionally, the purchase or sale of secondary interests makes for unique comparison problems due to the specific pricing and timing characteristics of the transaction when contrasted with the Limited Partners Investment.

Until a partnership is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in the early years of a partnership is not meaningful given the J-curve effect. The actual IRR performance of any limited partnership is not known until all capital contributed and earnings have been distributed to the investor.

Please note that none of the information contained herein has been reviewed or approved by the General Partners of the funds.

# Private Equity PORTFOLIO

Performance as of December 31, 2018

Vintage Year	Partnership Name	Capital Committed	Capital Contributed	Capital Distributed	Colorado PERA's Since Inception IRR
2014	Montauk TriGuard VI	\$30,000,000	\$19,500,000	\$12,691,796	17.38%
2014	New Mountain Partners IV	75,000,000	67,277,676	30,044,600	20.25%
2014	Permira V L.P.	75,000,000	61,096,670	25,162,794	15.72%
2014	Raine Partners II LP	50,000,000	39,759,426	8,200,329	11.46%
2014	Strategic Partners VI	50,000,000	33,912,075	29,137,335	19.38%
2014	Technology Crossover Ventures VIII	50,000,000	42,405,683	3,867,402	10.51%
2014	Warburg Pincus Energy, L.P.	50,000,000	32,700,000	3,580,709	9.35%
2014	Warburg Pincus Private Equity XI, L.P.	20,000,000	19,921,294	11,969,733	14.90%
2014	Z Capital Special Situations Fund II	50,000,000	50,885,954	21,416,739	11.43%
2015	Arclight Energy Partners Fund VI	50,000,000	46,838,041	15,315,719	13.37%
2015	Blackstone Energy Partners II L.P.	25,000,000	17,997,604	873,676	14.18%
2015	Comvest Investment Partners V	50,000,000	31,343,916	166,675	0.19%
2015	Fortress Credit Opportunities Fund IV	100,000,000	96,951,589	35,234,015	8.70%
2015	Francisco Partners IV	50,000,000	48,725,000	14,925,000	26.32%
2015	Genstar Capital Partners VII	75,000,000	93,198,255	62,451,140	37.33%
2015	Insight Venture Partners IX	50,000,000	47,875,000	5,314,551	26.01%
2015	JLL Partners VII	100,000,000	79,364,887	20,859,658	15.99%
2015	Lexington Capital Partners VIII, L.P.	75,000,000	51,829,550	19,580,203	24.05%
2015	Lime Rock VII	50,000,000	51,124,133	28,347,117	32.58%
2015	Peloton II	50,000,000	51,122,734	27,678,534	19.05%
2015	Warburg Pincus Private Equity XII, L.P.	110,000,000	77,770,000	3,676,530	11.68%
2016	Blackstone Capital Partners VII	112,500,000	51,926,354	2,465,907	21.60%
2016	Coller International Partners VII, L.P.	125,000,000	70,072,887	2,115,300	22.23%
2016	Foundry Group Next, L.P.	50,000,000	37,500,000	-	15.44%
2016	Kelso Investment Associates IX, L.P.	50,000,000	39,515,554	6,527,344	28.65%
2016	Longitude Venture Partners III	36,000,000	16,374,973	-	-6.38%
2016	Montauk TriGuard VII	50,000,000	15,000,000	6,262,243	29.39%
2016	Strategic Partners VII	150,000,000	73,379,489	11,695,184	45.16%
2016	Technology Crossover Ventures IX	75,000,000	52,110,000	4,121,431	11.96%
2016	TSG 7A	48,000,000	31,383,125	215,473	9.80%
2016	TSG 7B	12,000,000	3,359,024	-	-17.22%
2017	Access Venture Partners IV, L.P.	15,000,000	4,029,323	208,000	-20.80%
2017	Ares Corporate Opportunities Fund V, L.P.	150,000,000	63,729,202	2,582,325	-2.51%
2017	BC European Capital X	77,536,350	39,833,560	-	-10.84%
2017	Brentwood Associates Private Equity VI, L.P.	40,000,000	3,478,391	-	-86.99%
2017	Carlyle Strategic Partners IV, L.P.	50,000,000	17,128,065	5,421,672	5.06%
2017	GC Equity Partners Fund II, L.P.	17,791,344	10,452,561	3,418,772	19.39%
2017	Genstar Capital Partners VIII	50,000,000	27,922,432	1,353,875	50.53%
2017	Lexington Co-Investment Partners IV-B	125,000,000	76,668,800	5,900,205	19.55%
2017	Marlin Heritage II	20,000,000	7,824,258	-	-10.62%
2017	New Mountain Partners V	40,000,000	11,457,486	264,346	2.46%
2017	Permira VI L.P.	43,000,000	24,297,429	-	10.63%
2017	Summit Partners Growth Equity IX	75,000,000	48,000,000	7,480,219	29.68%
2018	Foundry Group Next 2018, L.P.	50,000,000	5,062,500	0	-10.30%
2018	Francisco Partners V	50,000,000	14,250,000	0	3.14%
2018	GSO Capital Solutions Fund III	50,000,000	5,917,109	1,164,773	11.82%
2018	Insight Venture Partners X	40,000,000	16,400,000	0	4.34%
2018	Kelso Investment Associates X, L.P.	50,000,000	261,567	0	42.72%

<sup>1</sup> Fund of Funds

<sup>2</sup> Assets transferred subsequent to 2010 merger of Denver Public Schools Retirement System (DPSRS) into PERA

<sup>3</sup> Not meaningful

The limited partnership recordkeeping, including the internal rate of return or IRR, is maintained internally by PERA for each limited partnership. The PERA IRR calculation method may differ from calculation methods used by the General Partners or other Limited Partners.

Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, partnership management fees, advisory fees, organization fees, other partnership expenses, sale of distributed stock, and valuations. Importantly, there is no industry-standardized method for valuation or reporting, which makes comparisons of these numbers difficult.

Additionally, the purchase or sale of secondary interests makes for unique comparison problems due to the specific pricing and timing characteristics of the transaction when contrasted with the Limited Partners Investment.

Until a partnership is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in the early years of a partnership is not meaningful given the J-curve effect. The actual IRR performance of any limited partnership is not known until all capital contributed and earnings have been distributed to the investor.

Please note that none of the information contained herein has been reviewed or approved by the General Partners of the funds.



# Private Equity PORTFOLIO

Performance as of December 31, 2018

Vintage Year	Partnership Name	Capital Committed	Capital Contributed	Capital Distributed	Colorado PERA's Since Inception IRR
2018	Lime Rock VIII	\$25,000,000	\$14,133,704	\$0	-9.32%
2018	LLR Equity Partners V	50,000,000	14,000,000	2,010,227	1.86%
2018	Marlin Equity V	40,000,000	7,754,738	599,598	9.94%
2018	TPG Growth IV, L.P.	50,000,000	11,712,142	0	-20.90%
2018	Wellspring Capital Partners VI	50,000,000	2,549,028	0	-38.72%

<sup>1</sup> Fund of Funds

<sup>2</sup> Assets transferred subsequent to 2010 merger of Denver Public Schools Retirement System (DPSRS) into PERA

<sup>3</sup> Not meaningful

The limited partnership recordkeeping, including the internal rate of return or IRR, is maintained internally by PERA for each limited partnership. The PERA IRR calculation method may differ from calculation methods used by the General Partners or other Limited Partners.

Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, partnership management fees, advisory fees, organization fees, other partnership expenses, sale of distributed stock, and valuations. Importantly, there is no industry-standardized method for valuation or reporting, which makes comparisons of these numbers difficult.

Additionally, the purchase or sale of secondary interests makes for unique comparison problems due to the specific pricing and timing characteristics of the transaction when contrasted with the Limited Partners Investment.

Until a partnership is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in the early years of a partnership is not meaningful given the J-curve effect. The actual IRR performance of any limited partnership is not known until all capital contributed and earnings have been distributed to the investor.

Please note that none of the information contained herein has been reviewed or approved by the General Partners of the funds.