

(Preliminary Subject to Change)



Employees Retirement System

City of Philadelphia Employees Retirement System Executive Summary December 31, 2018 **Total Fund Composite**

Ending December 31, 2018 3 Mo Net Cash Flows (\$) % of Portfolio Market Value Policy Difference Asset Class Policy % (\$) (\$) **Total Fund Composite** 4,817,851,747 60,978,980 100.0 100.0 0 Total Fund w/o Alternative Assets 3,509,862,692 22,090,495 72.9 72.9 -2,351,232 Investment Grade Fixed Income Composite 650,864,178 0 13.5 14.0 -23,635,067 0 Brandywine Global Investment Management **Global Fixed Income** 133,016,423 2.8 0 3.5 Garcia Hamilton & Associates Int. Govt. Fixed Income 166,795,254 Logan Circle 0 Core Plus Fixed Income 44,166,115 0.9 Longfellow Core Plus Fixed Income 157,634,169 0 3.3 Rhumbline Core Bond Index Core Fixed Income 149,252,216 0 3.1 **Opportunistic Fixed Income Composite** 258,878,699 -19,207,406 5.4 6.0 -30,192,406 Opportunistic Fixed Apollo Franklin Partnership, L.P. 13,242,220 -3,636,364 0.3 Income Opportunistic Fixed 20,015,775 0.4 Avenue Coppers Opportunity Fund LP -3,014,450 Income Opportunistic Fixed KKR-PBPR Capital Partners LP 58,281,072 -12,655,337 1.2 Income 0 EM Fixed Income 68,985,516 1.4 Logan Circle - EMD 97,962,942 0 2.0 Strategic Income Management High Yield Fixed Income 1,340,546,572 U.S. Equity Composite -1 27.8 29.8 -95,173,249 Rhumbline Russell 1000 Index Large-Cap Core 926.521.508 0 19.2 Aronson+Johnson+Ortiz LP 39.955.377 0 0.8 Large-Cap Value Large-Cap Value 24,797,363 0 0.5 O'Shaughnessy Asset Management Rhumbline MidCap Index Mid-Cap Core 129,230,461 -6,377 2.7 Rhumbline Russell 2000 Index Small-Cap Core 35,522,368 -1,819 0.7 **Emerald Advisors** Small-Cap Growth 65,893,505 0 1.4 48,782,567 Fisher Asset Management Small-Cap Value 0 1.0 Fiera Capital Smid-Cap Growth 23,224,696 0 0.5 Ariel Smid-Cap Value 46,539,896 0 1.0 Non-U.S. Equity Developed Composite 18.5 16.8 80,163,407 889,562,500 0 Non-U.S. Large-Cap Causeway Capital Management 99,613,858 ٥ 2.1 Core Non-U.S. Large-Cap Northern Trust MSCI EAFE+Canada 0 615,218,054 12.8 Core Non-U.S. Small-Cap Northern Trust International Small Cap 88,867,508 0 1.8 Core Non-U.S. Small-Cap Strategic Global Advisors 28,237,503 0 0.6 Core Non-U.S. Small-Cap Investors Group 53,685,727 0 1.1 Core Non-U.S. Equity Emerging Composite 200,418,557 0 4.2 5.2 -50,109,734 0 4.2 **Emerging Markets** 200,414,162

Market Value: \$4,817.9 Million and 100.0% of Fund

Total Fund Composite

Market Value: \$4,817.9 Million and 100.0% of Fund

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	Asset Class	Market Value (\$)	3 Mo Net Cash Flows (\$)	% of Portfolio	Policy %	Policy Difference (\$)
Cash Composite		169,592,187	41,297,902	3.5	1.1	116,595,818
Cash	Cash & Equivalents	168,893,014	41,307,368	3.5		
Directed Commissions	Cash & Equivalents	699,173	-9,466	0.0		
Absolute Return		27,919,182	-431,501	0.6	0.5	3,829,924
Elizabeth Park Capital Management	Long/Short Hedge Fund	25,489,473	0	0.5		
Archview Offshore Fund. LTD	Credit Hedge Fund	2,429,709	-431,501	0.1		
Real Assets Composite		822,755,216	56,452,942	17.1	15.6	71,170,343
Real Assets - Public Real Estate Composite		51,643,260	0	1.1	1.4	-15,806,664
Rhumbline FTSE NAREIT	Real Assets	51,643,260	0	1.1		
Real Assets - Open-End Real Estate Composite		483,179,292	77,564,231	10.0	7.6	117,022,559
UBS Trumbull Fund	Core Real Estate	372,842,710	77,564,231	7.7		
Clarion Lion Properties Fund	Core Real Estate	110,336,582	0	2.3		
Real Assets - Infrastructure Composite		177,158,077	0	3.7	4.0	-15,555,993
Rhumbline Infrastructure Index	Publicly-Traded Infrastructure	125,590,851	0	2.6		
Rreef Global Infrastructure	Global Infrastructure	51,567,226	0	1.1		
Real Assets - Private Real Estate Composite		100,181,203	-19,747,732	2.1	2.6	-25,082,943
Real Assets - Private Energy/Infrastructure Composite		10,593,384	-1,363,557	0.2		10,593,384
Private Assets Composite		457,314,657	-17,132,956	9.5	11.0	-72,649,035
Private Assets - Private Equity	U.S. Private Equity FoF	449,908,325	-16,222,331	9.3		
Private Assets - Private Debt	Mezz. Private Equity	7,406,332	-910,625	0.2		

Ending December 31, 2018

2 Marquette Associates, Inc.

Annualized Performance (Net of Fees)

Market Value: \$4,817.9 Million and 100.0% of Fund

	1 Mo	3 Mo	YTD	Fiscal YTD	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	7 Yrs	10 Yrs	Inception	Inception Date
Total Fund Composite	-3.9%	-7.7%	-4.2%	-5.6%	-4.2%	5.5%	6.0%	3.7%	4.0%	6.5%	7.8%	7.2%	Jul-88
Total Fund Policy Benchmark	-3.7%	-7.2%	-3.0%	-4.8%	-3.0%	5.3%	6.6%	4.4%	4.7%	7.2%	8.9%	8.1%	Jul-88
Total Fund w/o Alternative Assets	-5.2%	-10.1%	-7.8%	-7.6%	-7.8%	4.3%	5.1%	2.8%				3.6%	Jan-14
Investment Grade Fixed Income Composite	1.5%	0.9%	-0.7%	0.7%	-0.7%	2.3%	2.7%	1.2%	2.1%	2.1%	3.5%	6.0%	Jul-88
BBgBarc US Aggregate TR	1.8%	1.6%	0.0%	1.7%	0.0%	1.8%	2.1%	1.7%	2.5%	2.1%	3.5%	6.1%	Jul-88
Brandywine Global Investment Management	2.0%	-1.2%	-4.5%	-1.9%	-4.5%	3.7%	4.0%	1.0%	2.0%	2.8%		6.4%	Jan-09
FTSE WGBI TR	2.4%	1.8%	-0.8%	0.1%	-0.8%	3.2%	2.7%	1.1%	0.8%	0.2%	1.5%	2.0%	Jan-09
Garcia Hamilton & Associates	0.9%	1.4%	1.2%	1.5%	1.2%	1.7%	2.1%	1.9%	2.4%	3.2%	4.4%	5.1%	Aug-00
BBgBarc US Govt/Credit Int TR	1.3%	1.7%	0.9%	1.9%	0.9%	1.5%	1.7%	1.5%	1.9%	1.7%	2.9%	4.2%	Aug-00
Logan Circle	1.3%	0.8%	-0.3%	1.1%	-0.3%	2.4%	2.9%	2.1%				2.2%	Oct-14
BBgBarc US Aggregate TR	1.8%	1.6%	0.0%	1.7%	0.0%	1.8%	2.1%	1.7%	2.5%	2.1%	3.5%	1.8%	Oct-14
Longfellow	1.5%	1.3%	0.1%	1.4%	0.1%	2.1%	2.3%	2.1%				2.2%	Sep-14
BBgBarc US Aggregate TR	1.8%	1.6%	0.0%	1.7%	0.0%	1.8%	2.1%	1.7%	2.5%	2.1%	3.5%	2.0%	Sep-14
Rhumbline Core Bond Index	1.8%	1.7%	0.2%	1.7%	0.2%	1.8%	1.9%	1.4%	2.3%	1.8%	3.3%	3.8%	Jun-07
BBgBarc US Aggregate TR	1.8%	1.6%	0.0%	1.7%	0.0%	1.8%	2.1%	1.7%	2.5%	2.1%	3.5%	3.9%	Jun-07
Opportunistic Fixed Income Composite	-0.2%	-2.5%	-1.8%	-1.9%	-1.8%	2.5%	4.1%	1.9%	2.3%			2.9%	Dec-12
Opportunistic Fixed Income Benchmark	-2.3%	-4.0%	-0.8%	-2.0%	-0.8%	2.4%	6.0%	3.8%	3.5%	5.1%		3.9%	Dec-12
Apollo Franklin Partnership, L.P.	0.0%	-2.3%	8.1%	3.7%	8.1%	1.9%	1.4%	-3.3%	-3.8%			-2.6%	May-13
50% BarCap HY / 50% CSFB Lev Loans	-2.2%	-3.8%	-0.5%	-1.7%	-0.5%	2.6%	6.1%	3.9%	3.6%	5.3%	9.7%	3.7%	May-13
Avenue Coppers Opportunity Fund LP	0.0%	-9.4%	-10.9%	-11.1%	-10.9%	-3.1%	-0.5%	-0.4%	0.8%			0.8%	Dec-13
Actuarial Rate	0.6%	1.9%	7.7%	3.8%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	Dec-13
KKR-PBPR Capital Partners LP	0.0%	0.1%	2.5%	-1.2%	2.5%	4.8%	6.3%	4.2%	4.0%			5.9%	Jun-12
Actuarial Rate	0.6%	1.9%	7.7%	3.8%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	Jun-12
Logan Circle - EMD	1.1%	-1.2%	-6.0%	-0.4%	-6.0%	3.2%	6.8%					4.0%	Feb-15
JP Morgan EMBI Global TR	1.5%	-1.2%	-4.6%	0.7%	-4.6%	2.1%	4.7%	3.9%	4.2%	4.5%	7.8%	3.6%	Feb-15
Strategic Income Management	-1.4%	-3.4%	-0.5%	-1.8%	-0.5%	3.5%						7.4%	Mar-16
ICE BofAML US High Yield TR	-2.2%	-4.6%	-2.2%	-2.3%	-2.2%	2.5%	7.3%	4.2%	3.8%	5.9%	11.0%	6.7%	Mar-16

Annualized Performance (Net of Fees)

Market Value: \$4,817.9 Million and 100.0% of Fund

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	1 Mo	3 Mo	YTD	Fiscal YTD	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	7 Yrs	10 Yrs	Inception	Inception Date
U.S. Equity Composite	-9.7%	-15.2%	-6.6%	-9.6%	-6.6%	6.3%	8.0%	5.7%	6.6%	11.5%	12.9%	9.2%	Jul-88
Russell 3000	-9.3%	-14.3%	-5.2%	-8.2%	-5.2%	7.1%	9.0%	6.8%	7.9%	12.5%	13.2%	10.0%	Jul-88
Rhumbline Russell 1000 Index	-9.1%	-13.9%	-4.6%	-7.5%	-4.6%	7.7%	9.2%	7.1%	8.2%	12.4%	13.1%	6.8%	May-07
Rhumbline Russell 1000 Custom Benchmark	-9.1%	-13.9%	-4.7%	-7.5%	-4.7%	7.7%	9.1%	7.0%	8.2%	12.4%			<i>May-</i> 07
Aronson+Johnson+Ortiz LP	-9.9%	-14.7%	-12.1%	-10.8%	-12.1%	0.8%	3.7%	2.6%	4.1%	10.2%	10.5%	6.9%	May-01
Russell 1000 Value	-9.6%	-11.7%	-8.3%	-6.7%	-8.3%	2.1%	7.0%	4.2%	5.9%	11.0%	11.2%	6.1%	May-01
O'Shaughnessy Asset Management	-10.9%	-17.3%	-11.3%	-13.0%	-11.3%	4.7%	7.8%	3.8%	4.8%			11.2%	Jun-12
Russell 1000 Value	-9.6%	-11.7%	-8.3%	-6.7%	-8.3%	2.1%	7.0%	4.2%	5.9%	11.0%	11.2%	10.5%	Jun-12
Rhumbline MidCap Index	-9.9%	-15.4%	-9.0%	-11.1%	-9.0%	3.8%						3.8%	Dec-16
Rhumbline Russell Mid Cap Custom Benchmark	-9.9%	-15.4%	-9.1%	-11.1%	-9.1%	3.8%						3.8%	Dec-16
Rhumbline Russell 2000 Index	-11.8%	-20.1%	-10.7%	-17.1%	-10.7%	1.2%						1.2%	Dec-16
Rhumbline Russell 2000 Custom Benchmark	-11.8%	-20.1%	-10.9%	-17.2%	-10.9%	1.1%						1.1%	Dec-16
Emerald Advisors	-10.0%	-22.3%	-11.0%	-16.9%	-11.0%	6.8%	7.6%	6.7%	6.7%	13.6%	15.2%	8.7%	Dec-04
Russell 2000 Growth	-11.7%	-21.7%	-9.3%	-17.3%	-9.3%	5.3%	7.2%	5.0%	5.1%	11.3%	13.5%	7.5%	Dec-04
Fisher Asset Management	-12.3%	-19.4%	-12.1%	-17.0%	-12.1%	1.0%	6.8%	4.6%	5.4%	11.2%	13.1%	8.2%	May-08
Russell 2000 Value	-12.1%	-18.7%	-12.9%	-17.4%	-12.9%	-3.1%	7.4%	3.5%	3.6%	9.6%	10.4%	6.6%	May-08
Fiera Capital	-10.9%	-18.8%	-9.3%	-14.1%	-9.3%	7.4%	5.9%	4.0%	4.9%	11.8%		12.5%	Dec-09
Russell 2500 Growth	-10.9%	-20.1%	-7.5%	-14.4%	-7.5%	7.3%	8.1%	6.0%	6.2%	12.0%	14.8%	12.1%	Dec-09
Ariel	-12.4%	-18.5%	-13.6%	-15.4%	-13.6%	0.0%						6.8%	Jan-16
Russell 2500 Value	-11.1%	-17.1%	-12.4%	-14.9%	-12.4%	-1.7%	6.6%	3.4%	4.2%	10.0%	11.6%	9.1%	Jan-16
Non-U.S. Equity Developed Composite	-5.5%	-13.4%	-15.1%	-12.7%	-15.1%	3.0%	2.7%	1.1%	-0.3%	4.9%	6.0%	5.1%	Jan-89
MSCI EAFE	-4.9%	-12.5%	-13.8%	-11.4%	-13.8%	3.8%	2.9%	1.9%	0.5%	5.8%	6.3%	4.1%	Jan-89
Causeway Capital Management	-6.9%	-14.7%	-17.3%	-13.5%	-17.3%	2.6%	1.6%	0.7%	-0.3%	6.4%		6.3%	Nov-11
MSCI EAFE	-4.9%	-12.5%	-13.8%	-11.4%	-13.8%	3.8%	2.9%	1.9%	0.5%	5.8%	6.3%	5.5%	Nov-11
Northern Trust MSCI EAFE+Canada	-5.2%	-12.5%	-13.4%	-11.2%	-13.4%	3.7%	3.4%	1.8%	0.6%	5.5%	7.2%	1.9%	Mar-07
Northern Trust MSCI EAFE + Canada Custom Benchmark	-5.2%	-12.5%	-13.3%	-11.1%	-13.3%	3.9%	3.6%	2.1%	1.2%	6.3%	7.2%	1.6%	Mar-07
Northern Trust International Small Cap	-6.4%	-16.0%		-16.6%								-19.0%	Mar-18
Northern Trust EAFE Small Cap Custom Benchmark	-6.5%	-16.0%		-16.7%								-18.5%	Mar-18

Annualized Performance (Net of Fees)

Market Value: \$4,817.9 Million and 100.0% of Fund

Ending December 31, 2018

	1 Mo	3 Mo	YTD	Fiscal YTD	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	7 Yrs	10 Yrs	Inception	Inception Date
Strategic Global Advisors	-6.2%	-16.0%	-20.8%	-18.9%	-20.8%							-17.5%	Nov-17
MSCI World ex USA Small Cap	-6.4%	-16.2%	-18.1%	-16.9%	-18.1%	3.6%	3.8%	4.2%	2.3%	7.4%	10.1%	-14.6%	Nov-17
Investors Group	-5.3%	-15.8%	-18.7%	-18.6%	-18.7%							-14.9%	Nov-17
MSCI EAFE Small Cap	-6.4%	-16.0%	-17.9%	-16.8%	-17.9%	4.5%	3.7%	5.2%	3.1%	8.8%	10.5%	-14.6%	Nov-17
Non-U.S. Equity Emerging Composite	-2.6%	-7.3%	-14.5%	-8.2%	-14.5%	9.0%	9.6%	2.7%	1.6%	2.3%		8.2%	Jan-09
MSCI Emerging Markets	-2.7%	-7.5%	-14.6%	-8.5%	-14.6%	8.3%	9.2%	2.6%	1.6%	3.2%	8.0%	8.8%	Jan-09
Rhumbline Emerging Markets Index	-2.6%	-7.3%	-14.5%	-8.2%	-14.5%	9.0%	9.5%	2.9%	1.8%			0.8%	Feb-13
MSCI Emerging Markets	-2.7%	-7.5%	-14.6%	-8.5%	-14.6%	8.3%	9.2%	2.6%	1.6%	3.2%	8.0%	0.7%	Feb-13

Investment Manager

Annualized Performance (Net of Fees)

Market Value: \$4,817.9 Million and 100.0% of Fund

	1 Mo	3 Mo	YTD	Fiscal YTD	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	7 Yrs	10 Yrs	Inception	Inception Date
Absolute Return	-9.2%	-15.6%	-14.0%	-17.8%	-14.0%	-2.7%	0.4%	-1.0%	0.0%	2.2%	2.9%	2.1%	Sep-05
HFRI Fund of Funds Composite Index	-1.6%	-4.8%	-3.9%	-4.6%	-3.9%	1.8%	1.3%	0.9%	1.4%	2.9%	3.1%	2.2%	Sep-05
Elizabeth Park Capital Management	-10.0%	-16.2%	-14.1%	-18.3%	-14.1%	-2.2%	4.5%	5.0%				5.4%	May-14
HFRX Event Driven Index	-1.2%	-6.5%	-11.7%	-7.5%	-11.7%	-3.0%	1.5%	-0.7%	-1.4%	1.7%	2.4%	-2.1%	May-14
Archview Offshore Fund. LTD	0.0%	-8.3%	-7.9%	-11.2%	-7.9%	-1.0%	1.4%	-1.3%				-0.5%	Mar-14
HFRI ED: Distressed/Restructuring Index	-2.3%	-5.6%	-1.6%	-4.4%	-1.6%	2.2%	6.4%	2.6%	1.8%	4.6%	6.8%	1.4%	Mar-14
Real Assets Composite	-0.3%	-0.3%	2.0%	0.5%	2.0%	4.5%	6.4%	1.7%	4.2%			5.9%	Dec-12
Real Assets Benchmark	-1.2%	-0.8%	1.1%	0.4%	1.1%	2.3%	6.0%	-2.6%	-0.5%			1.8%	Dec-12
Real Assets - Public Real Estate Composite	-7.8%	-5.9%	-4.6%	-5.6%	-4.6%	1.8%	4.1%	3.7%	7.7%			6.9%	Jan-13
FTSE NAREIT All Equity REIT Custom Benchmark	-7.8%	-5.9%	-4.0%	-5.1%	-4.0%	2.1%	4.3%	3.9%	8.3%				Jan-13
Rhumbline FTSE NAREIT	-7.8%	-5.9%	-4.1%	-5.2%	-4.1%	2.1%	4.3%	3.9%	8.3%			5.4%	May-13
FTSE NAREIT All Equity REIT Custom Benchmark	-7.8%	-5.9%	-4.0%	-5.1%	-4.0%	2.1%	4.3%	3.9%	8.3%			5.4%	May-13
Real Assets - Open-End Real Estate Composite	1.8%	1.8%	6.5%	3.0%	6.5%							6.2%	Jan-17
NFI	0.5%	1.5%	7.4%	3.4%	7.4%	7.0%	7.3%	8.9%	9.4%	10.0%	6.0%	7.0%	Jan-17
UBS Trumbull Fund	1.7%	1.7%	6.4%	2.8%	6.4%							6.2%	Jan-17
NFI	0.5%	1.5%	7.4%	3.4%	7.4%	7.0%	7.3%	8.9%	9.4%	10.0%	6.0%	7.0%	Jan-17
Clarion Lion Properties Fund	2.0%	2.0%		3.6%								6.9%	Feb-18
NFI	0.5%	1.5%	7.4%	3.4%	7.4%	7.0%	7.3%	8.9%	9.4%	10.0%	6.0%	6.7%	Feb-18
Real Assets - Infrastructure Composite	-3.4%	-4.3%	-5.8%	-4.8%	-5.8%							1.1%	Mar-17
Dow Jones Brookfield Global Infrastructure Index	-4.8%	-5.9%	-7.9%	-6.7%	-7.9%	3.3%	6.3%	0.7%	3.6%	7.0%	10.7%	-0.5%	Mar-17
Rhumbline Infrastructure Index	-4.7%	-5.7%	-7.2%	-6.3%	-7.2%							0.2%	Mar-17
Dow Jones Brookfield Global Infrastructure Index	-4.8%	-5.9%	-7.9%	-6.7%	-7.9%	3.3%	6.3%	0.7%	3.6%	7.0%	10.7%	-0.5%	Mar-17
Rreef Global Infrastructure	0.0%	-0.9%		-1.1%								3.1%	Mar-18
Dow Jones Brookfield Global Infrastructure Index	-4.8%	-5.9%	-7.9%	-6.7%	-7.9%	3.3%	6.3%	0.7%	3.6%	7.0%	10.7%	-2.8%	Mar-18

Annualized Performance (Net of Fees)

Market Value: \$4,817.9 Million and 100.0% of Fund

	1 Mo	3 Mo	YTD	Fiscal YTD	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	7 Yrs	10 Yrs	Inception	Inception Date
Real Assets - Private Real Estate Composite	0.0%	0.0%	4.1%	1.5%	4.1%	6.0%	6.4%	8.2%	9.1%	10.1%	3.8%	3.8%	May-06
Real Assets - Private Real Estate Benchmark	0.0%	0.0%	4.1%	1.5%	4.1%	6.0%	6.4%	8.2%	9.1%				May-06
Real Assets - Private Energy/Infrastructure Composite	0.0%	0.0%	22.5%	3.4%	22.5%	18.3%	14.1%	-6.5%	6.4%			6.7%	May-12
Real Assets - Private Energy/Infrastructure Benchmark	0.0%	0.0%	22.5%	3.4%	22.5%	18.3%	14.1%	-6.5%	6.4%			6.7%	May-12
Private Assets Composite	0.0%	0.0%	15.4%	0.0%	15.4%	14.1%	12.7%	11.1%				-	Mar-87