

MWRA Employees' Retirement System

TOTAL FUND PERFORMANCE DETAIL (NET)

	Market Value (\$)	% of Portfolio	Policy %	1 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Composite	552,499,767	100.0	100.0	-0.6	9.2	2.8	7.2	5.1	8.1	6.8	Jan-86
Allocation Index				-0.7	9.2	2.8	7.2	5.6	7.6	--	Jan-86
Policy Index				-0.7	10.4	3.4	7.6	5.8	7.9	--	Jan-86
Total Balanced	64,540,998	11.7	12.0	-1.5	5.1	2.1	4.2	1.7	--	3.7	Dec-10
PRIT Core Fund	3,851,757	0.7		-0.3	9.7	3.8	8.2	6.4	8.6	6.6	Apr-99
PIMCO All Asset	30,416,421	5.5	6.0	-1.2	6.5	3.6	5.1	2.3	5.5	7.5	Dec-08
<i>PIMCO All Asset Index</i>				1.0	9.5	8.0	4.1	3.8	5.3	6.4	Dec-08
William Blair	30,272,819	5.5	6.0	-1.9	1.3	6.2	2.4	--	--	-0.7	Mar-15
<i>60% MSCI ACWI (Net) / 40% FTSE WGBI</i>				-0.4	11.5	3.5	6.4	4.0	6.2	4.9	Mar-15
<i>ICE BofAML 91 Days T-Bills TR</i>				0.2	1.6	2.4	1.5	0.9	0.5	1.1	Mar-15
Total Domestic Equity	127,960,937	23.2	22.0	-1.5	18.1	1.6	12.8	9.4	13.3	6.9	May-99
<i>Russell 3000</i>				-2.0	18.0	1.3	12.2	9.6	13.3	6.3	May-99
Large Cap	92,874,161	16.8	16.0	-0.8	18.2	4.9	13.6	10.0	--	12.8	Dec-10
Rhumblin Advisors S&P 500 Index Fund	44,546,859	8.1	8.0	-1.6	18.3	2.9	12.6	10.0	13.3	8.3	Apr-97
<i>S&P 500</i>				-1.6	18.3	2.9	12.7	10.1	13.4	8.2	Apr-97
Coho Relative Value Equity	25,025,778	4.5	4.0	-0.4	10.3	1.5	8.9	--	--	10.3	Mar-16
<i>Russell 1000 Value</i>				-2.9	13.8	0.6	8.1	6.6	11.5	11.6	Mar-16
Polen Focused Growth	23,301,524	4.2	4.0	0.4	26.2	11.9	19.9	--	--	18.1	Feb-16
<i>Russell 1000 Growth</i>				-0.8	23.3	4.3	17.0	13.1	15.4	17.7	Feb-16
Small Cap	35,086,776	6.4	6.0	-3.5	17.8	-6.0	11.4	8.3	--	11.9	Dec-10
Robeco Boston Partners Small Cap Value	17,648,458	3.2	3.0	-4.1	15.5	-8.0	5.8	4.6	10.8	10.3	Feb-97
<i>Russell 2000 Value</i>				-5.6	7.3	-14.9	5.0	4.6	10.0	8.5	Feb-97
Loomis Sayles Small Cap Growth	17,438,318	3.2	3.0	-2.9	20.1	-4.0	16.7	11.9	16.1	6.5	Jan-97
<i>Russell 2000 Growth</i>				-4.3	16.3	-11.0	10.6	8.1	13.1	6.7	Jan-97



Since inception return is 8.4% gross of fees. Prior to 1999, performance history does not capture separate net and gross returns.

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Total Non-US Equity	111,134,679	20.1	20.0	-2.3	10.0	-3.4	6.3	1.4	3.6	4.1	Mar-99
International Equity	86,968,454	15.7	15.0	-1.7	12.9	-1.3	7.2	2.5	--	--	Sep-05
SEG Baxter Street <i>MSCI ACWI ex USA</i>	31,910,031	5.8	5.0	-1.2	20.5	7.8	11.0	--	--	11.1	May-16
Schroder International Alpha Fund <i>MSCI ACWI ex USA</i>	29,551,356	5.3	5.0	-2.6	10.0	-2.4	6.8	2.9	--	5.3	Mar-12
LMCG Small Cap International <i>MSCI EAFE Small Cap</i>	25,507,068	4.6	5.0	-1.4	7.1	-10.1	--	--	--	-2.2	Aug-17
Emerging Markets Equity	24,166,224	4.4	5.0	-4.5	1.1	-9.8	3.4	-1.6	--	-0.1	Nov-13
<i>MSCI Emerging Markets</i>				-4.9	3.9	-4.4	5.8	0.4	4.1	1.6	Nov-13
LMCG Emerging Markets <i>MSCI Emerging Markets</i>	24,166,224	4.4	5.0	-4.5	1.1	-9.8	3.4	-1.6	--	-0.1	Dec-13
Total Fixed Income	129,340,198	23.4	21.0	1.9	8.9	7.5	3.8	3.0	6.1	6.6	Mar-99
Loomis Sayles - Multi Sector Bonds <i>BBgBarc US Aggregate TR</i>	35,203,000	6.4	6.0	0.8	9.8	6.3	4.8	3.0	7.0	7.8	Mar-99
<i>BBgBarc US High Yield TR</i>				2.6	9.1	10.2	3.1	3.3	3.9	4.9	Mar-99
<i>BBgBarc US High Yield TR</i>				0.4	11.0	6.6	6.2	4.9	8.5	6.9	Mar-99
Rhumbline TIPS <i>BBgBarc US TIPS TR</i>	29,084,602	5.3	5.0	2.4	9.1	7.5	2.9	--	--	3.3	Jun-16
<i>BBgBarc US TIPS TR</i>				2.4	9.1	7.5	2.9	2.2	3.8	3.4	Jun-16
Lord Abbett Core Fixed Income <i>BBgBarc US Aggregate TR</i>	17,045,559	3.1	3.0	2.6	9.1	9.8	--	--	--	7.2	Apr-18
<i>BBgBarc US Aggregate TR</i>				2.6	9.1	10.2	3.1	3.3	3.9	7.5	Apr-18
Garcia Hamilton Fixed Income Aggregate <i>BBgBarc US Aggregate TR</i>	40,815,719	7.4	7.0	2.6	7.7	8.3	--	--	--	6.5	Apr-18
<i>BBgBarc US Aggregate TR</i>				2.6	9.1	10.2	3.1	3.3	3.9	7.5	Apr-18
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1 <i>Credit Suisse Leveraged Loan</i>	6,988,297	1.3		-0.2	--	--	--	--	--	-0.2	Aug-19
<i>Credit Suisse Leveraged Loan</i>				-0.3	5.9	3.4	4.8	3.9	5.7	-0.3	Aug-19
Invesco Mortgage Recovery Loans Feeder Fund <i>BBgBarc US Aggregate TR</i>	203,022	0.0		0.0	1.1	10.7	2.5	9.8	--	14.4	Apr-10
<i>BBgBarc US Aggregate TR</i>				2.6	9.1	10.2	3.1	3.3	3.9	3.8	Apr-10



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Total Hedge Fund	28,251,969	5.1	5.0	-0.6	5.5	2.1	3.5	1.3	3.8	3.1	Oct-06
PRIM Portfolio Completion Strategies	13,689,660	2.5	0.0	-0.2	6.5	3.2	5.4	3.2	4.8	3.9	Oct-06
Corbin Pinehurst Partners	6,716,282	1.2		-1.9	5.8	--	--	--	--	3.4	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				-0.8	5.6	0.2	3.4	2.0	2.9	3.4	Nov-18
UBS Neutral Alpha Strategies	6,691,248	1.2		-0.1	5.0	--	--	--	--	2.8	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				-0.8	5.6	0.2	3.4	2.0	2.9	3.4	Nov-18
EnTrust	370,894	0.1	0.0								
Entrust Peru Wind Down	783,885	0.1									
Other	4,914,657	0.9	0.0	0.2	1.6	2.3	1.5	1.0	--	0.6	Dec-10
Cash Account	4,914,657	0.9		0.2	1.6	2.3	1.5	1.0	0.6	1.9	Feb-00
<i>91 Day T-Bills</i>				0.2	1.5	2.3	1.5	0.9	0.5	1.6	Feb-00
Total Real Estate	41,229,611	7.5	10.0	0.0	3.7	6.7	8.3	9.8	9.5	7.9	Apr-99
<i>NCREIF Property Index</i>				0.0	3.3	6.5	6.9	8.8	9.2	8.8	Apr-99
Morgan Stanley Prime Property (\$2.8m commitment in '95)	14,395,283	2.6		0.0	3.0	7.1	8.2	10.6	10.5	8.7	Sep-95
TA Realty Core Property Fund, LP (\$15m commitment in '19)	14,823,750	2.7		0.0	--	--	--	--	--	0.0	Jun-19
Invesco Mortgage Recovery II (\$3M commitment in '15)	1,239,264	0.2		0.0	7.5	21.9	17.7	--	--	14.5	Oct-15
Landmark VI (\$2m commitment in '11)	175,622	0.0		0.0	-10.8	-12.1	-4.0	0.8	--	7.2	Jul-11
Landmark VIII (\$4m commitment in '17)	792,174	0.1		0.0	4.7	4.8	--	--	--	22.1	Nov-17
Courtland/Mesirow MFire (\$2m commitment in '11)	855,856	0.2		0.0	-0.3	0.7	6.2	7.5	--	4.6	May-12
Cerberus (\$1.5m commitment in '12)	729,187	0.1		0.0	2.0	8.3	6.0	10.2	--	12.3	May-13
TA Realty Fund X LP (\$3.5m commitment in '12)	1,371,830	0.2		0.0	17.0	24.1	13.0	13.0	--	12.0	May-13
TerraCap Partners III, LP (\$2.6m commitment in '15)	2,594,939	0.5		0.0	-1.8	11.8	15.9	--	--	12.5	Jul-15
TerraCap Partners IV, LP (\$4m commitment in '17)	4,251,706	0.8		0.0	-1.4	8.6	--	--	--	7.3	Nov-17

Note:

Market values for Real estate managers are as of 06/30/2019 and are adjusted for cash flows. PRIM accounts are valued as of 08/31/2019. Importantly, all returns in this report, including those of the private real estate managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.



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Total Private Equity	45,126,718	8.2	10.0	0.0	2.4	8.0	11.4	13.2	16.2	9.3	Apr-99
<i>Cambridge Associates US All PE</i>				0.0	8.5	10.7	15.2	11.5	14.5	12.4	Apr-99
<i>NASDAQ W/O Income</i>				-2.6	20.0	-1.8	15.2	11.7	14.8	5.9	Apr-99
PRIM Vintage Year 2008 (\$3m commitment in '08)	1,107,068	0.2		-0.1	3.1	13.6	21.9	19.1	19.0	8.5	Jun-08
PRIM Vintage Year 2009 (\$1m commitment in '09)	166,202	0.0		-0.2	9.6	25.4	20.6	21.1	--	7.6	Nov-09
PRIM Vintage Year 2010 (\$1m commitment in '10)	593,287	0.1		-0.1	-1.0	17.6	19.6	18.7	--	8.6	Jun-10
PRIM Vintage Year 2011 (\$1.5m commitment in '11)	1,120,553	0.2		0.0	3.5	19.9	20.8	22.1	--	3.3	May-11
PRIM Vintage Year 2012 (\$1m commitment in '12)	626,622	0.1		-0.5	0.0	10.7	16.9	13.7	--	-18.7	Jun-12
PRIM Vintage Year 2014 (\$2m commitment in '14)	1,737,108	0.3		-0.1	5.5	23.4	22.6	12.5	--	-0.8	Jun-14
PRIM Vintage Year 2017 (\$2m commitment in '17)	612,727	0.1		-0.4	5.6	8.6	--	--	--	4.6	May-17
Alcentra European DLF (\$5m commitment in '14)	1,173,652	0.2		0.0	-7.8	-8.2	3.2	--	--	5.2	Jan-15
Ascent Fund II (\$0.8m commitment in '99)	9,065	0.0		0.0	-1.9	-3.6	2.5	30.8	25.8	17.7	Jan-99
Ascent Fund IV (\$2m commitment in '04)	31,980	0.0		0.0	-36.3	-77.7	-47.3	-53.1	-27.9	-22.8	Jul-04
Ascent Fund IV-B (\$1m commitment in '16)	1,423,553	0.3		0.0	-4.6	-10.4	-2.7	--	--	-2.5	Jul-16
Ascent Fund V (\$2m commitment in '08)	1,709,802	0.3		0.0	-3.3	-7.0	-1.0	1.2	6.8	5.4	Oct-08
Ascent VI (\$3m commitment in '15)	2,601,596	0.5		0.0	-1.3	2.3	9.9	--	--	2.6	Dec-15
Castile Ventures III, L.P. (\$3m commitment in '07)	239,126	0.0		0.0	-4.6	-41.0	-37.1	-28.7	-18.1	-18.2	Jan-08
CVI Credit Value Fund IV A LP (\$6m commitment in '17)	3,184,023	0.6		0.0	7.1	7.0	--	--	--	5.6	Dec-17
Invesco Fund IV (\$3m commitment in '03)	482,219	0.1		0.0	0.0	-15.5	-1.0	2.5	--	--	Feb-04
Invesco Fund VI (\$5m commitment in '13)	6,749,639	1.2		0.0	5.2	9.5	14.6	15.0	--	13.8	Jul-13
Kayne Energy Fund VII (\$5m commitment in '15)	3,877,165	0.7		0.0	-9.3	-18.9	16.0	--	--	12.2	Jan-16
Foundry 2007 (\$3m commitment in '07)	304,090	0.1		0.0	-20.4	-35.4	-12.2	7.0	20.1	20.6	Dec-07
Foundry 2010 (\$3m commitment in '10)	3,625,115	0.7		0.0	8.2	15.4	11.2	7.7	--	9.7	Jan-11
Foundry 2010 Annex (\$0.4m commitment in '15)	267,104	0.0		0.0	40.4	43.0	29.6	--	--	20.4	Sep-15
Pinebridge PEP V (\$6m commitment in '07)	1,082,165	0.2		0.0	4.3	-1.9	1.0	7.5	--	--	Mar-08
Landmark XV (\$3m commitment in '13)	1,146,783	0.2		0.0	-4.2	1.3	11.7	8.8	--	12.9	Nov-13
JFL Equity Investors IV, L.P. (\$6m commitment in '16)	5,469,997	1.0		0.0	6.2	41.9	--	--	--	30.9	Jan-17
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)	2,395,872	0.4		0.0	10.3	33.8	--	--	--	16.8	Feb-17
Park Square Credit Opportunities III (\$3m commitment in '17)	1,676,331	0.3		0.0	5.2	11.1	--	--	--	4.7	Feb-18
Ironsides Constitution Opportunities (\$3m commitment in '18)	1,713,874	0.3		0.0	8.1	7.0	--	--	--	7.0	Sep-18

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Market values for Private Equity managers are as of 06/30/2019 and are adjusted for cash flows. PRIM accounts are valued as of 08/31/2019. Importantly, all returns in this report, including those of the private markets managers, is based on a time weighted return calculation and not based on IRRs, which can result in return differences.



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NOTES

- 1 - Results for periods longer than one year are annualized.
- 2 - Total Balances, Large Cap, Small Cap, and Other Composite performance starts 12/1/2010.
- 3 - Preliminary Total Composite net of fee since inception return is 6.8% for the current month.
- 4 - Preliminary Total Composite gross of fee since inception return is 8.4% for the current month.
- 5 - Targets, Allocation Index, and Policy Index have been updated to reflect new allocation of 04/01/2019.
- 6 - Policy Index changed from Nasdaq to Cambridge All PE to reflect as of 5/1/2012.
- 7 - Entrust liquidated on 10/30/2018. Remaining balance is a holdback.



Information Disclaimer

- Past performance is no guarantee of future results.
- All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.
- NEPC's source for portfolio pricing, calculation of accruals, and transaction information is the plan's custodian bank. Information on market indices and security characteristics is received from other sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.
- Some index returns displayed in this report or used in calculation of a policy, allocation or custom benchmark may be preliminary and subject to change.
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Reporting Methodology

- The client's custodian bank is NEPC's preferred data source unless otherwise directed. NEPC generally reconciles custodian data to manager data. If the custodian cannot provide accurate data, manager data may be used.
- Trailing time period returns are determined by geometrically linking the holding period returns, from the first full month after inception to the report date. Rates of return are annualized when the time period is longer than a year. Performance is presented gross and/or net of manager fees as indicated on each page.
- For managers funded in the middle of a month, the "since inception" return will start with the first full month, although actual inception dates and cash flows are taken into account in all Composite calculations.
- This report may contain forward-looking statements that are based on NEPC's estimates, opinions and beliefs, but NEPC cannot guarantee that any plan will achieve its targeted return or meet other goals.



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