



# MONTHLY PERFORMANCE REPORT

**MWRA EMPLOYEES' RETIREMENT  
SYSTEM**

DECEMBER 31, 2022



PROPRIETARY & CONFIDENTIAL

# GOALS & OBJECTIVES

## Investment Return Objective

“Its primary goal is to provide promised benefits to participants and beneficiaries of the MWRA Employees’ Retirement system. Plan assets should be equal to or greater than the present value of the projected benefit obligations (“fully funded”). When Plan assets are less than the present value of projected benefit obligations, a schedule will be established and a plan will be in place to meet a fully funded status. When achieving return objectives required to fully fund the system, the Board is intent on controlling risk. Consistency of returns and risk of loss are primary considerations. The Board has also determined that the annual performance of plan assets should not vary substantially from returns achieved by other public pension funds with similar goals and objectives.”

## Return Expectations

The investment growth should be maintained in such a manner that the minimum nominal rate of return does not cause a negative real rate of return over a full market cycle:

- **Time Horizon:** Return assumptions will be based on a ten-year time horizon with a detailed review and analysis to be made at least annually to monitor allocations and assumptions. Should a manager deviate from proscribed mandate or expected risk and return profile by a consequential degree, that manager may be reevaluated at any time.
- **Liquidity Needs:** Presently contributions exceed plan withdrawals to provide benefits, payouts, and/or plan expenses. Portfolio liquidity will be managed based on the cash flow needs of the System.
- **Regulatory Considerations:** Assets of this Fund shall be invested in a manner consistent with the fiduciary standards established under Code of Massachusetts Regulations 840 (“840 CMR”). The Board shall also use as precedent the Employee Retirement Income Security Act (ERISA).



# EXECUTIVE SUMMARY

	Market Value (\$)	1 Mo (%)	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
<b>Composite</b>	<b>631,356,508</b>	<b>-2.1</b>	<b>4.2</b>	<b>-12.4</b>	<b>4.0</b>	<b>4.7</b>	<b>6.5</b>
<i>Allocation Index</i>		-2.0	4.6	-10.7	4.7	5.3	6.9
<i>Policy Index</i>		-2.5	4.8	-11.5	5.1	5.7	7.0

20 Years As of December 31, 2022				
	Return	Standard Deviation	Sharpe Ratio	Sortino Ratio
<b>Composite</b>	<b>7.3</b>	<b>8.4</b>	<b>0.7</b>	<b>1.1</b>
<i>Allocation Index</i>	6.7	7.9	0.7	1.0
<i>Policy Index</i>	7.2	8.5	0.7	1.0

## Performance

- The Composite had a return of -2.1% (net) for the month, trailing the Allocation Index (-2.0%) and outperforming the Policy Index (-2.5%).
- Equities sold off in December amid recessionary fears fueled by the Federal Reserve's tighter monetary policy. In the U.S., the S&P 500 Index fell 5.8%, bringing losses for 2022 to 18.1%, the worst calendar year return since 2008. Value stocks outperformed with the Russell 1000 Value Index down 4%, finishing the year in the red at 7.5%, while the Russell 1000 Growth Index declined 7.7% ending the year 29.1% lower. Non-U.S. developed markets were up 0.1%, outperforming all other regions. The portfolio's Domestic Equity composite fell -5.2% (net) and the Non-US Equity composite was down -2.5% (net).
- In fixed income, developed market bond yields continued to face upward pressure amid the hawkish stance from central banks. In the U.S., the yield curve experienced a bear flattener with the 10- and 30-year yields rising 18 and 15 basis points, respectively. The 10-year German Bund yield also increased 58 basis points to 2.53% amid inflation pressures in the Eurozone. The Fixed Income composite fell -0.5% (net) for the month while the Bloomberg Agg and the Bloomberg US HY were down -0.5% and -0.6% respectively.
- This brings the total plan return for the trailing one-year period to -12.4% (net), while the Allocation Index and Policy Index returned -10.7% and -11.5%, respectively.

Returns for 20 years Risk/Return and Statistics Summary are gross of fees.

Since inception return is 8.2% gross of fees. Prior to 1999, performance history does not capture separate net and gross returns.



# TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)							
	Market Value (\$)	% of Portfolio	Policy(%)	1 Mo (%)	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Composite</b>	<b>631,356,508</b>	<b>100.0</b>	<b>100.0</b>	<b>-2.1</b>	<b>4.2</b>	<b>-12.4</b>	<b>4.0</b>	<b>4.7</b>	<b>6.5</b>	<b>6.6</b>	<b>Jan-86</b>
Allocation Index				-2.0	4.6	-10.7	4.7	5.3	6.9		
Policy Index				-2.5	4.8	-11.5	5.1	5.7	7.0		
<b>Total Balanced</b>	<b>4,861,106</b>	<b>0.8</b>	<b>0.0</b>	<b>-1.7</b>	<b>4.1</b>	<b>-11.4</b>	<b>5.5</b>	<b>4.1</b>	<b>4.2</b>	<b>4.4</b>	<b>Dec-10</b>
PRIT Core Fund	4,861,106	0.8		-1.7	4.1	-11.4	6.0	6.2	7.8	6.7	Apr-99
60% S&P 500 / 40% Bloomberg Aggregate				-3.6	5.4	-15.8	3.8	6.0	8.1	5.9	
<b>Total Domestic Equity</b>	<b>189,135,783</b>	<b>30.0</b>	<b>31.0</b>	<b>-5.2</b>	<b>7.0</b>	<b>-19.6</b>	<b>5.9</b>	<b>8.6</b>	<b>11.4</b>	<b>7.1</b>	<b>May-99</b>
Russell 3000 Index				-5.9	7.2	-19.2	7.1	8.8	12.1	6.8	
<b>Large Cap</b>	<b>145,639,066</b>	<b>23.1</b>	<b>24.0</b>	<b>-5.3</b>	<b>6.6</b>	<b>-20.3</b>	<b>6.1</b>	<b>9.4</b>	<b>11.9</b>	<b>11.7</b>	<b>Dec-10</b>
Rhumblin Advisors S&P 500 Index Fund	60,033,275	9.5	10.0	-5.8	7.5	-18.1	7.6	9.4	12.5	8.5	Apr-97
S&P 500 Index				-5.8	7.6	-18.1	7.7	9.4	12.6	8.5	
Coho Relative Value Equity	48,892,880	7.7	7.0	-3.6	11.1	-4.2	7.9	9.0		10.6	Mar-16
Russell 1000 Value Index				-4.0	12.4	-7.5	6.0	6.7		10.2	
Polen Focused Growth	36,712,911	5.8	7.0	-6.6	-0.3	-38.0	0.8	8.9		10.8	Feb-16
Russell 1000 Growth Index				-7.7	2.2	-29.1	7.8	11.0		14.0	
<b>Small Cap</b>	<b>43,496,717</b>	<b>6.9</b>	<b>7.0</b>	<b>-5.1</b>	<b>8.7</b>	<b>-17.1</b>	<b>5.0</b>	<b>6.6</b>	<b>10.4</b>	<b>10.6</b>	<b>Dec-10</b>
Boston Partners Small Cap Value	22,229,854	3.5	3.5	-5.7	9.4	-11.7	4.5	4.3	8.4	9.9	Feb-97
Russell 2000 Value Index				-6.6	8.4	-14.5	4.7	4.1	8.5	8.5	
Loomis Sayles Small Cap Growth	21,266,863	3.4	3.5	-4.5	7.9	-22.5	4.9	8.2	11.9	6.5	Jan-97
Russell 2000 Growth Index				-6.4	4.1	-26.4	0.6	3.5	9.2	6.3	
<b>Total Non-US Equity</b>	<b>100,617,712</b>	<b>15.9</b>	<b>19.0</b>	<b>-2.5</b>	<b>11.7</b>	<b>-23.3</b>	<b>-3.4</b>	<b>-1.2</b>	<b>3.0</b>	<b>3.6</b>	<b>Mar-99</b>
<b>International Equity</b>	<b>66,194,604</b>	<b>10.5</b>	<b>12.0</b>	<b>-2.6</b>	<b>14.7</b>	<b>-21.3</b>	<b>-1.5</b>	<b>0.6</b>	<b>4.0</b>	<b>3.0</b>	<b>Sep-05</b>
SEG Baxter Street	28,091,632	4.4	5.0	-2.5	13.7	-22.3	-2.4	1.9		5.4	May-16
MSCI AC World ex USA (Net)				-0.7	14.3	-16.0	0.1	0.9		4.7	
Schroder International Alpha Trust Class 1	25,566,311	4.0	4.0	-1.3	16.7	-19.0	3.9	3.8	5.8	5.8	Mar-12
MSCI AC World ex USA (Net)				-0.7	14.3	-16.0	0.1	0.9	3.8	3.8	
Baillie Gifford International Growth Fund Class K	12,536,661	2.0	3.0	-5.5	13.0	-34.4				-13.7	Oct-20
MSCI AC World ex USA (Net)				-0.7	14.3	-16.0				2.6	
<b>Emerging Markets Equity</b>	<b>34,423,108</b>	<b>5.5</b>	<b>7.0</b>	<b>-2.2</b>	<b>6.4</b>	<b>-27.0</b>				<b>-18.7</b>	<b>Mar-21</b>
Axiom Emerging Markets Trust Class 2	16,040,874	2.5	7.0	-2.2	5.8	-31.0				-21.4	Mar-21
MSCI Emerging Markets (Net)				-1.4	9.7	-20.1				-14.5	
ABS Emerging Markets MA Fund	18,382,234	2.9		-2.2	6.8	-23.1				-20.0	Dec-21
MSCI Emerging Markets (Net)				-1.4	9.7	-20.1				-17.3	

Since inception return is 8.2% gross of fees. Prior to 1999, performance history does not capture separate net and gross returns.

In November 2019, Loomis Sayles and Schroders transitioned from a mutual fund to a CIT structure. Performance prior to the transition to the CIT is linked to mutual fund performance history.

Preliminary performance is subject to change once finalized.



# TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)							
	Market Value (\$)	% of Portfolio	Policy(%)	1 Mo (%)	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Total Fixed Income</b>	<b>126,614,522</b>	<b>20.1</b>	<b>20.0</b>	<b>-0.5</b>	<b>2.0</b>	<b>-11.1</b>	<b>-0.5</b>	<b>1.2</b>	<b>2.4</b>	<b>5.6</b>	<b>Mar-99</b>
Garcia Hamilton Fixed Income Aggregate	31,643,672	5.0	6.0	-1.0	1.5	-11.5	-2.3			0.3	Apr-18
<i>Blmbg. U.S. Aggregate Index</i>				-0.5	1.9	-13.0	-2.7			0.3	
Lord Abbett Core Fixed Income	34,259,229	5.4	4.0	-0.5	1.7	-13.3	-2.3			0.5	Apr-18
<i>Blmbg. U.S. Aggregate Index</i>				-0.5	1.9	-13.0	-2.7			0.3	
Loomis Sayles Multisector Full Discretion Trust	46,735,006	7.4	8.0	-0.2	2.6	-12.5	0.1	1.6	3.1	6.8	Mar-99
<i>Blmbg. U.S. Aggregate Index</i>				-0.5	1.9	-13.0	-2.7	0.0	1.1	3.9	
<i>Blmbg. U.S. Corp: High Yield Index</i>				-0.6	4.2	-11.2	0.0	2.3	4.0	6.0	
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	13,961,567	2.2	2.0	0.1	2.5	-2.2	1.9			2.2	Aug-19
<i>Credit Suisse Leveraged Loan</i>				0.4	2.3	-1.1	2.3			2.6	
Invesco Mortgage Recovery Loans Feeder Fund	15,048	0.0		0.0	0.0	-0.7	-0.6	2.6	6.1	9.9	Apr-10
<i>Blmbg. U.S. Aggregate Index</i>				-0.5	1.9	-13.0	-2.7	0.0	1.1	2.1	
<b>Total Hedge Fund</b>	<b>42,154,230</b>	<b>6.7</b>	<b>6.0</b>	<b>0.6</b>	<b>1.2</b>	<b>-2.6</b>	<b>4.3</b>	<b>3.6</b>	<b>3.7</b>	<b>3.4</b>	<b>Oct-06</b>
PRIM Portfolio Completion Strategies	15,032,294	2.4		0.4	1.5	-2.0	2.8	2.9	4.2	3.7	Oct-06
Corbin Pinehurst Partners	12,524,363	2.0		0.3	1.2	-11.3	3.5			4.1	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				0.3	1.8	-5.2	3.7			4.1	
UBS Neutral Alpha Strategies	13,868,875	2.2		1.2	1.0	5.0	7.2			6.3	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				0.3	1.8	-5.2	3.7			4.1	
Entrust Peru Wind Down	728,698	0.1		0.0	-0.4	-2.2	-1.3	-3.1		-3.2	Dec-17
<i>HFRI Fund of Funds Composite Index</i>				0.3	1.8	-5.2	3.7	3.0		3.2	
<b>Other</b>	<b>9,964,285</b>	<b>1.6</b>	<b>0.0</b>	<b>0.3</b>	<b>0.9</b>	<b>1.4</b>	<b>0.7</b>	<b>1.3</b>	<b>0.8</b>	<b>0.7</b>	<b>Dec-10</b>
Cash Account	9,964,285	1.6		0.3	0.9	1.4	0.7	1.3	0.8	1.7	Feb-00
<i>90 Day U.S. Treasury Bill</i>				0.4	0.8	1.5	0.7	1.3	0.8	1.6	

Importantly, all returns in this report, including those of the private markets managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.

Entrust Wind Down is valued as of 11/30/22.

Preliminary performance is subject to change once finalized.



# TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)							
	Market Value (\$)	% of Portfolio	Policy(%)	1 Mo (%)	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Total Real Estate</b>	<b>72,052,368</b>	<b>11.4</b>	<b>12.0</b>	<b>-0.3</b>	<b>-0.3</b>	<b>10.9</b>	<b>12.0</b>	<b>10.3</b>	<b>11.0</b>	<b>8.5</b>	<b>Apr-99</b>
<i>NCREIF Property Index</i>				0.0	0.0	9.4	9.4	8.2	9.2	8.9	
Morgan Stanley Prime Property (\$2.8m commitment in '95)	25,979,519	4.1		-3.7	-3.7	6.1	9.3	8.4	10.5	8.8	Sep-95
TA Realty Core Property Fund, LP (\$15m commitment in '19)	28,358,966	4.5		0.0	0.0	15.3	16.4			14.9	Jun-19
Invesco Mortgage Recovery II (\$3M commitment in '15)	921,638	0.1		0.0	0.0	-6.0	-20.0	-7.3		-1.9	Oct-15
Landmark VI (\$2m commitment in '11)	6,499	0.0		0.0	0.0	-16.4	-6.3	-8.7	-0.2	2.2	Jul-11
Landmark VIII (\$4m commitment in '17)	2,136,606	0.3		0.0	0.0	20.1	17.9	12.2		19.8	Nov-17
StepStone Real Estate Fund II (\$2m commitment in '11)	367,525	0.1		0.0	0.0	-1.7	-2.0	-1.5	5.1	2.0	May-12
Cerberus Institutional Real Estate Partners III (\$1.5m commitment in '12)	483,850	0.1		0.0	0.0	-19.6	14.3	12.7		13.3	May-13
TA Realty Fund X LP (\$3.5m commitment in '12)	4,086	0.0		0.0	0.0	24.1	5.1	9.2		9.6	May-13
TerraCap Partners III, LP (\$2.6m commitment in '15)	1,382,202	0.2		0.0	0.0	6.7	4.2	4.3		9.1	Jul-15
TerraCap Partners IV, LP (\$4m commitment in '17)	3,565,886	0.6		0.0	0.0	3.0	8.3	10.0		10.1	Nov-17
TerraCap Partners V, LP (\$8m commitment in '22)	8,845,592	1.4		8.9	8.9					14.5	Jun-22
<b>Total Private Equity and Debt</b>	<b>85,956,502</b>	<b>13.6</b>	<b>12.0</b>	<b>0.0</b>	<b>-0.2</b>	<b>3.6</b>	<b>18.4</b>	<b>14.5</b>	<b>14.6</b>	<b>10.4</b>	<b>Apr-99</b>
<i>CJA US All PE</i>				0.0	0.0	-2.7	18.1	15.7	14.7	13.1	
<i>NASDAQ W/O Income</i>				-8.7	-1.0	-33.1	5.3	8.7	13.2	6.3	
PRIM Vintage Year 2008 (\$3m commitment in '08)	801,810	0.1		0.1	-0.7	1.0	14.5	14.0	17.9	9.9	Jun-08
PRIM Vintage Year 2009 (\$1m commitment in '09)	73,681	0.0		-2.2	0.5	-12.0	35.7	32.0	26.0	14.3	Nov-09
PRIM Vintage Year 2010 (\$1m commitment in '10)	460,062	0.1		-0.2	-7.1	-42.2	23.0	16.9	18.7	10.9	Jun-10
PRIM Vintage Year 2011 (\$1.5m commitment in '11)	837,642	0.1		0.3	-2.9	-4.5	31.5	25.0	22.4	10.0	May-11
PRIM Vintage Year 2012 (\$1m commitment in '12)	472,161	0.1		1.2	5.9	-26.3	14.2	12.9	12.5	-9.4	Jun-12
PRIM Vintage Year 2014 (\$2m commitment in '14)	2,158,189	0.3		0.1	-2.2	-1.0	24.1	24.5		8.5	Jun-14
PRIM Vintage Year 2017 (\$2m commitment in '17)	2,559,371	0.4		1.2	2.3	4.4	24.6	17.8		16.2	May-17
PRIM Vintage Year 2020 (\$5m commitment in '20)	3,546,500	0.6		0.6	-0.2	5.2				16.8	Mar-20
PRIM Vintage Year 2021 (\$5m commitment in '21)	2,731,766	0.4		-2.2	-4.2	-5.7				-1.1	Dec-20
PRIM Vintage Year 2022 (\$7.5m commitment in '22)	966,325	0.2		-0.6	-0.6					-5.8	Apr-22
Alcentra European DLF (\$5m commitment in '14)	197,301	0.0		0.0	0.0	9.2	23.1	13.8		11.9	Jan-15
Ascent Fund IV-B (\$1m commitment in '16)	40,322	0.0		0.0	0.0	-14.7	-21.7	-20.1		-14.9	Jul-16
Ascent Fund V (\$2m commitment in '08)	1,250,422	0.2		0.0	0.0	-14.6	-2.0	-2.3	1.9	3.9	Oct-08
Ascent VI (\$3m commitment in '15)	3,453,769	0.5		0.0	0.0	2.6	2.6	3.2		2.4	Dec-15
CVI Credit Value Fund IV A LP (\$6m commitment in '17)	5,402,590	0.9		0.0	0.0	4.4	6.1	6.2		6.1	Dec-17
Invesco Fund VI (\$5m commitment in '13)	1,068,293	0.2		0.0	0.0	-21.3	31.4	22.3		18.7	Jul-13

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 FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)							
	Market Value (\$)	% of Portfolio	Policy(%)	1 Mo (%)	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Kayne Energy Fund VII (\$5m commitment in '15)	2,766,350	0.4		0.0	0.0	31.2	-15.4	-16.1		-4.8	Jan-16
Foundry 2007 (\$3m commitment in '07)	484,034	0.1		0.0	0.0	-3.5	30.2	4.2	12.1	19.8	Dec-07
Foundry 2010 (\$3m commitment in '10)	5,956,413	0.9		0.0	0.0	-1.0	34.0	22.0	15.1	14.3	Feb-11
Foundry 2010 Annex (\$0.4m commitment in '15)	1,105,234	0.2		0.0	0.0	-0.9	91.2	63.3		42.0	Sep-15
Pinebridge PEP V (\$6m commitment in '07)	449,779	0.1		0.0	0.0	-0.1	10.7	4.0	9.2	8.5	Dec-10
Pinebridge (AIG) PEP V Asia (\$6m commitment in '07)	32,657	0.0		0.0	0.0	-5.0	-12.9			-14.1	Oct-18
Pinebridge (AIG) PEP V Co-Investment (\$6m commitment in '07)	90,621	0.0		0.0	0.0	1.5	14.9			6.3	Oct-18
Pinebridge (AIG) PEP V Europe (\$6m commitment in '07)	16,190	0.0		0.0	0.0	-22.2	192.9			121.4	Oct-18
Pinebridge (AIG) PEP V Large Market US Buyout (\$6m commitment in '07)	74,199	0.0		0.0	0.0	-17.7	11.7			6.0	Oct-18
Pinebridge (AIG) PEP V Preferred Participation Fund (\$6m commitment in '07)	75,737	0.0		0.0	0.0	-23.4	-0.7			-3.9	Oct-18
Pinebridge (AIG) PEP V Secondary (\$6m commitment in '07)	23,017	0.0		0.0	0.0	-12.1	-12.6	-12.1		-10.2	Jan-17
Pinebridge (AIG) PEP V Small-Mid Market US Buyout (\$6m commitment in '07)	90,000	0.0		0.0	0.0	-6.3	18.6			15.7	Oct-18
Pinebridge (AIG) PEP V US Venture (\$6m commitment in '07)	47,358	0.0		0.0	0.0	-2.2	3.3			-2.7	Oct-18
Landmark XV (\$3m commitment in '13)	649,744	0.1		0.0	0.0	-15.7	4.5	7.3		10.8	Nov-13
JFL Equity Investors IV, L.P. (\$6m commitment in '16)	1,723,874	0.3		0.0	0.0	9.8	34.1	41.7		37.3	Jan-17
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)	4,695,956	0.7		0.0	0.0	0.5	23.1	21.7		19.4	Feb-17
Park Square Credit Opportunities III (\$3m commitment in '17)	2,775,654	0.4		0.0	0.0	3.3	6.8			6.6	Feb-18
Ironsides Constitution Opportunities (\$3m commitment in '18)	2,261,352	0.4		0.0	0.0	2.3	10.6			11.1	Oct-18
HarbourVest Dover Street X (\$9m commitment in '20)	6,689,436	1.1		0.0	0.0	4.4				63.4	Jun-20
Hamilton Lane Secondary Fund V LP (\$9m commitment in '20)	7,553,174	1.2		0.0	0.0	1.9				33.8	Jul-20
Constitution Ironsides Co-Investment Fund VI (\$12m commitment in '21)	13,189,202	2.1		0.0	0.0	3.7				3.2	Nov-21
HarbourVest Co-Investment Fund VI (\$8m commitment in '21)	1,848,598	0.3		0.0	0.0						Jan-22
JFL Equity Investors V, L.P. (\$9m commitment in '20)	7,787,501	1.2		0.0	0.0	11.7				1.4	Sep-20

Importantly, all returns in this report, including those of the private markets managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.



# FEE SCHEDULE

Account Name	Fee Schedule	Market Value (\$)	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
PRIT Core Fund	0.5 % of Assets	4,861,106	0.8	23,819	0.5
Rhumblin Advisors S&P 500 Index Fund	0.1 % of Assets	60,033,275	9.5	30,017	0.1
Coho Relative Value Equity	0.5 % of First \$75 M 0.4 % of Next \$75 M 0.4 % Thereafter	48,892,880	7.7	244,464	0.5
Polen Focused Growth	0.7 % of Assets	36,712,911	5.8	238,634	0.6
Boston Partners Small Cap Value	1.0 % of Assets	22,229,854	3.5	222,299	1.0
Loomis Sayles Small Cap Growth	0.5 % of Assets Minimum Fee: \$45,000	21,266,863	3.4	95,701	0.4
SEG Baxter Street	1.0 % of Assets	28,091,632	4.4	280,916	1.0
Schroder International Alpha Trust Class 1	0.6 % of Assets	25,566,311	4.0	140,615	0.5
Baillie Gifford International Growth Fund Class K	0.6 % of Assets	12,536,661	2.0	75,220	0.6
Axiom Emerging Markets Trust Class 2	0.7 % of Assets	16,040,874	2.5	117,098	0.7
ABS Emerging Markets MA Fund	0.8 % of Assets	18,382,234	2.9	137,867	0.8
Garcia Hamilton Fixed Income Aggregate		31,643,672	5.0	39,555	0.1
Lord Abbett Core Fixed Income	0.2 % of Assets	34,259,229	5.4	65,093	0.2
Loomis Sayles Multisector Full Discretion Trust	0.5 % of First \$20 M 0.4 % of Next \$20 M 0.3 % Thereafter	46,735,006	7.4	200,205	0.4
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	0.4 % of Assets	13,961,567	2.2	55,846	0.4
Invesco Mortgage Recovery Loans Feeder Fund		15,048	0.0		
PRIM Portfolio Completion Strategies		15,032,294	2.4		
Corbin Pinehurst Partners	0.9 % of Assets	12,524,363	2.0	106,457	0.8
UBS Neutral Alpha Strategies	0.9 % of Assets	13,868,875	2.2	124,820	0.9
Entrust Peru Wind Down	0.5 % of Assets	728,698	0.1	3,643	0.5
Cash Account		9,964,285	1.6		
Morgan Stanley Prime Property (\$2.8m commitment in '95)		25,979,519	4.1		
TA Realty Core Property Fund, LP (\$15m commitment in '19)		28,358,966	4.5		
Invesco Mortgage Recovery II (\$3M commitment in '15)		921,638	0.1		
Landmark VI (\$2m commitment in '11)		6,499	0.0		
Landmark VIII (\$4m commitment in '17)		2,136,606	0.3		
StepStone Real Estate Fund II (\$2m commitment in '11)		367,525	0.1		
Cerberus Institutional Real Estate Partners III (\$1.5m commitment in '12)		483,850	0.1		
TA Realty Fund X LP (\$3.5m commitment in '12)		4,086	0.0		





# FEE SCHEDULE

Account Name	Fee Schedule	Market Value (\$)	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
TerraCap Partners III, LP (\$2.6m commitment in '15)		1,382,202	0.2		
TerraCap Partners IV, LP (\$4m commitment in '17)		3,565,886	0.6		
TerraCap Partners V, LP (\$8m commitment in '22)		8,845,592	1.4		
PRIM Vintage Year 2008 (\$3m commitment in '08)		801,810	0.1		
PRIM Vintage Year 2009 (\$1m commitment in '09)		73,681	0.0		
PRIM Vintage Year 2010 (\$1m commitment in '10)		460,062	0.1		
PRIM Vintage Year 2011 (\$1.5m commitment in '11)		837,642	0.1		
PRIM Vintage Year 2012 (\$1m commitment in '12)		472,161	0.1		
PRIM Vintage Year 2014 (\$2m commitment in '14)		2,158,189	0.3		
PRIM Vintage Year 2017 (\$2m commitment in '17)		2,559,371	0.4		
PRIM Vintage Year 2020 (\$5m commitment in '20)		3,546,500	0.6		
PRIM Vintage Year 2021 (\$5m commitment in '21)		2,731,766	0.4		
PRIM Vintage Year 2022 (\$7.5m commitment in '22)		966,325	0.2		
Alcentra European DLF (\$5m commitment in '14)		197,301	0.0		
Ascent Fund IV-B (\$1m commitment in '16)		40,322	0.0		
Ascent Fund V (\$2m commitment in '08)		1,250,422	0.2		
Ascent VI (\$3m commitment in '15)		3,453,769	0.5		
CVI Credit Value Fund IV A LP (\$6m commitment in '17)		5,402,590	0.9		
Invesco Fund VI (\$5m commitment in '13)		1,068,293	0.2		
Kayne Energy Fund VII (\$5m commitment in '15)		2,766,350	0.4		
Foundry 2007 (\$3m commitment in '07)		484,034	0.1		
Foundry 2010 (\$3m commitment in '10)		5,956,413	0.9		
Foundry 2010 Annex (\$0.4m commitment in '15)		1,105,234	0.2		
Pinebridge (AIG) PEP V Asia (\$6m commitment in '07)		32,657	0.0		
Pinebridge (AIG) PEP V Co-Investment (\$6m commitment in '07)		90,621	0.0		
Pinebridge (AIG) PEP V Europe (\$6m commitment in '07)		16,190	0.0		
Pinebridge (AIG) PEP V Large Market US Buyout (\$6m commitment in '07)		74,199	0.0		
Pinebridge (AIG) PEP V Preferred Participation Fund (\$6m commitment in '07)		75,737	0.0		
Pinebridge (AIG) PEP V Secondary (\$6m commitment in '07)		23,017	0.0		
Pinebridge (AIG) PEP V Small-Mid Market US Buyout (\$6m commitment in '07)		90,000	0.0		
Pinebridge (AIG) PEP V US Venture (\$6m commitment in '07)		47,358	0.0		
Landmark XV (\$3m commitment in '13)		649,744	0.1		
JFL Equity Investors IV, L.P. (\$6m commitment in '16)		1,723,874	0.3		
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)		4,695,956	0.7		



# FEE SCHEDULE

Account Name	Fee Schedule	Market Value (\$)	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Park Square Credit Opportunities III (\$3m commitment in '17)		2,775,654	0.4		
Ironsides Constitution Opportunities (\$3m commitment in '18)		2,261,352	0.4		
HarbourVest Dover Street X (\$9m commitment in '20)		6,689,436	1.1		
Hamilton Lane Secondary Fund V LP (\$9m commitment in '20)		7,553,174	1.2		
Constitution Ironsides Co-Investment Fund VI (\$12m commitment in '21)		13,189,202	2.1		
JFL Equity Investors V, L.P. (\$9m commitment in '20)		7,787,501	1.2		
HarbourVest Co-Investment Fund VI (\$8m commitment in '21)		1,848,598	0.3		
<b>Investment Management Fee</b>		<b>631,356,508</b>	<b>100.0</b>	<b>2,202,269</b>	<b>0.3</b>

The estimated fee for private markets, inclusive of carried interest, is ~\$3,541,145 annually, which brings the total expense ratio for privates to ~53 bps. This brings the total estimated expense ratio for MWRA to ~93 bps.



# 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 6.6% for the current month.
- 4 - Preliminary Total Composite gross of fee since inception return is 8.2% for the current month.
- 5 - Targets, Allocation Index, and Policy Index have been updated to reflect new allocation of 02/01/2022.
- 6 - Policy Index changed from Nasdaq to Cambridge All PE to reflect as of 5/1/2012.
- 7 - Policy Index Consists of: 24% S&P 500, 7% Russell 2000, 12% MSCI ACWI IMI, 7% MSCI Emerging Markets, 12% Bloomberg US Aggregate TR, 8% Bloomberg US Universal TR, 6% HFRI Fund of Funds Composite Index, 12% NCREIF Property Index, 12% CIA US All PE.
- 8 - Allocation index consists of: Weighted index of underlying managers to their respective benchmark.

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Past performance is no guarantee of future results.

Returns for pooled funds, e.g. mutual funds and collective investment trusts, are collected from third parties; they are not generally calculated by NEPC. Returns for separate accounts, with some exceptions, are calculated by NEPC. Returns are reported net of manager fees unless otherwise noted.

A “since inception” return, if reported, begins with the first full month after funding, although actual inception dates (e.g. the middle of a month) and the timing of cash flows are taken into account in Composite return calculations.

NEPC’s preferred data source is the plan’s custodian bank or record-keeper. If data cannot be obtained from one of the preferred data sources, data provided by investment managers may be used. Information on market indices and security characteristics is received from additional providers. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within. In addition, some index returns displayed in this report or used in calculation of a policy index, allocation index or other custom benchmark may be preliminary and subject to change.

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Source of private fund performance benchmark data: Cambridge Associates, via Refinitiv

