

# **City of Memphis Retirement System**

## **Analysis of Investment Performance**

*Quarter Ending September 30, 2023*

**Rosemary E. Guillette**  
*Vice President*

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## Financial Market Conditions

# Quarter in Review: Global Equity Overview

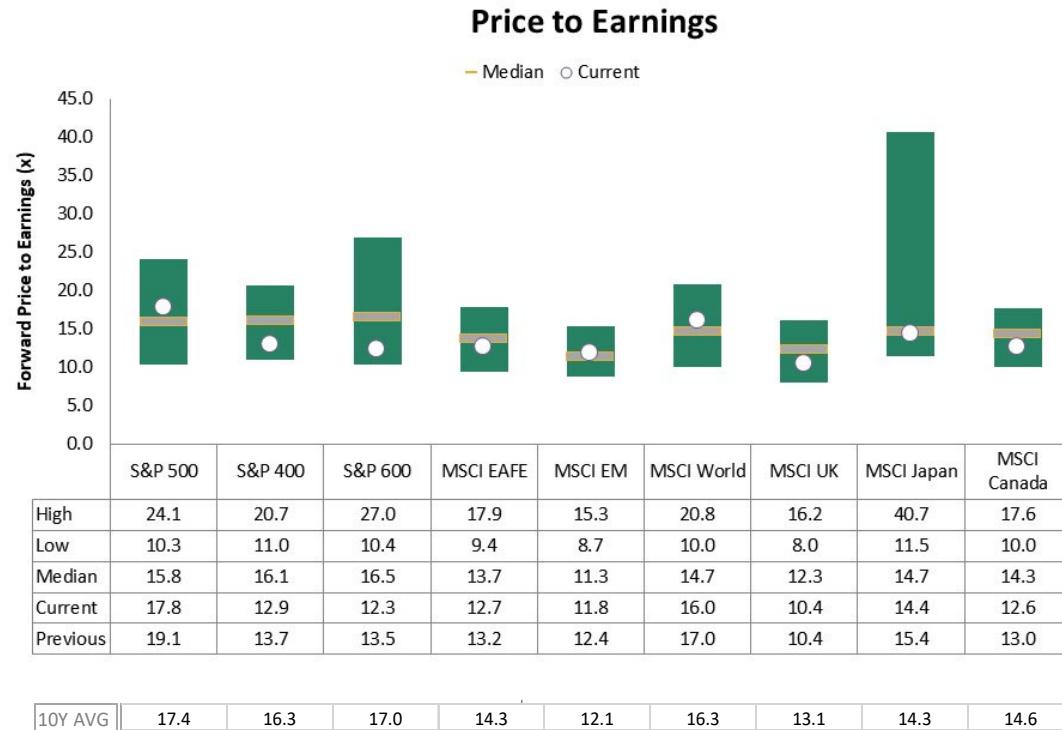
Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
S&P 500	-3.27	13.07	21.62	10.15	9.92	11.91
MSCI Europe, Australasia and Far East (EAFE)*	-4.11	7.08	25.65	5.75	3.24	3.82
MSCI Emerging Markets (EM)*	-2.93	1.82	11.70	-1.73	0.55	2.07

All data in the table are percentages.

\* Net dividends reinvested

## Global Equity Performance & Valuations

- All global equity markets posted negative returns for the quarter as the forecast of sustained higher interest rates by the U.S. Federal Reserve withered positive momentum to start the quarter.
- The U.K. and Japan both demonstrated resilience during the quarter. However, it was not enough to lift international developed markets beyond the economic worry over higher interest rates in Europe and various China concerns in Asia.
- In emerging markets, China continued to underperform as economic issues persist with property sector issues. India posted another positive quarter in what has been a relatively strong year.
- On a price-to-earnings basis, U.S. mid- and small-cap valuations are at a relative discount to their 10-year averages. International developed equities are also at relative discount to not just U.S. large caps but their own 10-year average as well



Data range is from 3/31/00-9/30/23. P/E ratios are forward 12 months.

# Quarter In Review: U.S. Equity

U.S. Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
S&P 500	-3.27	13.07	21.62	10.15	9.92	11.91
Russell 1000	-3.15	13.01	21.19	9.53	9.63	11.63
Russell 1000 Growth	-3.13	24.98	27.72	7.97	12.42	14.48
Russell 1000 Value	-3.16	1.79	14.44	11.05	6.23	8.45
Russell 2000	-5.13	2.54	8.93	7.16	2.40	6.65
Russell 2000 Growth	-7.32	5.24	9.59	1.09	1.55	6.72
Russell 2000 Value	-2.96	-0.53	7.84	13.32	2.59	6.19
Russell Midcap	-4.68	3.91	13.45	8.09	6.38	8.98
Russell 3000	-3.25	12.39	20.46	9.38	9.14	11.28

## Performance

- All U.S. equities were negative for the quarter. Investor optimism from the beginning of the quarter dwindled as the realization over sustained higher interest rates to battle inflation settled after the Federal Reserve's September meeting.
- Growth has outperformed value year-to-date. However, large cap growth and value were about level with each other during the quarter. Small cap growth lagged small cap value as growth sectors like technology declined sharply.
- Concentrated performance in the seven largest stocks of the S&P 500 paved the way for large caps to outpace mid and small caps year-to-date. This trend continued as large cap equities outperformed both mid and small caps for the quarter.
- Energy was the best sector this quarter given the recent sharp increase on gas prices. Utilities, Real Estate and Consumer Staples were among the biggest underperformers, but Technology with its concentrated weighting dragged down the broad market.

All data in the tables are percentages.

S&P 500 Sector Returns	QTD	1-Year
Consumer Discretionary	-4.80	13.77
Consumer Staples	-5.97	7.35
Energy	12.22	30.21
Financials	-1.13	11.73
Healthcare	-2.65	8.18
Industrials	-5.16	24.58
IT	-5.64	41.10
Materials	-4.76	18.05
Telecom	3.07	38.48
Real Estate	-8.90	-1.84
Utilities	-9.25	-7.02

# Quarter in Review: International Equity

MSCI International Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
World ex. U.S.	-4.10	6.73	24.00	6.07	3.44	3.84
EAFFE	-4.11	7.08	25.65	5.75	3.24	3.82
EAFFE Local Currency	-1.27	10.67	20.32	10.81	5.65	6.75
Europe	-4.96	7.96	28.85	7.23	3.96	3.83
Europe ex U.K.	-5.94	8.32	30.10	5.81	4.34	4.33
U.K.	-1.54	6.77	24.90	12.08	2.85	2.54
Japan	-1.59	11.21	25.92	2.81	2.06	4.38
Pacific ex Japan	-4.75	-4.44	10.58	4.15	1.78	2.81

All data in the tables are percentages and net dividends reinvested.

## Performance

- Developed international stocks were negative during the quarter, as high interest rates continued to impact economic growth and overall investor sentiment.
- Europe posted negative returns given concerns of consumer disposable income durability to support various sectors. U.K. equity markets rose over the quarter with positive performance in Energy and Materials, benefiting from sterling weakness against the dollar and recovery in crude oil prices.
- Japanese equities were down, but relative performance was supported by the weakening yen and strong domestic demand.
- Most sectors in the developed international markets were negative in the quarter with Technology, Utilities and Consumer Discretionary generating the most negative returns. Energy was resilient posting the highest positive return given the recent surge in oil prices. Over the last 12 months, all sectors remain positive.

MSCI EAFE Sector Returns	QTD	1-Year
Consumer Discretionary	-8.33	32.76
Consumer Staples	-7.09	9.87
Energy	11.58	34.33
Financials	0.79	33.92
Healthcare	-3.06	18.95
Industrials	-6.00	32.90
IT	-10.69	29.20
Materials	-3.15	23.66
Telecom	-3.43	14.37
Utilities	-8.83	22.54
Real Estate	-1.08	5.41

# Quarter in Review: Emerging Market Equity

MSCI EM Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Emerging Markets	-2.93	1.82	11.70	-1.73	0.55	2.07
EM Local Currency	-1.43	4.05	10.89	0.58	2.69	4.95
Asia	-2.90	0.99	11.93	-3.49	0.98	3.82
EMEA	-1.77	-0.16	5.62	-0.58	-2.72	-2.53
Latin America	-4.75	12.89	19.37	15.07	2.81	0.24

All data in the tables are percentages and net dividends reinvested.

## Performance

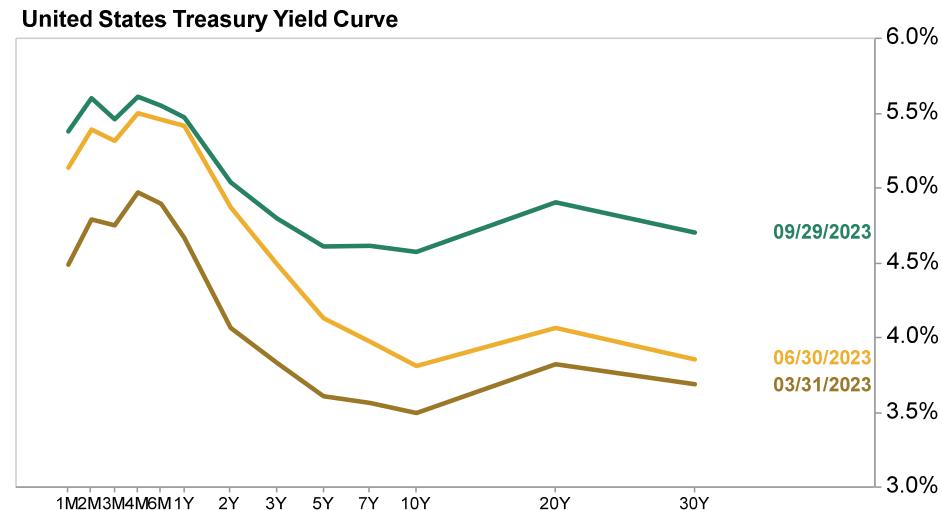
- Emerging markets (EM) were negative as investor risk appetite was impacted by continued concern of sustained high interest rates.
- Investor sentiment in Poland was volatile due to political uncertainty with the upcoming parliamentary elections, leading to large declines. Chile was also a large detractor as lithium prices dropped. China continued to underperform with ongoing weakness in the economy, especially its property sector.
- Egypt and Turkey posted the highest returns as support for central bank policy increased. Strong returns could also be found in Colombia, Hungary, Czech Republic, India, and UAE.
- Most sectors were negative for the quarter, but less volatile than counterparts in the developed markets. Energy was resilient posting the highest positive return given the recent surge in oil prices.

MSCI EM Sector Returns	QTD	1-Year
Consumer Discretionary	0.76	5.06
Consumer Staples	-4.36	4.62
Energy	6.32	23.81
Financials	-1.72	10.19
Healthcare	-0.81	4.09
Industrials	-4.63	11.50
IT	-6.80	25.78
Materials	-3.09	6.54
Telecom	-5.86	12.46
Utilities	-3.03	-5.46
Real Estate	-0.57	1.48

# Quarter In Review: Fixed Income Overview

## Yield Curve

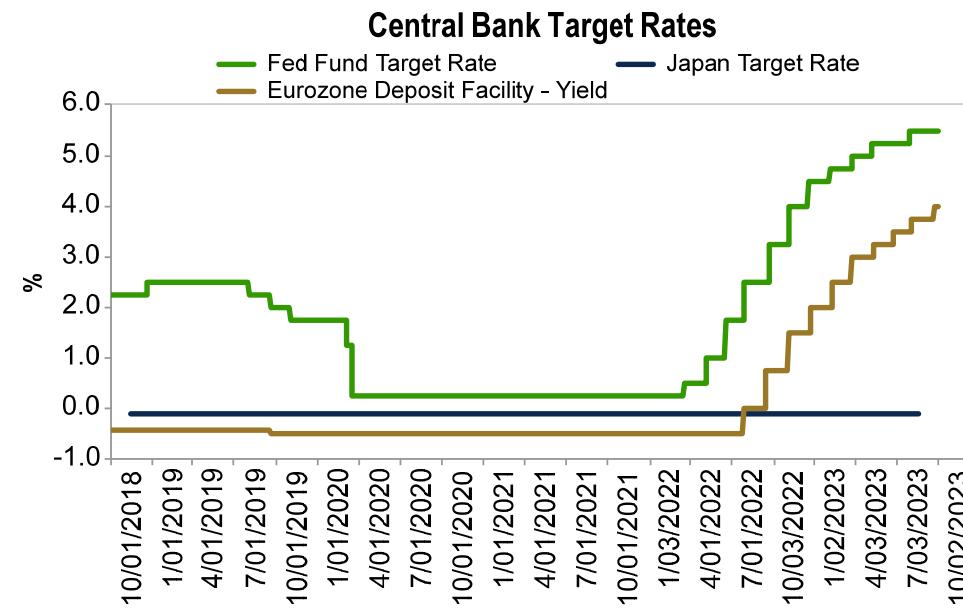
- The yield curve slightly flattened during the third quarter of 2023, with long-term rates rising faster than short-term rates. The Federal Reserve hiked rates by 25 basis points in July to the highest level in more than 22 years. The Fed also indicated that any future rate decisions will be made on meeting-by-meeting basis based on the economic data.
- Short-term yields rose the least, with the 2-year Treasury Note rising by 18 bps over the prior quarter.
- 10- and 30-year Treasury yields increased the most by 62 basis points and 68 basis points, ending the quarter at 4.57% and 4.70%, respectively.



## Monetary Policies & Global Interest Rates

- Central bank deposit rates remained negative in Japan, while rates in Europe ended the quarter at 4.50% and rates in the United Kingdom ended the quarter at 5.25%.
- The U.S. policy rate is above those of the Eurozone, the United Kingdom and Japan, at 5.50%.

Interest Rates	Fed Funds Rate	EZ Deposit Facility Rate
Average	4.95	0.90
Max	20.00	4.00
Min	0.25	-0.50



# Quarter In Review: U.S. Fixed Income

U.S. Fixed Income Indices*	QTD	YTD	1-Year	3-Year	5-Year	10-Year
U.S. Aggregate	-3.23	-1.21	0.64	-5.21	0.10	1.13
Government/Credit	-3.00	-0.85	0.93	-5.32	0.41	1.31
Government	-2.99	-1.45	-0.74	-5.73	-0.03	0.65
Investment Grade Credit	-3.09	0.02	3.65	-4.93	0.93	2.23
Investment Grade CMBS	-1.00	0.05	1.01	-3.66	0.90	1.65
U.S. Corporate High Yield	0.46	5.86	10.28	1.76	2.96	4.24
FTSE** 3-Month T-Bill	1.38	3.80	4.71	1.78	1.74	1.12
Hueler Stable Value	0.55	1.87	1.87	1.96	2.13	1.97

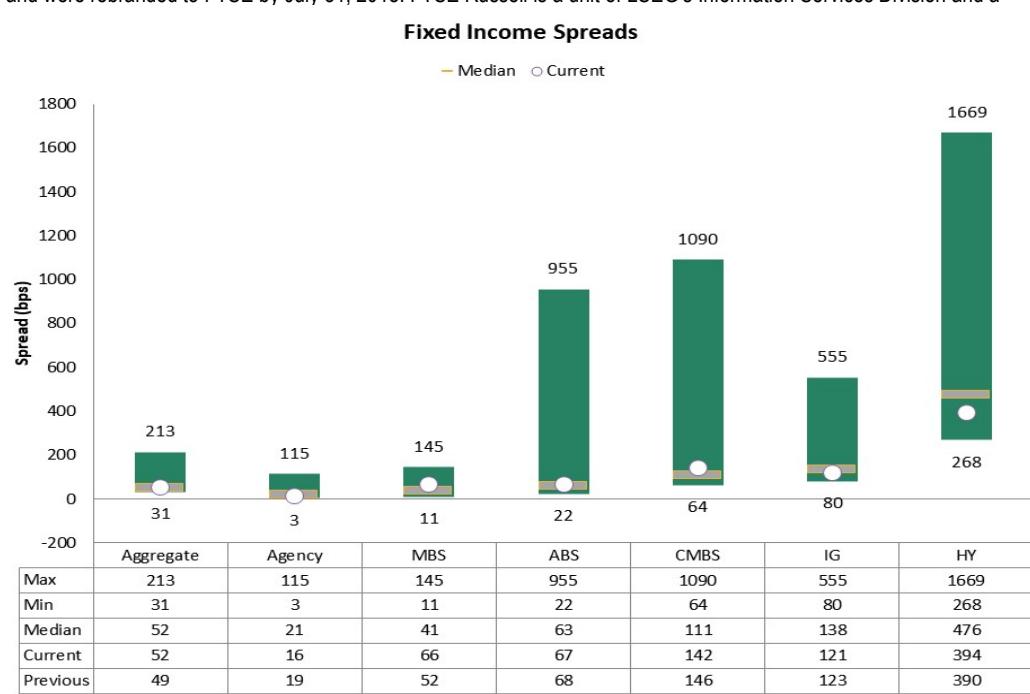
\* Bloomberg Indices, unless otherwise noted.

\*\* Formerly Citigroup. Citigroup's fixed income indices were purchased by London Stock Exchange Group (LSEG) and were rebranded to FTSE by July 31, 2018. FTSE Russell is a unit of LSEG's Information Services Division and a wholly owned subsidiary of LSEG.

All data in the table are percentages.

## Performance & Spreads

- The U.S. Aggregate Index was negative this quarter. Sector returns were mostly negative with only the high yield sector and cash delivering positive quarterly returns.
- The 3-Month T-Bill had the strongest performance for the quarter. The U.S. Aggregate Index experienced the weakest performance in the quarter.
- For the quarter, U.S. Aggregate, MBS, and High Yield spreads widened while the spreads on Agency, ABS, CMBS, and IG Credit narrowed. The largest change was in MBS with a spread increasing by 14 basis points.



# Quarter In Review: International Fixed Income

Global Fixed Income Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Bloomberg Global Aggregate	-3.59	-2.21	2.24	-6.93	-1.62	-0.44
Bloomberg Global Aggregate (Hgd)	-1.82	1.09	2.10	-3.71	0.57	1.84
FTSE Non-U.S. WGBI*	-5.16	-3.71	2.55	-10.77	-4.34	-2.31
FTSE Non-U.S. WGBI (Hgd)	-1.81	1.95	0.98	-4.43	0.01	1.98
JPM EMBI Global Diversified**	-2.23	1.76	10.01	-4.56	-0.35	2.47
JPM GBI-EM Global Diversified***	-3.26	4.28	13.10	-2.70	-0.00	-0.84

All data in the table are percentages.

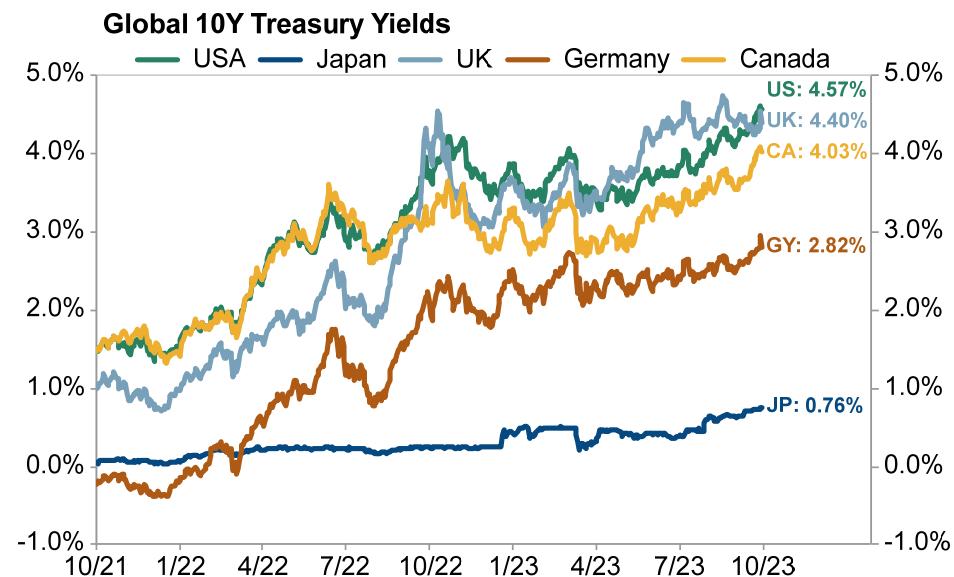
\* Formerly Citigroup. The FTSE Non-U.S. World Government Bond Index (WGBI) measures the performance of fixed-rate, local currency, investment grade sovereign bonds excluding the U.S.

\*\* The JP Morgan Emerging Market Bond Index (EMBI) Global Diversified index measures government bonds in hard currencies.

\*\*\* The JP Morgan Government Bond Index – Emerging Markets (GBI-EM) Global Diversified index measures government bonds in local currencies.

## Global Performance & Yields

- Yields rose in most developed markets during the quarter. The ECB was more aggressive with interest rate hikes compared to both the U.S. and UK. The Bank of England increased rates in August by 25 basis points. The ECB increased rates twice during the quarter by 25 basis points each time as inflation remains the main concern in Europe.
- Above target inflation continues to be the main driving force behind rate increases by the global central banks.
- The U.S. dollar appreciated relative to the yen, British pound and Euro.
- Global returns and emerging markets debt returns were negative for the quarter.



## Total Fund Composite

# City of Memphis

## Asset Allocation Comparison as of September 30, 2023

\$2,357,146

<b>Target Allocations</b>		<b>Current Managers &amp; Allocations</b>			<b>Difference</b>		<b>Range</b>
<b>Equity</b>							
Large Cap Equity	20.00%	\$471,429	Barrow, Hanley (large cap value) Rhumbline Russell 1000 Growth (large cap growth) Winslow (large cap growth) Rhumbline S&P 500 (large cap core)	6.15% 3.78% 3.59% 8.49%	\$144,921 \$89,150 \$84,588 \$200,057	<b>2.01%</b>	<b>15%-25%</b>
Mid/SMID Cap Equity	4.00%	\$94,286	Northern Trust (mid cap core) Capital Prospects SMID Cap*	2.23% 2.29%	\$52,615 \$54,017	<b>0.52%</b>	<b>0%-7%</b>
Small Cap Equity	4.00%	\$94,286	Capital Prospects Small Cap Value* Conestoga (small cap growth) Nicholas (small cap growth)	2.64% 1.22% 0.98%	\$62,264 \$28,727 \$23,147	<b>0.84%</b>	<b>0%-7%</b>
<b>Domestic Equity</b>	<b>28.00%</b>	<b>\$660,001</b>	<b>Domestic Equity</b>	<b>31.37%</b>	<b>\$739,486</b>	<b>3.37%</b>	<b>18%-38%</b>
Developed International	15.00%	\$353,572	1607 Capital Partners Principal Global Investors Marathon Asset Mgmt Strategic Global Advisors	4.38% 4.17% 4.48% 2.65%	\$103,291 \$98,382 \$105,537 \$62,431	<b>0.68%</b>	<b>10%-20%</b>
Emerging Markets	7.00%	\$165,000	Acadian JPMorgan	3.78% 3.25%	\$89,042 \$76,514	<b>0.02%</b>	<b>5%-12%</b>
<b>International</b>	<b>22.00%</b>	<b>\$518,572</b>	<b>International</b>	<b>22.71%</b>	<b>\$535,196</b>	<b>0.71%</b>	<b>15%-30%</b>
<b>Equity Total</b>	<b>50.00%</b>	<b>\$1,178,573</b>	<b>Equity Total</b>	<b>54.08%</b>	<b>\$1,274,681</b>	<b>4.08%</b>	
<b>Fixed Income</b>							
Core Fixed Income	13.00%	\$306,429	PIMCO Prudential Core Conserv Bond Barrow Hanley High Quality Core Garcia Hamilton Aggregate	3.87% 3.71% 1.29% 2.99%	\$91,218 \$87,402 \$30,495 \$70,371	<b>-1.14%</b>	<b>8%-18%</b>
Global Fixed Income	8.00%	\$188,572	Brandywine	7.76%	\$182,874	<b>-0.24%</b>	<b>3%-13%</b>
Global High Yield	5.00%	\$117,857	Mackay Shields	5.23%	\$123,329	<b>0.23%</b>	<b>2%-10%</b>
<b>Fixed Income Total</b>	<b>26.00%</b>	<b>\$612,858</b>	<b>Fixed Income Total</b>	<b>24.85%</b>	<b>\$585,688</b>	<b>-1.15%</b>	<b>18%-34%</b>

\* Emerging Managers

Target Allocations		Current Managers & Allocations			Difference		Range
<u>Real Estate</u>							
Core/Value Add/REITs	10.00%	\$235,715	BlackRock US Core Property Fund RREEF REIT II Vanguard REIT Index TA Realty Core Property Fund	2.87% 0.77% 0.13% 1.30%	\$67,764 \$18,159 \$3,041 \$30,547		
			Cornerstone (Barings) Real Estate Fund X <sup>1</sup> Dune Real Estate Partners Fund IV Green Cities III Green Cities IV Green Cities V Long Wharf Real Estate Partners IV Long Wharf Real Estate Partners Fund V Long Wharf Real Estate Partners Fund VI Long Wharf Real Estate Partners Fund VII Mesirow Financial Real Estate Value Fund III TA Realty Fund XI	0.00% 1.08% 0.43% 0.77% 0.00% 0.01% 0.50% 0.58% 0.08% 1.15% 0.15%	\$48 (Total Commitment \$10M, Total Drawn \$8.4M, Total Distributed \$11.6M) \$25,375 (Total Commitment \$30M, Total Drawn \$23.9M, Total Distributed \$1.5M) \$10,187 (Total Commitment \$20M, Total Drawn \$24.0M, Total Distributed \$10.7M) \$18,189 (Total Commitment \$20M, Total Drawn \$19.5, Total Distributed \$1.1M) \$18 (Total Commitment \$20M, Total Drawn \$0.2, Total Distributed \$0.0M) \$237 (Total Commitment \$20M, Total Drawn \$21.5M, Total Distributed \$29.6M) \$11,688 (Total Commitment \$20M, Total Drawn \$20.0M, Total Distributed \$14.9M) \$13,643 (Total Commitment \$20M, Total Drawn \$21.0M, Total Distributed \$11.8M) \$1,961 (Total Commitment \$20M, Total Drawn \$2.4M, Total Distributed \$0.0M) \$27,148 (Total Commitment \$20M, Total Drawn \$22.4M, Total Distributed \$7.9M) \$3,510 (Total Commitment \$20M, Total Drawn \$20.0M, Total Distributed \$28.8M)		
			<i>TA Realty Fund XIII (\$30M Commitment)</i>				
<b>Real Estate Total</b>	<b>10.00%</b>	<b>\$235,715</b>	<b>Real Estate Total</b>	<b>9.82%</b>	<b>\$231,516</b>	<b>-0.18%</b>	<b>5%-15%</b>
<u>Private Equity</u>							
Private Equity	5.00%	\$117,857	Neuberger Berman Crossroads XXI Neuberger Berman Crossroads XXIV Pantheon Global Secondary Fund V Siguler Guff Small Buyout Opportunities Fund V SSM Growth Equity Fund II* SSM Growth Equity Fund III*	2.38% 0.15% 1.29% 0.26% 0.34% 0.78%	\$56,217 (Total Commitment \$50M, Total Drawn \$36.5M, Total Distributed \$28.4M) \$3,596 (Total Commitment \$40M, Total Drawn \$3.6M, Total Distributed \$0.0M) \$30,403 (Total Commitment \$50M, Total Drawn \$39.7M, Total Distributed \$33.0M) \$6,229 (Total Commitment \$20M, Total Drawn \$5.7M, Total Distributed \$0.2M) \$7,956 (Total Commitment \$10M, Total Drawn \$9.5, Total Distributed \$5.3M) \$18,445 (Total Commitment \$10M, Total Drawn \$14.7, Total Distributed \$0.9M)		
<b>Private Equity Total</b>	<b>5.00%</b>	<b>\$117,857</b>		<b>5.21%</b>	<b>\$122,846</b>	<b>0.21%</b>	<b>3%-7%</b>
<u>Private Credit</u>							
	5.00%		Brightwood Capital Fund V Churchill Middle Market Senior Loan Fund III Neuberger Berman Private Debt Fund IV	0.20% 0.30% 0.77%	\$4,745 (Total Commitment \$10M, Total Drawn \$4.0, Total Distributed \$0.1M) \$7,178 (Total Commitment \$10M, Total Drawn \$12.5, Total Distributed \$6.1M) \$18,265 (Total Commitment \$30M, Total Drawn \$18.2, Total Distributed \$3.1M)		
<b>Private Credit Total</b>	<b>5.00%</b>	<b>\$117,857</b>		<b>1.28%</b>	<b>\$30,188</b>	<b>-3.72%</b>	<b>3%-7%</b>
<u>Hedge Fund of Funds</u>							
	4.00%		Aetos Grosvenor Preserver, LP*	2.00% 2.08% 0.22%	\$47,166 \$48,974 \$5,074		
<b>Hedge Fund of Funds Total</b>	<b>4.00%</b>	<b>\$94,286</b>		<b>4.29%</b>	<b>\$101,214</b>	<b>0.29%</b>	<b>2%-6%</b>
Internal Account	0.00%	\$0	Internal Account	0.47%	\$11,013		
<b>Cash</b>	<b>0.00%</b>	<b>\$0</b>	<b>Cash</b>	<b>0.47%</b>	<b>\$11,013</b>	<b>0.47%</b>	<b>0%-5%</b>
<b>Total</b>	<b>100%</b>	<b>\$2,357,146</b>	<b>Total</b>	<b>100%</b>	<b>\$2,357,146</b>		

<sup>1</sup> Cornerstone Real Estate Advisers now operates under the investment adviser name "Barings Real Estate Advisers," however, all predecessor funds retain the name Cornerstone. All new products open to new investors will operate under the name "Barings Real Estate Advisers"

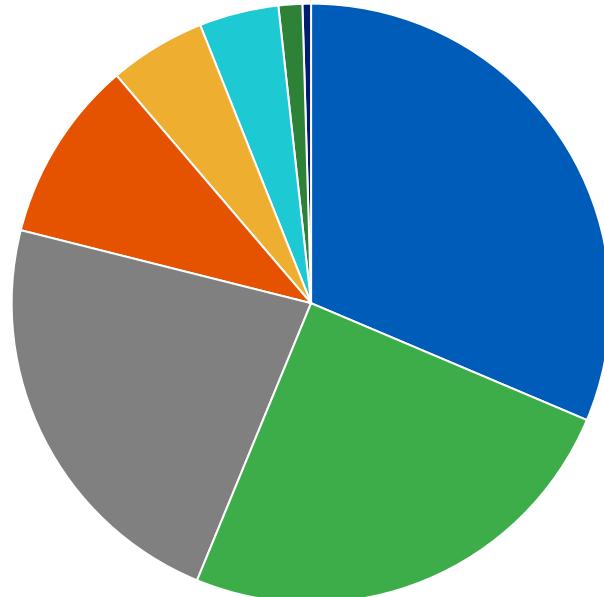
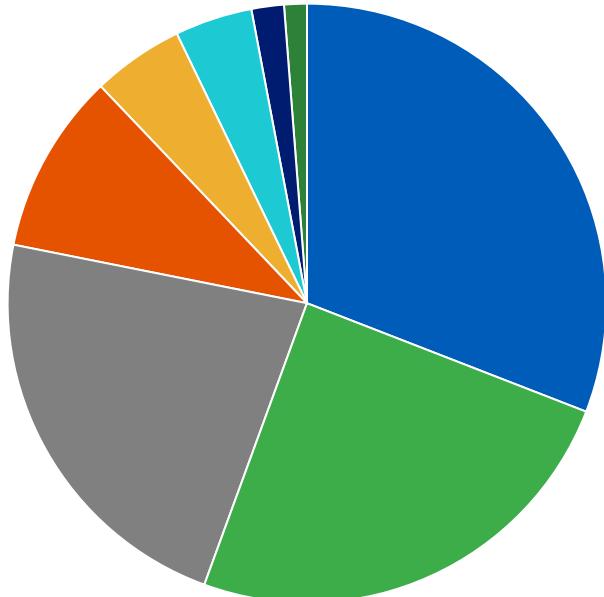
# City of Memphis Retirement System

## Asset Allocation Chart

As of September 30, 2023

June 30, 2023 : \$2,468,216,555.6

September 30, 2023 : \$2,357,145,853.1



	Market Value (\$)	Allocation (%)
■ Domestic Equity Composite	762,588,475	30.9
■ Fixed Income Composite	609,091,735	24.7
■ International Equity Composite	556,831,834	22.6
■ Total Real Estate Composite	240,861,871	9.8
■ Private Equity Composite	122,016,603	4.9
■ Hedge Fund Composite	103,101,454	4.2
■ In House Cash	43,322,653	1.8
■ Private Debt Composite	30,401,931	1.2

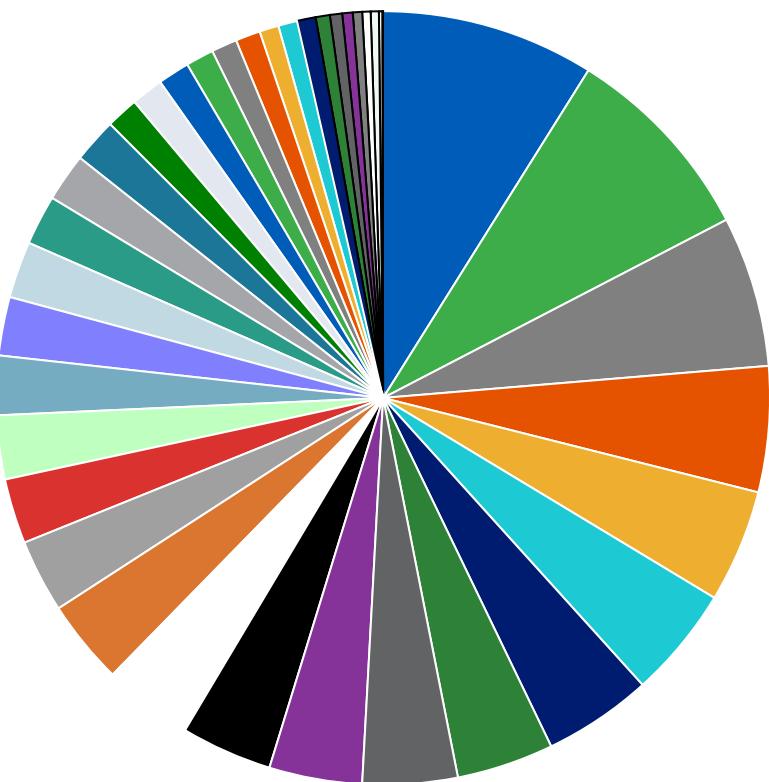
	Market Value (\$)	Allocation (%)
■ Domestic Equity Composite	739,485,571	31.4
■ Fixed Income Composite	585,687,912	24.8
■ International Equity Composite	535,195,817	22.7
■ Total Real Estate Composite	231,515,872	9.8
■ Private Equity Composite	122,846,311	5.2
■ Hedge Fund Composite	101,214,107	4.3
■ Private Debt Composite	30,187,593	1.3
■ In House Cash	11,012,671	0.5

# City of Memphis Retirement System

## Asset Allocation Chart

As of September 30, 2023

June 30, 2023 : \$2,322,999,964.3



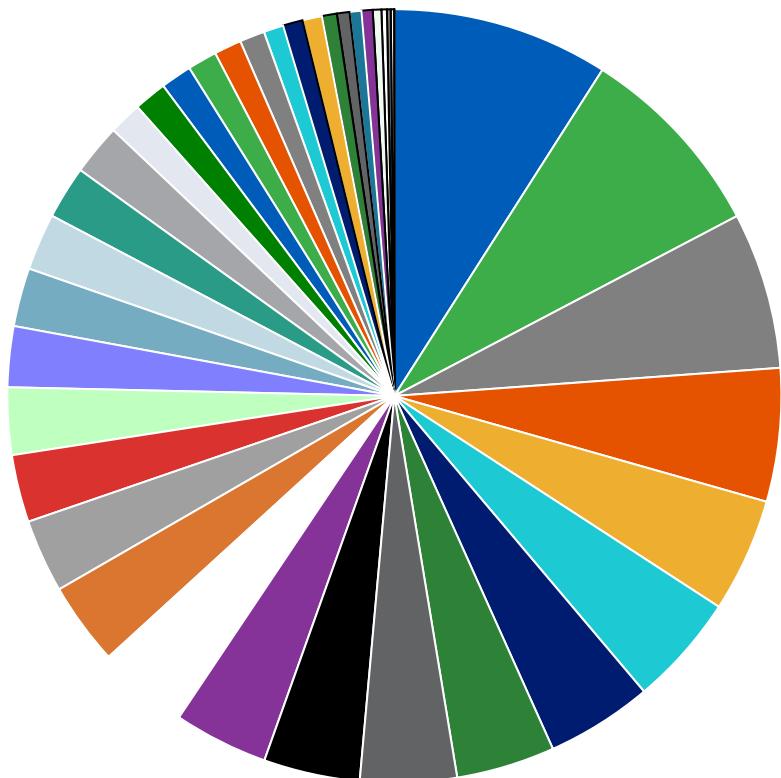
	Market Value (\$)	Allocation (%)
Rhumbline S&P 500	206,832,135	8.9
Brandywine	196,826,049	8.5
Barrow, Hanley	146,256,286	6.3
Mackay Shields	121,996,050	5.3
Marathon Asset Mgmt	109,559,559	4.7
1607 Capital Partners	108,274,582	4.7
Principal Global Investors	105,578,499	4.5
PIMCO	94,208,335	4.1
Rhumbline Russell 1000 Growth	92,028,341	4.0
Prudential Core Conserv Bond	90,307,631	3.9
Acadian EM Equity II	88,456,319	3.8
Winslow Capital Management	87,414,433	3.8
J.P. Morgan Global Emerging Markets Discovery Fund	81,834,912	3.5
BlackRock US Core Property Fund	70,977,248	3.1
Strategic Global Advisors	63,127,964	2.7
Capital Prospects Small Cap Value	61,912,261	2.7
Capital Prospects SMID	57,589,632	2.5
Neuberger Berman Crossroads Fund XXI	56,779,870	2.4
NTGI S&P 400	54,919,464	2.4
Grosvenor Institutional Partners, L.P.	48,300,153	2.1
Aetos	46,775,925	2.0
In House Cash	43,322,653	1.9
Pantheon Global Secondary Fund V	31,403,029	1.4
TA Realty Core Property Fund	31,099,922	1.3
Conestoga Capital Advisors	30,763,956	1.3
Mesirow Real Estate Value Fund III, L.P.	27,295,902	1.2
Nicholas Investment Partners	24,871,967	1.1
Dune Real Estate Fund IV	24,070,766	1.0
RREEF REIT II	18,755,315	0.8
SSM Partners Growth Equity III, LP	18,445,180	0.8
Green Cities IV, L.P.	18,016,117	0.8
Long Wharf RE Partners VI, L.P.	13,810,106	0.6
Long Wharf RE Partners V, L.P.	11,834,668	0.5
Green Cities III, L.P.	10,187,485	0.4
TA Realty Fund XI	9,117,076	0.4
Preserver, L.P.	8,025,376	0.3
SSM Partners Growth Equity II L.P.	7,955,861	0.3
Vanguard REIT Index Inv	3,323,306	0.1
Long Wharf Real Estate Partners IV, L.P.	697,352	0.0
Cornerstone (Barings) Real Estate Advisers Fund X	48,280	0.0
Smith Graham	0.0	0.0

# City of Memphis Retirement System

## Asset Allocation Chart

As of September 30, 2023

September 30, 2023 : \$2,214,288,153.5



	Market Value (\$)	Allocation (%)
Rhumbline S&P 500	200,057,302	9.0
Brandywine	182,873,518	8.3
Barrow, Hanley	144,921,106	6.5
Mackay Shields	123,328,920	5.6
Marathon Asset Mgmt	105,536,854	4.8
1607 Capital Partners	103,290,929	4.7
Principal Global Investors	98,381,660	4.4
PIMCO	91,217,586	4.1
Rhumbline Russell 1000 Growth	89,149,560	4.0
Acadian EM Equity II	89,041,539	4.0
Prudential Core Conserv Bond	87,401,799	3.9
Winslow Capital Management	84,588,391	3.8
J.P. Morgan Global Emerging Markets Discovery Fund	76,513,856	3.5
BlackRock US Core Property Fund	67,764,114	3.1
Strategic Global Advisors	62,430,978	2.8
Capital Prospects Small Cap Value	62,264,063	2.8
Neuberger Berman Crossroads Fund XXI	56,217,448	2.5
Capital Prospects SMID	54,016,794	2.4
NTGI S&P 400	52,615,090	2.4
Grosvenor Institutional Partners, L.P.	48,973,896	2.2
Aetos	47,165,909	2.1
TA Realty Core Property Fund	30,547,484	1.4
Pantheon Global Secondary Fund V	30,403,029	1.4
Conestoga Capital Advisors	28,726,604	1.3
Mesirow Real Estate Value Fund III, L.P.	27,147,546	1.2
Dune Real Estate Fund IV	25,374,632	1.1
Nicholas Investment Partners	23,146,662	1.0
SSM Partners Growth Equity III, L.P.	18,445,180	0.8
Green Cities IV, L.P.	18,189,244	0.8
RREEF REIT II	18,158,980	0.8
Long Wharf RE Partners VI, L.P.	13,643,138	0.6
Long Wharf RE Partners V, L.P.	11,688,061	0.5
In House Cash	11,012,671	0.5
Green Cities III, L.P.	10,187,485	0.5
SSM Partners Growth Equity II L.P.	7,955,861	0.4
Preserver, L.P.	5,074,303	0.2
TA Realty Fund XI	3,509,713	0.2
Vanguard REIT Index Inv	3,040,624	0.1
Long Wharf Real Estate Partners IV, L.P.	237,345	0.0
Cornerstone (Barings) Real Estate Advisers Fund X	48,280	0.0
Smith Graham	0	0.0

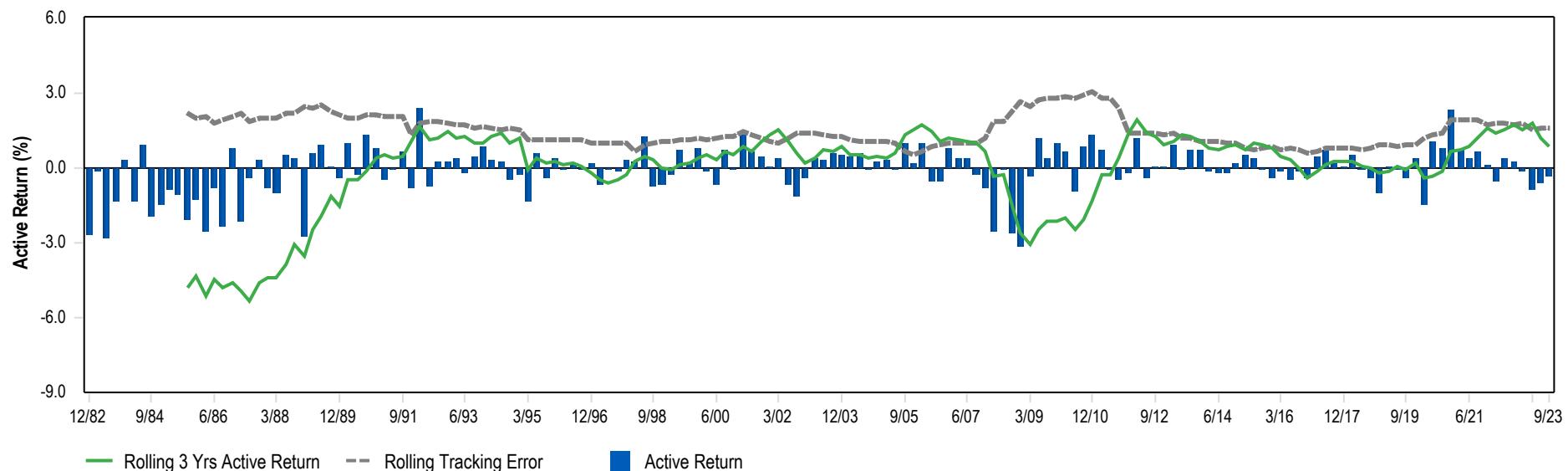
# City of Memphis

## Total Fund Composite

As of September 30, 2023

	Gain / Loss							
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	
Total Fund Composite								
Beginning Market Value	2,468,216,556	2,373,704,216	2,248,109,878	2,362,156,829	2,377,498,393	2,155,937,449	2,115,935,965	
Net Cash Flows	-40,259,636	-110,885,603	-145,941,069	-385,266,884	-658,600,375	-888,036,818	-1,237,267,987	
Income	8,551,724	26,732,008	35,085,476	95,607,925	165,677,951	231,380,656	348,830,967	
Gain/Loss	-79,362,791	67,595,233	219,891,567	284,647,984	472,569,884	857,864,567	1,129,646,908	
Ending Market Value	2,357,145,853	2,357,145,853	2,357,145,853	2,357,145,853	2,357,145,853	2,357,145,853	2,357,145,853	

## Rolling Return and Tracking Error



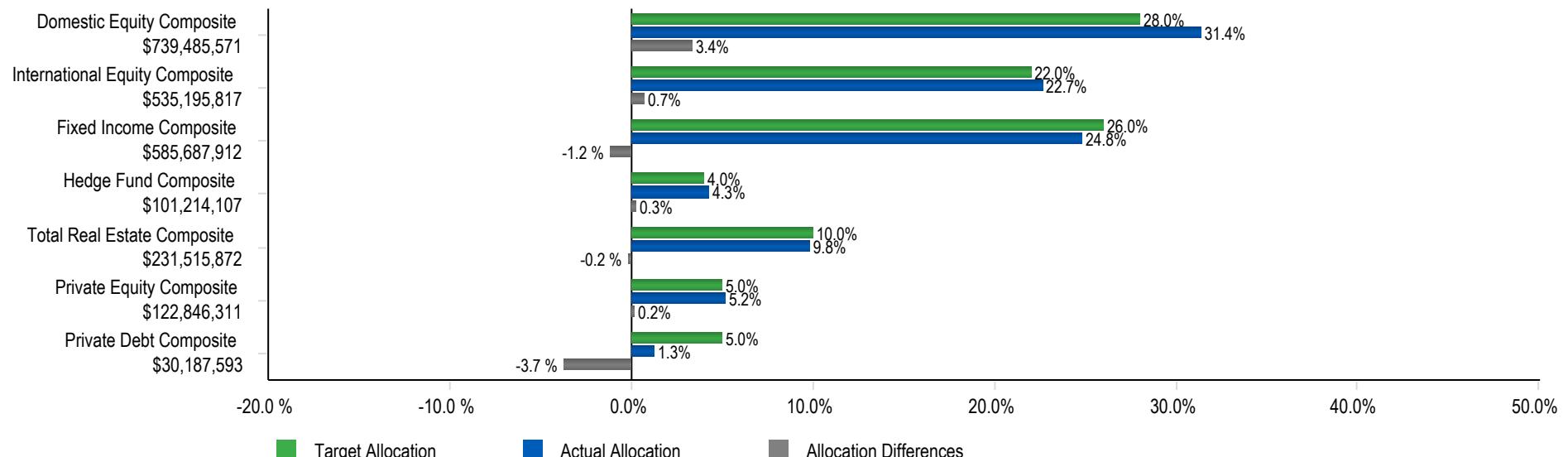
## Performance

	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Total Fund Composite	-2.9	3.9	10.6	4.9	5.2	6.7	6.5
Policy Index	-2.6	5.8	12.7	4.1	5.0	6.3	6.2
Difference	-0.3	-1.9	-2.1	0.8	0.2	0.4	0.3

# City of Memphis

## Total Fund Composite

As of September 30, 2023



	Asset Allocation (\$)	Asset Allocation (%)	Target Allocation (%)	Differences (%)	Minimum Allocation (%)	Maximum Allocation (%)
<b>Total Fund Composite</b>	<b>2,357,145,853</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	-	-
Domestic Equity Composite	739,485,571	31.37	28.00	3.37	18.00	38.00
International Equity Composite	535,195,817	22.71	22.00	0.71	15.00	30.00
Fixed Income Composite	585,687,912	24.85	26.00	-1.15	18.00	34.00
Hedge Fund Composite	101,214,107	4.29	4.00	0.29	2.00	6.00
Total Real Estate Composite	231,515,872	9.82	10.00	-0.18	5.00	15.00
Private Equity Composite	122,846,311	5.21	5.00	0.21	3.00	7.00
Private Debt Composite	30,187,593	1.28	5.00	-3.72	3.00	7.00

**City of Memphis  
Asset Allocation**

**As of September 30, 2023**

	Total Fund (\$)	%
Total Fund Composite	2,357,145,853	100.0
In House Cash	11,012,671	0.5
<b>Domestic Equity Composite</b>	<b>739,485,571</b>	<b>31.4</b>
Barrow, Hanley	144,921,106	6.1
Rhumbline S&P 500	200,057,302	8.5
Rhumbline Russell 1000 Growth	89,149,560	3.8
NTGI S&P 400	52,615,090	2.2
Winslow Capital Management	84,588,391	3.6
Nicholas Investment Partners	23,146,662	1.0
Conestoga Capital Advisors	28,726,604	1.2
Capital Prospects SMID	54,016,794	2.3
Capital Prospects Small Cap Value	62,264,063	2.6
<b>Fixed Income Composite</b>	<b>585,687,912</b>	<b>24.8</b>
Mackay Shields	123,328,920	5.2
PIMCO	91,217,586	3.9
Barrow Hanley High Quality Core	30,495,060	1.3
Garcia Hamilton Aggregate	70,371,028	3.0
Prudential Core Conserv Bond	87,401,799	3.7
Brandywine	182,873,518	7.8
<b>International Equity Composite</b>	<b>535,195,817</b>	<b>22.7</b>
1607 Capital Partners	103,290,929	4.4
Marathon Asset Mgmt	105,536,854	4.5
Principal Global Investors	98,381,660	4.2
Acadian EM Equity II	89,041,539	3.8
Strategic Global Advisors	62,430,978	2.6
J.P. Morgan Global Emerging Markets Discovery Fund	76,513,856	3.2
<b>Hedge Fund Composite</b>	<b>101,214,107</b>	<b>4.3</b>
Grosvenor Institutional Partners, L.P.	48,973,896	2.1
Aetos	47,165,909	2.0
Preserver, L.P.	5,074,303	0.2
<b>Total Real Estate Composite</b>	<b>231,515,872</b>	<b>9.8</b>

	Total Fund (\$)	%
<b>Core Private Real Estate Composite</b>	<b>119,511,203</b>	<b>5.1</b>
BlackRock US Core Property Fund	67,764,114	2.9
TA Realty Core Property Fund	30,547,484	1.3
RREEF REIT II	18,158,980	0.8
Vanguard REIT Index Inv	3,040,624	0.1
<b>Private Real Estate Composite</b>	<b>112,004,669</b>	<b>4.8</b>
Cornerstone (Barings) Real Estate Advisers Fund X	48,280	0.0
Dune Real Estate Fund IV	25,374,632	1.1
Green Cities III, L.P.	10,187,485	0.4
Green Cities IV, L.P.	18,189,244	0.8
Green Cities V, L.P.	18,214	0.0
Long Wharf Real Estate Partners IV, L.P.	237,345	0.0
Long Wharf RE Partners V, L.P.	11,688,061	0.5
Long Wharf RE Partners VI, L.P.	13,643,138	0.6
Long Wharf RE Partners VII, L.P.	1,961,011	0.1
Mesirow Real Estate Value Fund III, L.P.	27,147,546	1.2
TA Realty Fund XI	3,509,713	0.1
<b>Private Equity Composite</b>	<b>122,846,311</b>	<b>5.2</b>
Neuberger Berman Crossroads Fund XXI	56,217,448	2.4
Neuberger Berman Crossroads Fund XXIV	3,595,643	0.2
Pantheon Global Secondary Fund V	30,403,029	1.3
Siguler Guff Small Buyout Opportunities Fund V	6,229,150	0.3
SSM Partners Growth Equity II L.P.	7,955,861	0.3
SSM Partners Growth Equity III, LP	18,445,180	0.8
<b>Private Debt Composite</b>	<b>30,187,593</b>	<b>1.3</b>
Brightwood Capital Fund V	4,745,350	0.2
Churchill Middle Market Senior Loan Fund III	7,177,554	0.3
Neuberger Berman Private Debt Fund IV	18,264,689	0.8

City of Memphis

Comparative Performance

As of September 30, 2023

	<u>Performance (%)</u>								
	<u>1 Quarter</u>	<u>Year To Date</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>7 Years</u>	<u>10 Years</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Total Fund Composite</b>	<b>-2.91</b>	<b>3.93</b>	<b>10.58</b>	<b>4.93</b>	<b>5.24</b>	<b>6.65</b>	<b>6.50</b>	<b>9.06</b>	<b>10/01/1982</b>
Policy Index	-2.58	5.76	12.68	4.11	4.97	6.29	6.24	9.39	
In House Cash	1.25	3.66	4.59	1.71	1.62	1.46	1.08	3.87	10/01/1982
90 Day U.S. Treasury Bill	1.31	3.60	4.47	1.70	1.72	1.54	1.10	3.64	
<b>Domestic Equity Composite</b>	<b>-3.03</b>	<b>10.72</b>	<b>20.51</b>	<b>10.64</b>	<b>8.89</b>	<b>11.78</b>	<b>10.61</b>	<b>11.74</b>	<b>10/01/1982</b>
Russell 3000 Index	-3.25	12.39	20.46	9.38	9.14	11.64	11.28	11.54	
Domestic Equity Index	-3.87	10.12	18.19	9.17	7.80	10.62	10.47	N/A	
<b>Fixed Income Composite</b>	<b>-3.84</b>	<b>-1.25</b>	<b>3.01</b>	<b>-3.19</b>	<b>0.74</b>	<b>1.05</b>	<b>2.06</b>	<b>6.64</b>	<b>10/01/1982</b>
Fixed Income Index	-2.59	-0.02	3.23	-4.30	0.08	0.21	1.43	6.47	
<b>International Equity Composite</b>	<b>-3.85</b>	<b>6.47</b>	<b>21.62</b>	<b>3.11</b>	<b>3.72</b>	<b>5.92</b>	<b>5.09</b>	<b>5.10</b>	<b>01/01/1990</b>
International Equity Index	-3.72	5.43	21.19	3.48	2.50	4.74	3.42	4.81	
<b>Hedge Fund Composite</b>	<b>1.17</b>	<b>5.22</b>	<b>7.51</b>	<b>5.46</b>	<b>4.60</b>	<b>4.92</b>	<b>N/A</b>	<b>5.28</b>	<b>04/01/2016</b>
90-Day T-Bill+ 5%	2.56	7.46	9.70	6.79	6.80	6.62	6.16	6.53	
HFRI FOF: Conservative Index	1.50	3.51	5.02	5.67	4.07	4.09	3.50	4.14	
<b>Core Private Real Estate Composite</b>	<b>-3.18</b>	<b>-9.14</b>	<b>-12.72</b>	<b>6.98</b>	<b>6.12</b>	<b>6.29</b>	<b>8.42</b>	<b>7.93</b>	<b>09/01/1999</b>
NCREIF Property Index	-1.37	-5.07	-8.40	6.04	5.26	5.76	7.40	8.26	

Gross of Fees.

City of Memphis

Comparative Performance

As of September 30, 2023

	<u>Performance (%)</u>									
	<u>2022</u>	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>	<u>2013</u>
<b>Total Fund Composite</b>	<b>-12.92</b>	<b>13.57</b>	<b>15.06</b>	<b>18.86</b>	<b>-5.39</b>	<b>18.36</b>	<b>6.76</b>	<b>0.24</b>	<b>5.49</b>	<b>17.71</b>
Policy Index	-12.94	11.35	12.73	18.81	-4.51	16.68	8.04	-0.19	5.86	15.19
<b>In House Cash</b>	<b>1.50</b>	<b>0.04</b>	<b>0.26</b>	<b>2.12</b>	<b>1.93</b>	<b>0.67</b>	<b>0.35</b>	<b>0.18</b>	<b>0.11</b>	<b>0.11</b>
90 Day U.S. Treasury Bill	1.46	0.05	0.67	2.28	1.87	0.86	0.25	0.03	0.04	0.05
<b>Domestic Equity Composite</b>	<b>-17.48</b>	<b>25.47</b>	<b>22.41</b>	<b>30.07</b>	<b>-5.88</b>	<b>22.62</b>	<b>10.04</b>	<b>-1.26</b>	<b>8.80</b>	<b>35.55</b>
Russell 3000 Index	-19.21	25.66	20.89	31.02	-5.24	21.13	12.74	0.48	12.56	33.55
Domestic Equity Index	-18.82	23.52	20.08	29.94	-6.47	20.20	13.76	0.19	11.60	34.04
<b>Fixed Income Composite</b>	<b>-11.71</b>	<b>-0.36</b>	<b>9.51</b>	<b>9.88</b>	<b>-0.98</b>	<b>6.94</b>	<b>5.14</b>	<b>-0.23</b>	<b>4.70</b>	<b>0.13</b>
Fixed Income Index	-13.63	-1.25	7.78	9.24	-0.91	5.50	4.83	-0.86	4.89	0.39
<b>International Equity Composite</b>	<b>-20.51</b>	<b>9.15</b>	<b>17.83</b>	<b>24.67</b>	<b>-15.52</b>	<b>33.29</b>	<b>3.30</b>	<b>-0.50</b>	<b>-1.08</b>	<b>20.79</b>
International Equity Index	-16.14	6.88	11.18	20.94	-13.98	28.77	3.16	-4.06	-4.13	16.58
<b>Hedge Fund Composite</b>	<b>-3.41</b>	<b>7.59</b>	<b>11.20</b>	<b>7.95</b>	<b>-1.55</b>	<b>6.72</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
90-Day T-Bill+ 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index	0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
<b>Core Private Real Estate Composite</b>	<b>5.06</b>	<b>25.04</b>	<b>2.55</b>	<b>10.16</b>	<b>4.91</b>	<b>7.75</b>	<b>8.50</b>	<b>11.92</b>	<b>20.06</b>	<b>7.12</b>
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98

Gross of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
<b>Total Fund Composite</b>	<b>-2.91</b>	<b>3.93</b>	<b>10.58</b>	<b>4.93</b>	<b>5.24</b>	<b>6.65</b>	<b>6.50</b>	<b>9.06</b>	<b>10/01/1982</b>
Policy Index	-2.58	5.76	12.68	4.11	4.97	6.29	6.24	9.39	
In House Cash	1.25	3.66	4.59	1.71	1.62	1.46	1.08	3.87	10/01/1982
90 Day U.S. Treasury Bill	1.31	3.60	4.47	1.70	1.72	1.54	1.10	3.64	
<b>Domestic Equity Composite</b>	<b>-3.03</b>	<b>10.72</b>	<b>20.51</b>	<b>10.64</b>	<b>8.89</b>	<b>11.78</b>	<b>10.61</b>	<b>11.74</b>	<b>10/01/1982</b>
Russell 3000 Index	-3.25	12.39	20.46	9.38	9.14	11.64	11.28	11.54	
Domestic Equity Index	-3.87	10.12	18.19	9.17	7.80	10.62	10.47	N/A	
IM U.S. Equity (SA+CF) Median	-3.30	6.86	17.06	10.15	7.49	10.21	9.78	12.54	
Domestic Equity Composite Rank	40	33	33	46	34	34	40	79	
Barrow, Hanley	-0.91	2.55	17.05	14.93	7.74	10.11	9.82	12.50	10/01/1982
Russell 1000 Value Index	-3.16	1.79	14.44	11.05	6.23	7.92	8.45	11.30	
IM U.S. Large Cap Value Equity (SA+CF) Median	-2.18	3.53	17.21	13.00	7.59	9.75	9.55	12.42	
Barrow, Hanley Rank	23	60	52	29	48	40	37	43	
Winslow Capital Management	-3.23	22.07	31.35	5.11	10.59	14.95	13.58	14.31	11/01/2011
Russell 1000 Growth Index	-3.13	24.98	27.72	7.97	12.42	15.64	14.48	15.15	
IM U.S. Large Cap Growth Equity (SA+CF) Median	-3.35	21.51	25.57	6.44	10.59	14.03	13.30	14.19	
Winslow Capital Management Rank	46	47	12	65	51	30	41	44	
Rhumbline Russell 1000 Growth	-3.13	24.93	27.68	7.97	12.41	N/A	N/A	14.61	10/01/2017
Russell 1000 Growth Index	-3.13	24.98	27.72	7.97	12.42	15.64	14.48	14.62	
IM U.S. Large Cap Growth Equity (SA+CF) Median	-3.35	21.51	25.57	6.44	10.59	14.03	13.30	13.07	
Rhumbline Russell 1000 Growth Rank	42	29	38	32	20	N/A	N/A	16	
Rhumbline S&P 500	-3.28	13.06	21.60	10.16	9.91	12.22	11.88	9.24	01/01/2004
S&P 500	-3.27	13.07	21.62	10.15	9.92	12.24	11.91	9.21	
IM U.S. Large Cap Core Equity (SA+CF) Median	-2.89	11.68	20.76	9.77	9.22	11.83	11.67	9.51	
Rhumbline S&P 500 Rank	72	32	36	44	33	37	38	75	

Gross of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

					Performance (%)				
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
NTGI S&P 400	-4.20	4.28	15.52	12.07	6.07	8.77	8.95	9.40	04/01/2011
<i>S&amp;P MidCap 400</i>	-4.20	4.27	15.51	12.05	6.06	8.77	8.94	9.40	
IM U.S. Mid Cap Core Equity (SA+CF) Median	-4.19	4.27	15.47	10.82	6.31	8.91	9.02	9.56	
NTGI S&P 400 Rank	54	45	41	24	69	68	66	78	
Capital Prospects SMID	-6.20	3.80	11.45	8.65	4.93	10.22	N/A	11.51	02/01/2016
<i>Russell 2500 Index</i>	-4.78	3.59	11.28	8.39	4.55	7.96	7.90	9.87	
IM U.S. SMID Cap Equity (SA+CF) Median	-4.63	4.90	13.76	10.42	6.33	9.56	8.95	11.07	
Capital Prospects SMID Rank	76	59	73	61	75	37	N/A	41	
Capital Prospects Small Cap Value	0.57	8.98	24.26	21.03	N/A	N/A	N/A	10.50	04/01/2019
<i>Russell 2000 Value Index</i>	-2.96	-0.53	7.84	13.32	2.59	5.94	6.19	5.05	
IM U.S. Small Cap Value Equity (SA+CF) Median	-2.16	4.14	15.90	16.19	5.43	8.08	8.10	8.24	
Capital Prospects Small Cap Value Rank	14	17	12	14	N/A	N/A	N/A	19	
Nicholas Investment Partners	-6.94	7.06	6.14	2.19	6.74	11.57	8.79	12.05	07/01/2012
<i>Russell 2000 Growth Index</i>	-7.32	5.24	9.59	1.09	1.55	6.77	6.72	9.13	
IM U.S. Small Cap Growth Equity (SA+CF) Median	-6.45	6.51	11.04	2.81	5.39	10.78	9.31	11.73	
Nicholas Investment Partners Rank	59	45	75	56	31	38	67	41	
Conestoga Capital Advisors	-6.62	10.57	17.55	5.87	5.36	N/A	N/A	6.41	08/01/2018
<i>Russell 2000 Growth Index</i>	-7.32	5.24	9.59	1.09	1.55	6.77	6.72	2.23	
IM U.S. Small Cap Growth Equity (SA+CF) Median	-6.45	6.51	11.04	2.81	5.39	10.78	9.31	6.61	
Conestoga Capital Advisors Rank	52	18	13	28	52	N/A	N/A	53	

Gross of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
<b>International Equity Composite</b>	<b>-3.85</b>	<b>6.47</b>	<b>21.62</b>	<b>3.11</b>	<b>3.72</b>	<b>5.92</b>	<b>5.09</b>	<b>5.10</b>	<b>01/01/1990</b>
<i>International Equity Index</i>	-3.72	5.43	21.19	3.48	2.50	4.74	3.42	4.81	
IM International Equity (SA+CF) Median	-3.83	6.26	22.10	4.63	3.62	5.76	4.88	7.01	
International Equity Composite Rank	51	49	53	63	47	46	45	88	
<b>1607 Capital Partners</b>	<b>-4.60</b>	<b>4.27</b>	<b>20.98</b>	<b>4.49</b>	<b>3.88</b>	<b>6.41</b>	<b>5.32</b>	<b>4.70</b>	<b>06/01/2008</b>
<i>MSCI EAFE (Net)</i>	-4.11	7.08	25.65	5.75	3.24	5.29	3.82	2.43	
IM International Large Cap Core Equity (SA+CF) Median	-4.04	6.81	23.55	5.32	3.64	5.72	4.81	3.51	
1607 Capital Partners Rank	56	83	69	59	43	31	29	14	
<b>Marathon Asset Mgmt</b>	<b>-3.51</b>	<b>6.80</b>	<b>26.01</b>	<b>6.28</b>	<b>3.64</b>	<b>5.72</b>	<b>5.01</b>	<b>7.50</b>	<b>04/01/2004</b>
<i>MSCI AC World ex USA (Net)</i>	-3.77	5.34	20.39	3.74	2.58	4.73	3.35	5.08	
IM International Large Cap Core Equity (SA+CF) Median	-4.04	6.81	23.55	5.32	3.64	5.72	4.81	6.13	
Marathon Asset Mgmt Rank	39	51	32	30	52	50	40	13	
<b>Principal Global Investors</b>	<b>-6.82</b>	<b>7.45</b>	<b>21.41</b>	<b>1.23</b>	<b>3.69</b>	<b>5.18</b>	<b>5.30</b>	<b>2.89</b>	<b>07/01/2007</b>
<i>MSCI World ex U.S. Growth (Net)</i>	-8.24	4.38	19.27	0.47	3.37	5.26	4.36	2.81	
IM International Large Cap Core Equity (SA+CF) Median	-4.04	6.81	23.55	5.32	3.64	5.72	4.81	3.26	
Principal Global Investors Rank	87	44	63	90	48	70	29	71	
<b>Strategic Global Advisors</b>	<b>-1.10</b>	<b>9.25</b>	<b>26.02</b>	<b>6.68</b>	<b>4.05</b>	<b>6.33</b>	<b>5.72</b>	<b>7.94</b>	<b>07/01/2012</b>
<i>MSCI World ex-U.S. (Net)</i>	-4.10	6.73	24.00	6.07	3.44	5.38	3.84	5.87	
IM International Core Equity (SA+CF) Median	-3.98	5.78	22.03	4.73	3.52	5.69	4.93	7.05	
Strategic Global Advisors Rank	13	22	27	26	33	30	26	26	
<b>Acadian EM Equity II</b>	<b>0.66</b>	<b>12.80</b>	<b>25.27</b>	<b>5.27</b>	<b>3.39</b>	<b>5.27</b>	<b>3.56</b>	<b>2.42</b>	<b>05/01/2011</b>
<i>MSCI EM (net)</i>	-2.93	1.82	11.70	-1.73	0.55	3.22	2.07	0.60	
IM Emerging Markets Equity (SA+CF) Median	-2.96	4.63	14.89	-0.16	2.60	4.53	3.49	2.16	
Acadian EM Equity II Rank	21	15	13	31	39	37	47	40	

Gross of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
J.P. Morgan Global Emerging Markets Discovery Fund	-6.50	-1.65	10.26	-5.65	2.56	N/A	N/A	6.05	12/01/2016
MSCI EM (net)	-2.93	1.82	11.70	-1.73	0.55	3.22	2.07	3.98	
IM Emerging Markets Equity (SA+CF) Median	-2.96	4.63	14.89	-0.16	2.60	4.53	3.49	5.32	
J.P. Morgan Global Emerging Markets Discovery Fund Rank	96	87	76	88	51	N/A	N/A	38	
<b>Fixed Income Composite</b>	<b>-3.84</b>	<b>-1.25</b>	<b>3.01</b>	<b>-3.19</b>	<b>0.74</b>	<b>1.05</b>	<b>2.06</b>	<b>6.64</b>	<b>10/01/1982</b>
Fixed Income Index	-2.59	-0.02	3.23	-4.30	0.08	0.21	1.43	6.47	
Mackay Shields	0.80	6.29	10.58	3.43	4.26	4.81	5.38	7.57	01/01/1999
Credit Suisse High Yield Index	0.46	6.33	10.34	2.12	2.82	3.73	4.09	6.17	
IM U.S. High Yield Bonds (SA+CF) Median	0.71	5.72	9.99	2.26	3.33	3.94	4.39	6.36	
Mackay Shields Rank	41	32	39	22	11	11	5	5	
PIMCO	-3.17	-0.40	1.60	-4.19	0.92	0.95	1.72	2.96	04/01/2009
Blmbg. U.S. Aggregate	-3.23	-1.21	0.64	-5.21	0.10	-0.09	1.13	2.30	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-3.14	-0.81	1.06	-4.84	0.54	0.39	1.58	3.07	
PIMCO Rank	52	24	22	18	17	10	33	59	
Prudential Core Conserv Bond	-3.19	-0.98	1.20	-5.09	0.18	-0.01	1.26	2.19	09/01/2009
Blmbg. U.S. Aggregate	-3.23	-1.21	0.64	-5.21	0.10	-0.09	1.13	2.05	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-3.14	-0.81	1.06	-4.84	0.54	0.39	1.58	2.63	
Prudential Core Conserv Bond Rank	54	64	40	71	84	83	79	82	
Barrow Hanley High Quality Core	-3.54	-0.98	N/A	N/A	N/A	N/A	N/A	2.19	11/01/2022
Blmbg. U.S. Aggregate	-3.23	-1.21	0.64	-5.21	0.10	-0.09	1.13	1.97	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-3.17	-0.98	0.82	-5.02	0.29	0.13	1.32	2.28	
Barrow Hanley High Quality Core Rank	86	51	N/A	N/A	N/A	N/A	N/A	58	
Garcia Hamilton Aggregate	-5.08	-2.34	N/A	N/A	N/A	N/A	N/A	1.31	11/01/2022
Blmbg. U.S. Aggregate	-3.23	-1.21	0.64	-5.21	0.10	-0.09	1.13	1.97	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-3.17	-0.98	0.82	-5.02	0.29	0.13	1.32	2.28	
Garcia Hamilton Aggregate Rank	100	98	N/A	N/A	N/A	N/A	N/A	90	

Gross of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	Performance (%)									
	<u>1 Quarter</u>	<u>Year To Date</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>7 Years</u>	<u>10 Years</u>	<u>Since Inception</u>	<u>Inception Date</u>	
Brandywine	-7.09	-5.90	1.40	-5.33	-1.32	-0.51	N/A	0.07	08/01/2015	
<i>Bloomberg Global Aggregate</i>	-3.59	-2.21	2.24	-6.93	-1.62	-1.53	-0.44	-0.21		
<i>FTSE World Government Bond Index</i>	-4.27	-2.68	1.04	-8.72	-2.57	-2.44	-1.19	-0.83		
IM Global Fixed Income (SA+CF) Median	-1.18	2.05	5.89	-1.72	1.72	1.86	2.26	2.42		
Brandywine Rank	100	100	88	75	86	77	N/A	86		
<b>Hedge Fund Composite</b>	<b>1.17</b>	<b>5.22</b>	<b>7.51</b>	<b>5.46</b>	<b>4.60</b>	<b>4.92</b>	<b>N/A</b>	<b>5.28</b>	<b>04/01/2016</b>	
90-Day T-Bill + 5%	2.56	7.46	9.70	6.79	6.80	6.62	6.16	6.53		
<i>HFRI FOF: Conservative Index</i>	1.50	3.51	5.02	5.67	4.07	4.09	3.50	4.14		
Grosvenor Institutional Partners, L.P.	1.39	5.35	6.61	4.99	4.76	5.12	N/A	5.39	04/01/2016	
90-Day T-Bill + 5%	2.56	7.46	9.70	6.79	6.80	6.62	6.16	6.53		
<i>HFRI FOF: Conservative Index</i>	1.50	3.51	5.02	5.67	4.07	4.09	3.50	4.14		
Aetos	0.83	5.26	8.77	5.74	4.52	4.78	N/A	5.01	05/01/2016	
90-Day T-Bill + 5%	2.56	7.46	9.70	6.79	6.80	6.62	6.16	6.55		
<i>HFRI FOF: Conservative Index</i>	1.50	3.51	5.02	5.67	4.07	4.09	3.50	4.13		
Preserver, L.P.	2.24	4.52	6.10	6.48	N/A	N/A	N/A	4.97	02/01/2019	
90-Day T-Bill + 5%	2.56	7.46	9.70	6.79	6.80	6.62	6.16	6.76		
<i>HFRI Fund of Funds Composite Index</i>	0.52	2.82	4.60	3.77	3.38	3.78	3.28	4.19		
<i>HFRI RV: Multi-Strategy Index</i>	1.72	3.50	3.83	4.62	3.85	3.86	3.81	4.24		
<b>Total Real Estate Composite</b>	<b>-1.87</b>	<b>-7.20</b>	<b>-11.15</b>	<b>7.04</b>	<b>6.33</b>	<b>6.73</b>	<b>9.24</b>	<b>9.53</b>	<b>07/01/1996</b>	
<i>NCREIF Property Index</i>	-1.37	-5.07	-8.40	6.04	5.26	5.76	7.40	8.78		
<b>Core Private Real Estate Composite</b>	<b>-3.18</b>	<b>-9.14</b>	<b>-12.72</b>	<b>6.98</b>	<b>6.12</b>	<b>6.29</b>	<b>8.42</b>	<b>7.93</b>	<b>09/01/1999</b>	
<i>NCREIF Property Index</i>	-1.37	-5.07	-8.40	6.04	5.26	5.76	7.40	8.26		
BlackRock US Core Property Fund	-3.80	-11.55	-14.89	5.48	5.16	6.21	8.12	4.24	10/01/2006	
<i>NCREIF Property Index</i>	-1.37	-5.07	-8.40	6.04	5.26	5.76	7.40	6.62		

Gross of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

										<u>Performance (%)</u>
	<u>1 Quarter</u>	<u>Year To Date</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>7 Years</u>	<u>10 Years</u>	<u>Since Inception</u>	<u>Inception Date</u>	
RREEF REIT II	-2.21	-9.12	-12.28	7.60	6.02	6.77	8.53	7.90	07/01/1999	
<i>NCREIF Property Index</i>	-1.37	-5.07	-8.40	6.04	5.26	5.76	7.40	8.20		
Vanguard REIT Index Inv	-8.51	-5.35	-1.22	2.34	2.45	N/A	N/A	2.61	01/01/2017	
<i>Vanguard REIT Spliced Index</i>	-8.50	-5.26	-1.14	2.45	2.54	2.18	5.62	2.72		
IM Real Estate Sector (MF) Median	-7.66	-3.45	0.19	3.41	2.71	2.42	5.50	2.94		
Vanguard REIT Index Inv Rank	79	80	71	72	61	N/A	N/A	59		
TA Realty Core Property Fund	-1.78	-3.60	-8.82	12.63	N/A	N/A	N/A	10.45	04/01/2019	
<i>NCREIF ODCE Equal Weighted</i>	-1.99	-7.63	-12.21	7.25	5.91	6.59	8.36	5.81		

Gross of Fees.

# City of Memphis Retirement System

## Comparative Performance - IRR

As of September 30, 2023

	Market Value (\$)	%	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	Since Inception	Inception Date
<b>Real Estate</b>										
<b>Private Real Estate Composite</b>	<b>112,004,669</b>	<b>4.8</b>	<b>-0.5</b>	<b>-5.3</b>	<b>-9.6</b>	<b>7.1</b>	<b>6.3</b>	<b>6.8</b>	<b>11.2</b>	<b>09/30/2009</b>
Dune Real Estate Fund IV	25,374,632	1.1	0.0	3.0	6.5	10.8			5.9	08/22/2019
Green Cities III, L.P.	10,187,485	0.4	0.0	-24.3	-42.6	-15.2	-7.5	-3.4	-3.1	11/13/2015
Green Cities IV, L.P.	18,189,244	0.8	0.0	-2.4	-7.3	0.1			-0.6	06/27/2019
Green Cities V, L.P.	18,214	0.0	-97.5						-100.0	03/27/2023
Long Wharf RE Partners V, L.P.	11,688,061	0.5	-1.2	-5.2	-5.6	6.3	6.6	7.8	7.4	11/20/2015
Long Wharf RE Partners VI, L.P.	13,643,138	0.6	1.1	1.5	2.6	25.0			17.7	06/27/2019
Long Wharf RE Partners VII, L.P.	1,961,011	0.1	-3.5						-20.4	03/30/2023
Mesirow Real Estate Value Fund III, L.P.	27,147,546	1.2	0.0	1.7	2.3	17.8	14.2		13.2	05/07/2018
TA Realty Fund XI	3,509,713	0.1	0.0	-17.9	-21.3	15.6	12.3	11.4	10.9	05/25/2016
<b>Private Equity</b>										
<b>Private Equity Composite</b>	<b>122,846,311</b>	<b>5.2</b>	<b>0.0</b>	<b>2.0</b>	<b>3.7</b>	<b>16.6</b>	<b>12.9</b>	<b>14.0</b>	<b>14.4</b>	<b>12/15/2015</b>
Neuberger Berman Crossroads Fund XXI	56,217,448	2.4	0.0	4.2	6.1	20.6	18.4	17.4	16.9	04/27/2016
Neuberger Berman Crossroads Fund XXIV	3,595,643	0.2	0.0	20.6	-0.3				-0.2	07/11/2022
Pantheon Global Secondary Fund V	30,403,029	1.3	0.0	-5.0	-5.1	11.4	6.6	10.7	12.3	12/22/2015
Siguler Guff Small Buyout Opportunities Fund V	6,229,150	0.3	0.2	4.7	15.8				20.6	08/05/2022
SSM Partners Growth Equity II L.P.	7,955,861	0.3	0.0	4.4	6.3	9.9	6.9	8.2	8.1	12/15/2015
SSM Partners Growth Equity III, LP	18,445,180	0.8	0.0	5.3	11.2	17.4			15.7	12/02/2019
<b>Private Debt</b>										
<b>Private Debt Composite</b>	<b>30,187,593</b>	<b>1.3</b>	<b>0.0</b>	<b>6.6</b>	<b>9.4</b>				<b>10.2</b>	<b>07/30/2021</b>
Churchill Middle Market Senior Loan Fund III	7,177,554	0.3	0.0	4.3	6.8				6.4	10/07/2021
Brightwood Capital Fund V	4,745,350	0.2	0.0	8.3	10.1				10.8	07/30/2021
Neuberger Berman Private Debt Fund IV	18,264,689	0.8	0.0	7.0	10.2				11.8	10/21/2021

# City of Memphis

## Comparative Performance

As of September 30, 2023

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
	Performance (%)									
<b>In House Cash</b>	<b>1.50</b>	<b>0.04</b>	<b>0.26</b>	<b>2.12</b>	<b>1.93</b>	<b>0.67</b>	<b>0.35</b>	<b>0.18</b>	<b>0.11</b>	<b>0.11</b>
90 Day U.S. Treasury Bill	1.46	0.05	0.67	2.28	1.87	0.86	0.25	0.03	0.04	0.05
<b>Domestic Equity Composite</b>	<b>-17.48</b>	<b>25.47</b>	<b>22.41</b>	<b>30.07</b>	<b>-5.88</b>	<b>22.62</b>	<b>10.04</b>	<b>-1.26</b>	<b>8.80</b>	<b>35.55</b>
Russell 3000 Index	-19.21	25.66	20.89	31.02	-5.24	21.13	12.74	0.48	12.56	33.55
Domestic Equity Index	-18.82	23.52	20.08	29.94	-6.47	20.20	13.76	0.19	11.60	34.04
IM U.S. Equity (SA+CF) Median	-16.43	26.09	16.70	28.60	-7.07	19.43	13.20	-0.49	9.98	35.77
Domestic Equity Composite Rank	55	54	35	41	43	32	68	56	58	52
<b>Barrow, Hanley</b>	<b>-2.54</b>	<b>26.34</b>	<b>4.53</b>	<b>26.10</b>	<b>-5.94</b>	<b>16.37</b>	<b>14.95</b>	<b>-1.57</b>	<b>13.68</b>	<b>33.49</b>
Russell 1000 Value Index	-7.54	25.16	2.80	26.54	-8.27	13.66	17.34	-3.83	13.45	32.53
IM U.S. Large Cap Value Equity (SA+CF) Median	-5.27	27.90	4.44	27.48	-8.38	17.15	14.79	-2.34	12.03	33.67
Barrow, Hanley Rank	28	66	50	62	28	63	48	44	28	53
<b>Winslow Capital Management</b>	<b>-30.74</b>	<b>24.86</b>	<b>38.77</b>	<b>34.63</b>	<b>4.19</b>	<b>33.24</b>	<b>-1.53</b>	<b>7.17</b>	<b>11.14</b>	<b>38.29</b>
Russell 1000 Growth Index	-29.14	27.60	38.49	36.39	-1.51	30.21	7.08	5.67	13.05	33.48
IM U.S. Large Cap Growth Equity (SA+CF) Median	-29.13	24.98	35.35	33.98	-0.53	28.48	4.63	5.43	11.87	34.63
Winslow Capital Management Rank	61	52	35	45	11	20	93	35	59	20
<b>Rhumbline Russell 1000 Growth</b>	<b>-29.11</b>	<b>27.58</b>	<b>38.51</b>	<b>36.35</b>	<b>-1.51</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
Russell 1000 Growth Index	-29.14	27.60	38.49	36.39	-1.51	30.21	7.08	5.67	13.05	33.48
IM U.S. Large Cap Growth Equity (SA+CF) Median	-29.13	24.98	35.35	33.98	-0.53	28.48	4.63	5.43	11.87	34.63
Rhumbline Russell 1000 Growth Rank	50	32	35	27	58	N/A	N/A	N/A	N/A	N/A
<b>Rhumbline S&amp;P 500</b>	<b>-18.09</b>	<b>28.72</b>	<b>18.40</b>	<b>31.39</b>	<b>-4.41</b>	<b>21.78</b>	<b>11.94</b>	<b>1.38</b>	<b>13.58</b>	<b>32.30</b>
S&P 500	-18.11	28.71	18.40	31.49	-4.38	21.83	11.96	1.38	13.69	32.39
IM U.S. Large Cap Core Equity (SA+CF) Median	-16.49	27.75	17.65	30.06	-5.05	22.12	10.50	1.49	13.42	33.17
Rhumbline S&P 500 Rank	64	37	46	35	41	56	32	55	48	63
<b>NTGI S&amp;P 400</b>	<b>-13.06</b>	<b>24.84</b>	<b>13.64</b>	<b>26.22</b>	<b>-11.10</b>	<b>16.22</b>	<b>20.74</b>	<b>-2.17</b>	<b>9.75</b>	<b>33.51</b>
S&P MidCap 400	-13.06	24.76	13.66	26.20	-11.08	16.24	20.74	-2.18	9.77	33.50
IM U.S. Mid Cap Core Equity (SA+CF) Median	-13.08	24.80	13.76	27.08	-11.02	17.47	16.61	-1.33	10.09	36.00
NTGI S&P 400 Rank	40	49	62	71	60	76	22	69	63	77

Gross of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	Performance (%)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>Capital Prospects SMID</b>	<b>-20.88</b>	<b>23.82</b>	<b>21.47</b>	<b>27.70</b>	<b>-4.36</b>	<b>23.75</b>	N/A	N/A	N/A	N/A
Russell 2500 Index	-18.37	18.18	19.99	27.77	-10.00	16.81	17.59	-2.90	7.07	36.80
IM U.S. SMID Cap Equity (SA+CF) Median	-16.86	23.31	17.56	28.92	-9.85	17.98	16.34	-1.42	6.70	38.15
Capital Prospects SMID Rank	67	47	42	60	22	24	N/A	N/A	N/A	N/A
<b>Capital Prospects Small Cap Value</b>	<b>-8.69</b>	<b>38.00</b>	<b>3.48</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Russell 2000 Value Index	-14.48	28.27	4.63	22.39	-12.86	7.84	31.74	-7.47	4.22	34.52
IM U.S. Small Cap Value Equity (SA+CF) Median	-10.84	29.80	5.16	24.96	-14.06	11.58	27.22	-4.30	5.71	37.91
Capital Prospects Small Cap Value Rank	33	16	56	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Nicholas Investment Partners</b>	<b>-31.08</b>	<b>9.62</b>	<b>69.08</b>	<b>36.26</b>	<b>-10.37</b>	<b>27.38</b>	<b>3.01</b>	<b>-1.36</b>	<b>-0.13</b>	<b>59.00</b>
Russell 2000 Growth Index	-26.36	2.83	34.63	28.48	-9.31	22.17	11.32	-1.38	5.60	43.30
IM U.S. Small Cap Growth Equity (SA+CF) Median	-27.40	12.05	42.40	29.18	-3.83	24.33	10.61	-0.71	3.91	46.26
Nicholas Investment Partners Rank	74	60	13	27	87	36	90	56	76	5
<b>Conestoga Capital Advisors</b>	<b>-27.05</b>	<b>17.47</b>	<b>32.97</b>	<b>26.95</b>	N/A	N/A	N/A	N/A	N/A	N/A
Russell 2000 Growth Index	-26.36	2.83	34.63	28.48	-9.31	22.17	11.32	-1.38	5.60	43.30
IM U.S. Small Cap Growth Equity (SA+CF) Median	-27.40	12.05	42.40	29.18	-3.83	24.33	10.61	-0.71	3.91	46.26
Conestoga Capital Advisors Rank	47	32	72	63	N/A	N/A	N/A	N/A	N/A	N/A
<b>International Equity Composite</b>	<b>-20.51</b>	<b>9.15</b>	<b>17.83</b>	<b>24.67</b>	<b>-15.52</b>	<b>33.29</b>	<b>3.30</b>	<b>-0.50</b>	<b>-1.08</b>	<b>20.79</b>
International Equity Index	-16.14	6.88	11.18	20.94	-13.98	28.77	3.16	-4.06	-4.13	16.58
IM International Equity (SA+CF) Median	-16.26	11.68	11.50	23.50	-14.58	28.70	2.41	1.17	-3.37	23.40
International Equity Composite Rank	72	66	31	44	60	27	44	61	30	62
<b>1607 Capital Partners</b>	<b>-19.27</b>	<b>12.25</b>	<b>16.08</b>	<b>25.34</b>	<b>-14.21</b>	<b>32.93</b>	<b>2.69</b>	<b>-0.08</b>	<b>-1.55</b>	<b>26.32</b>
MSCI EAFE (Net)	-14.45	11.26	7.82	22.01	-13.79	25.03	1.00	-0.81	-4.90	22.78
IM International Large Cap Core Equity (SA+CF) Median	-15.93	12.06	11.60	23.58	-14.32	27.82	1.67	0.57	-3.66	22.82
1607 Capital Partners Rank	77	47	29	37	49	11	39	57	22	25

Gross of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	Performance (%)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>Marathon Asset Mgmt</b>	<b>-13.54</b>	<b>10.00</b>	<b>9.94</b>	<b>23.94</b>	<b>-13.22</b>	<b>24.34</b>	<b>-1.17</b>	<b>7.15</b>	<b>-3.95</b>	<b>29.45</b>
MSCI AC World ex USA (Net)	-16.00	7.82	10.65	21.51	-14.20	27.19	4.50	-5.66	-3.87	15.29
IM International Large Cap Core Equity (SA+CF) Median	-15.93	12.06	11.60	23.58	-14.32	27.82	1.67	0.57	-3.66	22.82
Marathon Asset Mgmt Rank	26	68	58	48	34	81	82	6	55	9
<b>Principal Global Investors</b>	<b>-24.40</b>	<b>12.61</b>	<b>22.60</b>	<b>26.96</b>	<b>-17.31</b>	<b>26.47</b>	<b>-0.37</b>	<b>4.95</b>	<b>-1.10</b>	<b>26.38</b>
MSCI World ex U.S. Growth (Net)	-22.68	11.57	18.41	27.92	-13.14	27.61	-1.87	1.65	-3.26	20.53
IM International Large Cap Core Equity (SA+CF) Median	-15.93	12.06	11.60	23.58	-14.32	27.82	1.67	0.57	-3.66	22.82
Principal Global Investors Rank	96	42	11	28	87	59	75	12	18	25
<b>Strategic Global Advisors</b>	<b>-16.24</b>	<b>17.09</b>	<b>8.22</b>	<b>22.95</b>	<b>-16.55</b>	<b>30.04</b>	<b>0.01</b>	<b>3.84</b>	<b>1.30</b>	<b>26.59</b>
MSCI World ex-U.S. (Net)	-14.29	12.62	7.59	22.49	-14.09	24.21	2.75	-3.04	-4.32	21.02
IM International Core Equity (SA+CF) Median	-16.79	12.45	12.09	23.97	-15.01	29.37	1.72	1.59	-3.43	24.21
Strategic Global Advisors Rank	44	15	72	59	66	44	72	31	9	35
<b>Acadian EM Equity II</b>	<b>-19.83</b>	<b>8.59</b>	<b>12.47</b>	<b>17.83</b>	<b>-18.46</b>	<b>38.83</b>	<b>13.85</b>	<b>-17.49</b>	<b>2.28</b>	<b>-1.63</b>
MSCI EM (net)	-20.09	-2.54	18.31	18.42	-14.57	37.28	11.19	-14.92	-2.19	-2.60
IM Emerging Markets Equity (SA+CF) Median	-19.50	0.94	18.28	20.15	-15.20	36.91	10.00	-12.11	0.09	1.16
Acadian EM Equity II Rank	53	26	75	67	80	38	23	90	34	70
<b>J.P. Morgan Global Emerging Markets Discovery Fund</b>	<b>-28.06</b>	<b>-3.29</b>	<b>34.80</b>	<b>30.36</b>	<b>-15.05</b>	<b>46.95</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
MSCI EM (net)	-20.09	-2.54	18.31	18.42	-14.57	37.28	11.19	-14.92	-2.19	-2.60
IM Emerging Markets Equity (SA+CF) Median	-19.50	0.94	18.28	20.15	-15.20	36.91	10.00	-12.11	0.09	1.16
J.P. Morgan Global Emerging Markets Discovery Fund Rank	91	69	14	10	49	12	N/A	N/A	N/A	N/A
<b>Fixed Income Composite</b>	<b>-11.71</b>	<b>-0.36</b>	<b>9.51</b>	<b>9.88</b>	<b>-0.98</b>	<b>6.94</b>	<b>5.14</b>	<b>-0.23</b>	<b>4.70</b>	<b>0.13</b>
Fixed Income Index	-13.63	-1.25	7.78	9.24	-0.91	5.50	4.83	-0.86	4.89	0.39
<b>Mackay Shields</b>	<b>-6.92</b>	<b>6.26</b>	<b>6.25</b>	<b>14.24</b>	<b>-0.61</b>	<b>7.77</b>	<b>17.63</b>	<b>-0.68</b>	<b>2.55</b>	<b>7.28</b>
Credit Suisse High Yield Index	-10.55	5.50	5.48	14.00	-2.37	7.02	18.26	-4.93	1.86	7.53
IM U.S. High Yield Bonds (SA+CF) Median	-9.46	5.31	6.57	14.32	-1.64	7.48	14.07	-2.09	2.55	7.59
Mackay Shields Rank	23	27	58	51	31	38	13	27	51	57

Gross of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	Performance (%)									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>PIMCO</b>	<b>-12.46</b>	<b>-0.41</b>	<b>8.78</b>	<b>9.11</b>	<b>0.82</b>	<b>5.49</b>	<b>3.58</b>	<b>0.17</b>	<b>4.46</b>	<b>-2.69</b>
Blmbg. U.S. Aggregate	-13.01	-1.55	7.51	8.72	0.01	3.54	2.65	0.55	5.97	-2.02
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-12.97	-1.24	8.43	9.18	0.06	4.01	3.07	0.81	6.14	-1.61
PIMCO Rank	26	21	38	54	9	5	34	89	96	96
<b>Prudential Core Conserv Bond</b>	<b>-13.02</b>	<b>-1.54</b>	<b>7.75</b>	<b>8.82</b>	<b>-0.09</b>	<b>3.69</b>	<b>2.86</b>	<b>0.83</b>	<b>6.19</b>	<b>-2.08</b>
Blmbg. U.S. Aggregate	-13.01	-1.55	7.51	8.72	0.01	3.54	2.65	0.55	5.97	-2.02
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-12.97	-1.24	8.43	9.18	0.06	4.01	3.07	0.81	6.14	-1.61
Prudential Core Conserv Bond Rank	54	66	70	68	72	69	61	48	46	78
<b>Brandywine</b>	<b>-13.45</b>	<b>-3.50</b>	<b>11.98</b>	<b>8.14</b>	<b>-2.74</b>	<b>11.09</b>	<b>1.05</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
Blmbg. Global Aggregate	-16.25	-4.71	9.20	6.84	-1.19	7.39	2.09	-3.15	0.59	-2.60
FTSE World Government Bond Index	-18.26	-6.97	10.11	5.90	-0.84	7.49	1.60	-3.57	-0.48	-4.00
IM Global Fixed Income (SA+CF) Median	-12.28	0.50	8.68	9.73	-1.81	7.83	6.17	-2.41	2.47	0.05
Brandywine Rank	57	74	19	75	66	14	92	N/A	N/A	N/A
<b>Hedge Fund Composite</b>	<b>-3.41</b>	<b>7.59</b>	<b>11.20</b>	<b>7.95</b>	<b>-1.55</b>	<b>6.72</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
90-Day T-Bill+ 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index	0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
<b>Grosvenor Institutional Partners, L.P.</b>	<b>-5.86</b>	<b>7.78</b>	<b>17.17</b>	<b>6.06</b>	<b>-1.49</b>	<b>6.14</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
90-Day T-Bill+ 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index	0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
<b>Aetos</b>	<b>-0.68</b>	<b>6.46</b>	<b>6.99</b>	<b>9.26</b>	<b>-1.61</b>	<b>7.30</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
90-Day T-Bill + 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index	0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
<b>Preserver, L.P.</b>	<b>-3.69</b>	<b>11.83</b>	<b>3.70</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
90-Day T-Bill + 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI Fund of Funds Composite Index	-5.31	6.17	10.88	8.39	-4.02	7.77	0.51	-0.27	3.37	8.96
HFRI RV: Multi-Strategy Index	-0.73	7.03	6.69	5.29	-0.23	4.09	6.36	0.65	3.40	7.90

Gross of Fees.

**City of Memphis**

**Comparative Performance**

**As of September 30, 2023**

	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>				
<b>Total Real Estate Composite</b>	<b>2.66</b>	<b>24.73</b>	<b>2.36</b>	<b>9.80</b>	<b>8.23</b>	<b>6.97</b>	<b>9.06</b>	<b>15.74</b>	<b>20.84</b>	<b>10.85</b>				
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98				
<b>Core Private Real Estate Composite</b>	<b>5.06</b>	<b>25.04</b>	<b>2.55</b>	<b>10.16</b>	<b>4.91</b>	<b>7.75</b>	<b>8.50</b>	<b>11.92</b>	<b>20.06</b>	<b>7.12</b>				
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98				
<b>BlackRock US Core Property Fund</b>	<b>9.61</b>	<b>19.62</b>	<b>2.86</b>	<b>6.39</b>	<b>7.76</b>	<b>8.87</b>	<b>10.95</b>	<b>15.25</b>	<b>11.63</b>	<b>10.85</b>				
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98				
<b>RREEF REIT II</b>	<b>8.60</b>	<b>24.92</b>	<b>1.32</b>	<b>6.28</b>	<b>7.99</b>	<b>7.44</b>	<b>9.14</b>	<b>16.70</b>	<b>13.00</b>	<b>15.01</b>				
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98				
<b>Vanguard REIT Index Inv</b>	<b>-26.19</b>	<b>40.47</b>	<b>-4.67</b>	<b>28.95</b>	<b>-5.93</b>	<b>4.86</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>				
Vanguard REIT Spliced Index	-26.12	40.56	-4.55	29.03	-5.86	5.07	8.60	2.52	30.38	2.47				
IM Real Estate Sector (MF) Median	-26.17	41.32	-4.31	27.32	-5.71	5.32	6.34	2.91	29.47	1.64				
Vanguard REIT Index Inv Rank	51	61	54	34	54	59	N/A	N/A	N/A	N/A				
<b>TA Realty Core Property Fund</b>	<b>9.59</b>	<b>30.41</b>	<b>6.23</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>				
NCREIF ODCE Equal Weighted	7.46	22.62	1.57	6.08	8.25	7.80	9.27	15.17	12.38	13.36				

Gross of Fees.

**City of Memphis**

**Comparative Performance**

As of September 30, 2023

	<u>Performance (%)</u>								
	<u>1 Quarter</u>	<u>Year To Date</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>7 Years</u>	<u>10 Years</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Total Fund Composite</b>	<b>-3.00</b>	<b>3.64</b>	<b>10.17</b>	<b>4.53</b>	<b>4.82</b>	<b>6.23</b>	<b>6.07</b>	<b>6.93</b>	<b>07/01/1996</b>
Policy Index	-2.58	5.76	12.68	4.11	4.97	6.29	6.24	6.91	
<b>In House Cash</b>	<b>1.25</b>	<b>3.66</b>	<b>4.59</b>	<b>1.71</b>	<b>1.62</b>	<b>1.46</b>	<b>1.08</b>	<b>3.87</b>	<b>10/01/1982</b>
90 Day U.S. Treasury Bill	1.31	3.60	4.47	1.70	1.72	1.54	1.10	3.64	
<b>Domestic Equity Composite</b>	<b>-3.10</b>	<b>10.49</b>	<b>20.18</b>	<b>10.33</b>	<b>8.57</b>	<b>11.44</b>	<b>10.26</b>	<b>11.85</b>	<b>10/01/2009</b>
Russell 3000 Index	-3.25	12.39	20.46	9.38	9.14	11.64	11.28	12.41	
Domestic Equity Index	-3.87	10.12	18.19	9.17	7.80	10.62	10.47	11.87	
<b>Fixed Income Composite</b>	<b>-3.91</b>	<b>-1.48</b>	<b>2.69</b>	<b>-3.50</b>	<b>0.43</b>	<b>0.73</b>	<b>1.75</b>	<b>2.92</b>	<b>10/01/2009</b>
Fixed Income Index	-2.59	-0.02	3.23	-4.30	0.08	0.21	1.43	2.40	
<b>International Equity Composite</b>	<b>-4.02</b>	<b>5.93</b>	<b>20.81</b>	<b>2.44</b>	<b>3.03</b>	<b>5.21</b>	<b>4.40</b>	<b>5.48</b>	<b>10/01/2009</b>
International Equity Index	-3.72	5.43	21.19	3.48	2.50	4.74	3.42	4.46	
<b>Hedge Fund Composite</b>	<b>1.17</b>	<b>5.22</b>	<b>7.51</b>	<b>5.46</b>	<b>4.60</b>	<b>4.92</b>	<b>N/A</b>	<b>5.28</b>	<b>04/01/2016</b>
90-Day T-Bill+ 5%	2.56	7.46	9.70	6.79	6.80	6.62	6.16	6.53	
HFRI FOF: Conservative Index	1.50	3.51	5.02	5.67	4.07	4.09	3.50	4.14	
<b>Core Private Real Estate Composite</b>	<b>-3.18</b>	<b>-9.14</b>	<b>-12.72</b>	<b>6.98</b>	<b>6.12</b>	<b>6.29</b>	<b>8.42</b>	<b>7.93</b>	<b>09/01/1999</b>
NCREIF Property Index	-1.37	-5.07	-8.40	6.04	5.26	5.76	7.40	8.26	

Net of Fees.

## City of Memphis

## Comparative Performance

As of September 30, 2023

	<b>1 Quarter</b>	<b>Year To Date</b>	<b>1 Year</b>	<b>3 Years</b>	<b>Performance (%)</b>				
					<b>5 Years</b>	<b>7 Years</b>	<b>10 Years</b>	<b>Since Inception</b>	<b>Inception Date</b>
<b>In House Cash</b>	<b>1.25</b>	<b>3.66</b>	<b>4.59</b>	<b>1.71</b>	<b>1.62</b>	<b>1.46</b>	<b>1.08</b>	<b>3.87</b>	<b>10/01/1982</b>
90 Day U.S. Treasury Bill	1.31	3.60	4.47	1.70	1.72	1.54	1.10	3.64	
<b>Domestic Equity Composite</b>	<b>-3.10</b>	<b>10.49</b>	<b>20.18</b>	<b>10.33</b>	<b>8.57</b>	<b>11.44</b>	<b>10.26</b>	<b>11.85</b>	<b>10/01/2009</b>
Russell 3000 Index	-3.25	12.39	20.46	9.38	9.14	11.64	11.28	12.41	
Domestic Equity Index	-3.87	10.12	18.19	9.17	7.80	10.62	10.47	11.87	
IM U.S. Equity (SA+CF) Median	-3.30	6.86	17.06	10.15	7.49	10.21	9.78	12.05	
Domestic Equity Composite Rank	42	34	35	48	38	38	43	54	
<b>Barrow, Hanley</b>	<b>-0.99</b>	<b>2.32</b>	<b>16.69</b>	<b>14.59</b>	<b>7.40</b>	<b>9.74</b>	<b>9.45</b>	<b>12.26</b>	<b>10/01/1982</b>
Russell 1000 Value Index	-3.16	1.79	14.44	11.05	6.23	7.92	8.45	11.30	
IM U.S. Large Cap Value Equity (SA+CF) Median	-2.18	3.53	17.21	13.00	7.59	9.75	9.55	12.42	
Barrow, Hanley Rank	23	62	54	32	57	51	53	71	
<b>Winslow Capital Management</b>	<b>-3.37</b>	<b>21.54</b>	<b>30.59</b>	<b>4.51</b>	<b>9.95</b>	<b>14.27</b>	<b>12.93</b>	<b>13.66</b>	<b>11/01/2011</b>
Russell 1000 Growth Index	-3.13	24.98	27.72	7.97	12.42	15.64	14.48	15.15	
IM U.S. Large Cap Growth Equity (SA+CF) Median	-3.35	21.51	25.57	6.44	10.59	14.03	13.30	14.19	
Winslow Capital Management Rank	51	50	15	73	67	47	57	64	
<b>Rhumbline Russell 1000 Growth</b>	<b>-3.13</b>	<b>24.91</b>	<b>27.65</b>	<b>7.94</b>	<b>12.39</b>	<b>N/A</b>	<b>N/A</b>	<b>14.55</b>	<b>09/01/2017</b>
Russell 1000 Growth Index	-3.13	24.98	27.72	7.97	12.42	15.64	14.48	14.65	
IM U.S. Large Cap Growth Equity (SA+CF) Median	-3.35	21.51	25.57	6.44	10.59	14.03	13.30	13.04	
Rhumbline Russell 1000 Growth Rank	42	30	38	32	20	N/A	N/A	17	
<b>Rhumbline S&amp;P 500</b>	<b>-3.28</b>	<b>13.04</b>	<b>21.57</b>	<b>10.13</b>	<b>9.88</b>	<b>12.19</b>	<b>11.86</b>	<b>9.21</b>	<b>01/01/2004</b>
S&P 500	-3.27	13.07	21.62	10.15	9.92	12.24	11.91	9.21	
IM U.S. Large Cap Core Equity (SA+CF) Median	-2.89	11.68	20.76	9.77	9.22	11.83	11.67	9.51	
Rhumbline S&P 500 Rank	73	32	38	47	35	39	40	78	
<b>NTGI S&amp;P 400</b>	<b>-4.21</b>	<b>4.24</b>	<b>15.47</b>	<b>12.02</b>	<b>6.02</b>	<b>8.72</b>	<b>8.90</b>	<b>9.35</b>	<b>04/01/2011</b>
S&P MidCap 400	-4.20	4.27	15.51	12.05	6.06	8.77	8.94	9.40	
IM U.S. Mid Cap Core Equity (SA+CF) Median	-4.19	4.27	15.47	10.82	6.31	8.91	9.02	9.56	
NTGI S&P 400 Rank	58	53	51	37	76	76	73	83	

Net of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
<b>Capital Prospects SMID</b>	<b>-6.32</b>	<b>3.43</b>	<b>10.92</b>	<b>8.14</b>	<b>4.43</b>	<b>9.70</b>	N/A	<b>10.97</b>	<b>02/01/2016</b>
Russell 2500 Index	-4.78	3.59	11.28	8.39	4.55	7.96	7.90	9.87	
IM U.S. SMID Cap Equity (SA+CF) Median	-4.63	4.90	13.76	10.42	6.33	9.56	8.95	11.07	
Capital Prospects SMID Rank	77	63	75	65	80	46	N/A	52	
<b>Capital Prospects Small Cap Value</b>	<b>0.46</b>	<b>8.63</b>	<b>23.77</b>	<b>20.49</b>	N/A	N/A	N/A	<b>10.02</b>	<b>04/01/2019</b>
Russell 2000 Value Index	-2.96	-0.53	7.84	13.32	2.59	5.94	6.19	5.05	
IM U.S. Small Cap Value Equity (SA+CF) Median	-2.16	4.14	15.90	16.19	5.43	8.08	8.10	8.24	
Capital Prospects Small Cap Value Rank	14	21	16	18	N/A	N/A	N/A	24	
<b>Nicholas Investment Partners</b>	<b>-7.17</b>	<b>6.26</b>	<b>5.08</b>	<b>1.25</b>	<b>5.73</b>	<b>10.50</b>	<b>7.74</b>	<b>11.37</b>	<b>06/01/2012</b>
Russell 2000 Growth Index	-7.32	5.24	9.59	1.09	1.55	6.77	6.72	9.55	
IM U.S. Small Cap Growth Equity (SA+CF) Median	-6.45	6.51	11.04	2.81	5.39	10.78	9.31	12.01	
Nicholas Investment Partners Rank	64	53	79	62	44	57	91	73	
<b>Conestoga Capital Advisors</b>	<b>-6.81</b>	<b>9.90</b>	<b>16.59</b>	<b>4.99</b>	<b>4.53</b>	N/A	N/A	<b>5.56</b>	<b>08/01/2018</b>
Russell 2000 Growth Index	-7.32	5.24	9.59	1.09	1.55	6.77	6.72	2.23	
IM U.S. Small Cap Growth Equity (SA+CF) Median	-6.45	6.51	11.04	2.81	5.39	10.78	9.31	6.61	
Conestoga Capital Advisors Rank	58	26	20	31	68	N/A	N/A	69	
<b>International Equity Composite</b>	<b>-4.02</b>	<b>5.93</b>	<b>20.81</b>	<b>2.44</b>	<b>3.03</b>	<b>5.21</b>	<b>4.40</b>	<b>5.48</b>	<b>10/01/2009</b>
International Equity Index	-3.72	5.43	21.19	3.48	2.50	4.74	3.42	4.46	
IM International Equity (SA+CF) Median	-3.83	6.26	22.10	4.63	3.62	5.76	4.88	6.39	
International Equity Composite Rank	53	53	60	67	64	63	67	75	
<b>1607 Capital Partners</b>	<b>-4.78</b>	<b>3.73</b>	<b>20.18</b>	<b>3.63</b>	<b>3.08</b>	<b>5.62</b>	<b>4.54</b>	<b>3.95</b>	<b>06/01/2008</b>
MSCI EAFE (Net)	-4.11	7.08	25.65	5.75	3.24	5.29	3.82	2.43	
IM International Large Cap Core Equity (SA+CF) Median	-4.04	6.81	23.55	5.32	3.64	5.72	4.81	3.51	
1607 Capital Partners Rank	60	88	77	69	72	55	61	28	

Net of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
<b>Marathon Asset Mgmt</b>	<b>-3.67</b>	<b>6.29</b>	<b>25.22</b>	<b>5.59</b>	<b>2.98</b>	<b>5.04</b>	<b>4.33</b>	<b>6.78</b>	<b>04/01/2004</b>
MSCI AC World ex USA (Net)	-3.77	5.34	20.39	3.74	2.58	4.73	3.35	5.08	
IM International Large Cap Core Equity (SA+CF) Median	-4.04	6.81	23.55	5.32	3.64	5.72	4.81	6.13	
Marathon Asset Mgmt Rank	45	54	38	42	73	72	68	25	
<b>Principal Global Investors</b>	<b>-6.94</b>	<b>7.03</b>	<b>20.78</b>	<b>0.81</b>	<b>3.19</b>	<b>4.65</b>	<b>4.74</b>	<b>2.33</b>	<b>07/01/2007</b>
MSCI World ex U.S. Growth (Net)	-8.24	4.38	19.27	0.47	3.37	5.26	4.36	2.81	
IM International Large Cap Core Equity (SA+CF) Median	-4.04	6.81	23.55	5.32	3.64	5.72	4.81	3.26	
Principal Global Investors Rank	87	48	71	91	68	83	54	90	
<b>Strategic Global Advisors</b>	<b>-1.28</b>	<b>8.66</b>	<b>25.10</b>	<b>5.88</b>	<b>3.28</b>	<b>5.55</b>	<b>4.95</b>	<b>7.28</b>	<b>06/01/2012</b>
MSCI World ex-U.S. (Net)	-4.10	6.73	24.00	6.07	3.44	5.38	3.84	6.42	
IM International Core Equity (SA+CF) Median	-3.98	5.78	22.03	4.73	3.52	5.69	4.93	7.56	
Strategic Global Advisors Rank	14	27	34	33	57	53	49	63	
<b>Acadian EM Equity II</b>	<b>0.48</b>	<b>12.21</b>	<b>24.40</b>	<b>4.53</b>	<b>2.66</b>	<b>4.53</b>	<b>2.86</b>	<b>1.82</b>	<b>05/01/2011</b>
MSCI EM (net)	-2.93	1.82	11.70	-1.73	0.55	3.22	2.07	0.60	
IM Emerging Markets Equity (SA+CF) Median	-2.96	4.63	14.89	-0.16	2.60	4.53	3.49	2.16	
Acadian EM Equity II Rank	22	18	15	34	50	50	70	65	
<b>J.P. Morgan Global Emerging Markets Discovery Fund</b>	<b>-6.69</b>	<b>-2.26</b>	<b>9.34</b>	<b>-6.36</b>	<b>1.77</b>	<b>N/A</b>	<b>N/A</b>	<b>5.23</b>	<b>12/01/2016</b>
MSCI EM (net)	-2.93	1.82	11.70	-1.73	0.55	3.22	2.07	3.98	
IM Emerging Markets Equity (SA+CF) Median	-2.96	4.63	14.89	-0.16	2.60	4.53	3.49	5.32	
J.P. Morgan Global Emerging Markets Discovery Fund Rank	96	88	82	89	66	N/A	N/A	52	
<b>Fixed Income Composite</b>	<b>-3.91</b>	<b>-1.48</b>	<b>2.69</b>	<b>-3.50</b>	<b>0.43</b>	<b>0.73</b>	<b>1.75</b>	<b>2.92</b>	<b>10/01/2009</b>
Fixed Income Index	-2.59	-0.02	3.23	-4.30	0.08	0.21	1.43	2.40	
IM U.S. Fixed Income (SA+CF) Median	-1.28	0.81	2.74	-1.98	1.39	1.23	1.98	2.78	
Fixed Income Composite Rank	89	88	52	66	85	72	62	47	

Net of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
<b>Mackay Shields</b>	<b>0.80</b>	<b>6.03</b>	<b>10.17</b>	<b>2.98</b>	<b>3.84</b>	<b>4.39</b>	<b>4.94</b>	<b>7.12</b>	<b>01/01/1999</b>
Credit Suisse High Yield Index	0.46	6.33	10.34	2.12	2.82	3.73	4.09	6.17	
IM U.S. High Yield Bonds (SA+CF) Median	0.71	5.72	9.99	2.26	3.33	3.94	4.39	6.36	
Mackay Shields Rank	41	37	47	28	21	30	13	11	
<b>PIMCO</b>	<b>-3.26</b>	<b>-0.66</b>	<b>1.24</b>	<b>-4.53</b>	<b>0.57</b>	<b>0.59</b>	<b>1.38</b>	<b>2.63</b>	<b>04/01/2009</b>
Blmbg. U.S. Aggregate	-3.23	-1.21	0.64	-5.21	0.10	-0.09	1.13	2.30	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-3.14	-0.81	1.06	-4.84	0.54	0.39	1.58	3.07	
PIMCO Rank	79	41	36	33	47	27	72	77	
<b>Prudential Core Conserv Bond</b>	<b>-3.19</b>	<b>-0.98</b>	<b>1.20</b>	<b>-5.15</b>	<b>0.09</b>	<b>-0.12</b>	<b>1.16</b>	<b>2.08</b>	<b>09/01/2009</b>
Blmbg. U.S. Aggregate	-3.23	-1.21	0.64	-5.21	0.10	-0.09	1.13	2.05	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-3.14	-0.81	1.06	-4.84	0.54	0.39	1.58	2.63	
Prudential Core Conserv Bond Rank	54	64	40	78	96	98	87	87	
<b>Barrow Hanley High Quality Core</b>	<b>-3.60</b>	<b>-1.17</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>1.94</b>	<b>11/01/2022</b>
Blmbg. U.S. Aggregate	-3.23	-1.21	0.64	-5.21	0.10	-0.09	1.13	1.97	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-3.17	-0.98	0.82	-5.02	0.29	0.13	1.32	2.28	
Barrow Hanley High Quality Core Rank	88	71	N/A	N/A	N/A	N/A	N/A	71	
<b>Garcia Hamilton Aggregate</b>	<b>-5.13</b>	<b>-2.48</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>1.17</b>	<b>11/01/2022</b>
Blmbg. U.S. Aggregate	-3.23	-1.21	0.64	-5.21	0.10	-0.09	1.13	1.97	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	-3.17	-0.98	0.82	-5.02	0.29	0.13	1.32	2.28	
Garcia Hamilton Aggregate Rank	100	99	N/A	N/A	N/A	N/A	N/A	91	
<b>Brandywine</b>	<b>-7.17</b>	<b>-6.16</b>	<b>1.03</b>	<b>-5.68</b>	<b>-1.69</b>	<b>-0.88</b>	<b>N/A</b>	<b>-0.30</b>	<b>08/01/2015</b>
Blmbg. Global Aggregate	-3.59	-2.21	2.24	-6.93	-1.62	-1.53	-0.44	-0.21	
FTSE World Government Bond Index	-4.27	-2.68	1.04	-8.72	-2.57	-2.44	-1.19	-0.83	
IM Global Fixed Income (SA+CF) Median	-1.18	2.05	5.89	-1.72	1.72	1.86	2.26	2.42	
Brandywine Rank	100	100	91	77	89	85	N/A	91	

Net of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

					Performance (%)						
					1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
<b>Hedge Fund Composite</b>		<b>1.17</b>	<b>5.22</b>	<b>7.51</b>	<b>5.46</b>	<b>4.60</b>	<b>4.92</b>	<b>N/A</b>	<b>5.28</b>	<b>04/01/2016</b>	
90-Day T-Bill+ 5%		2.56	7.46	9.70	6.79	6.80	6.62	6.16	6.53		
HFRI FOF: Conservative Index		1.50	3.51	5.02	5.67	4.07	4.09	3.50	4.14		
<b>Grosvenor Institutional Partners, L.P.</b>		<b>1.39</b>	<b>5.35</b>	<b>6.61</b>	<b>4.99</b>	<b>4.76</b>	<b>5.12</b>	<b>N/A</b>	<b>5.39</b>	<b>04/01/2016</b>	
90-Day T-Bill+ 5%		2.56	7.46	9.70	6.79	6.80	6.62	6.16	6.53		
HFRI FOF: Conservative Index		1.50	3.51	5.02	5.67	4.07	4.09	3.50	4.14		
<b>Aetos</b>		<b>0.83</b>	<b>5.26</b>	<b>8.77</b>	<b>5.74</b>	<b>4.52</b>	<b>4.78</b>	<b>N/A</b>	<b>5.01</b>	<b>05/01/2016</b>	
90-Day T-Bill + 5%		2.56	7.46	9.70	6.79	6.80	6.62	6.16	6.55		
HFRI FOF: Conservative Index		1.50	3.51	5.02	5.67	4.07	4.09	3.50	4.13		
<b>Preserver, L.P.</b>		<b>2.24</b>	<b>4.52</b>	<b>6.10</b>	<b>6.48</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>4.97</b>	<b>02/01/2019</b>	
90-Day T-Bill + 5%		2.56	7.46	9.70	6.79	6.80	6.62	6.16	6.76		
HFRI Fund of Funds Composite Index		0.52	2.82	4.60	3.77	3.38	3.78	3.28	4.19		
HFRI RV: Multi-Strategy Index		1.72	3.50	3.83	4.62	3.85	3.86	3.81	4.24		
<b>Total Real Estate Composite</b>		<b>-1.97</b>	<b>-7.52</b>	<b>-11.59</b>	<b>6.48</b>	<b>5.74</b>	<b>6.09</b>	<b>8.54</b>	<b>10.09</b>	<b>10/01/2009</b>	
NCREIF Property Index		-1.37	-5.07	-8.40	6.04	5.26	5.76	7.40	8.39		
<b>BlackRock US Core Property Fund</b>		<b>-3.99</b>	<b>-12.08</b>	<b>-15.57</b>	<b>4.63</b>	<b>4.35</b>	<b>5.45</b>	<b>7.33</b>	<b>3.45</b>	<b>10/01/2006</b>	
NCREIF Property Index		-1.37	-5.07	-8.40	6.04	5.26	5.76	7.40	6.62		
<b>RREEF REIT II</b>		<b>-2.44</b>	<b>-9.77</b>	<b>-13.11</b>	<b>6.60</b>	<b>5.04</b>	<b>5.77</b>	<b>7.52</b>	<b>7.03</b>	<b>07/01/1999</b>	
NCREIF Property Index		-1.37	-5.07	-8.40	6.04	5.26	5.76	7.40	8.20		
<b>Vanguard REIT Index Inv</b>		<b>-8.51</b>	<b>-5.35</b>	<b>-1.22</b>	<b>2.34</b>	<b>2.45</b>	<b>N/A</b>	<b>N/A</b>	<b>2.61</b>	<b>01/01/2017</b>	
Vanguard REIT Spliced Index		-8.50	-5.26	-1.14	2.45	2.54	2.18	5.62	2.72		
IM Real Estate Sector (MF) Median		-7.66	-3.45	0.19	3.41	2.71	2.42	5.50	2.94		
Vanguard REIT Index Inv Rank		79	80	71	72	61	N/A	N/A	59		
<b>TA Realty Core Property Fund</b>		<b>-1.78</b>	<b>-3.60</b>	<b>-8.82</b>	<b>12.63</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>10.45</b>	<b>04/01/2019</b>	
NCREIF ODCE Equal Weighted		-1.99	-7.63	-12.21	7.25	5.91	6.59	8.36	5.81		

Net of Fees.

## City of Memphis

## Comparative Performance

As of September 30, 2023

	<b>Performance (%)</b>									
	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
<b>Total Fund Composite</b>	<b>-13.24</b>	<b>13.13</b>	<b>14.58</b>	<b>18.36</b>	<b>-5.79</b>	<b>17.86</b>	<b>6.33</b>	<b>-0.17</b>	<b>5.09</b>	<b>17.24</b>
Policy Index	-12.94	11.35	12.73	18.81	-4.51	16.68	8.04	-0.19	5.86	15.19
<b>In House Cash</b>	<b>1.50</b>	<b>0.04</b>	<b>0.26</b>	<b>2.12</b>	<b>1.93</b>	<b>0.67</b>	<b>0.35</b>	<b>0.18</b>	<b>0.11</b>	<b>0.11</b>
90 Day U.S. Treasury Bill	1.46	0.05	0.67	2.28	1.87	0.86	0.25	0.03	0.04	0.05
<b>Domestic Equity Composite</b>	<b>-17.70</b>	<b>25.11</b>	<b>22.02</b>	<b>29.67</b>	<b>-6.17</b>	<b>22.22</b>	<b>9.62</b>	<b>-1.61</b>	<b>8.44</b>	<b>35.07</b>
Russell 3000 Index	-19.21	25.66	20.89	31.02	-5.24	21.13	12.74	0.48	12.56	33.55
Domestic Equity Index	-18.82	23.52	20.08	29.94	-6.47	20.20	13.76	0.19	11.60	34.04
<b>Fixed Income Composite</b>	<b>-11.98</b>	<b>-0.70</b>	<b>9.17</b>	<b>9.51</b>	<b>-1.28</b>	<b>6.58</b>	<b>4.83</b>	<b>-0.53</b>	<b>4.42</b>	<b>-0.14</b>
Fixed Income Index	-13.63	-1.25	7.78	9.24	-0.91	5.50	4.83	-0.86	4.89	0.39
<b>International Equity Composite</b>	<b>-21.01</b>	<b>8.44</b>	<b>17.01</b>	<b>23.83</b>	<b>-16.10</b>	<b>32.40</b>	<b>2.64</b>	<b>-1.18</b>	<b>-1.73</b>	<b>20.03</b>
International Equity Index	-16.14	6.88	11.18	20.94	-13.98	28.77	3.16	-4.06	-4.13	16.58
<b>Hedge Fund Composite</b>	<b>-3.41</b>	<b>7.59</b>	<b>11.20</b>	<b>7.95</b>	<b>-1.55</b>	<b>6.72</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
90-Day T-Bill+ 5%	6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index	0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
<b>Total Real Estate Composite</b>	<b>2.12</b>	<b>24.06</b>	<b>1.81</b>	<b>9.01</b>	<b>7.46</b>	<b>6.29</b>	<b>8.20</b>	<b>14.65</b>	<b>20.16</b>	<b>10.27</b>
NCREIF Property Index	5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98

Net of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	Market Value (\$000)	Performance (%)									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>In House Cash</b>	11,013	1.50	0.04	0.26	2.12	1.93	0.67	0.35	0.18	0.11	0.11
90 Day U.S. Treasury Bill		1.46	0.05	0.67	2.28	1.87	0.86	0.25	0.03	0.04	0.05
<b>Domestic Equity Composite</b>	739,486	-17.70	25.11	22.02	29.67	-6.17	22.22	9.62	-1.61	8.44	35.07
Russell 3000 Index		-19.21	25.66	20.89	31.02	-5.24	21.13	12.74	0.48	12.56	33.55
Domestic Equity Index		-18.82	23.52	20.08	29.94	-6.47	20.20	13.76	0.19	11.60	34.04
IM U.S. Equity (SA+CF) Median		-16.43	26.09	16.70	28.60	-7.07	19.43	13.20	-0.49	9.98	35.77
Domestic Equity Composite Rank		56	56	35	43	45	34	70	59	61	55
<b>Barrow, Hanley</b>	144,921	-2.83	25.97	4.19	25.67	-6.30	15.92	14.50	-1.92	13.29	33.03
Russell 1000 Value Index		-7.54	25.16	2.80	26.54	-8.27	13.66	17.34	-3.83	13.45	32.53
IM U.S. Large Cap Value Equity (SA+CF) Median		-5.27	27.90	4.44	27.48	-8.38	17.15	14.79	-2.34	12.03	33.67
Barrow, Hanley Rank		31	68	53	66	31	69	54	46	33	56
<b>Winslow Capital Management</b>	84,588	-31.14	24.15	37.97	33.81	3.57	32.46	-2.13	6.55	10.67	37.50
Russell 1000 Growth Index		-29.14	27.60	38.49	36.39	-1.51	30.21	7.08	5.67	13.05	33.48
IM U.S. Large Cap Growth Equity (SA+CF) Median		-29.13	24.98	35.35	33.98	-0.53	28.48	4.63	5.43	11.87	34.63
Winslow Capital Management Rank		65	57	38	52	13	26	95	41	63	26
<b>Rhumbline Russell 1000 Growth</b>	89,150	-29.11	27.58	38.51	36.35	-1.51	N/A	N/A	N/A	N/A	N/A
Russell 1000 Growth Index		-29.14	27.60	38.49	36.39	-1.51	30.21	7.08	5.67	13.05	33.48
IM U.S. Large Cap Growth Equity (SA+CF) Median		-29.13	24.98	35.35	33.98	-0.53	28.48	4.63	5.43	11.87	34.63
Rhumbline Russell 1000 Growth Rank		50	32	35	27	58	N/A	N/A	N/A	N/A	N/A
<b>Rhumbline S&amp;P 500</b>	200,057	-18.11	28.69	18.37	31.36	-4.43	21.75	11.89	1.35	13.55	32.26
S&P 500		-18.11	28.71	18.40	31.49	-4.38	21.83	11.96	1.38	13.69	32.39
IM U.S. Large Cap Core Equity (SA+CF) Median		-16.49	27.75	17.65	30.06	-5.05	22.12	10.50	1.49	13.42	33.17
Rhumbline S&P 500 Rank		66	37	47	35	42	57	33	55	48	63
<b>NTGI S&amp;P 400</b>	52,615	-13.10	24.79	13.59	26.16	-11.14	16.17	20.68	-2.22	9.70	33.45
S&P MidCap 400		-13.06	24.76	13.66	26.20	-11.08	16.24	20.74	-2.18	9.77	33.50
IM U.S. Mid Cap Core Equity (SA+CF) Median		-13.08	24.80	13.76	27.08	-11.02	17.47	16.61	-1.33	10.09	36.00
NTGI S&P 400 Rank		52	56	66	73	62	79	26	74	66	80

Net of Fees.

## City of Memphis

## Comparative Performance

As of September 30, 2023

	<b>Market Value (\$000)</b>	<b>Performance (%)</b>									
		<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>
<b>Capital Prospects SMID</b>	<b>54,017</b>	<b>-21.26</b>	<b>23.27</b>	<b>20.87</b>	<b>27.08</b>	<b>-4.83</b>	<b>23.15</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
Russell 2500 Index		-18.37	18.18	19.99	27.77	-10.00	16.81	17.59	-2.90	7.07	36.80
IM U.S. SMID Cap Equity (SA+CF) Median		-16.86	23.31	17.56	28.92	-9.85	17.98	16.34	-1.42	6.70	38.15
Capital Prospects SMID Rank		68	51	43	65	24	25	N/A	N/A	N/A	N/A
<b>Capital Prospects Small Cap Value</b>	<b>62,264</b>	<b>-9.09</b>	<b>37.37</b>	<b>2.98</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
Russell 2000 Value Index		-14.48	28.27	4.63	22.39	-12.86	7.84	31.74	-7.47	4.22	34.52
IM U.S. Small Cap Value Equity (SA+CF) Median		-10.84	29.80	5.16	24.96	-14.06	11.58	27.22	-4.30	5.71	37.91
Capital Prospects Small Cap Value Rank		38	19	61	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Nicholas Investment Partners</b>	<b>23,147</b>	<b>-31.60</b>	<b>8.52</b>	<b>67.40</b>	<b>34.93</b>	<b>-11.26</b>	<b>26.11</b>	<b>1.98</b>	<b>-2.34</b>	<b>-1.12</b>	<b>57.42</b>
Russell 2000 Growth Index		-26.36	2.83	34.63	28.48	-9.31	22.17	11.32	-1.38	5.60	43.30
IM U.S. Small Cap Growth Equity (SA+CF) Median		-27.40	12.05	42.40	29.18	-3.83	24.33	10.61	-0.71	3.91	46.26
Nicholas Investment Partners Rank		76	65	16	31	89	42	92	65	82	9
<b>Conestoga Capital Advisors</b>	<b>28,727</b>	<b>-27.66</b>	<b>16.41</b>	<b>32.04</b>	<b>26.02</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
Russell 2000 Growth Index		-26.36	2.83	34.63	28.48	-9.31	22.17	11.32	-1.38	5.60	43.30
IM U.S. Small Cap Growth Equity (SA+CF) Median		-27.40	12.05	42.40	29.18	-3.83	24.33	10.61	-0.71	3.91	46.26
Conestoga Capital Advisors Rank		53	38	73	69	N/A	N/A	N/A	N/A	N/A	N/A
<b>International Equity Composite</b>	<b>535,196</b>	<b>-21.01</b>	<b>8.44</b>	<b>17.01</b>	<b>23.83</b>	<b>-16.10</b>	<b>32.40</b>	<b>2.64</b>	<b>-1.18</b>	<b>-1.73</b>	<b>20.03</b>
International Equity Index		-16.14	6.88	11.18	20.94	-13.98	28.77	3.16	-4.06	-4.13	16.58
IM International Equity (SA+CF) Median		-16.26	11.68	11.50	23.50	-14.58	28.70	2.41	1.17	-3.37	23.40
International Equity Composite Rank		74	71	33	49	65	31	49	66	35	66
<b>1607 Capital Partners</b>	<b>103,291</b>	<b>-20.18</b>	<b>11.46</b>	<b>15.28</b>	<b>24.50</b>	<b>-14.82</b>	<b>32.05</b>	<b>1.97</b>	<b>-0.82</b>	<b>-2.22</b>	<b>25.44</b>
MSCI EAFE (Net)		-14.45	11.26	7.82	22.01	-13.79	25.03	1.00	-0.81	-4.90	22.78
IM International Large Cap Core Equity (SA+CF) Median		-15.93	12.06	11.60	23.58	-14.32	27.82	1.67	0.57	-3.66	22.82
1607 Capital Partners Rank		84	55	31	44	60	15	46	63	30	29

Net of Fees.

# City of Memphis

## Comparative Performance

As of September 30, 2023

	<u>Market Value (\$000)</u>	<u>Performance (%)</u>									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>Marathon Asset Mgmt</b>	<b>105,537</b>	<b>-14.09</b>	<b>9.29</b>	<b>9.30</b>	<b>23.13</b>	<b>-13.78</b>	<b>23.53</b>	<b>-1.82</b>	<b>6.45</b>	<b>-4.59</b>	<b>28.60</b>
MSCI AC World ex USA (Net)		-16.00	7.82	10.65	21.51	-14.20	27.19	4.50	-5.66	-3.87	15.29
IM International Large Cap Core Equity (SA+CF) Median		-15.93	12.06	11.60	23.58	-14.32	27.82	1.67	0.57	-3.66	22.82
Marathon Asset Mgmt Rank		34	71	64	54	42	89	86	9	63	14
<b>Principal Global Investors</b>	<b>98,382</b>	<b>-24.52</b>	<b>11.97</b>	<b>21.89</b>	<b>26.23</b>	<b>-17.79</b>	<b>25.75</b>	<b>-0.95</b>	<b>4.34</b>	<b>-1.67</b>	<b>25.65</b>
MSCI World ex U.S. Growth (Net)		-22.68	11.57	18.41	27.92	-13.14	27.61	-1.87	1.65	-3.26	20.53
IM International Large Cap Core Equity (SA+CF) Median		-15.93	12.06	11.60	23.58	-14.32	27.82	1.67	0.57	-3.66	22.82
Principal Global Investors Rank		97	51	12	32	90	68	79	13	23	28
<b>Strategic Global Advisors</b>	<b>62,431</b>	<b>-16.85</b>	<b>16.18</b>	<b>7.36</b>	<b>22.09</b>	<b>-17.09</b>	<b>29.13</b>	<b>-0.74</b>	<b>3.08</b>	<b>0.54</b>	<b>25.64</b>
MSCI World ex-U.S. (Net)		-14.29	12.62	7.59	22.49	-14.09	24.21	2.75	-3.04	-4.32	21.02
IM International Core Equity (SA+CF) Median		-16.79	12.45	12.09	23.97	-15.01	29.37	1.72	1.59	-3.43	24.21
Strategic Global Advisors Rank		51	20	75	66	72	52	77	38	13	40
<b>Acadian EM Equity II</b>	<b>89,042</b>	<b>-20.42</b>	<b>7.84</b>	<b>11.67</b>	<b>17.03</b>	<b>-19.04</b>	<b>37.87</b>	<b>13.08</b>	<b>-18.07</b>	<b>1.60</b>	<b>-2.15</b>
MSCI EM (net)		-20.09	-2.54	18.31	18.42	-14.57	37.28	11.19	-14.92	-2.19	-2.60
IM Emerging Markets Equity (SA+CF) Median		-19.50	0.94	18.28	20.15	-15.20	36.91	10.00	-12.11	0.09	1.16
Acadian EM Equity II Rank		57	27	77	70	83	43	29	92	37	74
<b>J.P. Morgan Global Emerging Markets Discovery Fund</b>	<b>76,514</b>	<b>-28.67</b>	<b>-3.87</b>	<b>33.64</b>	<b>29.38</b>	<b>-15.74</b>	<b>45.78</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
MSCI EM (net)		-20.09	-2.54	18.31	18.42	-14.57	37.28	11.19	-14.92	-2.19	-2.60
IM Emerging Markets Equity (SA+CF) Median		-19.50	0.94	18.28	20.15	-15.20	36.91	10.00	-12.11	0.09	1.16
J.P. Morgan Global Emerging Markets Discovery Fund Rank		91	72	16	14	57	14	N/A	N/A	N/A	N/A
<b>Fixed Income Composite</b>	<b>585,688</b>	<b>-11.98</b>	<b>-0.70</b>	<b>9.17</b>	<b>9.51</b>	<b>-1.28</b>	<b>6.58</b>	<b>4.83</b>	<b>-0.53</b>	<b>4.42</b>	<b>-0.14</b>
Fixed Income Index		-13.63	-1.25	7.78	9.24	-0.91	5.50	4.83	-0.86	4.89	0.39
IM U.S. Fixed Income (SA+CF) Median		-9.19	0.03	6.98	8.74	0.44	4.18	3.64	0.75	4.45	-0.18
Fixed Income Composite Rank		65	68	27	40	77	27	40	74	51	50

Net of Fees.

## City of Memphis

## Comparative Performance

As of September 30, 2023

	<u>Market Value (\$000)</u>	<u>Performance (%)</u>									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>Mackay Shields</b>	<b>123,329</b>	<b>-7.36</b>	<b>5.77</b>	<b>5.87</b>	<b>13.72</b>	<b>-0.96</b>	<b>7.27</b>	<b>17.20</b>	<b>-1.13</b>	<b>2.09</b>	<b>6.80</b>
Credit Suisse High Yield Index		-10.55	5.50	5.48	14.00	-2.37	7.02	18.26	-4.93	1.86	7.53
IM U.S. High Yield Bonds (SA+CF) Median		-9.46	5.31	6.57	14.32	-1.64	7.48	14.07	-2.09	2.55	7.59
Mackay Shields Rank		24	38	65	56	35	55	17	33	61	67
<b>PIMCO</b>	<b>91,218</b>	<b>-12.74</b>	<b>-0.80</b>	<b>8.36</b>	<b>8.73</b>	<b>0.49</b>	<b>5.14</b>	<b>3.24</b>	<b>-0.15</b>	<b>4.15</b>	<b>-2.98</b>
Blmbg. U.S. Aggregate		-13.01	-1.55	7.51	8.72	0.01	3.54	2.65	0.55	5.97	-2.02
IM U.S. Broad Market Core Fixed Income (SA+CF) Median		-12.97	-1.24	8.43	9.18	0.06	4.01	3.07	0.81	6.14	-1.61
PIMCO Rank		36	32	51	77	17	7	45	97	98	99
<b>Prudential Core Conserv Bond</b>	<b>87,402</b>	<b>-13.06</b>	<b>-1.65</b>	<b>7.59</b>	<b>8.66</b>	<b>-0.21</b>	<b>3.56</b>	<b>2.75</b>	<b>0.73</b>	<b>6.09</b>	<b>-2.18</b>
Blmbg. U.S. Aggregate		-13.01	-1.55	7.51	8.72	0.01	3.54	2.65	0.55	5.97	-2.02
IM U.S. Broad Market Core Fixed Income (SA+CF) Median		-12.97	-1.24	8.43	9.18	0.06	4.01	3.07	0.81	6.14	-1.61
Prudential Core Conserv Bond Rank		60	83	81	82	81	81	66	59	55	86
<b>Brandywine</b>	<b>182,874</b>	<b>-13.77</b>	<b>-3.86</b>	<b>11.57</b>	<b>7.74</b>	<b>-3.10</b>	<b>10.67</b>	<b>0.67</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
Blmbg. Global Aggregate		-16.25	-4.71	9.20	6.84	-1.19	7.39	2.09	-3.15	0.59	-2.60
FTSE World Government Bond Index		-18.26	-6.97	10.11	5.90	-0.84	7.49	1.60	-3.57	-0.48	-4.00
IM Global Fixed Income (SA+CF) Median		-12.28	0.50	8.68	9.73	-1.81	7.83	6.17	-2.41	2.47	0.05
Brandywine Rank		59	77	23	80	70	16	93	N/A	N/A	N/A
<b>Hedge Fund Composite</b>	<b>101,214</b>	<b>-3.41</b>	<b>7.59</b>	<b>11.20</b>	<b>7.95</b>	<b>-1.55</b>	<b>6.72</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
90-Day T-Bill+ 5%		6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index		0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
<b>Grosvenor Institutional Partners, L.P.</b>	<b>48,974</b>	<b>-5.86</b>	<b>7.78</b>	<b>17.17</b>	<b>6.06</b>	<b>-1.49</b>	<b>6.14</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
90-Day T-Bill+ 5%		6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index		0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70
<b>Aetos</b>	<b>47,166</b>	<b>-0.68</b>	<b>6.46</b>	<b>6.99</b>	<b>9.26</b>	<b>-1.61</b>	<b>7.30</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
90-Day T-Bill + 5%		6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
HFRI FOF: Conservative Index		0.08	7.62	6.47	6.30	-0.87	4.12	1.89	0.37	3.14	7.70

Net of Fees.

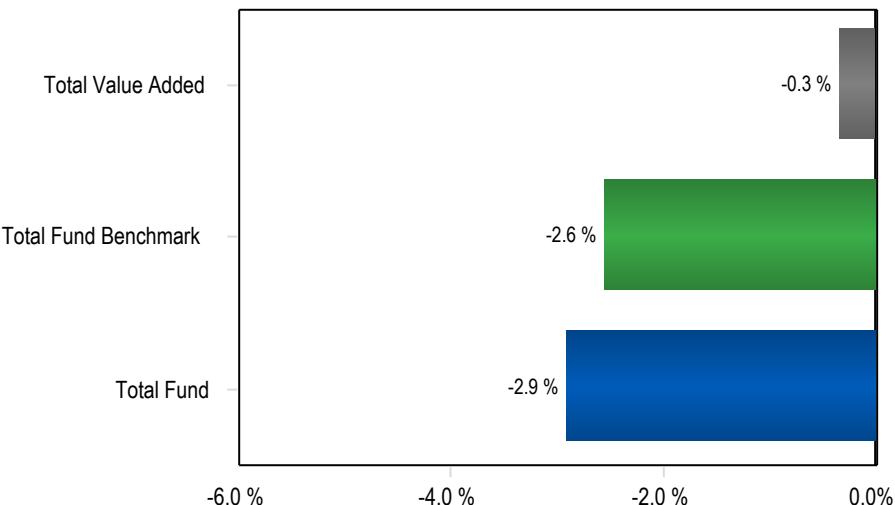
# City of Memphis

## Comparative Performance

As of September 30, 2023

	Market Value (\$000)	Performance (%)									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>Preserver, L.P.</b>	<b>5,074</b>	<b>-3.69</b>	<b>11.83</b>	<b>3.70</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
90-Day T-Bill + 5%		6.53	5.05	5.70	7.39	6.97	5.90	5.27	5.03	5.04	5.05
<i>HFRI Fund of Funds Composite Index</i>		-5.31	6.17	10.88	8.39	-4.02	7.77	0.51	-0.27	3.37	8.96
<i>HFRI RV: Multi-Strategy Index</i>		-0.73	7.03	6.69	5.29	-0.23	4.09	6.36	0.65	3.40	7.90
<b>Total Real Estate Composite</b>	<b>231,516</b>	<b>2.12</b>	<b>24.06</b>	<b>1.81</b>	<b>9.01</b>	<b>7.46</b>	<b>6.29</b>	<b>8.20</b>	<b>14.65</b>	<b>20.16</b>	<b>10.27</b>
<i>NCREIF Property Index</i>		5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98
<b>BlackRock US Core Property Fund</b>	<b>67,764</b>	<b>8.74</b>	<b>18.65</b>	<b>2.08</b>	<b>5.58</b>	<b>7.20</b>	<b>8.29</b>	<b>10.10</b>	<b>14.38</b>	<b>10.71</b>	<b>9.90</b>
<i>NCREIF Property Index</i>		5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98
<b>RREEF REIT II</b>	<b>18,159</b>	<b>7.59</b>	<b>23.79</b>	<b>0.37</b>	<b>5.29</b>	<b>6.98</b>	<b>6.43</b>	<b>8.12</b>	<b>15.63</b>	<b>11.95</b>	<b>14.38</b>
<i>NCREIF Property Index</i>		5.51	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82	10.98
<b>Vanguard REIT Index Inv</b>	<b>3,041</b>	<b>-26.19</b>	<b>40.47</b>	<b>-4.67</b>	<b>28.95</b>	<b>-5.93</b>	<b>4.86</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>Vanguard REIT Spliced Index</i>		-26.12	40.56	-4.55	29.03	-5.86	5.07	8.60	2.52	30.38	2.47
<i>IM Real Estate Sector (MF) Median</i>		-26.17	41.32	-4.31	27.32	-5.71	5.32	6.34	2.91	29.47	1.64
<i>Vanguard REIT Index Inv Rank</i>		51	61	54	34	54	59	N/A	N/A	N/A	N/A
<b>TA Realty Core Property Fund</b>	<b>30,547</b>	<b>8.84</b>	<b>29.56</b>	<b>5.50</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<i>NCREIF ODCE Equal Weighted</i>		7.46	22.62	1.57	6.08	8.25	7.80	9.27	15.17	12.38	13.36

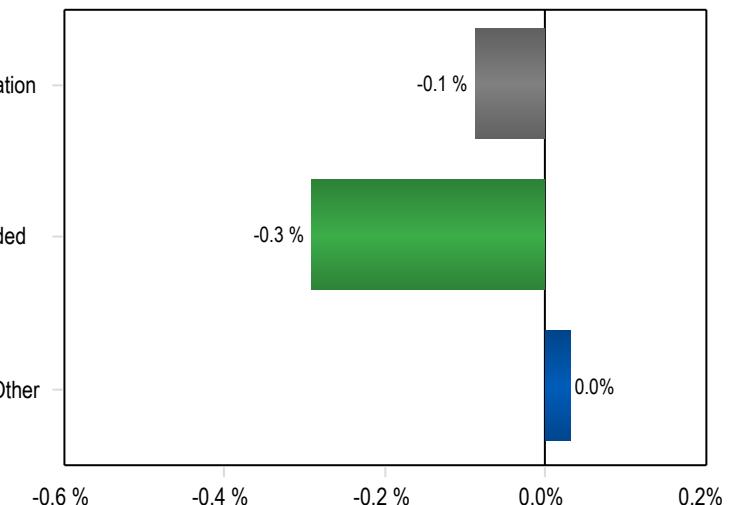
Net of Fees.

**Total Fund Performance****Total Value Added:-0.3 %**

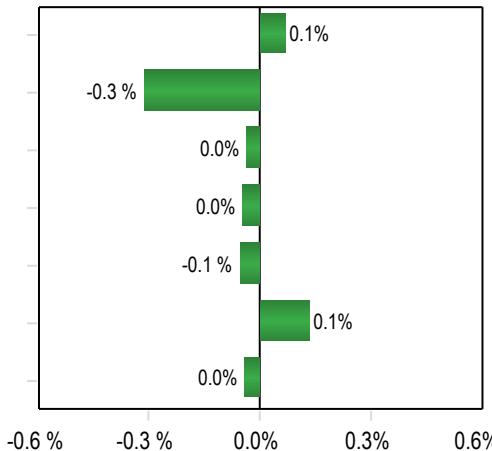
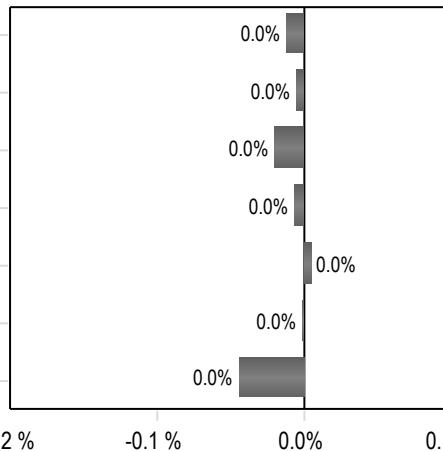
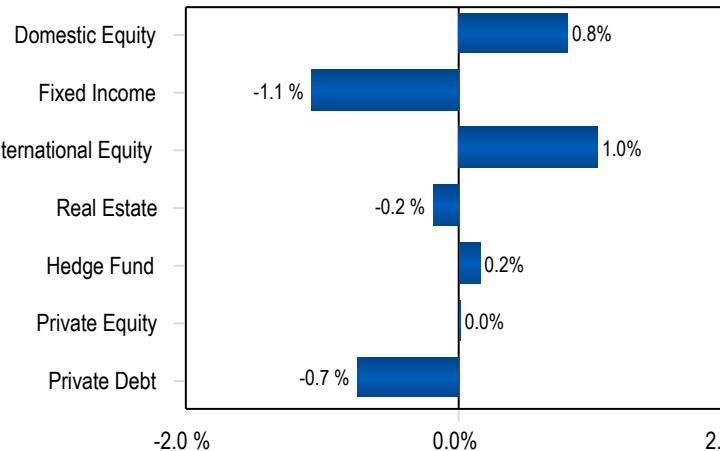
## Asset Allocation

## Manager Value Added

## Other

**Total Asset Allocation:-0.1 %****Total Manager Value Added:-0.3 %**

Weight (%)



■ Average Active Weight

■ Asset Allocation Value Added

■ Manager Value Added

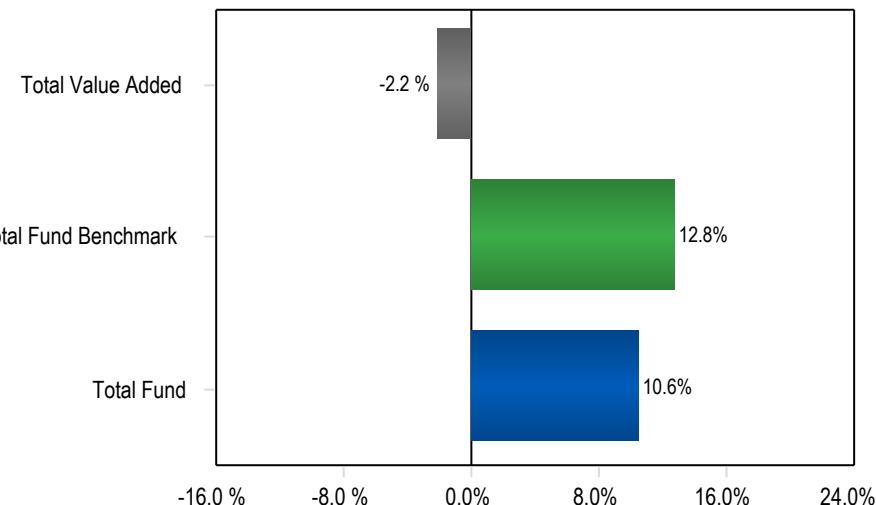
# City of Memphis

## Total Fund Attribution

1 Year Ending September 30, 2023

**Total Fund Performance**

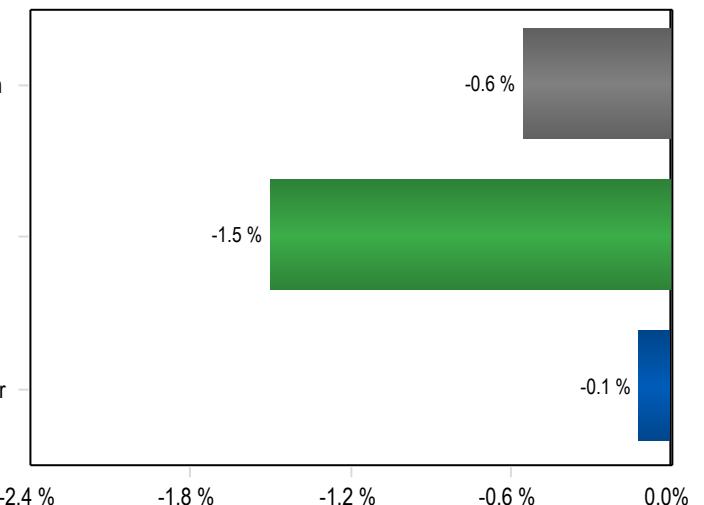
**Total Value Added:-2.2 %**



Asset Allocation

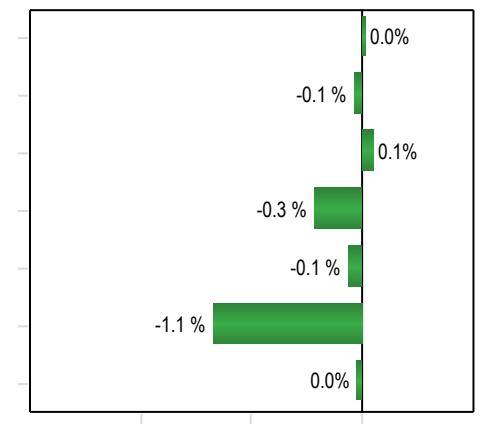
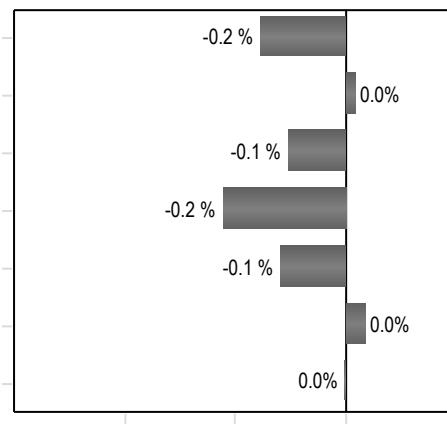
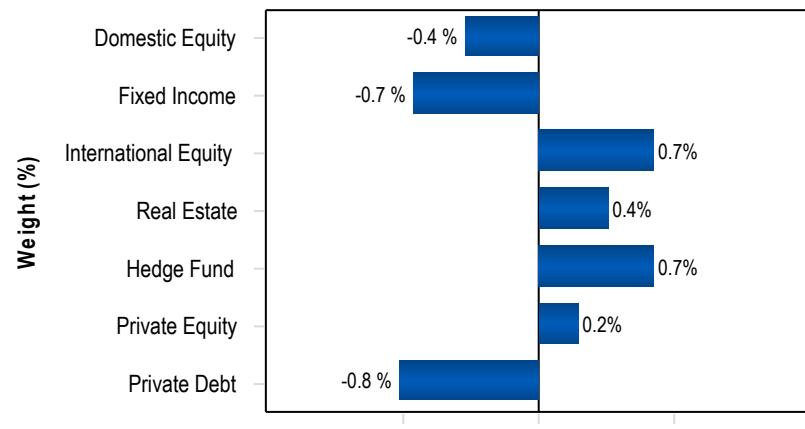
Manager Value Added

Other



**Total Asset Allocation:-0.6 %**

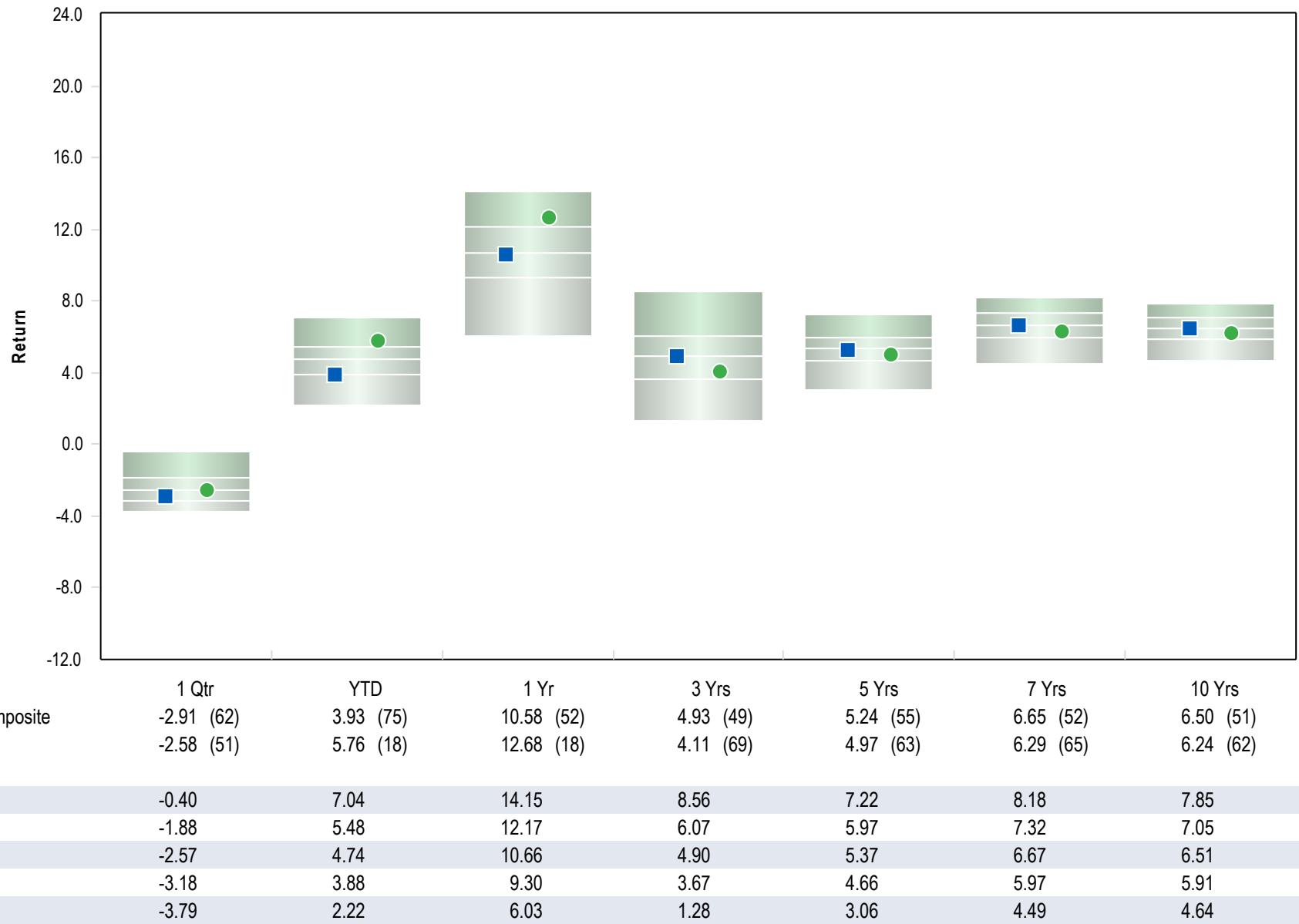
**Total Manager Value Added:-1.5 %**



■ Average Active Weight

■ Asset Allocation Value Added

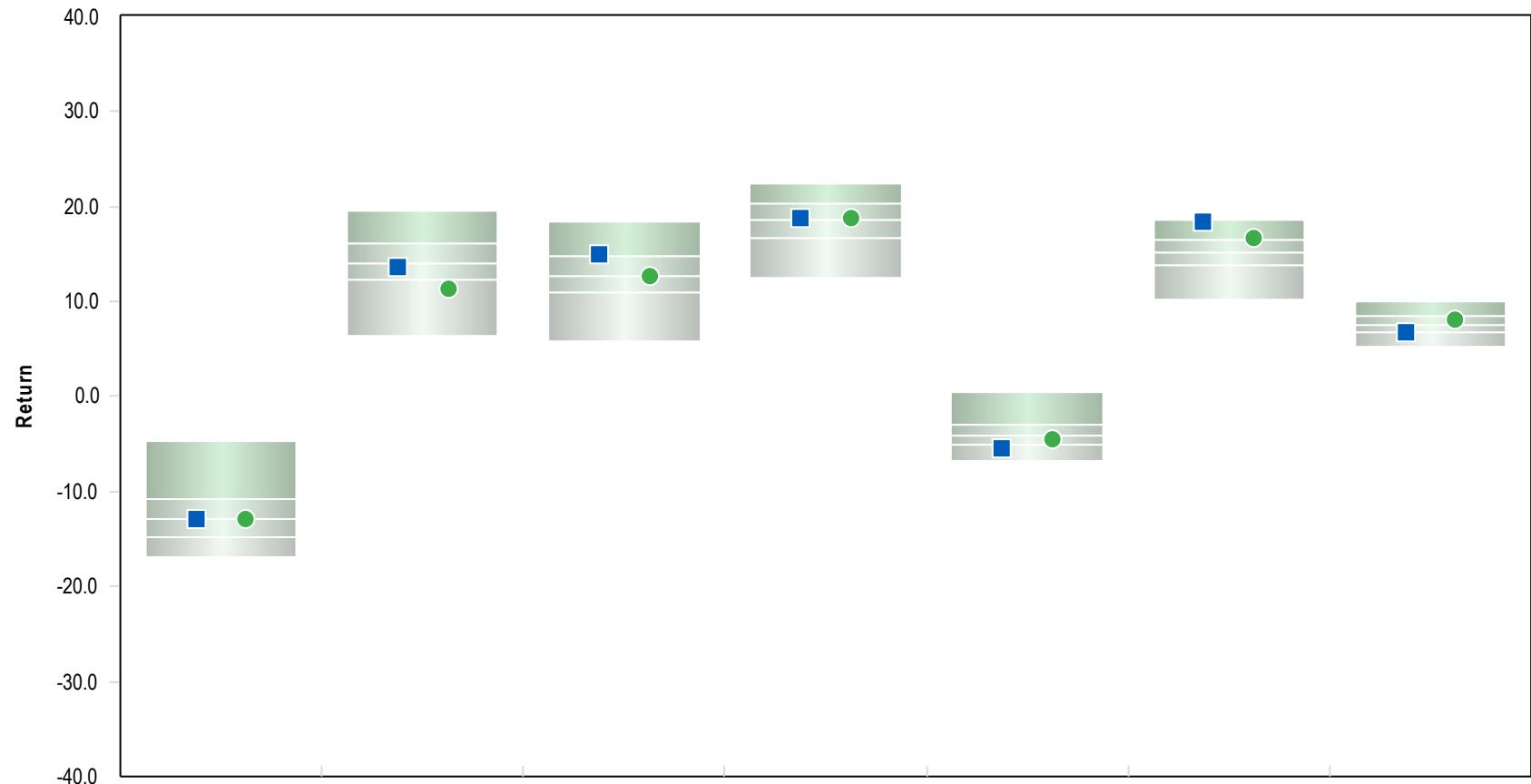
■ Manager Value Added



# City of Memphis

## All Public Plans-Total Fund

As of September 30, 2023



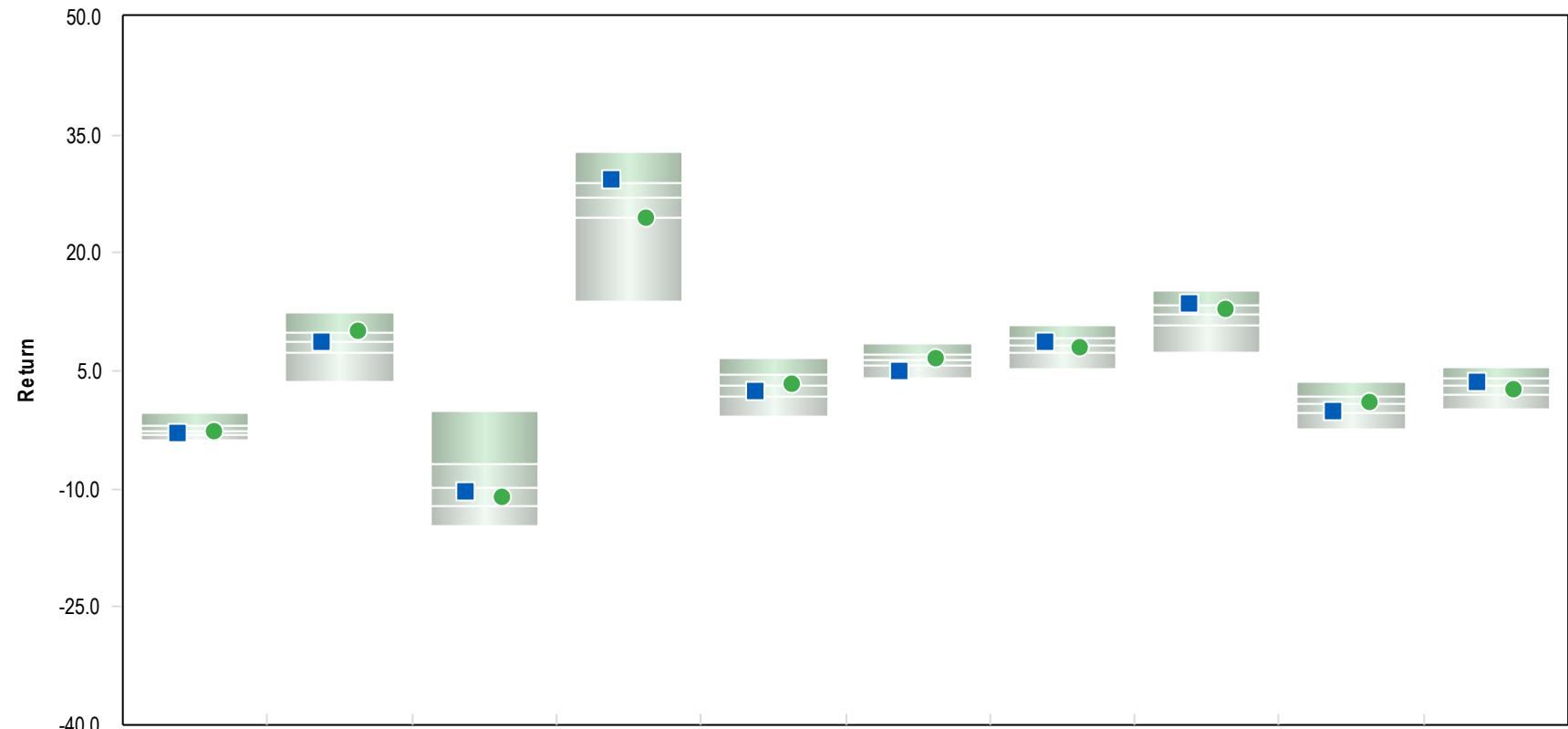
	2022	2021	2020	2019	2018	2017	2016
Total Fund Composite	-12.92 (52)	13.57 (57)	15.06 (22)	18.86 (47)	-5.39 (80)	18.36 (6)	6.76 (77)
Policy Index	-12.94 (52)	11.35 (84)	12.73 (50)	18.81 (47)	-4.51 (59)	16.68 (21)	8.04 (39)
5th Percentile	-4.66	19.61	18.42	22.47	0.43	18.55	9.95
1st Quartile	-10.79	16.07	14.71	20.35	-2.90	16.44	8.46
Median	-12.85	14.01	12.63	18.63	-4.11	15.10	7.61
3rd Quartile	-14.77	12.30	10.99	16.68	-5.15	13.80	6.83
95th Percentile	-16.92	6.46	5.91	12.50	-6.83	10.13	5.23

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# City of Memphis

## All Public Plans-Total Fund

As of September 30, 2023

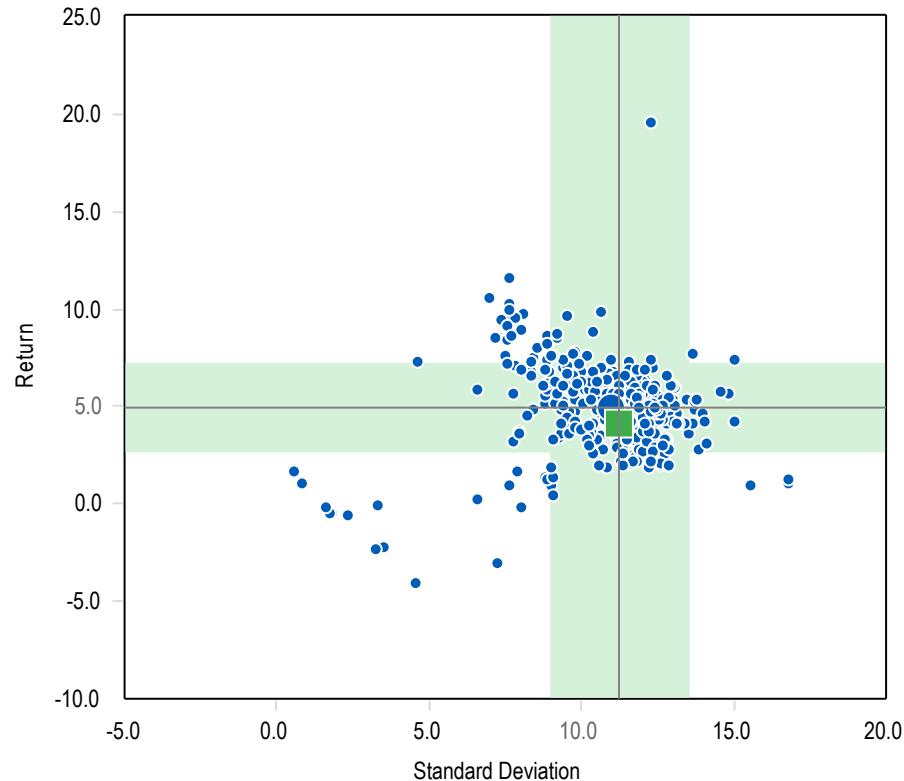


	FYTD	Jul-2022 To Jun-2023	Jul-2021 To Jun-2022	Jul-2020 To Jun-2021	Jul-2019 To Jun-2020	Jul-2018 To Jun-2019	Jul-2017 To Jun-2018	Jul-2016 To Jun-2017	Jul-2015 To Jun-2016	Jul-2014 To Jun-2015
■ Total Fund Composite	-2.91 (62)	8.77 (52)	-10.31 (54)	29.46 (21)	2.48 (60)	5.10 (84)	8.78 (36)	13.55 (23)	-0.10 (70)	3.72 (33)
● Policy Index	-2.58 (51)	10.15 (21)	-10.93 (61)	24.40 (76)	3.33 (47)	6.55 (44)	7.91 (59)	12.89 (33)	1.02 (43)	2.78 (61)
5th Percentile	-0.40	12.35	0.00	32.90	6.67	8.55	10.91	15.27	3.60	5.43
1st Quartile	-1.88	9.94	-6.89	28.94	4.57	7.20	9.26	13.36	1.77	3.99
Median	-2.57	8.82	-9.83	26.97	3.10	6.39	8.26	12.08	0.73	3.14
3rd Quartile	-3.18	7.31	-12.11	24.43	1.65	5.60	7.31	10.74	-0.40	2.10
95th Percentile	-3.79	3.63	-14.83	13.88	-0.87	4.18	5.12	7.28	-2.41	0.14

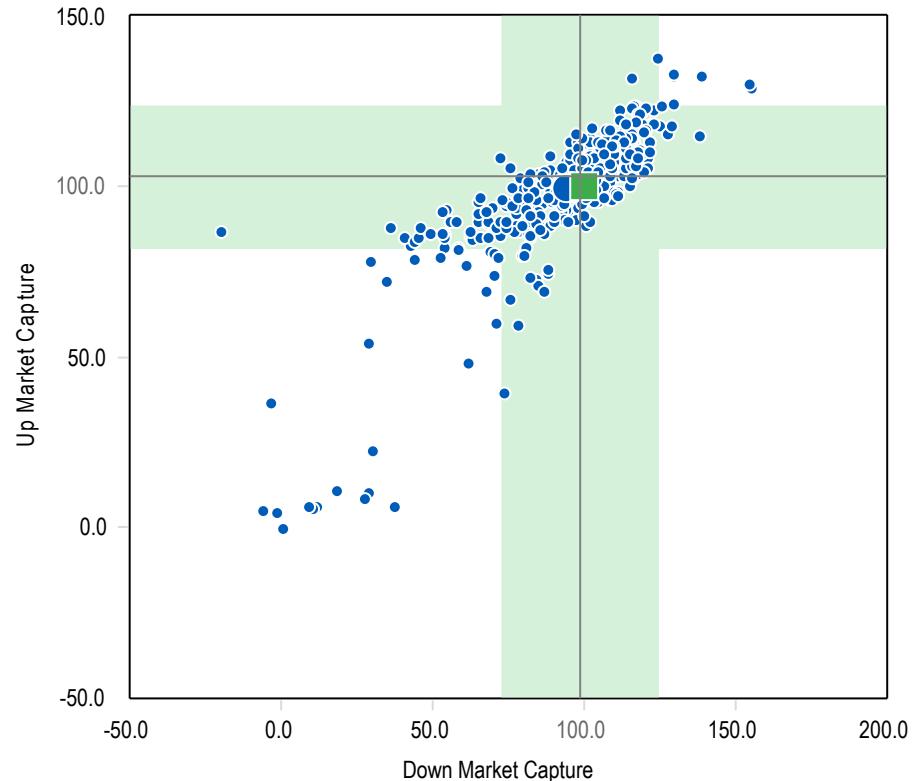
Parentheses contain percentile rankings.

Calculation based on monthly periodicity.

3 Years Annualized Return vs. Annualized Standard Deviation



3 Years Upside Capture Ratio vs. Downside Capture Ratio

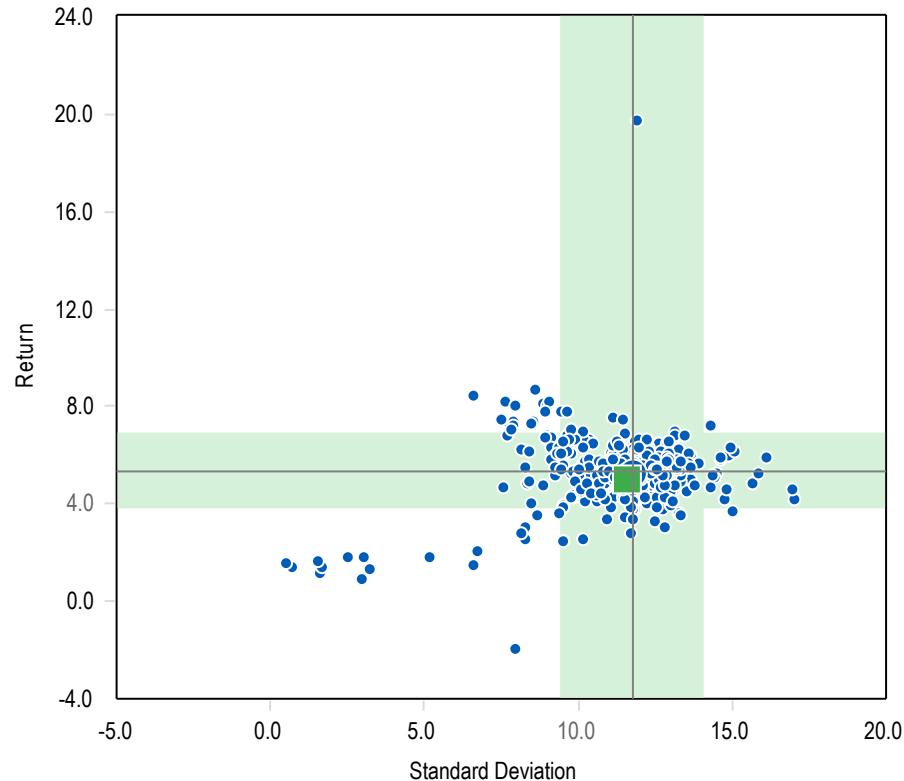


	Return	Standard Deviation
Total Fund Composite	4.9	11.0
Policy Index	4.1	11.2
Median	4.9	11.2
Population	379	379

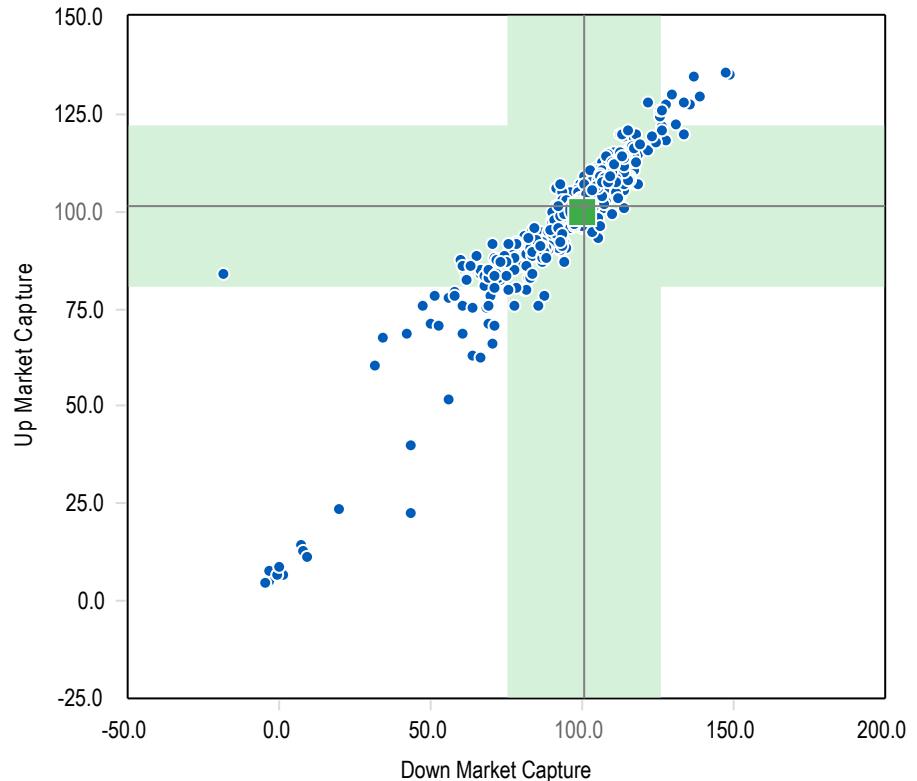
	Up Market Capture	Down Market Capture
Total Fund Composite	99.6	94.0
Policy Index	100.0	100.0
Median	103.1	98.7
Population	379	379

The shaded area is one sigma range from the median.

5 Years Annualized Return vs. Annualized Standard Deviation



5 Years Upside Capture Ratio vs. Downside Capture Ratio



	Return	Standard Deviation
Total Fund Composite	5.2	11.8
Policy Index	5.0	11.6
Median	5.4	11.8
Population	369	369

	Up Market Capture	Down Market Capture
Total Fund Composite	100.6	98.8
Policy Index	100.0	100.0
Median	101.4	100.8
Population	369	369

The shaded area is one sigma range from the median.

**City of Memphis  
Policy Index**

**As of September 30, 2023**

Policy Index	Weight (%)	Policy Index	Weight (%)
Jan-1979		Apr-2011	
Russell 3000 Index	45.0	S&P 500	26.0
Bloomberg U.S. Aggregate	40.0	Russell Midcap Index	4.0
MSCI EAFE (Net)	10.0	Russell 2000 Index	4.0
Wilshire REOC	5.0	MSCI EAFE (Net)	17.0
Apr-1997		MSCI Emerging Markets Index	5.0
Russell 3000 Index	40.0	Bloomberg U.S. Aggregate	29.0
Bloomberg U.S. Aggregate	40.0	Credit Suisse High Yield	10.0
MSCI EAFE (Net)	15.0	NCREIF ODCE Equal Weighted	5.0
Wilshire REOC	5.0	Sep-2016	
Oct-1999		Russell 3000 Index	27.0
Russell 3000 Index	40.0	MSCI EAFE (Net)	18.5
Bloomberg U.S. Aggregate	40.0	MSCI EM (net)	8.5
MSCI AC World ex USA	15.0	Bloomberg U.S. Aggregate	12.0
Wilshire REOC	5.0	NCREIF Property Index	10.0
Jul-2001		Bloomberg Global Aggregate	10.0
Russell 3000 Index	40.0	S&P 500 + 3%	4.0
Bloomberg U.S. Aggregate	40.0	T Bills + 5%	4.0
MSCI AC World ex USA	15.0	Credit Suisse High Yield Index	6.0
NCREIF Property Index	5.0	Dec-2021	
Apr-2007		Russell 3000 Index	32.0
Russell 3000 Index	35.0	MSCI EAFE (Net)	15.0
Bloomberg U.S. Aggregate	40.0	MSCI EM (net)	7.0
MSCI AC World ex USA	20.0	Bloomberg U.S. Aggregate	13.0
NCREIF Property Index	5.0	NCREIF Property Index	10.0
		Bloomberg Global Aggregate	8.0
		S&P 500 + 3%	4.0
		T Bills + 5%	4.0
		Credit Suisse High Yield Index	5.0
		Morningstar LSTA US Leveraged Loan	2.0

Policy Index	Weight (%)
Jan-2023	
Russell 3000 Index	31.0
MSCI EAFE (Net)	15.0
MSCI EM (net)	7.0
Bloomberg U.S. Aggregate	13.0
NCREIF Property Index	10.0
Bloomberg Global Aggregate	8.0
S&P 500 + 3%	5.0
T Bills + 5%	4.0
Credit Suisse High Yield Index	5.0
Morningstar LSTA US Leveraged Loan	2.0

Policy Index	Weight (%)
Jan-1970	
MSCI AC World ex USA	100.0
Apr-2011	
MSCI EAFE (Net)	77.0
MSCI Emerging Markets Index	23.0
Sep-2016	
MSCI EAFE (Net)	69.0
MSCI EM (net)	31.0
Dec-2021	
MSCI EAFE (Net)	68.0
MSCI EM (net)	32.0

# City of Memphis

## Fixed Income Index

As of September 30, 2023

Policy Index	Weight (%)	Policy Index	Weight (%)
Jan-1976		Jan-2021	
Blmbg. U.S. Aggregate	100.0	Blmbg. U.S. Aggregate	43.0
Apr-2011		Credit Suisse High Yield Index	21.0
Blmbg. U.S. Aggregate	74.0	Blmbg. Global Aggregate	36.0
Credit Suisse High Yield	26.0		
Sep-2016			
Blmbg. U.S. Aggregate	43.0		
Credit Suisse High Yield	21.0		
Blmbg. Global Aggregate	36.0		
Jan-2017			
Blmbg. U.S. Aggregate	47.0		
Credit Suisse High Yield	22.0		
Blmbg. Global Aggregate	31.0		
Jan-2018			
Blmbg. U.S. Aggregate	43.0		
Credit Suisse High Yield	22.5		
Blmbg. Global Aggregate	34.5		
Jan-2019			
Blmbg. U.S. Aggregate	43.5		
Credit Suisse High Yield	22.0		
Blmbg. Global Aggregate	34.5		
Jan-2020			
Blmbg. U.S. Aggregate	44.0		
Credit Suisse High Yield Index	23.0		
Blmbg. Global Aggregate	33.0		

# City of Memphis

## Schedule of Investable Assets

Since Inception Ending September 30, 2023

Periods Ending	Beginning Market Value (\$)	Net Cash Flow (\$)	Gain/Loss (\$)	Ending Market Value (\$)	%Return
From 06/1996	1,291,734,891	-14,742,714	101,140,788	1,378,132,965	7.9
1997	1,378,132,965	-34,096,344	234,250,900	1,578,287,521	17.2
1998	1,578,287,521	-42,268,539	240,063,429	1,776,082,411	15.4
1999	1,776,082,411	-47,808,437	240,291,082	1,968,565,056	13.2
2000	1,968,565,056	-64,387,008	7,639,956	1,911,818,004	0.4
2001	1,911,818,004	-77,481,199	-14,124,868	1,820,211,937	-0.7
2002	1,820,211,937	-81,528,582	-150,191,752	1,588,491,603	-8.4
2003	1,588,491,603	-75,424,638	350,796,286	1,863,863,251	22.6
2004	1,863,863,251	-79,808,593	216,220,232	2,000,274,890	11.9
2005	2,000,274,890	-90,832,853	173,260,464	2,082,702,500	8.5
2006	2,082,702,500	-86,039,647	266,362,298	2,263,025,152	13.6
2007	2,263,025,152	-96,032,638	180,996,824	2,347,989,338	8.3
2008	2,347,989,338	-105,220,477	-662,432,769	1,580,336,092	-28.9
2009	1,580,336,092	-102,169,783	337,471,803	1,815,638,112	22.2
2010	1,815,638,112	-107,265,723	244,019,890	1,952,392,279	14.0
2011	1,952,392,279	-113,653,688	14,703,206	1,853,441,798	0.7
2012	1,853,441,798	-64,856,098	206,277,288	1,994,862,988	13.7
2013	1,994,862,988	-135,949,680	344,705,536	2,203,618,845	17.7
2014	2,203,618,845	-133,361,482	120,224,286	2,190,481,650	5.5
2015	2,190,481,650	-122,787,070	9,420,065	2,077,114,644	0.2
2016	2,077,114,644	-90,342,269	135,585,599	2,122,357,975	6.8
2017	2,122,357,975	-117,949,337	385,214,135	2,389,622,772	18.4
2018	2,389,622,772	-134,023,080	-122,005,142	2,133,594,551	-5.4
2019	2,133,594,551	-109,150,662	398,812,740	2,423,256,628	18.9
2020	2,423,256,628	-136,045,892	343,923,054	2,631,133,790	15.1
2021	2,631,133,790	-96,972,374	343,958,578	2,878,119,994	13.6
2022	2,878,119,994	-155,042,272	-349,373,506	2,373,704,216	-12.9
To 09/2023	2,373,704,216	-110,885,603	94,327,240	2,357,145,853	3.9

Gain/Loss includes income received and change in accrued income for the period.

## Appendix

# City of Memphis Retirement System

## Comparative Performance

As of September 30, 2023

	1 Quarter	Year To Date	1 Year	3 Years	5 Years	Since Inception	Inception Date
Barrow, Hanley	-0.9	2.5	17.0	14.9	7.7	12.5	10/01/1982
Russell 1000 Value + 75 bps	-3.0	2.4	15.3	11.9	7.0	12.1	10/01/1982
1607 Capital Partners	-4.6	4.3	21.0	4.5	3.9	5.3	07/01/2008
MSCI EAFE Net + 400 bps	-3.2	10.3	30.7	10.0	7.4	7.1	07/01/2008
Marathon Asset Mgmt	-3.5	6.8	26.0	6.3	3.6	7.5	04/01/2004
MSCI ACWI ex. US + 200 bps	-3.2	7.4	23.4	6.3	5.1	7.7	04/01/2004
Principal Global Investors	-6.8	7.5	21.4	1.2	3.7	2.9	07/01/2007
MSCI EAFE Net + 240 bps	-3.5	9.0	28.7	8.3	5.7	4.6	07/01/2007
PIMCO	-3.2	-0.4	1.6	-4.2	0.9	3.0	04/01/2009
BC Aggregate + 75 bps	-3.1	-0.7	1.4	-4.5	0.9	3.1	04/01/2009

>Returns for periods greater than one year are annualized.

>Returns are expressed as percentages.

**City of Memphis**  
**Manager Roster**  
**As of September 30, 2023**

Manager	Date	Assets Under Management	Assignment	Benchmark	Stated Style	Fee Structure	Estimated Annual Fee (\$)	Estimated Annual Fee (bps)	Universe Median Fee (bps)
Barrow Hanley	9/30/2023	\$144,921,106	Equity Only	Russell 1000 Value	Large Cap Value	75 bps on first \$10.0M, 50 bps on next \$15.0M, 25 bps on next \$175M, 20 bps on next \$600M, 15 bps over \$800M	\$449,803	0.31%	0.54%
Rhumbline Russell 1000 Growth Index	9/30/2023	\$89,149,560	Equity Only	Russell 1000 Growth	Large Cap Growth	3 bps on first \$100.0M, 2 bps on next \$200.0M (Assets of Rhumbline S&P 500 combined with Rhumbline Russell 1000 Growth Index for pricing)	\$20,912	0.02%	0.55%
Winslow Capital	9/30/2023	\$84,588,391	Equity Only	Russell 1000 Growth	Large Cap Growth	60 bps for the first \$50M, 55 bps next \$50M, and 50 bps next \$150M	\$490,236	0.58%	0.55%
Rhumbline S&P 500 Index	9/30/2023	\$200,057,302	Equity Only	S&P 500	Large Cap Core	3 bps on first \$100.0M, 2 bps on next \$200.0M (Assets of Rhumbline S&P 500 combined with Rhumbline Russell 1000 Growth Index for pricing)	\$46,928	0.02%	N/A
Northern Trust	9/30/2023	\$52,615,090	Equity Only	S&P 400	Mid Cap Core	5 bps on first \$50.0M, 4 bps thereafter	\$26,046	0.05%	N/A
Capital Prospects SMID	9/30/2023	\$54,016,794	Equity Only	Russell 2500 Index	SMID Cap	75 bps on all assets	\$405,126	0.75%	0.85%
Capital Prospects SCV	9/30/2023	\$62,264,063	Equity Only	Russell 2000 Value	Small Cap Value	100 bps on first \$5.0M, 85 bps on next \$5.0M, 60 bps on the balance	\$466,980	0.75%	0.90%
Nicholas Investment Partners	9/30/2023	\$23,146,662	Equity Only	Russell 2000 Growth	Small Cap Growth	100 bps on all assets	\$231,467	1.00%	0.91%
Conestoga Small Cap Growth	9/30/2023	\$28,726,604	Equity Only	Russell 2000 Growth	Small Cap Growth	90 bps on first \$10.0M, 80 bps on next \$15.0M, 65 bps thereafter	\$234,223	0.82%	0.91%
1607 Capital Partners	9/30/2023	\$103,290,929	Int'l Equity	MSCI EAFE	Int'l Equity	70 bps on all assets	\$723,037	0.70%	0.60%
Principal Global Investors	9/30/2023	\$98,381,660	Int'l Equity	MSCI World ex US Growth	Int'l Equity	60 bps on first \$50.0M, 55 bps on next \$50.0M, \$50 bps over \$100.0M	\$566,099	0.58%	0.66%
Marathon Asset Management	9/30/2023	\$105,536,854	Int'l Equity	MSCI ACWI ex US	Int'l Equity	95 bps on the first \$25.0M, 75 bps on next \$25.0M, and 52.5 bps thereafter	\$716,568	0.68%	0.60%
Strategic Global Advisors	9/30/2023	\$62,430,978	Int'l Equity	MSCI ACWI ex US	Int'l All Cap	100 bps on first \$5.0M, 70 bps on next \$50.0M, 65 bps on the next \$50.0M, and 50 bps on the remaining balance	\$452,017	0.72%	0.66%
Acadian	9/30/2023	\$89,041,539	Emerging Markets	MSCI EM	Emerging Markets	75 basis points on the first \$50 million and 65 basis points thereafter	\$628,770	0.71%	0.85%
JPMorgan	9/30/2023	\$76,513,856	Emerging Markets	MSCI EM	Emerging Markets	80 bps on first \$100.0M, 75 bps on balance	\$612,111	0.80%	0.85%

**City of Memphis  
Manager Roster  
As of September 30, 2023**

<b>Manager</b>	<b>Date</b>	<b>Assets Under Management</b>	<b>Assignment</b>	<b>Benchmark</b>	<b>Stated Style</b>	<b>Fee Structure</b>	<b>Estimated Annual Fee (\$)</b>	<b>Estimated Annual Fee (bps)</b>	<b>Universe Median Fee (bps)</b>
PIMCO	9/30/2023	\$91,217,586	Fixed Income	Barclays US Aggregate	Fixed Income	50 bps on first \$25.0M, 37.5 bps on next \$25.0M, 25 bps over \$50.0M: Separate Account min \$75M	\$321,794	0.35%	0.25%
Garcia Hamilton	9/30/2023	\$70,371,028	Fixed Income	Barclays US Aggregate	Fixed Income	20 bps on first \$50.0M, 16 bps on next \$50.0M, 14 bps thereafter	\$132,594	0.19%	0.25%
Barrow Hanley	9/30/2023	\$30,495,060	Fixed Income	Barclays US Aggregate	Fixed Income	30 bps on first \$50M	\$91,485	0.30%	0.25%
Prudential	9/30/2023	\$87,401,799	Fixed Income	Barclays US Aggregate	Fixed Income	12 bps on first \$100.0M, 7 bps on next \$100.0M, 5 bps thereafter	\$111,181	0.13%	0.25%
Brandywine	9/30/2023	\$182,873,518	Global FI	Barclays Global Aggregate	Global Fixed Income	37 bps on the first \$220.0M; 35 bps thereafter	\$684,057	0.37%	0.35%
Mackay Shields	9/30/2023	\$123,328,920	High Yield FI	Credit Suisse HY	High Yield Fixed Income	50 bps on first \$100.0M, 40 bps over \$100.0M	\$593,316	0.48%	0.48%
BlackRock US Core Property	9/30/2023	\$67,764,114	Real Estate	NCREIF Property Index	Real Estate	66 bps on net capital contributions, 14 bps on reinvested amounts	\$541,442	0.80%	0.75% - 1.50%
RREEF II	9/30/2023	\$18,158,980	Real Estate	NCREIF Property Index	Real Estate	50-55 bps on net asset value + performance fee	\$174,181	0.96%	0.75% - 1.50%
Vanguard REIT Index	9/30/2023	\$3,040,624	Real Estate	Wilshire US REIT	Real Estate	10 bps on all assets	\$3,041	0.10%	N/A
TA Realty Core Property Fund	9/30/2023	\$30,547,484	Real Estate	NCREIF Property Index	Real Estate	70 bps on all assets	\$213,832	0.70%	0.75% - 1.50%
Cornerstone (Barings) Real Estate Fund X	6/30/2023	\$48,280	Real Estate	NCREIF Property Index	Real Estate	1.5% of equity investment	\$20,024	0.97%	1.00% - 1.50%
Dune Real Estate Fund IV	6/30/2023	\$25,374,632	Real Estate	NCREIF Property Index	Real Estate	1.5% on committed capital until end of investment period, 1.5% on called capital thereafter	\$450,000	1.50%	1.00 - 1.50%

**City of Memphis  
Manager Roster**  
**As of September 30, 2023**

Manager	Date	Assets Under Management	Assignment	Benchmark	Stated Style	Fee Structure	Estimated Annual Fee (\$)	Estimated Annual Fee (bps)	Universe Median Fee (bps)
Green Cities III	6/30/2023	\$10,187,485	Real Estate	NCREIF Property Index	Real Estate	1.5% on committed capital until end of investment period, 1.5% of unreturned capital contributions	\$126,224	0.63%	1.00% - 1.50%
Green Cities IV	6/30/2023	\$18,189,244	Real Estate	NCREIF Property Index	Real Estate	1.5% on committed capital until end of investment period, 1.5% of unreturned capital contributions	\$300,000	1.50%	1.00% - 1.50%
Green Cities V	6/30/2023	\$18,214	Real Estate	NCREIF Property Index	Real Estate	1.5% on committed capital until end of investment period, 1.5% of unreturned capital contributions	\$300,000	1.50%	1.00% - 1.50%
Long Wharf RE Partners IV	9/30/2023	\$237,345	Real Estate	NCREIF Property Index	Real Estate	1.0% of unfunded capital commitments and 1.5% of funded capital commitments during investment period; thereafter 1.5% of contributed capital less capital attributed to investments that have been sold	\$24,732	0.12%	1.00% - 1.50%
Long Wharf RE Partners V	9/30/2023	\$11,688,061	Real Estate	NCREIF Property Index	Real Estate	1.5% of committed capital during investment period; 1.5% of invested capital after investment period	\$143,692	0.72%	1.00% - 1.50%
Long Wharf RE Partners VI	9/30/2023	\$13,643,138	Real Estate	NCREIF Property Index	Real Estate	1.5% of committed capital during investment period; 1.5% of invested capital after investment period	\$300,000	1.50%	1.00% - 1.50%
Long Wharf RE Partners VII	9/30/2023	\$1,961,011	Real Estate	NCREIF Property Index	Real Estate	1.5% of committed capital during investment period; 1.5% of invested capital after investment period	\$300,000	1.50%	1.00% - 1.50%
Mesirow Real Estate Value Fund III	6/30/2023	\$27,147,546	Real Estate	NCREIF Property Index	Real Estate	Commitments <\$25M: 1.5% on invested capital subject to a minimum of 1.1% on committed capital during investment period	\$220,000	1.10%	1.00% - 1.50%
TA Realty Associates Fund XI	6/30/2023	\$3,509,713	Real Estate	NCREIF Property Index	Real Estate	Years 1-3 on committed capital. Year 1: 0.50%, Year 2: 0.85%, Year 3: 1.15%. Thereafter, based on invested equity: Year 4: 1.20%, Year 5: 1.25%, Year 6: 1.20%, Year 7: 1.00%, and 0.60% thereafter.	\$42,117	1.20%	1.00% - 1.50%
Pantheon Global Secondary Fund V	6/30/2023	\$30,403,029	Private Equity	S&P + 3%	Secondaries	1% on committed capital during investment period; 90 % annual reduction of prior year	\$314,680	0.63%	1.00% - 2.00%
SSM Growth Equity Fund II	6/30/2023	\$7,955,861	Private Equity	S&P + 3%	Growth Equity	2.0% on committed capital during investment period	\$200,000	2.00%	1.00% - 2.00%
SSM Growth Equity Fund III	6/30/2023	\$18,445,180	Private Equity	S&P + 3%	Growth Equity	2.0% on committed capital during investment period	\$200,000	2.00%	1.00% - 2.00%
NB Crossroads Fund XXI	6/30/2023	\$56,217,448	Private Equity	S&P + 3%	Fund of Funds	Based on committed capital: Year 1: 20bps, Years 2-4: 40bps, Years 5-8: 40 bps, Years 9-10: 5 bps, Years 11-12: 0 bps	\$200,000	0.40%	1.00% - 2.00%
NB Crossroads Fund XXIV	6/30/2023	\$3,595,643	Private Equity	S&P + 3%	Fund of Funds	Based on committed capital: Average Fee Schedule on Commitments \$50M - \$100M	\$200,000	0.40%	1.00% - 2.00%
Siguler Guff Small Buyout Opportunities V	6/30/2023	\$6,229,150	Private Equity	S&P + 3%	Fund of Funds	Reduced Fee Schedule: 82 bps on first \$10M of commitment; 69.7 bps on remaining \$10M of commitment.	\$151,700	0.76%	1.00% - 2.00%
Brightwood Capital Fund V	6/30/2023	\$4,745,350	Private Debt	Barclays US Aggregate	Direct Lending	1.5% on equity capital	\$71,180	1.50%	1.00% - 2.00%
Churchill Middle Market Senior Loan Fund III	6/30/2023	\$7,177,554	Private Debt	Barclays US Aggregate	Direct Lending	0.50% on invested capital	\$35,888	0.50%	1.00% - 2.00%
Neuberger Berman Private Debt Fund IV	6/30/2023	\$18,264,689	Private Debt	Barclays US Aggregate	Direct Lending	0.50% on invested capital through June 2022	\$91,323	0.50%	1.00% - 2.00%
Aetos	9/30/2023	\$47,165,909	Hedge Fund	90 Day T Bills + 5%	Hedge Fund of Funds	75 bps plus a 5% performance fee	\$287,997	0.69%	1.00%-2.00%
Grosvenor	9/30/2023	\$48,973,896	Hedge Fund	90 Day T Bills + 5%	Hedge Fund of Funds	115 bps on the first \$25M, 100 bps on next \$25M, 80 bps on next \$50M, 60 bps thereafter	\$527,239	1.08%	1.00% - 2.00%
Preserver	9/30/2023	\$5,074,303	Hedge Fund	90 Day T Bills + 5%	Hedge Fund of Funds	1.00% on all assets	\$50,743	1.00%	1.00% - 2.00%
<b>TOTAL</b>		<b>\$2,346,133,182</b>					<b>\$13,494,784</b>	<b>0.58%</b>	

\* Estimated Fee reflects actual Q4 2022 fees multiplied by 4 to estimate annual fee. Figure includes base management fee plus/minus performance fee if achieved.  
Total Market Value does not include Cash account.