

# **City of Memphis Retirement System**

## **Analysis of Investment Performance**

*Quarter Ending December 31, 2023*

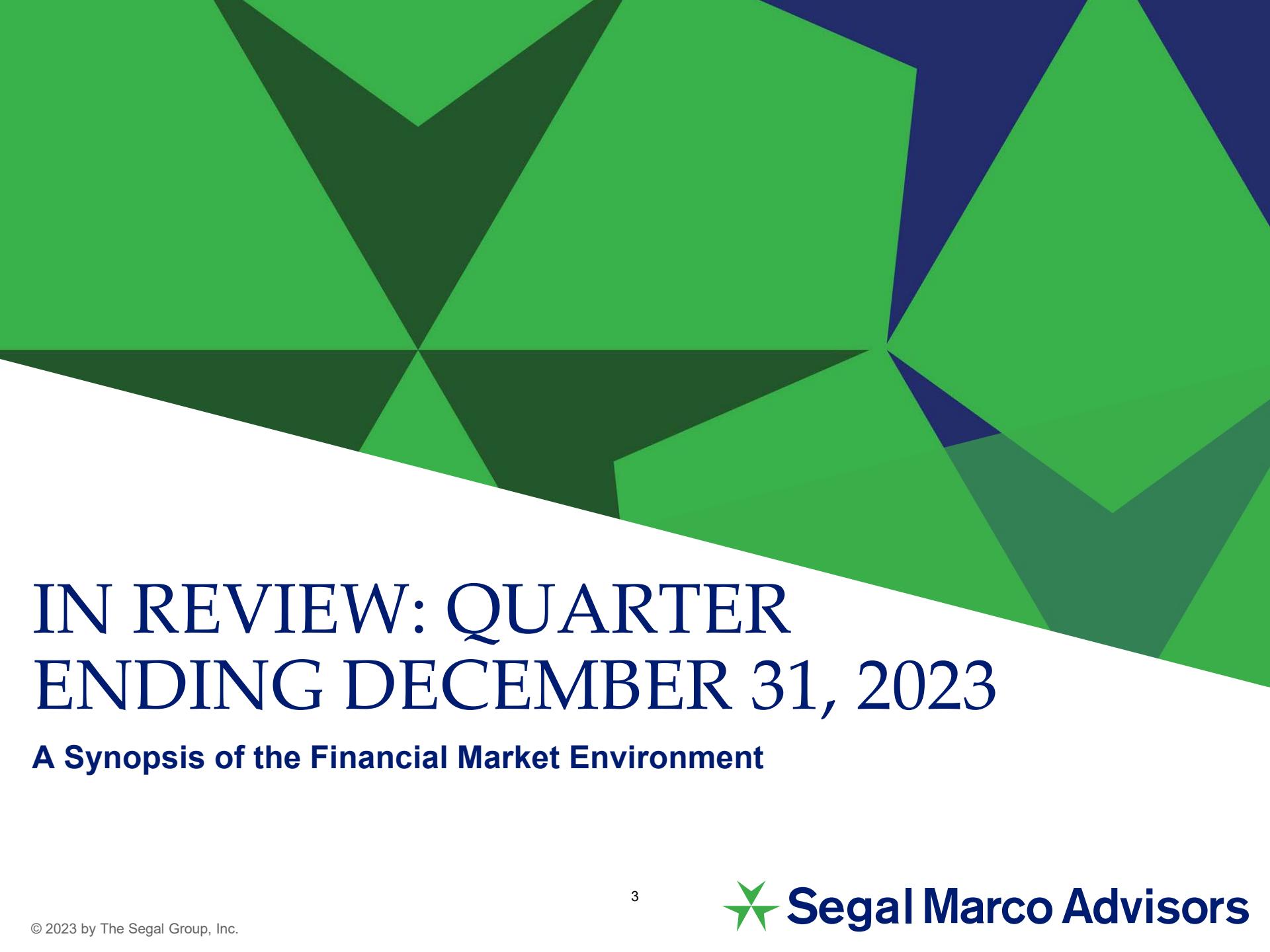
**Rosemary E. Guillette**  
*Vice President*

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## Financial Market Conditions



# IN REVIEW: QUARTER ENDING DECEMBER 31, 2023

**A Synopsis of the Financial Market Environment**

# Quarter In Review: Global Equity Overview

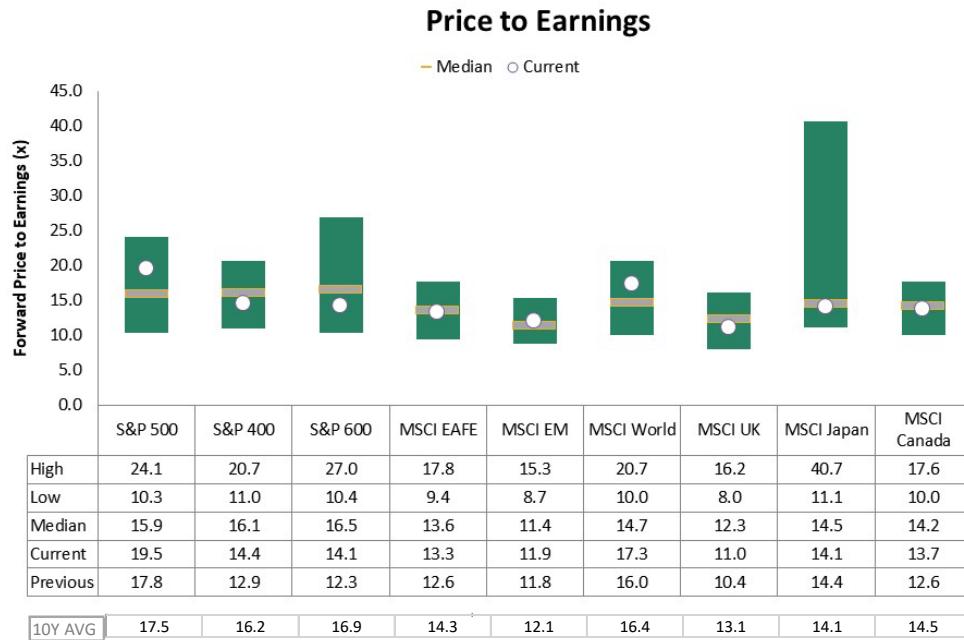
Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
S&P 500	11.69	26.29	26.29	10.00	15.69	12.03
MSCI Europe, Australasia and Far East (EAFE)*	10.42	18.24	18.24	4.02	8.16	4.28
MSCI Emerging Markets (EM)*	7.86	9.83	9.83	-5.08	3.68	2.66

All data in the table are percentages.

\* Net dividends reinvested

## Global Equity Performance and Valuations

- U.S. (+11.7%), Developed International (+10.4%), and Emerging Markets (+7.9%) all posted positive returns through the quarter ending December 31. Potential interest rate cuts for 2024 signaled by the U.S. Federal Reserve improved investor sentiment globally.
- For emerging markets, despite Latin America's (+17.6%) strong returns, lack of economic stimulus and the ongoing real estate crisis in China continued to hinder performance across the asset class, delivering lower returns than developed markets.
- Europe (+11.1%) and Japan (+8.2%) produced the highest returns for developed international markets, driven by increasing market expectations.
- On a price-to-earnings basis, U.S. mid (14.4x) and small cap (14.1x) valuations are up from the third quarter but remain at a relative discount to their 10-year averages (16.2x and 16.9x, respectively). International developed equities (13.3x) and emerging markets (11.9x) remain cheap to their 10-year average as well (14.3x and 12.1x, respectively). U.S. large cap valuations (19.5x) remain well above their long-term average (17.5x).



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

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# Quarter In Review: U.S. Equity

U.S. Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
S&P 500	11.69	26.29	26.29	10.00	15.69	12.03
Russell 1000	11.96	26.53	26.53	8.97	15.52	11.80
Russell 1000 Growth	14.16	42.68	42.68	8.86	19.50	14.86
Russell 1000 Value	9.50	11.46	11.46	8.86	10.91	8.40
Russell 2000	14.03	16.93	16.93	2.22	9.97	7.16
Russell 2000 Growth	12.75	18.66	18.66	-3.50	9.22	7.16
Russell 2000 Value	15.26	14.65	14.65	7.94	10.00	6.76
Russell Midcap	12.82	17.23	17.23	5.92	12.68	9.42
Russell 3000	12.07	25.96	25.96	8.54	15.16	11.48

## Performance

- U.S. equities, represented by the S&P 500, were up +11.7% for the quarter ending December 31. Investor optimism bounced back from the third quarter with expectations for imminent rate cuts by the Federal Reserve.
- Year-to-date, growth has outperformed value. During the quarter, large cap growth (+14.2%) outperformed large cap value (+9.5%). Continuing from last quarter small cap growth (+12.8%) lagged small cap value (+15.3%).
- Large cap stocks led the market for most of the year with the highly concentrated seven stocks of the S&P 500 driving outperformance, but mid (+12.8%) and small cap stocks (+14.0%) bounced back during the fourth quarter.
- Interest rate sensitive sectors including Real Estate (+18.8%), IT (+17.2%), and Financials (+14.0%) led the markets during the quarter. Energy (-6.9%) lagged the market as the only negative sector as crude oil prices weakened. For the year, IT (+57.8%), Communication Services (+55.8%), and Consumer Discretionary (+42.4%) were the highest performing sectors while Utilities (-7.1%) and Energy (-1.3%) were the only negative sectors.

All data in the tables are percentages.

S&P 500 Sector Returns	QTD	1-Year
Communication Services	10.95	55.80
Consumer Discretionary	12.42	42.41
Consumer Staples	5.54	0.52
Energy	-6.94	-1.33
Financials	14.03	12.15
Healthcare	6.41	2.06
Industrials	13.05	18.13
Information Technology	17.17	57.84
Materials	9.69	12.55
Real Estate	18.83	12.36
Utilities	8.56	-7.08

# Quarter In Review: International Equity

MSCI International Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
World ex. U.S.	10.51	17.94	17.94	4.42	8.45	4.32
EAFE	10.42	18.24	18.24	4.02	8.16	4.28
EAFE Local Currency	4.96	16.16	16.16	8.64	9.49	6.61
Europe	11.05	19.89	19.89	5.80	9.09	4.13
Europe ex U.K.	12.34	21.69	21.69	4.91	9.83	4.74
U.K.	6.86	14.09	14.09	8.76	6.87	2.49
Japan	8.19	20.32	20.32	0.66	6.91	4.97
Pacific ex Japan	11.39	6.44	6.44	1.57	5.74	3.90

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

## Performance

- International developed markets slightly trailed the U.S. (+11.7%) during the fourth quarter in 2023, but still finished strong posting a 10.4% return over the quarter.
- Europe was uplifted by softer inflation numbers and increasing market expectations of a cease in future interest rate hikes, ending 2023 with a robust quarter (+11.1%). Similarly, U.K. equities were also up for the quarter ending December 31 (+6.9%) as small and mid cap domestic stocks outperformed.
- Japanese equities had one of its strongest years in recent memory, with an +8.2% gain during the last quarter. Investors continue to be bullish on the more favorable market and regulatory conditions in the country's capital markets. Pacific ex Japan equities ended the quarter +11.4% as technology stocks led the growth in Asian markets.
- It was a positive quarter for all sectors in International Developed equities with IT (+21.3%) and Materials (+17.1%) the strongest performers.

MSCI EAFE Sector Returns	QTD	1-Year
Communication Services	8.94	13.14
Consumer Discretionary	8.00	21.69
Consumer Staples	5.19	4.47
Energy	0.35	12.54
Financials	9.95	18.83
Healthcare	4.90	9.27
Industrials	14.31	27.62
Information Technology	21.31	36.41
Materials	17.07	19.91
Real Estate	14.89	9.07
Utilities	14.00	16.97

# Quarter In Review: Emerging Market Equity

MSCI EM Equity Indices	QTD	YTD	1-Year	3-Year	5-Year	10-Year
Emerging Markets	7.86	9.83	9.83	-5.08	3.68	2.66
EM Local Currency	5.58	9.85	9.85	-2.53	5.42	5.21
Asia	6.71	7.76	7.76	-6.90	4.32	4.13
EMEA	8.37	8.19	8.19	-2.90	-0.32	-1.76
Latin America	17.55	32.71	32.71	9.93	6.11	2.11

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

## Performance

- Emerging Market equities (+7.9%) lagged U.S. (+11.7%) and International Developed equities (+10.4%) during the quarter ending December 31 as China continued to detract from the index.
- China continues to struggle as an ongoing real estate crisis, sentiment on weaker economic growth, and uncertainty in stimulus measures led to an underperforming quarter.
- Taiwan and Korea outperformed on technology related returns. India was also strong, backed by economic growth of 7%. Turkey was the worst performing index as inflation persists at over 60%. Latin America was the strongest region (+17.6%) as Brazil outperformed with an improving economy, including interest rate cuts in the end of the quarter.
- Technology (+17.8%) and Utilities (+12.8%) were the strongest sectors in Emerging Markets, with Real Estate being the only negative sector (-0.2%) during the quarter.

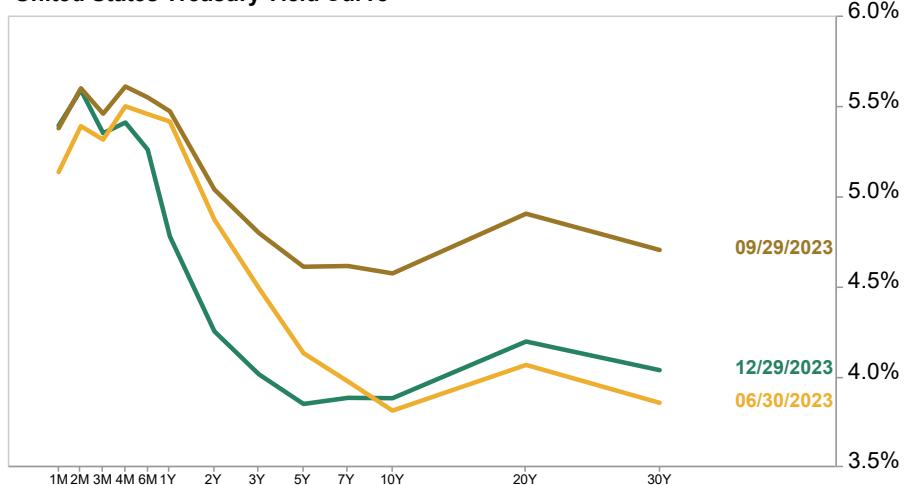
MSCI EM Sector Returns	QTD	1-Year
Communication Services	0.05	-1.10
Consumer Discretionary	0.83	-3.40
Consumer Staples	6.12	4.24
Energy	6.69	26.82
Financials	8.26	11.50
Healthcare	7.31	-1.29
Industrials	6.25	5.43
Information Technology	17.83	32.32
Materials	6.79	1.51
Real Estate	-0.21	-7.09
Utilities	12.77	1.95

# Quarter In Review: Fixed Income Overview

## Yield Curve

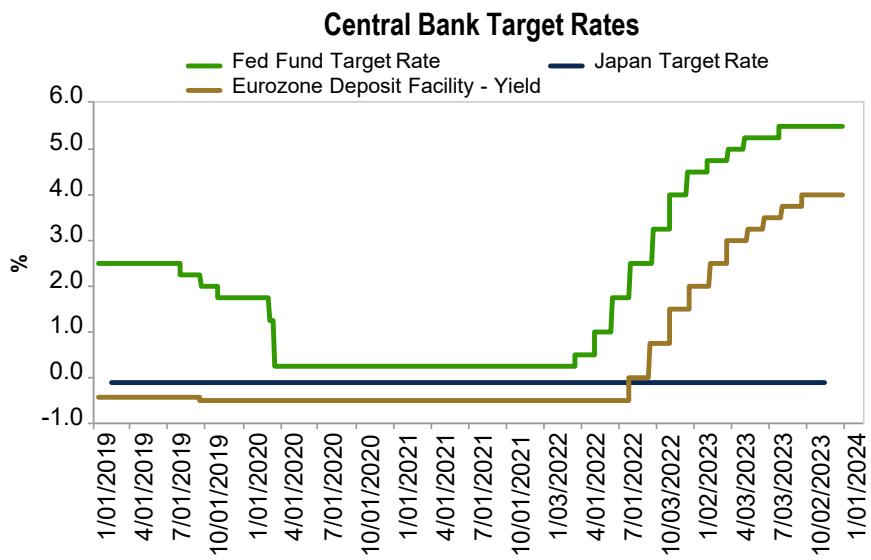
- Yields declined in intermediate to long-term maturities while the 1-Month T-Bill yield remained mostly unchanged. The interest rate curve further inverted compared to third quarter. The shift in the yield curve indicates that the market is pricing several rate cuts during 2024. The Federal Reserve continues its rate decision pause citing the need to hold rates higher for longer until inflation is conclusively moving towards the Fed's long-term target of 2%.
- Short-term yields declined the least, with the 3-Month T-Bill decreasing by 11 bps over the prior quarter.
- 2- and 3-year Treasury yields declined the most by 79 bps each, ending the quarter at 4.25% and 4.01%, respectively.

United States Treasury Yield Curve



## 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	0.93
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	6.82	5.53	5.53	-3.31	1.10	1.81
Government/Credit	6.63	5.72	5.72	-3.53	1.41	1.97
Government	5.62	4.09	4.09	-3.74	0.56	1.27
Investment Grade Credit	8.50	8.52	8.52	-3.29	2.63	2.95
Investment Grade CMBS	5.24	5.29	5.29	-2.41	1.60	2.11
U.S. Corporate High Yield	7.16	13.44	13.44	1.98	5.37	4.60
FTSE** 3-Month T-Bill	1.41	5.26	5.26	2.25	1.91	1.26
Hueler Stable Value	0.55	1.87	1.87	1.96	2.13	1.97

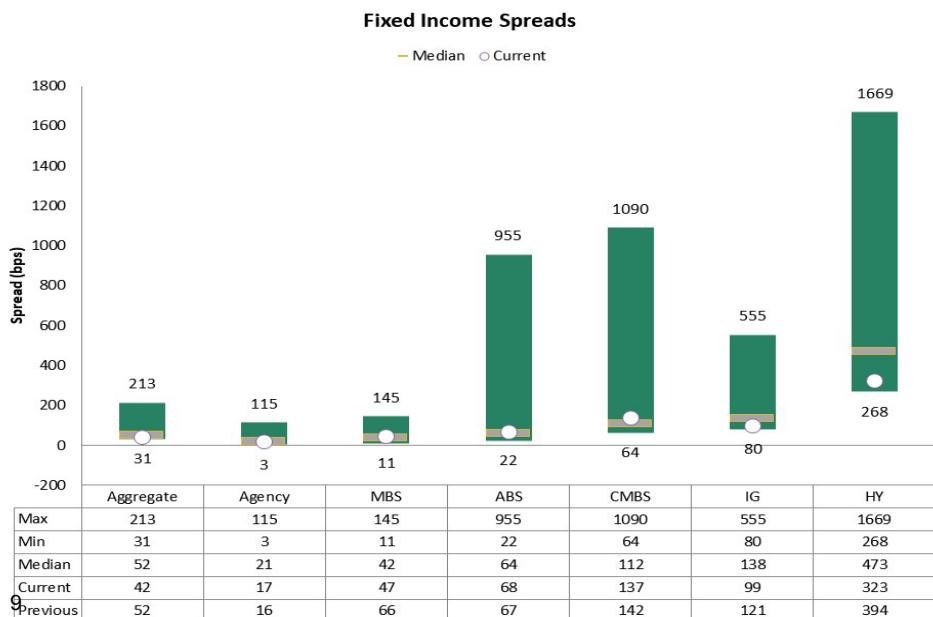
\* Bloomberg Indices, unless otherwise noted.

\*\* 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 and Spreads

- The U.S. Aggregate Index was positive during the fourth quarter. All sectors delivered positive quarterly returns.
- Investment Grade Credit had the strongest performance at +8.50% for the quarter. Cash experienced the weakest performance in the quarter ended December 31 (1.41%).
- For the quarter, Agency and ABS spreads slightly widened while the spreads on the US Aggregate Index, MBS, CMBS, IG Credit and High Yield narrowed. The largest change was in the High Yield sector with spreads narrowing by 71 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	8.10	5.72	5.72	-5.51	-0.32	0.38
Bloomberg Global Aggregate (Hgd)	5.99	7.15	7.15	-2.11	1.40	2.41
FTSE Non-U.S. WGBI*	9.91	5.83	5.83	-9.35	-2.77	-1.26
FTSE Non-U.S. WGBI (Hgd)	5.95	8.02	8.02	-2.86	0.72	2.52
JPM EMBI Global Diversified**	9.16	11.09	11.09	-3.56	1.67	3.22
JPM GBI-EM Global Diversified***	8.07	12.70	12.70	-3.16	1.14	0.09

All data in the table are percentages.

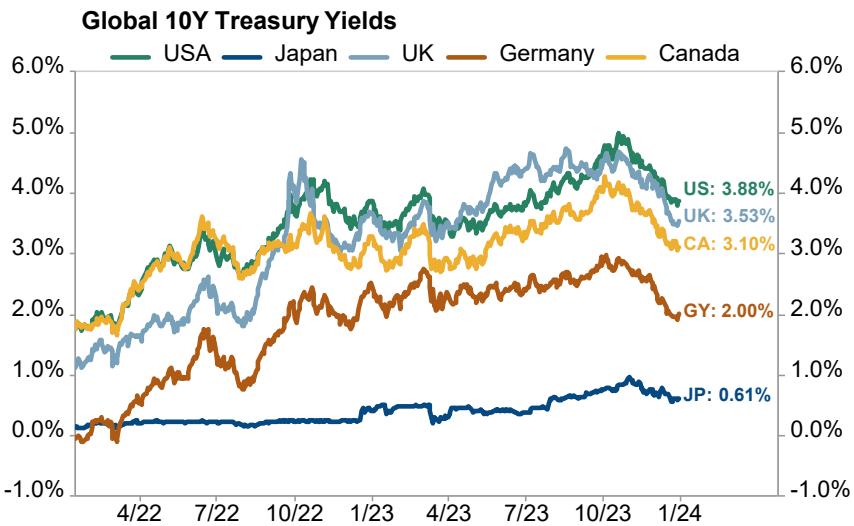
\* Formerly Citigroup. The FTSE Non-U.S. World Government Bond Index (WGBI) measures the performance of fixed-rate, local currency, investment grade sovereign bonds excluding the U.S.

\*\* 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 and Yields

- Yields declined in most developed markets during the quarter. Both the ECB and the Bank of England kept policy rates unchanged during the fourth quarter as inflation remains the main concern in Europe and UK.
- Global central banks kept interest rates at record highs in anticipation of inflation resurgence.
- The U.S. dollar depreciated relative to the yen, British pound and Euro.
- Global returns were positive for the quarter ended December 31, with Non-U.S. sovereign bonds exhibiting the strongest performance.



## Total Fund Composite

# City of Memphis

## Asset Allocation Comparison as of December 31, 2023

<b>\$2,529,124</b>							
<b>Target Allocations</b>		<b>Current Managers &amp; Allocations</b>			<b>Difference</b>		<b>Range</b>
<b>Equity</b>							
Large Cap Equity	20.00%	\$505,825 (000)	Barrow, Hanley (large cap value) Rhumbline Russell 1000 Growth (large cap growth) Winslow (large cap growth) Rhumbline S&P 500 (large cap core)	6.08% 3.37% 3.49% 8.83%	\$153,881 \$85,279 \$88,367 \$223,393 (000)	<b>1.78%</b>	<b>15%-25%</b>
Mid/SMID Cap Equity	4.00%	\$101,165	Northern Trust (mid cap core) Capital Prospects SMID Cap*	2.10% 2.39%	\$53,068 \$60,439	<b>0.49%</b>	<b>0%-7%</b>
Small Cap Equity	4.00%	\$101,165	Capital Prospects Small Cap Value* Conestoga (small cap growth) Nicholas (small cap growth)	2.84% 1.05% 1.04%	\$71,709 \$26,475 \$26,229	<b>0.92%</b>	<b>0%-7%</b>
<b>Domestic Equity</b>	<b>28.00%</b>	<b>\$708,155</b>	<b>Domestic Equity</b>	<b>31.19%</b>	<b>\$788,840</b>	<b>3.19%</b>	<b>18%-38%</b>
Developed International	15.00%	\$379,369	1607 Capital Partners Principal Global Investors Marathon Asset Mgmt Strategic Global Advisors	4.52% 4.33% 4.32% 2.72%	\$114,201 \$109,424 \$109,285 \$68,686	<b>0.88%</b>	<b>10%-20%</b>
<i>Channing Int'l Developed Equity - \$15M pending* Frontier Global Int'l Equity - \$15M pending*</i>							
Emerging Markets	7.00%	\$177,039	Acadian JPMorgan	3.62% 3.34%	\$91,475 \$84,357	<b>-0.05%</b>	<b>5%-12%</b>
<b>International</b>	<b>22.00%</b>	<b>\$556,407</b>	<b>International</b>	<b>22.83%</b>	<b>\$577,428</b>	<b>0.83%</b>	<b>15%-30%</b>
<b>Equity Total</b>	<b>50.00%</b>	<b>\$1,264,562</b>	<b>Equity Total</b>	<b>54.02%</b>	<b>\$1,366,268</b>	<b>4.02%</b>	
<b>Fixed Income</b>							
Core Fixed Income	13.00%	\$328,786	PIMCO Prudential Core Conserv Bond Barrow Hanley High Quality Core Garcia Hamilton Aggregate	3.87% 3.70% 1.30% 3.00%	\$98,001 \$93,575 \$32,760 \$75,879	<b>-1.13%</b>	<b>8%-18%</b>
Global Fixed Income	8.00%	\$202,330	Brandywine	8.12%	\$205,384	<b>0.12%</b>	<b>3%-13%</b>
Global High Yield	5.00%	\$126,456	Mackay Shields	5.17%	\$130,681	<b>0.17%</b>	<b>2%-10%</b>
<b>Fixed Income Total</b>	<b>26.00%</b>	<b>\$657,572</b>	<b>Fixed Income Total</b>	<b>25.16%</b>	<b>\$636,280</b>	<b>-0.84%</b>	<b>18%-34%</b>

\* Emerging Managers

Target Allocations		Current Managers & Allocations			Difference		Range
<u>Real Estate</u>							
Core/Value Add/REITs	10.00%	\$252,912	BlackRock US Core Property Fund RREEF REIT II Vanguard REIT Index TA Realty Core Property Fund	2.46% 0.67% 0.14% 1.14%	\$62,168 \$16,924 \$3,636 \$28,891		
			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 TA Realty Fund XIII	0.00% 1.08% 0.31% 0.71% 0.01% 0.01% 0.45% 0.54% 0.11% 1.08% 0.05% 0.30%	\$28 (Total Commitment \$10M, Total Drawn \$8.4M, Total Distributed \$11.6M) \$27,415 (Total Commitment \$30M, Total Drawn \$26.3M, Total Distributed \$1.5M) \$7,760 (Total Commitment \$20M, Total Drawn \$24.0M, Total Distributed \$10.7M) \$17,917 (Total Commitment \$20M, Total Drawn \$19.8, Total Distributed \$1.1M) \$240 (Total Commitment \$20M, Total Drawn \$0.5, Total Distributed \$0.0M) \$234 (Total Commitment \$20M, Total Drawn \$21.5M, Total Distributed \$29.6M) \$11,503 (Total Commitment \$20M, Total Drawn \$20.0M, Total Distributed \$14.9M) \$13,728 (Total Commitment \$20M, Total Drawn \$21.0M, Total Distributed \$11.8M) \$2,660 (Total Commitment \$20M, Total Drawn \$3.1M, Total Distributed \$0.0M) \$27,341 (Total Commitment \$20M, Total Drawn \$22.5M, Total Distributed \$8.1M) \$1,356 (Total Commitment \$20M, Total Drawn \$20.0M, Total Distributed \$30.5M) \$7,500 (Total Commitment \$30M, Total Drawn \$7.5M, Total Distributed \$0.0M)		
<i>LaFayette Square Grocery Anchored Impact Fund - \$5M Commitment*</i>							
<b>Real Estate Total</b>	<b>10.00%</b>	<b>\$252,912</b>	<b>Real Estate Total</b>	<b>9.07%</b>	<b>\$229,301</b>	<b>-0.93%</b>	<b>5%-15%</b>
<b>Private Equity</b>							
Private Equity	5.00%	\$126,456	Neuberger Berman Crossroads XXI Neuberger Berman Crossroads XXIV Pantheon Global Secondary Fund V RPS Ventures II* Siguler Guff Small Buyout Opportunities Fund V SSM Growth Equity Fund II* SSM Growth Equity Fund III*	2.14% 0.21% 1.16% 0.07% 0.29% 0.32% 0.74%	\$54,077 (Total Commitment \$50M, Total Drawn \$36.5M, Total Distributed \$29.9M) \$5,190 (Total Commitment \$40M, Total Drawn \$5.2, Total Distributed \$0.0M) \$29,448 (Total Commitment \$50M, Total Drawn \$39.7M, Total Distributed \$33.6M) \$1,817 (Total Commitment \$15M, Total Drawn \$2.3M, Total Distributed \$0.0M) \$7,234 (Total Commitment \$20M, Total Drawn \$6.4M, Total Distributed \$0.2M) \$7,973 (Total Commitment \$10M, Total Drawn \$9.5, Total Distributed \$5.3M) \$18,784 (Total Commitment \$10M, Total Drawn \$14.7, Total Distributed \$0.9M)		
<b>Private Equity Total</b>	<b>5.00%</b>	<b>\$126,456</b>	<i>GSAM Black Equity Opportunities Fund - \$15M Commitment*</i>			<b>4.92%</b>	<b>\$124,523</b>
<b>Private Credit</b>						<b>-0.08%</b>	<b>3%-7%</b>
Private Credit	5.00%		Brightwood Capital Fund V Churchill Middle Market Senior Loan Fund III Neuberger Berman Private Debt Fund IV	0.19% 0.30% 0.99%	\$4,820 (Total Commitment \$10M, Total Drawn \$4.0, Total Distributed \$0.2M) \$7,646 (Total Commitment \$10M, Total Drawn \$12.5, Total Distributed \$6.4M) \$25,130 (Total Commitment \$30M, Total Drawn \$24.2, Total Distributed \$3.7M)		
<b>Private Credit Total</b>	<b>5.00%</b>	<b>\$126,456</b>			<b>1.49%</b>	<b>\$37,595</b>	<b>-3.51%</b>
<b>Hedge Fund of Funds</b>							
	4.00%		Aetos Grosvenor Preserver, LP*	1.92% 1.98% 0.10%	\$48,517 \$50,150 \$2,440		
<b>Hedge Fund of Funds Total</b>	<b>4.00%</b>	<b>\$101,165</b>			<b>4.00%</b>	<b>\$101,107</b>	<b>0.00%</b>
Internal Account	0.00%	\$0	Internal Account	1.35%	\$34,051		
<b>Cash</b>	<b>0.00%</b>	<b>\$0</b>	<b>Cash</b>	<b>1.35%</b>	<b>\$34,051</b>	<b>1.35%</b>	<b>0%-5%</b>
<b>Total</b>	<b>100%</b>	<b>\$2,529,124</b>	<b>Total</b>	<b>100%</b>	<b>\$2,529,124</b>		

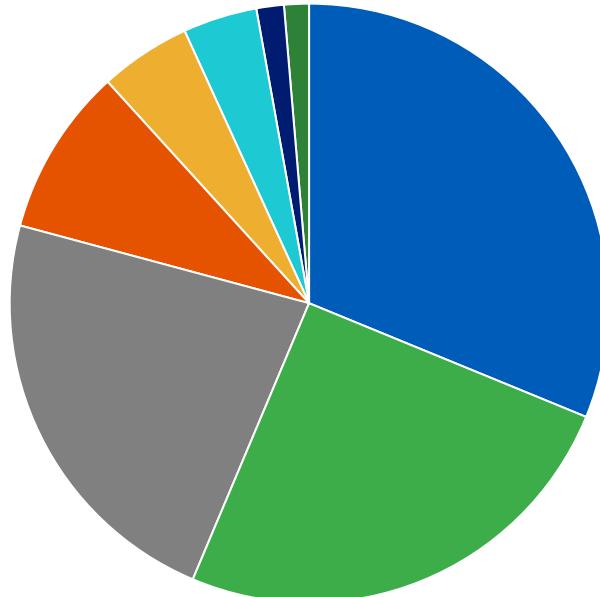
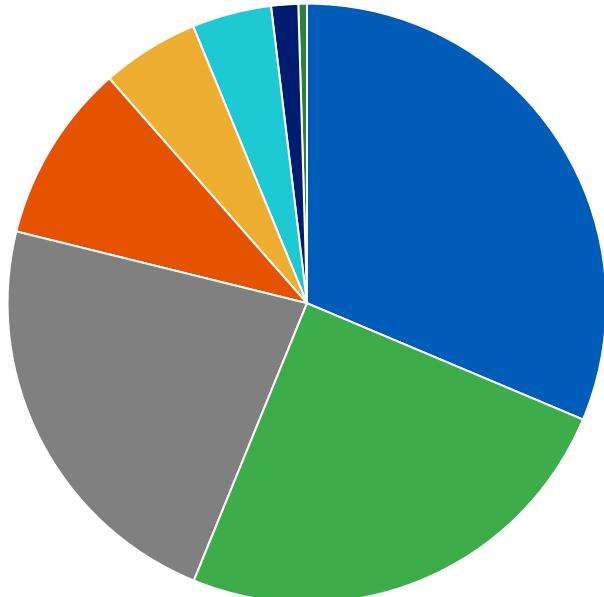
# City of Memphis Retirement System

## Asset Allocation Chart

As of December 31, 2023

September 30, 2023 : \$2,359,293,210.3

December 31, 2023 : \$2,529,123,973.2



	Market Value (\$)	Allocation (%)
Domestic Equity Composite	739,485,571	31.3
Fixed Income Composite	585,687,912	24.8
International Equity Composite	535,195,817	22.7
Total Real Estate Composite	227,987,783	9.7
Private Equity Composite	124,365,914	5.3
Hedge Fund Composite	101,206,643	4.3
Private Debt Composite	34,350,900	1.5
In House Cash	11,012,671	0.5

	Market Value (\$)	Allocation (%)
Domestic Equity Composite	788,839,588	31.2
Fixed Income Composite	636,279,671	25.2
International Equity Composite	577,427,957	22.8
Total Real Estate Composite	229,301,370	9.1
Private Equity Composite	124,522,794	4.9
Hedge Fund Composite	101,106,649	4.0
Private Debt Composite	37,595,201	1.5
In House Cash	34,050,743	1.3

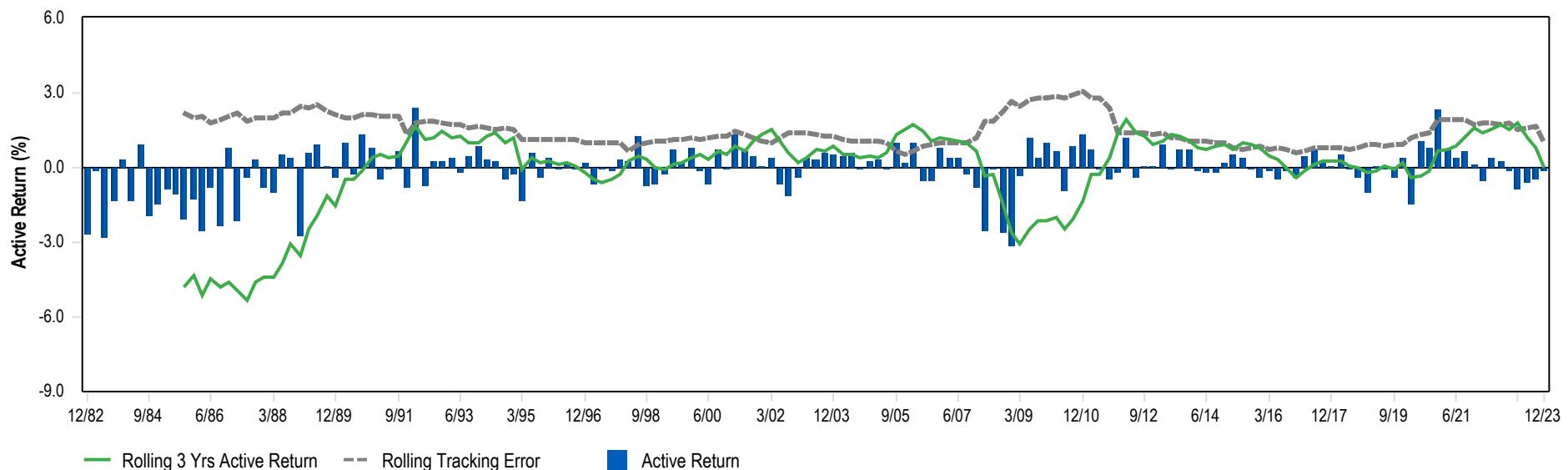
# City of Memphis

## Total Fund Composite

As of December 31, 2023

	Gain / Loss							
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	
Total Fund Composite								
Beginning Market Value	2,359,293,210	2,373,704,216	2,373,704,216	2,631,133,790	2,133,594,551	2,122,357,975	2,203,618,845	
Net Cash Flows	-19,598,047	-125,233,649	-125,233,649	-377,248,296	-622,444,850	-874,417,267	-1,220,908,087	
Income	9,317,883	36,049,890	36,049,890	102,433,631	165,144,247	231,143,604	353,084,650	
Gain/Loss	180,110,927	244,603,517	244,603,517	172,804,848	852,830,025	1,050,039,662	1,193,328,565	
Ending Market Value	2,529,123,973	2,529,123,973	2,529,123,973	2,529,123,973	2,529,123,973	2,529,123,973	2,529,123,973	

## Rolling Return and Tracking Error



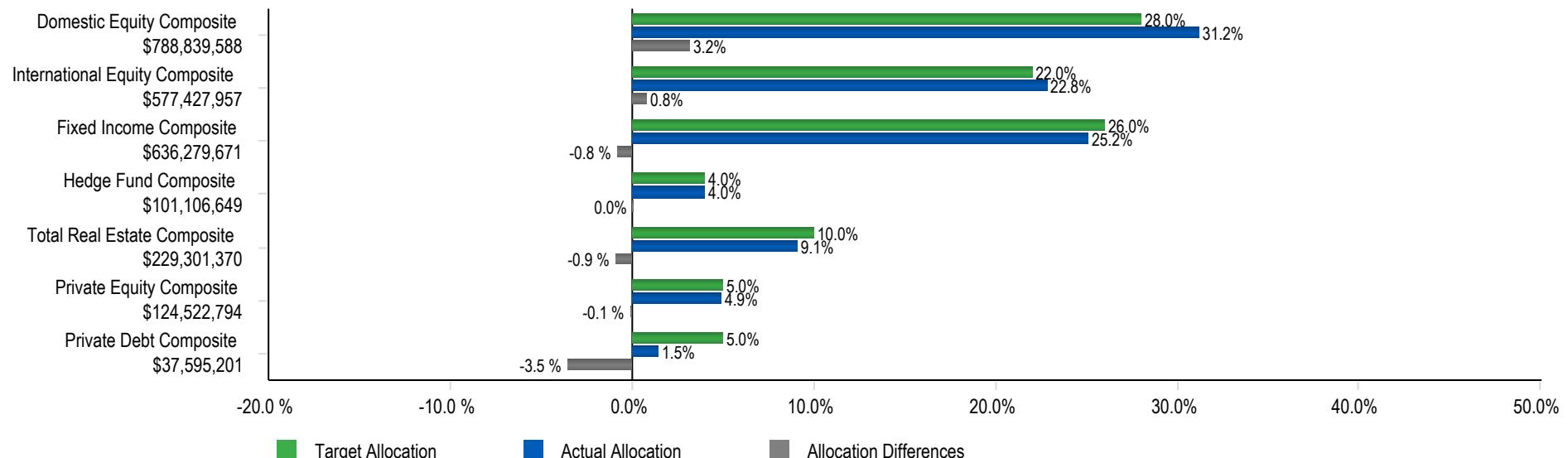
## Performance

	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Total Fund Composite	8.1	12.2	12.2	3.5	8.7	7.9	6.7
Policy Index	8.2	14.4	14.4	3.5	8.2	7.5	6.6
Difference	-0.1	-2.2	-2.2	0.0	0.5	0.4	0.1

# City of Memphis

## Total Fund Composite

As of December 31, 2023



	Asset Allocation (\$)	Asset Allocation (%)	Target Allocation (%)	Differences (%)	Minimum Allocation (%)	Maximum Allocation (%)
<b>Total Fund Composite</b>	<b>2,529,123,973</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	-	-
Domestic Equity Composite	788,839,588	31.19	28.00	3.19	18.00	38.00
International Equity Composite	577,427,957	22.83	22.00	0.83	15.00	30.00
Fixed Income Composite	636,279,671	25.16	26.00	-0.84	18.00	34.00
Hedge Fund Composite	101,106,649	4.00	4.00	0.00	2.00	6.00
Total Real Estate Composite	229,301,370	9.07	10.00	-0.93	5.00	15.00
Private Equity Composite	124,522,794	4.92	5.00	-0.08	3.00	7.00
Private Debt Composite	37,595,201	1.49	5.00	-3.51	3.00	7.00

**City of Memphis  
Asset Allocation**

**As of December 31, 2023**

	Total Fund (\$)	%
Total Fund Composite	2,529,123,973	100.0
In House Cash	34,050,743	1.3
<b>Domestic Equity Composite</b>	<b>788,839,588</b>	<b>31.2</b>
Barrow, Hanley	153,881,140	6.1
Rhumbline S&P 500	223,393,258	8.8
Rhumbline Russell 1000 Growth	85,279,242	3.4
NTGI S&P 400	53,068,143	2.1
Winslow Capital Management	88,366,780	3.5
Nicholas Investment Partners	26,229,025	1.0
Conestoga Capital Advisors	26,474,706	1.0
Capital Prospects SMID	60,438,534	2.4
Capital Prospects Small Cap Value	71,708,761	2.8
<b>Fixed Income Composite</b>	<b>636,279,671</b>	<b>25.2</b>
Mackay Shields	130,681,258	5.2
PIMCO	98,000,625	3.9
Barrow Hanley High Quality Core	32,760,233	1.3
Garcia Hamilton Aggregate	75,878,741	3.0
Prudential Core Conserv Bond	93,574,956	3.7
Brandywine	205,383,859	8.1
<b>International Equity Composite</b>	<b>577,427,957</b>	<b>22.8</b>
1607 Capital Partners	114,201,056	4.5
Marathon Asset Mgmt	109,284,534	4.3
Principal Global Investors	109,424,066	4.3
Acadian EM Equity II	91,475,350	3.6
Strategic Global Advisors	68,686,005	2.7
J.P. Morgan Global Emerging Markets Discovery Fund	84,356,946	3.3
<b>Hedge Fund Composite</b>	<b>101,106,649</b>	<b>4.0</b>
Grosvenor Institutional Partners, L.P.	50,150,324	2.0
Aetos	48,516,532	1.9
Preserver, L.P.	2,439,793	0.1
<b>Total Real Estate Composite</b>	<b>229,301,370</b>	<b>9.1</b>

	Total Fund (\$)	%
<b>Core Private Real Estate Composite</b>	<b>111,618,441</b>	<b>4.4</b>
BlackRock US Core Property Fund	62,168,264	2.5
TA Realty Core Property Fund	28,890,950	1.1
RREEF REIT II	16,923,722	0.7
Vanguard REIT Index Inv	3,635,506	0.1
<b>Private Real Estate Composite</b>	<b>117,682,929</b>	<b>4.7</b>
Cornerstone (Barings) Real Estate Advisers Fund X	28,009	0.0
Dune Real Estate Fund IV	27,415,339	1.1
Green Cities III, L.P.	7,760,193	0.3
Green Cities IV, L.P.	17,917,016	0.7
Green Cities V, L.P.	239,785	0.0
Long Wharf Real Estate Partners IV, L.P.	234,311	0.0
Long Wharf RE Partners V, L.P.	11,503,322	0.5
Long Wharf RE Partners VI, L.P.	13,727,609	0.5
Long Wharf RE Partners VII, L.P.	2,660,432	0.1
Mesirow Real Estate Value Fund III, L.P.	27,341,099	1.1
TA Realty Fund XI	1,355,814	0.1
TA Realty Fund XIII	7,500,000	0.3
<b>Private Equity Composite</b>	<b>124,522,794</b>	<b>4.9</b>
Neuberger Berman Crossroads Fund XXI	54,076,912	2.1
Neuberger Berman Crossroads Fund XXIV	5,189,542	0.2
Pantheon Global Secondary Fund V	29,448,327	1.2
RPS Ventures II	1,817,457	0.1
Siguler Guff Small Buyout Opportunities Fund V	7,233,594	0.3
SSM Partners Growth Equity II L.P.	7,972,956	0.3
SSM Partners Growth Equity III, LP	18,784,006	0.7
<b>Private Debt Composite</b>	<b>37,595,201</b>	<b>1.5</b>
Brightwood Capital Fund V	4,819,671	0.2
Churchill Middle Market Senior Loan Fund III	7,645,530	0.3
Neuberger Berman Private Debt Fund IV	25,130,000	1.0

City of Memphis

Comparative Performance

As of December 31, 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>8.09</b>	<b>12.20</b>	<b>12.20</b>	<b>3.53</b>	<b>8.70</b>	<b>7.87</b>	<b>6.73</b>	<b>9.21</b>	<b>10/01/1982</b>
Policy Index	8.21	14.44	14.44	3.52	8.24	7.47	6.57	9.54	
Policy Index2	8.20	14.10	14.10	3.18	8.02	7.21	6.39	9.50	
In House Cash	1.38	5.08	5.08	2.19	1.78	1.65	1.21	3.88	10/01/1982
90 Day U.S. Treasury Bill	1.37	5.02	5.02	2.15	1.88	1.73	1.24	3.66	
<b>Domestic Equity Composite</b>	<b>12.69</b>	<b>24.76</b>	<b>24.76</b>	<b>8.91</b>	<b>15.52</b>	<b>13.14</b>	<b>10.87</b>	<b>11.99</b>	<b>10/01/1982</b>
Russell 3000 Index	12.07	25.96	25.96	8.54	15.16	12.81	11.48	11.77	
Domestic Equity Index	12.20	23.55	23.55	7.40	14.09	11.73	10.70	N/A	
<b>Fixed Income Composite</b>	<b>8.64</b>	<b>7.29</b>	<b>7.29</b>	<b>-1.91</b>	<b>2.58</b>	<b>2.67</b>	<b>2.82</b>	<b>6.82</b>	<b>10/01/1982</b>
Fixed Income Index	7.27	7.25	7.25	-2.93	1.49	1.71	2.07	6.61	
<b>International Equity Composite</b>	<b>10.03</b>	<b>17.14</b>	<b>17.14</b>	<b>0.54</b>	<b>8.34</b>	<b>7.70</b>	<b>5.51</b>	<b>5.36</b>	<b>01/01/1990</b>
International Equity Index	9.60	15.56	15.56	1.18	6.85	6.39	3.88	5.06	
<b>Hedge Fund Composite</b>	<b>2.63</b>	<b>7.98</b>	<b>7.98</b>	<b>3.91</b>	<b>6.14</b>	<b>5.08</b>	<b>N/A</b>	<b>5.46</b>	<b>04/01/2016</b>
90-Day T-Bill+ 5%	2.61	10.27	10.27	7.26	6.97	6.82	6.30	6.67	
HFRI FOF: Conservative Index	2.09	5.65	5.65	4.40	5.19	4.15	3.44	4.27	
<b>Core Private Real Estate Composite</b>	<b>-6.06</b>	<b>-14.64</b>	<b>-14.64</b>	<b>3.89</b>	<b>4.84</b>	<b>5.26</b>	<b>7.64</b>	<b>7.57</b>	<b>09/01/1999</b>
NCREIF Property Index	-3.02	-7.94	-7.94	4.57	4.33	5.04	6.80	8.03	

Gross of Fees.

**City of Memphis**

**Comparative Performance**

**As of December 31, 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>-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
Policy Index2	-13.47	11.27	12.76	18.71	-5.04	16.63	7.97	-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 December 31, 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>8.09</b>	<b>12.20</b>	<b>12.20</b>	<b>3.53</b>	<b>8.70</b>	<b>7.87</b>	<b>6.73</b>	<b>9.21</b>	<b>10/01/1982</b>
Policy Index	8.21	14.44	14.44	3.52	8.24	7.47	6.57	9.54	
Policy Index2	8.20	14.10	14.10	3.18	8.02	7.21	6.39	9.50	
In House Cash	1.38	5.08	5.08	2.19	1.78	1.65	1.21	3.88	10/01/1982
90 Day U.S. Treasury Bill	1.37	5.02	5.02	2.15	1.88	1.73	1.24	3.66	
<b>Domestic Equity Composite</b>	<b>12.69</b>	<b>24.76</b>	<b>24.76</b>	<b>8.91</b>	<b>15.52</b>	<b>13.14</b>	<b>10.87</b>	<b>11.99</b>	<b>10/01/1982</b>
Russell 3000 Index	12.07	25.96	25.96	8.54	15.16	12.81	11.48	11.77	
Domestic Equity Index	12.20	23.55	23.55	7.40	14.09	11.73	10.70	N/A	
IM U.S. Equity (SA+CF) Median	11.89	19.35	19.35	8.77	13.85	11.14	10.02	12.68	
Domestic Equity Composite Rank	38	32	32	48	30	33	40	78	
Barrow, Hanley	10.02	12.82	12.82	11.58	12.86	10.44	9.93	12.68	10/01/1982
Russell 1000 Value Index	9.50	11.46	11.46	8.86	10.91	8.32	8.40	11.47	
IM U.S. Large Cap Value Equity (SA+CF) Median	10.23	14.37	14.37	10.83	12.93	10.31	9.56	N/A	
Barrow, Hanley Rank	55	60	60	40	55	47	36	N/A	
Winslow Capital Management	18.05	44.11	44.11	7.61	18.42	18.25	14.26	15.56	11/01/2011
Russell 1000 Growth Index	14.16	42.68	42.68	8.86	19.50	17.68	14.86	16.07	
IM U.S. Large Cap Growth Equity (SA+CF) Median	13.89	39.45	39.45	7.20	17.31	16.31	13.63	15.08	
Winslow Capital Management Rank	4	26	26	47	30	16	30	32	
Rhumbline Russell 1000 Growth	14.15	42.61	42.61	8.85	19.49	N/A	N/A	16.43	10/01/2017
Russell 1000 Growth Index	14.16	42.68	42.68	8.86	19.50	17.68	14.86	16.44	
IM U.S. Large Cap Growth Equity (SA+CF) Median	13.89	39.45	39.45	7.20	17.31	16.31	13.63	14.77	
Rhumbline Russell 1000 Growth Rank	44	32	32	30	16	N/A	N/A	17	
Rhumbline S&P 500	11.66	26.25	26.25	10.00	15.67	13.39	12.00	9.72	01/01/2004
S&P 500	11.69	26.29	26.29	10.00	15.69	13.42	12.03	9.69	
IM U.S. Large Cap Core Equity (SA+CF) Median	11.60	24.68	24.68	9.81	15.28	13.23	11.82	10.02	
Rhumbline S&P 500 Rank	48	39	39	46	41	42	42	77	

Gross of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 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	11.67	16.44	16.44	8.12	12.63	9.38	9.28	10.16	04/01/2011
<i>S&amp;P MidCap 400</i>	11.67	16.44	16.44	8.09	12.62	9.37	9.27	10.16	
IM U.S. Mid Cap Core Equity (SA+CF) Median	12.00	16.51	16.51	8.10	12.83	10.14	9.54	10.61	
NTGI S&P 400 Rank	75	62	62	47	69	73	68	79	
Capital Prospects SMID	11.89	16.14	16.14	4.40	12.03	11.10	N/A	12.71	02/01/2016
<i>Russell 2500 Index</i>	13.35	17.42	17.42	4.24	11.67	8.98	8.36	11.29	
IM U.S. SMID Cap Equity (SA+CF) Median	11.72	17.39	17.39	6.71	13.15	10.18	9.09	12.13	
Capital Prospects SMID Rank	48	56	56	61	65	38	N/A	41	
Capital Prospects Small Cap Value	15.17	25.51	25.51	16.51	N/A	N/A	N/A	13.23	04/01/2019
<i>Russell 2000 Value Index</i>	15.26	14.65	14.65	7.94	10.00	6.10	6.76	7.96	
IM U.S. Small Cap Value Equity (SA+CF) Median	12.98	17.34	17.34	10.78	12.62	8.31	8.34	10.59	
Capital Prospects Small Cap Value Rank	14	11	11	11	N/A	N/A	N/A	15	
Nicholas Investment Partners	13.32	21.32	21.32	-2.86	16.13	13.40	9.36	12.99	07/01/2012
<i>Russell 2000 Growth Index</i>	12.75	18.66	18.66	-3.50	9.22	8.08	7.16	10.07	
IM U.S. Small Cap Growth Equity (SA+CF) Median	11.12	18.35	18.35	-1.40	12.46	11.87	9.60	12.43	
Nicholas Investment Partners Rank	18	31	31	60	16	31	59	37	
Conestoga Capital Advisors	11.35	23.11	23.11	1.80	12.23	N/A	N/A	8.23	08/01/2018
<i>Russell 2000 Growth Index</i>	12.75	18.66	18.66	-3.50	9.22	8.08	7.16	4.41	
IM U.S. Small Cap Growth Equity (SA+CF) Median	11.12	18.35	18.35	-1.40	12.46	11.87	9.60	8.51	
Conestoga Capital Advisors Rank	45	17	17	26	57	N/A	N/A	55	

Gross of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 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>10.03</b>	<b>17.14</b>	<b>17.14</b>	<b>0.54</b>	<b>8.34</b>	<b>7.70</b>	<b>5.51</b>	<b>5.36</b>	<b>01/01/1990</b>
<i>International Equity Index</i>	9.60	15.56	15.56	1.18	6.85	6.39	3.88	5.06	
IM International Equity (SA+CF) Median	10.14	17.56	17.56	3.12	8.69	7.56	5.27	7.47	
International Equity Composite Rank	53	53	53	72	58	46	42	88	
<b>1607 Capital Partners</b>	<b>10.56</b>	<b>15.28</b>	<b>15.28</b>	<b>1.47</b>	<b>8.73</b>	<b>8.17</b>	<b>5.76</b>	<b>5.30</b>	<b>06/01/2008</b>
<i>MSCI EAFE (Net)</i>	10.42	18.24	18.24	4.02	8.16	6.91	4.28	3.04	
IM International Large Cap Core Equity (SA+CF) Median	10.21	17.90	17.90	3.50	8.79	7.58	5.14	4.07	
1607 Capital Partners Rank	43	82	82	77	51	34	28	14	
<b>Marathon Asset Mgmt</b>	<b>9.13</b>	<b>16.55</b>	<b>16.55</b>	<b>3.50</b>	<b>8.60</b>	<b>7.23</b>	<b>5.19</b>	<b>7.88</b>	<b>04/01/2004</b>
<i>MSCI AC World ex USA (Net)</i>	9.75	15.62	15.62	1.55	7.08	6.33	3.83	5.51	
IM International Large Cap Core Equity (SA+CF) Median	10.21	17.90	17.90	3.50	8.79	7.58	5.14	6.56	
Marathon Asset Mgmt Rank	78	67	67	51	57	60	48	12	
<b>Principal Global Investors</b>	<b>11.22</b>	<b>19.51</b>	<b>19.51</b>	<b>0.58</b>	<b>9.63</b>	<b>7.47</b>	<b>5.53</b>	<b>3.51</b>	<b>07/01/2007</b>
<i>MSCI World ex U.S. Growth (Net)</i>	12.52	17.45	17.45	0.44	8.94	7.88	5.08	3.51	
IM International Large Cap Core Equity (SA+CF) Median	10.21	17.90	17.90	3.50	8.79	7.58	5.14	3.84	
Principal Global Investors Rank	26	33	33	86	26	54	33	70	
<b>Strategic Global Advisors</b>	<b>10.02</b>	<b>20.20</b>	<b>20.20</b>	<b>5.64</b>	<b>9.42</b>	<b>7.90</b>	<b>6.00</b>	<b>8.66</b>	<b>07/01/2012</b>
<i>MSCI World ex-U.S. (Net)</i>	10.51	17.94	17.94	4.42	8.45	6.95	4.32	6.66	
IM International Core Equity (SA+CF) Median	10.32	16.84	16.84	3.04	8.63	7.60	5.25	7.84	
Strategic Global Advisors Rank	59	19	19	19	31	41	28	25	
<b>Acadian EM Equity II</b>	<b>8.85</b>	<b>22.79</b>	<b>22.79</b>	<b>2.24</b>	<b>7.21</b>	<b>6.98</b>	<b>4.42</b>	<b>3.06</b>	<b>05/01/2011</b>
<i>MSCI EM (net)</i>	7.86	9.83	9.83	-5.08	3.68	4.98	2.66	1.19	
IM Emerging Markets Equity (SA+CF) Median	8.18	12.91	12.91	-3.16	5.57	6.42	3.93	2.71	
Acadian EM Equity II Rank	37	20	20	30	32	37	41	37	

Gross of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 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	10.25	8.43	8.43	-8.97	5.80	7.46	N/A	7.30	12/01/2016
MSCI EM (net)	7.86	9.83	9.83	-5.08	3.68	4.98	2.66	4.95	
IM Emerging Markets Equity (SA+CF) Median	8.18	12.91	12.91	-3.16	5.57	6.42	3.93	6.25	
J.P. Morgan Global Emerging Markets Discovery Fund Rank	17	75	75	88	45	31	N/A	33	
<b>Fixed Income Composite</b>	<b>8.64</b>	<b>7.29</b>	<b>7.29</b>	<b>-1.91</b>	<b>2.58</b>	<b>2.67</b>	<b>2.82</b>	<b>6.82</b>	<b>10/01/1982</b>
Fixed Income Index	7.27	7.25	7.25	-2.93	1.49	1.71	2.07	6.61	
Mackay Shields	6.02	12.82	12.82	3.72	6.26	5.46	5.68	7.75	01/01/1999
Credit Suisse High Yield Index	6.79	13.55	13.55	2.33	5.20	4.34	4.42	6.38	
IM U.S. High Yield Bonds (SA+CF) Median	6.53	12.58	12.58	2.50	5.42	4.63	4.71	6.56	
Mackay Shields Rank	72	44	44	18	16	12	3	5	
PIMCO	7.00	6.57	6.57	-2.42	1.97	2.30	2.43	3.38	04/01/2009
Blmbg. U.S. Aggregate	6.82	5.53	5.53	-3.31	1.10	1.29	1.81	2.72	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	6.82	6.06	6.06	-3.01	1.64	1.76	2.25	3.55	
PIMCO Rank	34	22	22	15	21	10	34	61	
Prudential Core Conserv Bond	7.10	6.04	6.04	-3.16	1.26	1.41	1.97	2.65	09/01/2009
Blmbg. U.S. Aggregate	6.82	5.53	5.53	-3.31	1.10	1.29	1.81	2.48	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	6.82	6.06	6.06	-3.01	1.64	1.76	2.25	3.08	
Prudential Core Conserv Bond Rank	24	51	51	63	77	81	79	82	
Barrow Hanley High Quality Core	7.43	6.37	6.37	N/A	N/A	N/A	N/A	8.32	11/01/2022
Blmbg. U.S. Aggregate	6.82	5.53	5.53	-3.31	1.10	1.29	1.81	7.60	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	6.76	5.82	5.82	-3.19	1.37	1.52	2.00	7.83	
Barrow Hanley High Quality Core Rank	6	17	17	N/A	N/A	N/A	N/A	19	
Garcia Hamilton Aggregate	7.83	5.30	5.30	N/A	N/A	N/A	N/A	7.87	11/01/2022
Blmbg. U.S. Aggregate	6.82	5.53	5.53	-3.31	1.10	1.29	1.81	7.60	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	6.76	5.82	5.82	-3.19	1.37	1.52	2.00	7.83	
Garcia Hamilton Aggregate Rank	4	79	79	N/A	N/A	N/A	N/A	45	

Gross of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
Brandywine	12.31	5.69	5.69	-4.07	1.34	2.08	N/A	1.46	08/01/2015
<i>Blmbg. Global Aggregate</i>	8.10	5.72	5.72	-5.51	-0.32	0.62	0.38	0.73	
<i>FTSE World Government Bond Index</i>	8.08	5.18	5.18	-7.18	-1.39	-0.09	-0.31	0.12	
IM Global Fixed Income (SA+CF) Median	7.34	8.75	8.75	-1.46	3.07	3.04	2.80	3.07	
Brandywine Rank	3	82	82	73	72	67	N/A	78	
<b>Hedge Fund Composite</b>	<b>2.63</b>	<b>7.98</b>	<b>7.98</b>	<b>3.91</b>	<b>6.14</b>	<b>5.08</b>	<b>N/A</b>	<b>5.46</b>	<b>04/01/2016</b>
90-Day T-Bill+ 5%	2.61	10.27	10.27	7.26	6.97	6.82	6.30	6.67	
<i>HFRI FOF: Conservative Index</i>	2.09	5.65	5.65	4.40	5.19	4.15	3.44	4.27	
Grosvenor Institutional Partners, L.P.	2.42	7.88	7.88	3.06	6.35	5.16	N/A	5.53	04/01/2016
90-Day T-Bill+ 5%	2.61	10.27	10.27	7.26	6.97	6.82	6.30	6.67	
<i>HFRI FOF: Conservative Index</i>	2.09	5.65	5.65	4.40	5.19	4.15	3.44	4.27	
Aetos	2.86	8.27	8.27	4.61	6.00	5.06	N/A	5.23	05/01/2016
90-Day T-Bill + 5%	2.61	10.27	10.27	7.26	6.97	6.82	6.30	6.68	
<i>HFRI FOF: Conservative Index</i>	2.09	5.65	5.65	4.40	5.19	4.15	3.44	4.27	
Preserver, L.P.	2.42	7.06	7.06	4.86	N/A	N/A	N/A	5.22	02/01/2019
90-Day T-Bill + 5%	2.61	10.27	10.27	7.26	6.97	6.82	6.30	6.96	
<i>HFRI Fund of Funds Composite Index</i>	3.39	6.32	6.32	2.25	5.14	4.15	3.25	4.69	
<i>HFRI RV: Multi-Strategy Index</i>	2.71	6.31	6.31	4.14	4.88	4.02	3.85	4.59	
<b>Total Real Estate Composite</b>	<b>-3.13</b>	<b>-11.47</b>	<b>-11.47</b>	<b>4.27</b>	<b>4.97</b>	<b>5.71</b>	<b>8.45</b>	<b>9.25</b>	<b>07/01/1996</b>
<i>NCREIF Property Index</i>	-3.02	-7.94	-7.94	4.57	4.33	5.04	6.80	8.58	
<b>Core Private Real Estate Composite</b>	<b>-6.06</b>	<b>-14.64</b>	<b>-14.64</b>	<b>3.89</b>	<b>4.84</b>	<b>5.26</b>	<b>7.64</b>	<b>7.57</b>	<b>09/01/1999</b>
<i>NCREIF Property Index</i>	-3.02	-7.94	-7.94	4.57	4.33	5.04	6.80	8.03	
BlackRock US Core Property Fund	-7.56	-18.23	-18.23	2.35	3.25	4.67	6.99	3.71	10/01/2006
<i>NCREIF Property Index</i>	-3.02	-7.94	-7.94	4.57	4.33	5.04	6.80	6.33	

Gross of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 2023

					Performance (%)				
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
RREEF REIT II	-5.86	-14.44	-14.44	5.09	4.56	5.45	7.63	7.55	07/01/1999
NCREIF Property Index	-3.02	-7.94	-7.94	4.57	4.33	5.04	6.80	7.97	
Vanguard REIT Index Inv	19.56	13.17	13.17	5.47	7.60	5.17	N/A	5.17	01/01/2017
Vanguard REIT Spliced Index	18.18	11.96	11.96	5.15	7.44	5.10	7.47	5.10	
IM Real Estate Sector (MF) Median	16.27	11.91	11.91	5.35	7.25	4.99	7.22	4.99	
Vanguard REIT Index Inv Rank	3	27	27	45	37	45	N/A	45	
TA Realty Core Property Fund	-5.42	-8.83	-8.83	9.22	N/A	N/A	N/A	8.59	04/01/2019
NCREIF ODCE Equal Weighted	-4.83	-12.01	-12.01	5.05	4.55	5.53	7.50	4.43	

Gross of Fees.

**City of Memphis Retirement System  
Comparative Performance - IRR**

**As of December 31, 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>117,682,929</b>	<b>4.7</b>	<b>-0.3</b>	<b>-8.4</b>	<b>-8.4</b>	<b>4.6</b>	<b>4.8</b>	<b>5.7</b>	<b>10.5</b>	<b>09/30/2009</b>
Dune Real Estate Fund IV	27,415,339	1.1	0.0	1.5	1.5	9.6			4.7	08/22/2019
Green Cities III, L.P.	7,760,193	0.3	0.0	-42.4	-42.4	-22.7	-12.9	-7.7	-6.0	11/13/2015
Green Cities IV, L.P.	17,917,016	0.7	0.0	-5.8	-5.8	-1.1			-1.9	06/27/2019
Green Cities V, L.P.	239,785	0.0	-87.5						-99.9	03/27/2023
Long Wharf RE Partners V, L.P.	11,503,322	0.5	-1.6	-6.7	-6.7	4.7	5.7	7.6	7.0	11/20/2015
Long Wharf RE Partners VI, L.P.	13,727,609	0.5	0.6	2.1	2.1	17.7			16.2	06/27/2019
Long Wharf RE Partners VII, L.P.	2,660,432	0.1	-3.1						-22.5	03/30/2023
Mesirow Real Estate Value Fund III, L.P.	27,341,099	1.1	-0.2	2.6	2.6	15.4	13.2		12.7	05/07/2018
TA Realty Fund XI	1,355,814	0.1	0.0	-26.6	-26.6	13.2	12.0	11.2	10.6	05/25/2016
TA Realty Fund XIII	7,500,000	0.3							0.0	11/17/2023
<b>Private Equity</b>										
<b>Private Equity Composite</b>	<b>124,522,794</b>	<b>4.9</b>	<b>0.1</b>	<b>1.4</b>	<b>1.4</b>	<b>12.5</b>	<b>12.7</b>	<b>13.2</b>	<b>13.8</b>	<b>12/15/2015</b>
Neuberger Berman Crossroads Fund XXI	54,076,912	2.1	0.0	3.0	3.0	15.1	17.5	16.9	16.3	04/27/2016
Neuberger Berman Crossroads Fund XXIV	5,189,542	0.2	0.0	13.9	13.9				-0.4	07/11/2022
Pantheon Global Secondary Fund V	29,448,327	1.2	0.0	-6.0	-6.0	9.1	7.3	9.7	11.8	12/22/2015
RPS Ventures II	1,817,457	0.1	0.0						-19.2	07/21/2023
Siguler Guff Small Buyout Opportunities Fund V	7,233,594	0.3	1.5	12.7	12.7				22.6	08/05/2022
SSM Partners Growth Equity II L.P.	7,972,956	0.3	0.0	4.6	4.6	10.7	6.3	7.3	7.8	12/15/2015
SSM Partners Growth Equity III, LP	18,784,006	0.7	0.0	7.2	7.2	12.1			14.8	12/02/2019
<b>Private Debt</b>										
<b>Private Debt Composite</b>	<b>37,595,201</b>	<b>1.5</b>	<b>3.3</b>	<b>14.3</b>	<b>14.3</b>				<b>12.7</b>	<b>07/30/2021</b>
Churchill Middle Market Senior Loan Fund III	7,645,530	0.3	4.4	14.5	14.5				10.1	10/07/2021
Brightwood Capital Fund V	4,819,671	0.2	0.0	11.8	11.8				11.1	07/30/2021
Neuberger Berman Private Debt Fund IV	25,130,000	1.0	3.6	14.8	14.8				14.3	10/21/2021

# City of Memphis

## Comparative Performance

As of December 31, 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>Performance (%)</b>
<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	-16.41	26.09	16.71	28.60	-7.05	19.43	13.14	-0.48	9.98	35.76	
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	-5.34	27.88	4.44	27.45	-8.36	17.13	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	10.51	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 December 31, 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>	<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	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>	<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	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>	<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	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	-16.25	11.70	11.50	23.51	-14.58	28.71	2.41	1.15	-3.38	23.40
International Equity Composite Rank	72	66	31	44	60	28	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	-15.99	11.88	11.69	23.61	-14.32	27.86	1.71	0.50	-3.67	22.76
1607 Capital Partners Rank	77	46	30	38	50	11	40	56	22	25

Gross of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 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	-15.99	11.88	11.69	23.61	-14.32	27.86	1.71	0.50	-3.67	22.76
Marathon Asset Mgmt Rank	26	68	59	49	35	81	82	6	55	8
<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	-15.99	11.88	11.69	23.61	-14.32	27.86	1.71	0.50	-3.67	22.76
Principal Global Investors Rank	96	41	11	28	87	60	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	-16.84	12.38	12.17	24.03	-14.96	29.41	1.77	1.32	-3.43	24.16
Strategic Global Advisors Rank	44	15	72	59	66	45	72	30	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	-19.46	0.94	18.29	20.15	-15.20	36.91	10.07	-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	-19.46	0.94	18.29	20.15	-15.20	36.91	10.07	-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	-9.43	5.31	6.57	14.26	-1.64	7.48	14.07	-2.09	2.55	7.59
Mackay Shields Rank	24	27	58	51	31	38	13	27	51	57

Gross of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 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	20	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	0.44	8.42	9.72	-1.76	7.78	6.13	-2.35	2.61	0.01
Brandywine Rank	57	75	18	76	66	14	93	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 December 31, 2023**

	<b>2022</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>Performance (%)</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 December 31, 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>8.00</b>	<b>11.79</b>	<b>11.79</b>	<b>3.14</b>	<b>8.27</b>	<b>7.44</b>	<b>6.30</b>	<b>7.16</b>	<b>07/01/1996</b>
Policy Index	8.21	14.44	14.44	3.52	8.24	7.47	6.57	7.16	
Policy Index2	8.20	14.10	14.10	3.18	8.02	7.21	6.39	7.09	
<b>In House Cash</b>	<b>1.38</b>	<b>5.08</b>	<b>5.08</b>	<b>2.19</b>	<b>1.78</b>	<b>1.65</b>	<b>1.21</b>	<b>3.88</b>	<b>10/01/1982</b>
90 Day U.S. Treasury Bill	1.37	5.02	5.02	2.15	1.88	1.73	1.24	3.66	
<b>Domestic Equity Composite</b>	<b>12.61</b>	<b>24.42</b>	<b>24.42</b>	<b>8.61</b>	<b>15.18</b>	<b>12.81</b>	<b>10.52</b>	<b>12.56</b>	<b>10/01/2009</b>
Russell 3000 Index	12.07	25.96	25.96	8.54	15.16	12.81	11.48	13.08	
Domestic Equity Index	12.20	23.55	23.55	7.40	14.09	11.73	10.70	12.56	
<b>Fixed Income Composite</b>	<b>8.56</b>	<b>6.96</b>	<b>6.96</b>	<b>-2.22</b>	<b>2.25</b>	<b>2.34</b>	<b>2.50</b>	<b>3.46</b>	<b>10/01/2009</b>
Fixed Income Index	7.27	7.25	7.25	-2.93	1.49	1.71	2.07	2.86	
<b>International Equity Composite</b>	<b>9.85</b>	<b>16.36</b>	<b>16.36</b>	<b>-0.11</b>	<b>7.63</b>	<b>6.98</b>	<b>4.81</b>	<b>6.08</b>	<b>10/01/2009</b>
International Equity Index	9.60	15.56	15.56	1.18	6.85	6.39	3.88	5.06	
<b>Hedge Fund Composite</b>	<b>2.63</b>	<b>7.98</b>	<b>7.98</b>	<b>3.91</b>	<b>6.14</b>	<b>5.08</b>	<b>N/A</b>	<b>5.46</b>	<b>04/01/2016</b>
90-Day T-Bill+ 5%	2.61	10.27	10.27	7.26	6.97	6.82	6.30	6.67	
HFRI FOF: Conservative Index	2.09	5.65	5.65	4.40	5.19	4.15	3.44	4.27	
<b>Core Private Real Estate Composite</b>	<b>-6.06</b>	<b>-14.64</b>	<b>-14.64</b>	<b>3.89</b>	<b>4.84</b>	<b>5.26</b>	<b>7.64</b>	<b>7.57</b>	<b>09/01/1999</b>
NCREF Property Index	-3.02	-7.94	-7.94	4.57	4.33	5.04	6.80	8.03	

Net of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
<b>In House Cash</b>	<b>1.38</b>	<b>5.08</b>	<b>5.08</b>	<b>2.19</b>	<b>1.78</b>	<b>1.65</b>	<b>1.21</b>	<b>3.88</b>	<b>10/01/1982</b>
90 Day U.S. Treasury Bill	1.37	5.02	5.02	2.15	1.88	1.73	1.24	3.66	
<b>Domestic Equity Composite</b>	<b>12.61</b>	<b>24.42</b>	<b>24.42</b>	<b>8.61</b>	<b>15.18</b>	<b>12.81</b>	<b>10.52</b>	<b>12.56</b>	<b>10/01/2009</b>
Russell 3000 Index	12.07	25.96	25.96	8.54	15.16	12.81	11.48	13.08	
Domestic Equity Index	12.20	23.55	23.55	7.40	14.09	11.73	10.70	12.56	
IM U.S. Equity (SA+CF) Median	11.89	19.35	19.35	8.77	13.85	11.14	10.02	12.72	
Domestic Equity Composite Rank	40	33	33	52	34	36	43	54	
<b>Barrow, Hanley</b>	<b>9.93</b>	<b>12.48</b>	<b>12.48</b>	<b>11.25</b>	<b>12.51</b>	<b>10.08</b>	<b>9.56</b>	<b>12.44</b>	<b>10/01/1982</b>
Russell 1000 Value Index	9.50	11.46	11.46	8.86	10.91	8.32	8.40	11.47	
IM U.S. Large Cap Value Equity (SA+CF) Median	10.23	14.37	14.37	10.83	12.93	10.31	9.56	N/A	
Barrow, Hanley Rank	57	62	62	44	65	57	51	N/A	
<b>Winslow Capital Management</b>	<b>17.88</b>	<b>43.28</b>	<b>43.28</b>	<b>6.99</b>	<b>17.73</b>	<b>17.56</b>	<b>13.60</b>	<b>14.91</b>	<b>11/01/2011</b>
Russell 1000 Growth Index	14.16	42.68	42.68	8.86	19.50	17.68	14.86	16.07	
IM U.S. Large Cap Growth Equity (SA+CF) Median	13.89	39.45	39.45	7.20	17.31	16.31	13.63	15.08	
Winslow Capital Management Rank	4	31	31	53	41	26	51	57	
<b>Rhumbline Russell 1000 Growth</b>	<b>14.15</b>	<b>42.58</b>	<b>42.58</b>	<b>8.83</b>	<b>19.46</b>	<b>N/A</b>	<b>N/A</b>	<b>16.34</b>	<b>09/01/2017</b>
Russell 1000 Growth Index	14.16	42.68	42.68	8.86	19.50	17.68	14.86	16.44	
IM U.S. Large Cap Growth Equity (SA+CF) Median	13.89	39.45	39.45	7.20	17.31	16.31	13.63	14.78	
Rhumbline Russell 1000 Growth Rank	44	32	32	31	16	N/A	N/A	19	
<b>Rhumbline S&amp;P 500</b>	<b>11.66</b>	<b>26.22</b>	<b>26.22</b>	<b>9.98</b>	<b>15.64</b>	<b>13.37</b>	<b>11.97</b>	<b>9.69</b>	<b>01/01/2004</b>
S&P 500	11.69	26.29	26.29	10.00	15.69	13.42	12.03	9.69	
IM U.S. Large Cap Core Equity (SA+CF) Median	11.60	24.68	24.68	9.81	15.28	13.23	11.82	10.02	
Rhumbline S&P 500 Rank	48	39	39	48	41	44	43	81	
<b>NTGI S&amp;P 400</b>	<b>11.65</b>	<b>16.39</b>	<b>16.39</b>	<b>8.07</b>	<b>12.58</b>	<b>9.33</b>	<b>9.23</b>	<b>10.11</b>	<b>04/01/2011</b>
S&P MidCap 400	11.67	16.44	16.44	8.09	12.62	9.37	9.27	10.16	
IM U.S. Mid Cap Core Equity (SA+CF) Median	12.00	16.51	16.51	8.10	12.83	10.14	9.54	10.61	
NTGI S&P 400 Rank	77	66	66	57	75	79	74	85	

Net of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 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>11.76</b>	<b>15.60</b>	<b>15.60</b>	<b>3.91</b>	<b>11.50</b>	<b>10.56</b>	N/A	12.17	02/01/2016
Russell 2500 Index	13.35	17.42	17.42	4.24	11.67	8.98	8.36	11.29	
IM U.S. SMID Cap Equity (SA+CF) Median	11.72	17.39	17.39	6.71	13.15	10.18	9.09	12.13	
Capital Prospects SMID Rank	50	61	61	65	72	46	N/A	50	
<b>Capital Prospects Small Cap Value</b>	<b>15.04</b>	<b>24.97</b>	<b>24.97</b>	<b>15.99</b>	N/A	N/A	N/A	12.75	04/01/2019
Russell 2000 Value Index	15.26	14.65	14.65	7.94	10.00	6.10	6.76	7.96	
IM U.S. Small Cap Value Equity (SA+CF) Median	12.98	17.34	17.34	10.78	12.62	8.31	8.34	10.59	
Capital Prospects Small Cap Value Rank	14	12	12	12	N/A	N/A	N/A	20	
<b>Nicholas Investment Partners</b>	<b>13.03</b>	<b>20.11</b>	<b>20.11</b>	<b>-3.75</b>	<b>15.03</b>	<b>12.31</b>	<b>8.30</b>	12.29	06/01/2012
Russell 2000 Growth Index	12.75	18.66	18.66	-3.50	9.22	8.08	7.16	10.47	
IM U.S. Small Cap Growth Equity (SA+CF) Median	11.12	18.35	18.35	-1.40	12.46	11.87	9.60	12.72	
Nicholas Investment Partners Rank	21	36	36	67	22	42	83	64	
<b>Conestoga Capital Advisors</b>	<b>11.11</b>	<b>22.11</b>	<b>22.11</b>	<b>0.93</b>	<b>11.34</b>	N/A	N/A	7.36	08/01/2018
Russell 2000 Growth Index	12.75	18.66	18.66	-3.50	9.22	8.08	7.16	4.41	
IM U.S. Small Cap Growth Equity (SA+CF) Median	11.12	18.35	18.35	-1.40	12.46	11.87	9.60	8.51	
Conestoga Capital Advisors Rank	51	23	23	35	72	N/A	N/A	71	
<b>International Equity Composite</b>	<b>9.85</b>	<b>16.36</b>	<b>16.36</b>	<b>-0.11</b>	<b>7.63</b>	<b>6.98</b>	<b>4.81</b>	6.08	10/01/2009
International Equity Index	9.60	15.56	15.56	1.18	6.85	6.39	3.88	5.06	
IM International Equity (SA+CF) Median	10.14	17.56	17.56	3.12	8.69	7.56	5.27	7.05	
International Equity Composite Rank	57	59	59	76	69	65	65	74	
<b>1607 Capital Partners</b>	<b>10.39</b>	<b>14.50</b>	<b>14.50</b>	<b>0.62</b>	<b>7.89</b>	<b>7.37</b>	<b>4.98</b>	4.55	06/01/2008
MSCI EAFE (Net)	10.42	18.24	18.24	4.02	8.16	6.91	4.28	3.04	
IM International Large Cap Core Equity (SA+CF) Median	10.21	17.90	17.90	3.50	8.79	7.58	5.14	4.07	
1607 Capital Partners Rank	46	87	87	86	74	57	57	26	

Net of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 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>8.96</b>	<b>15.81</b>	<b>15.81</b>	<b>2.83</b>	<b>7.91</b>	<b>6.54</b>	<b>4.51</b>	<b>7.15</b>	<b>04/01/2004</b>
MSCI AC World ex USA (Net)	9.75	15.62	15.62	1.55	7.08	6.33	3.83	5.51	
IM International Large Cap Core Equity (SA+CF) Median	10.21	17.90	17.90	3.50	8.79	7.58	5.14	6.56	
Marathon Asset Mgmt Rank	81	74	74	60	74	83	72	25	
<b>Principal Global Investors</b>	<b>11.08</b>	<b>18.89</b>	<b>18.89</b>	<b>0.16</b>	<b>9.11</b>	<b>6.93</b>	<b>4.97</b>	<b>2.95</b>	<b>07/01/2007</b>
MSCI World ex U.S. Growth (Net)	12.52	17.45	17.45	0.44	8.94	7.88	5.08	3.51	
IM International Large Cap Core Equity (SA+CF) Median	10.21	17.90	17.90	3.50	8.79	7.58	5.14	3.84	
Principal Global Investors Rank	28	38	38	88	41	72	58	87	
<b>Strategic Global Advisors</b>	<b>9.82</b>	<b>19.33</b>	<b>19.33</b>	<b>4.85</b>	<b>8.60</b>	<b>7.11</b>	<b>5.22</b>	<b>7.99</b>	<b>06/01/2012</b>
MSCI World ex-U.S. (Net)	10.51	17.94	17.94	4.42	8.45	6.95	4.32	7.20	
IM International Core Equity (SA+CF) Median	10.32	16.84	16.84	3.04	8.63	7.60	5.25	8.32	
Strategic Global Advisors Rank	65	30	30	27	53	65	52	63	
<b>Acadian EM Equity II</b>	<b>8.67</b>	<b>21.93</b>	<b>21.93</b>	<b>1.52</b>	<b>6.46</b>	<b>6.23</b>	<b>3.69</b>	<b>2.45</b>	<b>05/01/2011</b>
MSCI EM (net)	7.86	9.83	9.83	-5.08	3.68	4.98	2.66	1.19	
IM Emerging Markets Equity (SA+CF) Median	8.18	12.91	12.91	-3.16	5.57	6.42	3.93	2.71	
Acadian EM Equity II Rank	39	22	22	32	37	55	59	65	
<b>J.P. Morgan Global Emerging Markets Discovery Fund</b>	<b>10.04</b>	<b>7.56</b>	<b>7.56</b>	<b>-9.65</b>	<b>4.98</b>	<b>6.62</b>	<b>N/A</b>	<b>6.47</b>	<b>12/01/2016</b>
MSCI EM (net)	7.86	9.83	9.83	-5.08	3.68	4.98	2.66	4.95	
IM Emerging Markets Equity (SA+CF) Median	8.18	12.91	12.91	-3.16	5.57	6.42	3.93	6.25	
J.P. Morgan Global Emerging Markets Discovery Fund Rank	20	80	80	90	63	44	N/A	45	
<b>Fixed Income Composite</b>	<b>8.56</b>	<b>6.96</b>	<b>6.96</b>	<b>-2.22</b>	<b>2.25</b>	<b>2.34</b>	<b>2.50</b>	<b>3.46</b>	<b>10/01/2009</b>
Fixed Income Index	7.27	7.25	7.25	-2.93	1.49	1.71	2.07	2.86	
IM U.S. Fixed Income (SA+CF) Median	6.10	6.33	6.33	-0.92	2.26	2.24	2.49	3.16	
Fixed Income Composite Rank	11	41	41	67	51	46	49	44	

Net of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 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>5.89</b>	<b>12.40</b>	<b>12.40</b>	<b>3.27</b>	<b>5.81</b>	<b>5.02</b>	<b>5.24</b>	<b>7.29</b>	<b>01/01/1999</b>
Credit Suisse High Yield Index	6.79	13.55	13.55	2.33	5.20	4.34	4.42	6.38	
IM U.S. High Yield Bonds (SA+CF) Median	6.53	12.58	12.58	2.50	5.42	4.63	4.71	6.56	
Mackay Shields Rank	73	55	55	25	31	33	14	11	
<b>PIMCO</b>	<b>6.85</b>	<b>6.15</b>	<b>6.15</b>	<b>-2.78</b>	<b>1.60</b>	<b>1.94</b>	<b>2.08</b>	<b>3.04</b>	<b>04/01/2009</b>
Blmbg. U.S. Aggregate	6.82	5.53	5.53	-3.31	1.10	1.29	1.81	2.72	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	6.82	6.06	6.06	-3.01	1.64	1.76	2.25	3.55	
PIMCO Rank	46	44	44	33	56	30	72	78	
<b>Prudential Core Conserv Bond</b>	<b>7.10</b>	<b>6.04</b>	<b>6.04</b>	<b>-3.21</b>	<b>1.17</b>	<b>1.31</b>	<b>1.86</b>	<b>2.54</b>	<b>09/01/2009</b>
Blmbg. U.S. Aggregate	6.82	5.53	5.53	-3.31	1.10	1.29	1.81	2.48	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	6.82	6.06	6.06	-3.01	1.64	1.76	2.25	3.08	
Prudential Core Conserv Bond Rank	24	51	51	66	85	89	85	86	
<b>Barrow Hanley High Quality Core</b>	<b>7.36</b>	<b>6.11</b>	<b>6.11</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>8.04</b>	<b>11/01/2022</b>
Blmbg. U.S. Aggregate	6.82	5.53	5.53	-3.31	1.10	1.29	1.81	7.60	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	6.76	5.82	5.82	-3.19	1.37	1.52	2.00	7.83	
Barrow Hanley High Quality Core Rank	7	27	27	N/A	N/A	N/A	N/A	39	
<b>Garcia Hamilton Aggregate</b>	<b>7.78</b>	<b>5.11</b>	<b>5.11</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>7.70</b>	<b>11/01/2022</b>
Blmbg. U.S. Aggregate	6.82	5.53	5.53	-3.31	1.10	1.29	1.81	7.60	
IM U.S. Broad Market Core Fixed Income (SA+CF) Median	6.76	5.82	5.82	-3.19	1.37	1.52	2.00	7.83	
Garcia Hamilton Aggregate Rank	4	84	84	N/A	N/A	N/A	N/A	59	
<b>Brandywine</b>	<b>12.21</b>	<b>5.29</b>	<b>5.29</b>	<b>-4.43</b>	<b>0.97</b>	<b>1.70</b>	<b>N/A</b>	<b>1.09</b>	<b>08/01/2015</b>
Blmbg. Global Aggregate	8.10	5.72	5.72	-5.51	-0.32	0.62	0.38	0.73	
FTSE World Government Bond Index	8.08	5.18	5.18	-7.18	-1.39	-0.09	-0.31	0.12	
IM Global Fixed Income (SA+CF) Median	7.34	8.75	8.75	-1.46	3.07	3.04	2.80	3.07	
Brandywine Rank	4	86	86	74	77	76	N/A	86	

Net of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 2023

	Performance (%)								
	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception	Inception Date
<b>Hedge Fund Composite</b>	<b>2.63</b>	<b>7.98</b>	<b>7.98</b>	<b>3.91</b>	<b>6.14</b>	<b>5.08</b>	N/A	<b>5.46</b>	<b>04/01/2016</b>
90-Day T-Bill+ 5%	2.61	10.27	10.27	7.26	6.97	6.82	6.30	6.67	
HFRI FOF: Conservative Index	2.09	5.65	5.65	4.40	5.19	4.15	3.44	4.27	
<b>Grosvenor Institutional Partners, L.P.</b>	<b>2.42</b>	<b>7.88</b>	<b>7.88</b>	<b>3.06</b>	<b>6.35</b>	<b>5.16</b>	N/A	<b>5.53</b>	<b>04/01/2016</b>
90-Day T-Bill+ 5%	2.61	10.27	10.27	7.26	6.97	6.82	6.30	6.67	
HFRI FOF: Conservative Index	2.09	5.65	5.65	4.40	5.19	4.15	3.44	4.27	
<b>Aetos</b>	<b>2.86</b>	<b>8.27</b>	<b>8.27</b>	<b>4.61</b>	<b>6.00</b>	<b>5.06</b>	N/A	<b>5.23</b>	<b>05/01/2016</b>
90-Day T-Bill + 5%	2.61	10.27	10.27	7.26	6.97	6.82	6.30	6.68	
HFRI FOF: Conservative Index	2.09	5.65	5.65	4.40	5.19	4.15	3.44	4.27	
<b>Preserver, L.P.</b>	<b>2.42</b>	<b>7.06</b>	<b>7.06</b>	<b>4.86</b>	N/A	N/A	N/A	<b>5.22</b>	<b>02/01/2019</b>
90-Day T-Bill + 5%	2.61	10.27	10.27	7.26	6.97	6.82	6.30	6.96	
HFRI Fund of Funds Composite Index	3.39	6.32	6.32	2.25	5.14	4.15	3.25	4.69	
HFRI RV: Multi-Strategy Index	2.71	6.31	6.31	4.14	4.88	4.02	3.85	4.59	
<b>Total Real Estate Composite</b>	<b>-3.25</b>	<b>-11.89</b>	<b>-11.89</b>	<b>3.73</b>	<b>4.38</b>	<b>5.08</b>	<b>7.75</b>	<b>9.53</b>	<b>10/01/2009</b>
NCREIF Property Index	-3.02	-7.94	-7.94	4.57	4.33	5.04	6.80	8.01	
<b>BlackRock US Core Property Fund</b>	<b>-7.74</b>	<b>-18.88</b>	<b>-18.88</b>	<b>1.53</b>	<b>2.44</b>	<b>3.92</b>	<b>6.20</b>	<b>2.92</b>	<b>10/01/2006</b>
NCREIF Property Index	-3.02	-7.94	-7.94	4.57	4.33	5.04	6.80	6.33	
<b>RREEF REIT II</b>	<b>-6.08</b>	<b>-15.25</b>	<b>-15.25</b>	<b>4.12</b>	<b>3.59</b>	<b>4.47</b>	<b>6.63</b>	<b>6.68</b>	<b>07/01/1999</b>
NCREIF Property Index	-3.02	-7.94	-7.94	4.57	4.33	5.04	6.80	7.97	
<b>Vanguard REIT Index Inv</b>	<b>19.56</b>	<b>13.17</b>	<b>13.17</b>	<b>5.47</b>	<b>7.60</b>	<b>5.17</b>	N/A	<b>5.17</b>	<b>01/01/2017</b>
Vanguard REIT Spliced Index	18.18	11.96	11.96	5.15	7.44	5.10	7.47	5.10	
IM Real Estate Sector (MF) Median	16.27	11.91	11.91	5.35	7.25	4.99	7.22	4.99	
Vanguard REIT Index Inv Rank	3	27	27	45	37	45	N/A	45	
<b>TA Realty Core Property Fund</b>	<b>-5.42</b>	<b>-8.83</b>	<b>-8.83</b>	<b>9.22</b>	N/A	N/A	N/A	<b>8.59</b>	<b>04/01/2019</b>
NCREIF ODCE Equal Weighted	-4.83	-12.01	-12.01	5.05	4.55	5.53	7.50	4.43	

Net of Fees.

**City of Memphis**

**Comparative Performance**

**As of December 31, 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
Policy Index2	-13.47	11.27	12.76	18.71	-5.04	16.63	7.97	-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 December 31, 2023

	Market Value (\$000)	Performance (%)									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>In House Cash</b>	34,051	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>	788,840	-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		-16.41	26.09	16.71	28.60	-7.05	19.43	13.14	-0.48	9.98	35.76
Domestic Equity Composite Rank		56	56	35	44	45	34	70	59	61	55
<b>Barrow, Hanley</b>	153,881	-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		-5.34	27.88	4.44	27.45	-8.36	17.13	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>	88,367	-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>	85,279	-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>	223,393	-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	10.51	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>	53,068	-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 December 31, 2023

	Market Value (\$000)	Performance (%)									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>Capital Prospects SMID</b>	<b>60,439</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>71,709</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>26,229</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>26,475</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>577,428</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		-16.25	11.70	11.50	23.51	-14.58	28.71	2.41	1.15	-3.38	23.40
International Equity Composite Rank		74	71	33	49	65	31	49	66	35	66
<b>1607 Capital Partners</b>	<b>114,201</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		-15.99	11.88	11.69	23.61	-14.32	27.86	1.71	0.50	-3.67	22.76
1607 Capital Partners Rank		84	54	31	44	60	15	47	62	30	29

Net of Fees.

# City of Memphis

## Comparative Performance

As of December 31, 2023

	Market Value (\$000)	Performance (%)									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>Marathon Asset Mgmt</b>	<b>109,285</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		-15.99	11.88	11.69	23.61	-14.32	27.86	1.71	0.50	-3.67	22.76
Marathon Asset Mgmt Rank		34	70	64	54	42	89	86	9	62	14
<b>Principal Global Investors</b>	<b>109,424</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		-15.99	11.88	11.69	23.61	-14.32	27.86	1.71	0.50	-3.67	22.76
Principal Global Investors Rank		97	50	12	32	90	68	79	13	23	28
<b>Strategic Global Advisors</b>	<b>68,686</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		-16.84	12.38	12.17	24.03	-14.96	29.41	1.77	1.32	-3.43	24.16
Strategic Global Advisors Rank		51	20	76	66	72	52	77	37	13	40
<b>Acadian EM Equity II</b>	<b>91,475</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		-19.46	0.94	18.29	20.15	-15.20	36.91	10.07	-12.11	0.09	1.16
Acadian EM Equity II Rank		57	27	77	70	83	43	30	92	37	74
<b>J.P. Morgan Global Emerging Markets Discovery Fund</b>	<b>84,357</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		-19.46	0.94	18.29	20.15	-15.20	36.91	10.07	-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>636,280</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	0.02	6.93	8.73	0.45	4.17	3.61	0.75	4.44	-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 December 31, 2023

	Market Value (\$000)	Performance (%)									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>Mackay Shields</b>	130,681	-7.36	5.77	5.87	13.72	-0.96	7.27	17.20	-1.13	2.09	6.80
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		-9.43	5.31	6.57	14.26	-1.64	7.48	14.07	-2.09	2.55	7.59
Mackay Shields Rank		25	38	65	56	35	55	17	33	61	67
<b>PIMCO</b>	98,001	-12.74	-0.80	8.36	8.73	0.49	5.14	3.24	-0.15	4.15	-2.98
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		37	32	51	77	17	7	45	97	98	99
<b>Prudential Core Conserv Bond</b>	93,575	-13.06	-1.65	7.59	8.66	-0.21	3.56	2.75	0.73	6.09	-2.18
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>	205,384	-13.77	-3.86	11.57	7.74	-3.10	10.67	0.67	N/A	N/A	N/A
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	0.44	8.42	9.72	-1.76	7.78	6.13	-2.35	2.61	0.01
Brandywine Rank		60	77	23	80	70	16	94	N/A	N/A	N/A
<b>Hedge Fund Composite</b>	101,107	-3.41	7.59	11.20	7.95	-1.55	6.72	N/A	N/A	N/A	N/A
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>	50,150	-5.86	7.78	17.17	6.06	-1.49	6.14	N/A	N/A	N/A	N/A
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>	48,517	-0.68	6.46	6.99	9.26	-1.61	7.30	N/A	N/A	N/A	N/A
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.

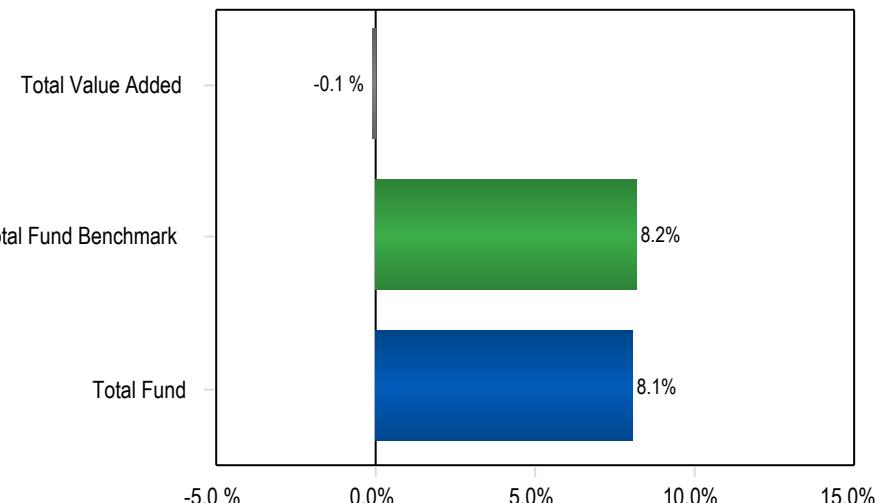
**City of Memphis**

**Comparative Performance**

**As of December 31, 2023**

	<u>Market Value (\$000)</u>	<u>Performance (%)</u>									
		2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
<b>Preserver, L.P.</b>	<b>2,440</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>229,301</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>62,168</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>16,924</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>3,636</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>28,891</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

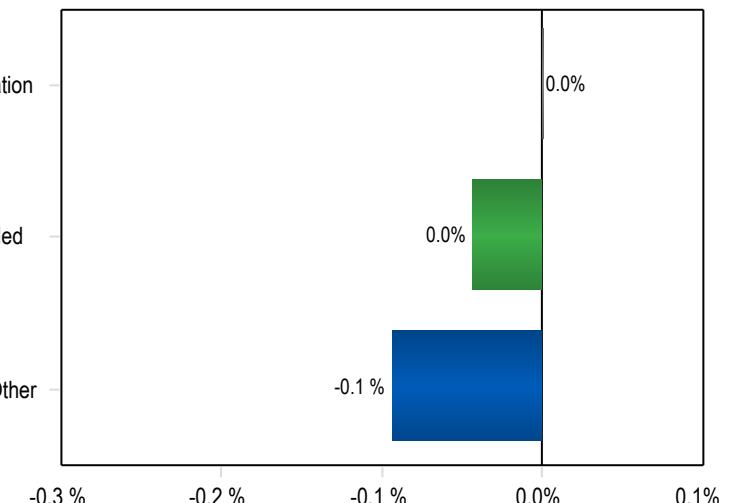
Net of Fees.

**Total Fund Performance****Total Value Added:-0.1 %**

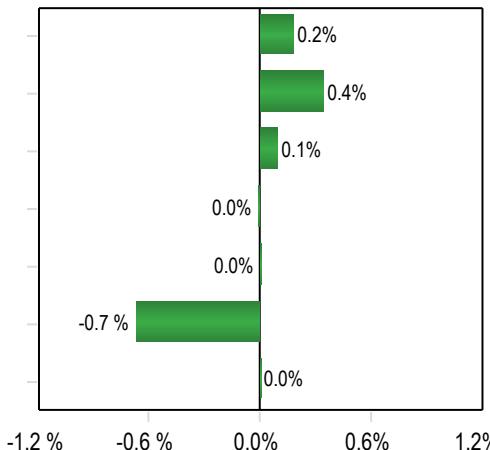
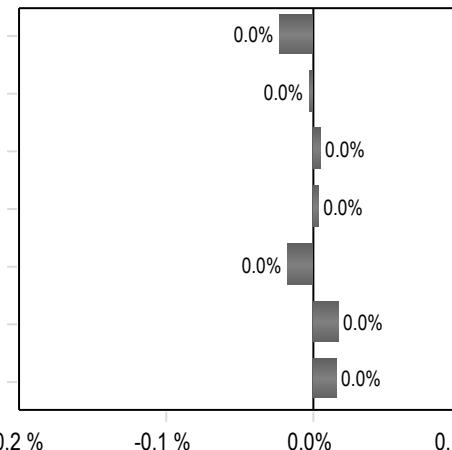
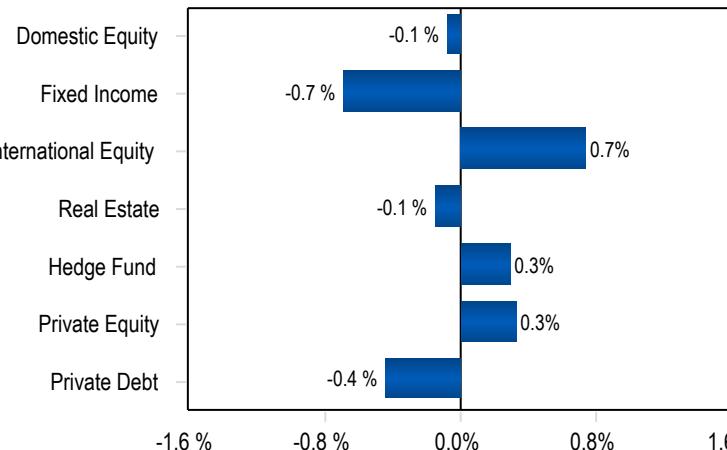
## Asset Allocation

## Manager Value Added

## Other

**Total Asset Allocation:0.0%****Total Manager Value Added:0.0%**

Weight (%)



■ Average Active Weight

■ Asset Allocation Value Added

■ Manager Value Added

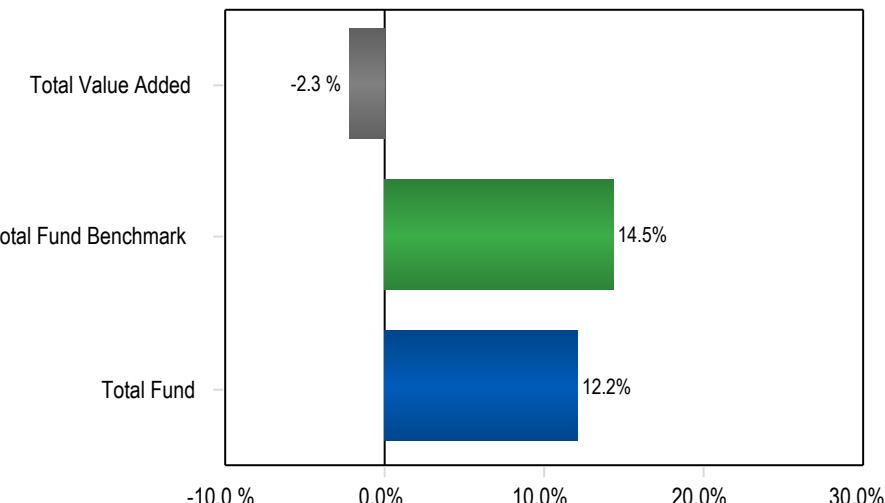
# City of Memphis

## Total Fund Attribution

1 Year Ending December 31, 2023

**Total Fund Performance**

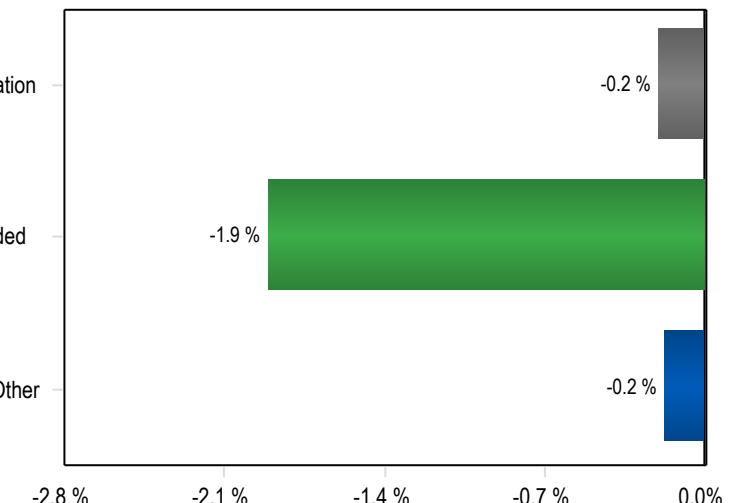
**Total Value Added:-2.3 %**



Asset Allocation

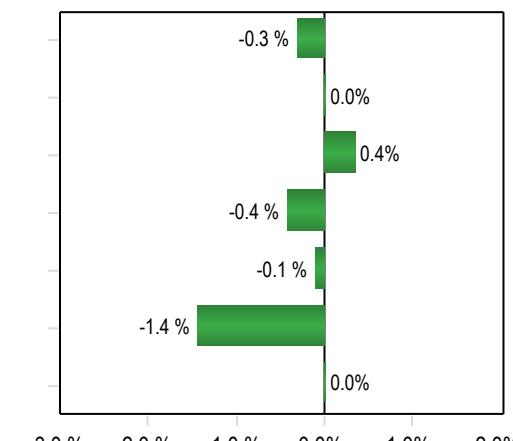
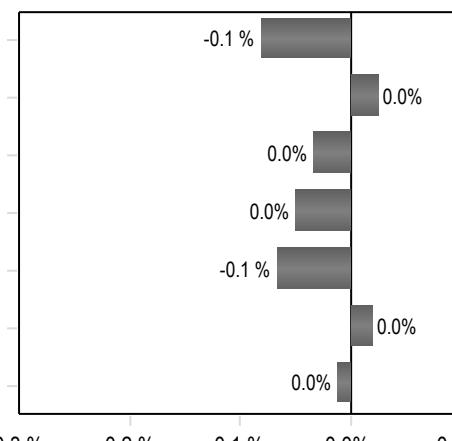
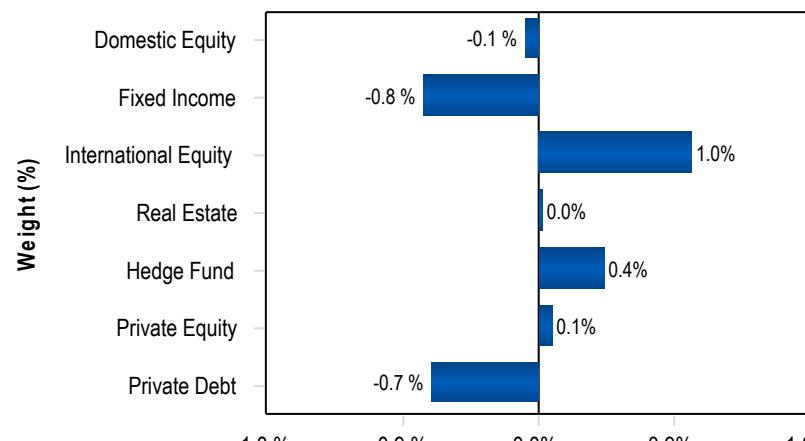
Manager Value Added

Other



**Total Asset Allocation:-0.2 %**

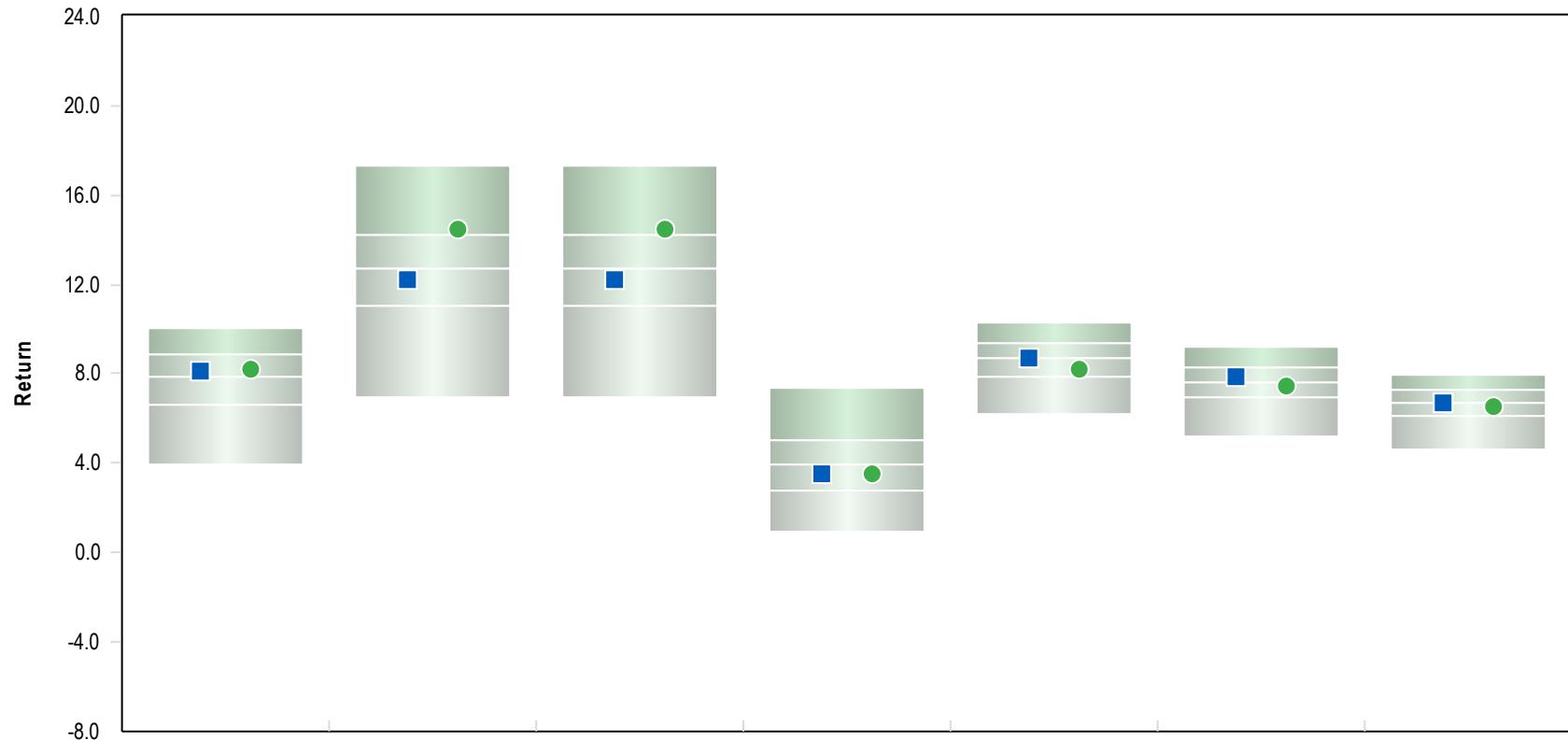
**Total Manager Value Added:-1.9 %**



■ Average Active Weight

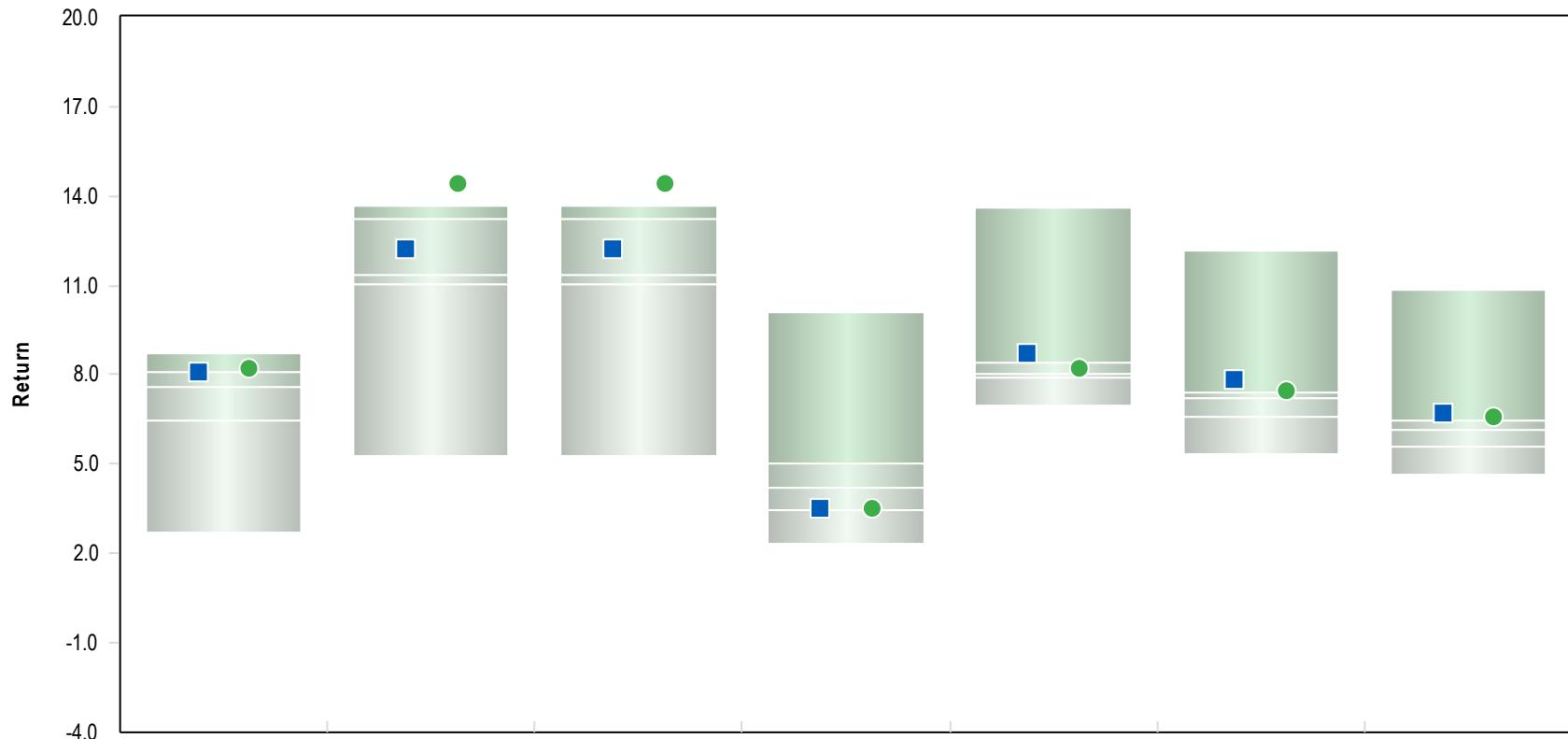
■ Asset Allocation Value Added

■ Manager Value Added



	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Total Fund Composite	8.09 (44)	12.20 (58)	12.20 (58)	3.53 (59)	8.70 (50)	7.87 (42)	6.73 (51)
● Policy Index	8.21 (40)	14.44 (24)	14.44 (24)	3.52 (59)	8.24 (65)	7.47 (56)	6.57 (56)
5th Percentile	10.08	17.34	17.34	7.38	10.33	9.21	7.98
1st Quartile	8.86	14.25	14.25	5.06	9.40	8.27	7.27
Median	7.85	12.69	12.69	3.96	8.69	7.65	6.74
3rd Quartile	6.64	11.07	11.07	2.75	7.85	6.96	6.08
95th Percentile	3.99	6.96	6.96	0.97	6.24	5.23	4.62
Population	500	463	463	425	409	395	364

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.



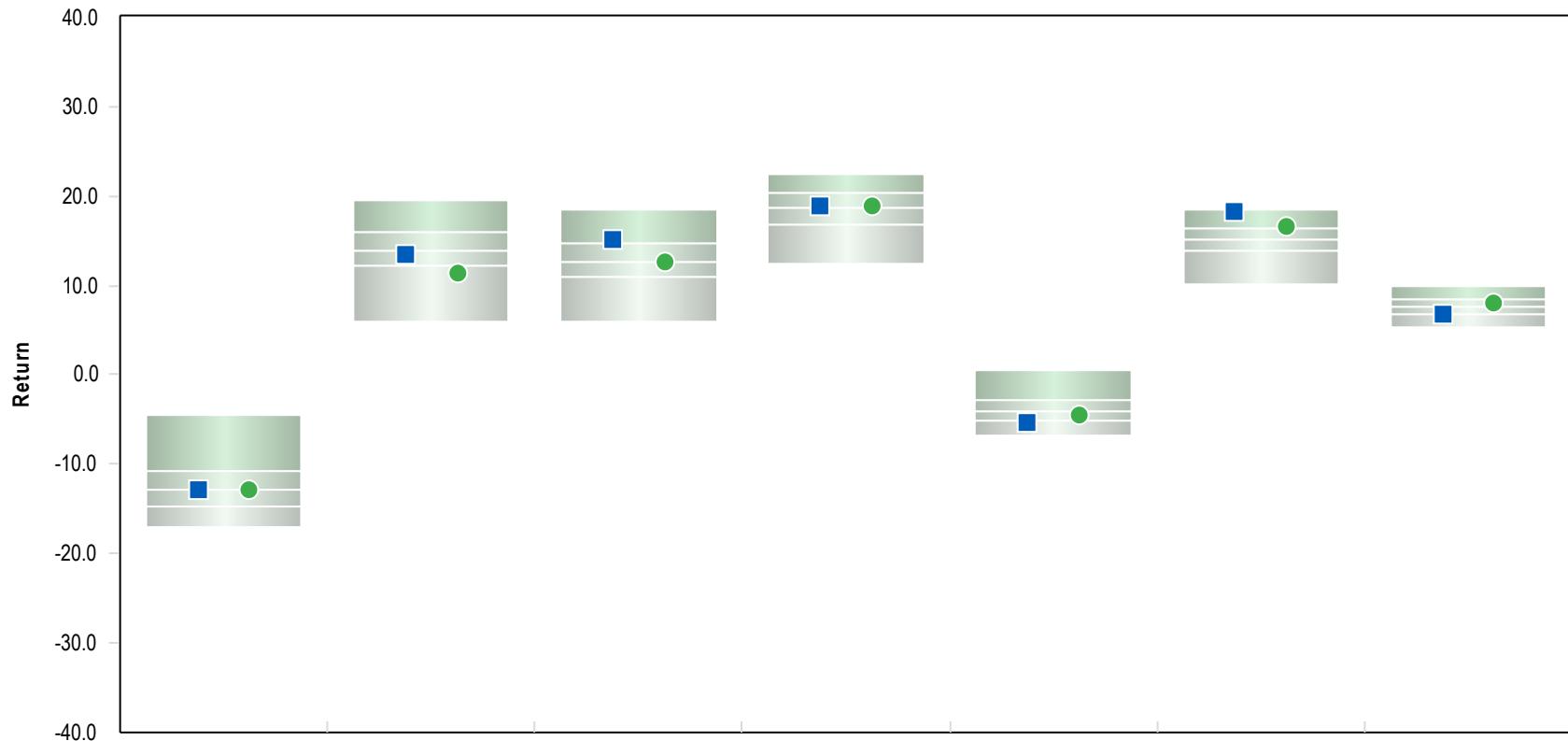
	1 Qtr	YTD	1 Yr	3 Yrs	5 Yrs	7 Yrs	10 Yrs
■ Total Fund Composite	8.09 (25)	12.20 (43)	12.20 (43)	3.53 (72)	8.70 (22)	7.87 (16)	6.73 (20)
● Policy Index	8.21 (14)	14.44 (1)	14.44 (1)	3.52 (73)	8.24 (35)	7.47 (24)	6.57 (23)
5th Percentile	8.71	13.65	13.65	10.11	13.61	12.19	10.83
1st Quartile	8.09	13.23	13.23	5.04	8.40	7.40	6.45
Median	7.60	11.37	11.37	4.22	8.01	7.22	6.13
3rd Quartile	6.43	11.05	11.05	3.47	7.90	6.59	5.57
95th Percentile	2.69	5.26	5.26	2.33	6.94	5.36	4.67
Population	15	13	13	13	13	13	12

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# City of Memphis

## All Public Plans-Total Fund

As of December 31, 2023



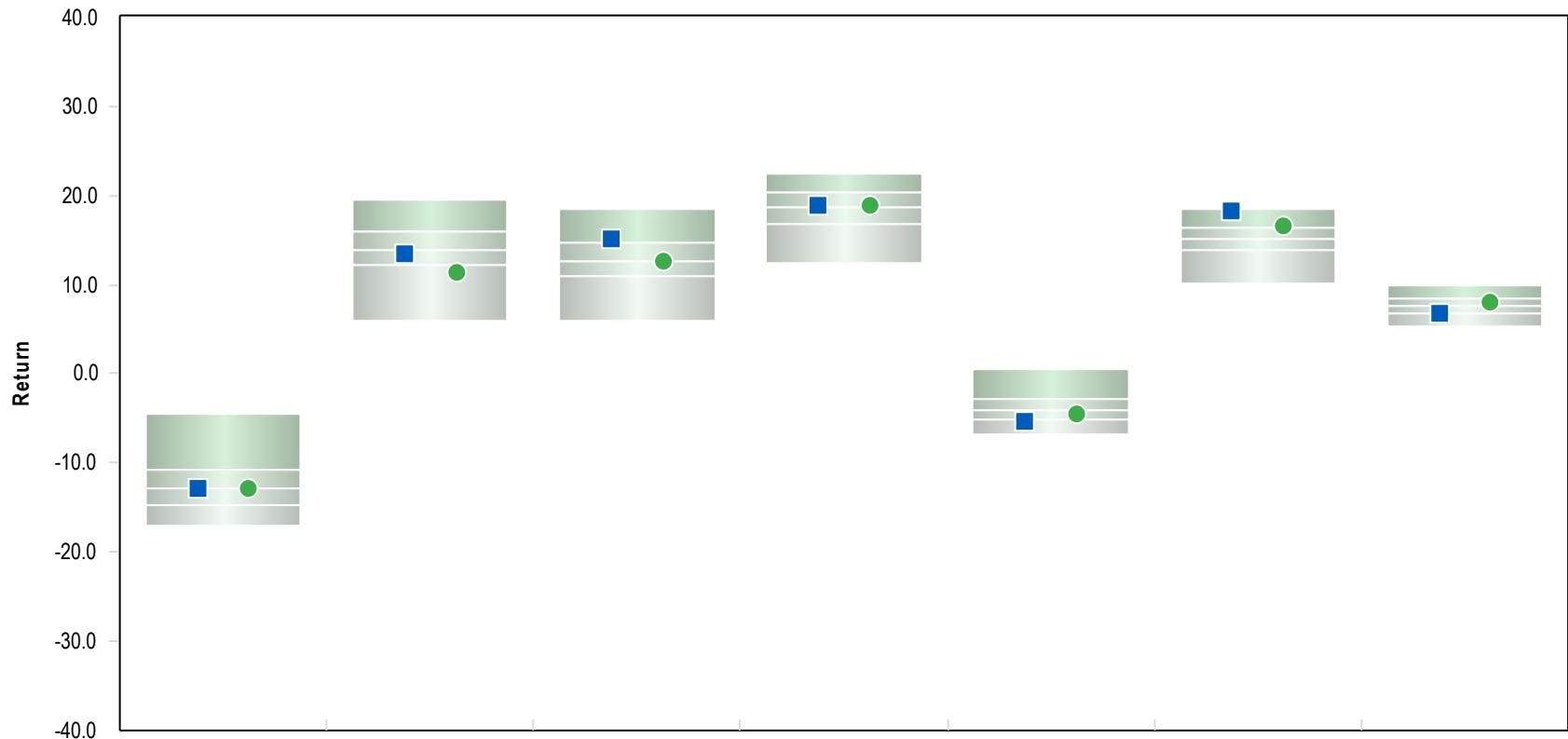
	2022	2021	2020	2019	2018	2017	2016
■ Total Fund Composite	-12.92 (51)	13.57 (56)	15.06 (22)	18.86 (47)	-5.39 (80)	18.36 (6)	6.76 (77)
● Policy Index	-12.94 (52)	11.35 (84)	12.73 (50)	18.81 (48)	-4.51 (58)	16.68 (21)	8.04 (39)
5th Percentile	-4.45	19.48	18.44	22.48	0.59	18.55	9.94
1st Quartile	-10.81	16.03	14.77	20.36	-2.90	16.47	8.45
Median	-12.90	13.96	12.63	18.68	-4.12	15.16	7.57
3rd Quartile	-14.78	12.21	10.99	16.73	-5.15	13.82	6.82
95th Percentile	-16.93	5.86	5.88	12.44	-6.86	10.11	5.23
Population	606	701	761	785	661	674	684

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# City of Memphis

## All Public Plans-Total Fund

As of December 31, 2023



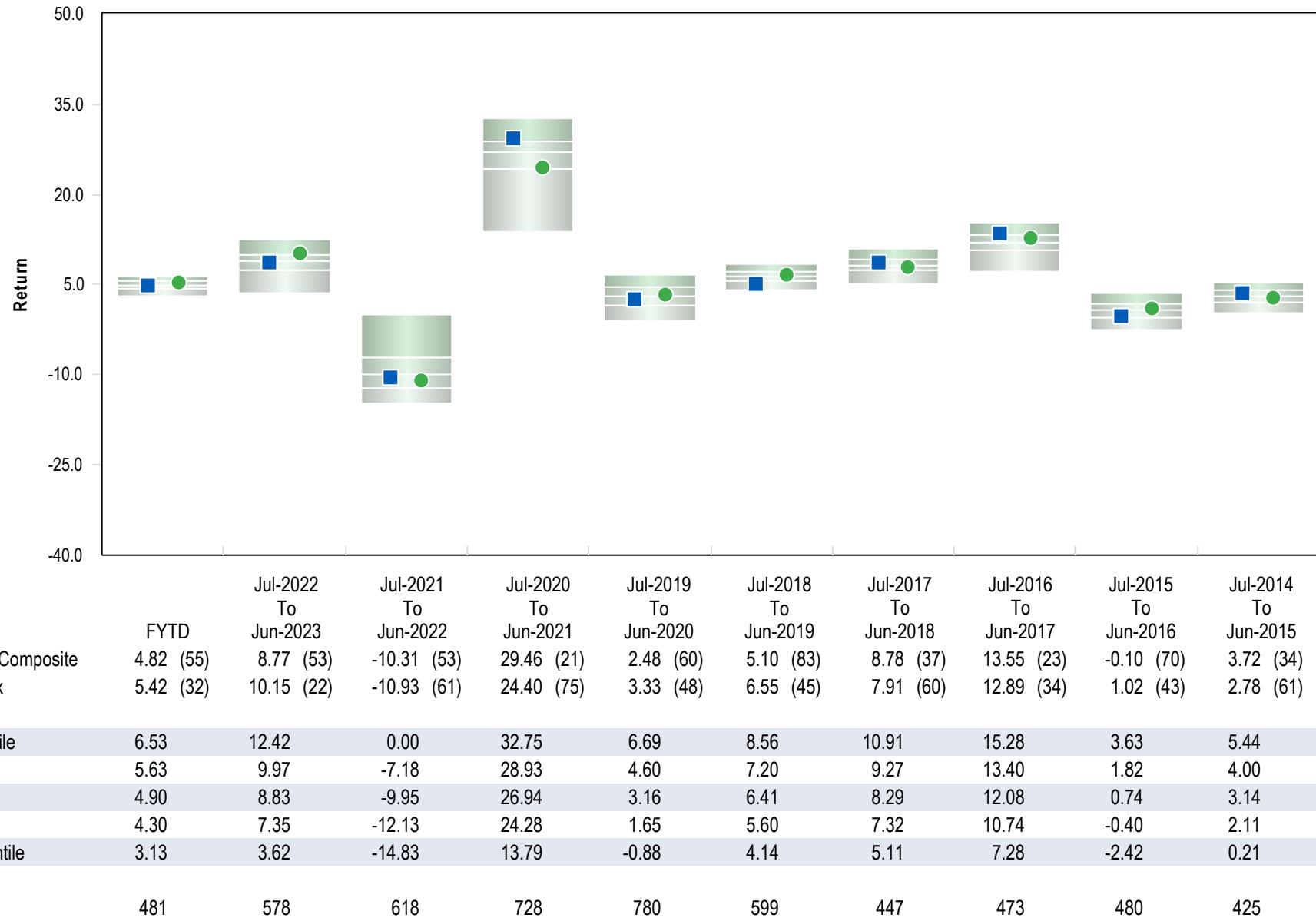
	2022	2021	2020	2019	2018	2017	2016
■ Total Fund Composite	-12.92 (51)	13.57 (56)	15.06 (22)	18.86 (47)	-5.39 (80)	18.36 (6)	6.76 (77)
● Policy Index	-12.94 (52)	11.35 (84)	12.73 (50)	18.81 (48)	-4.51 (58)	16.68 (21)	8.04 (39)
5th Percentile	-4.45	19.48	18.44	22.48	0.59	18.55	9.94
1st Quartile	-10.81	16.03	14.77	20.36	-2.90	16.47	8.45
Median	-12.90	13.96	12.63	18.68	-4.12	15.16	7.57
3rd Quartile	-14.78	12.21	10.99	16.73	-5.15	13.82	6.82
95th Percentile	-16.93	5.86	5.88	12.44	-6.86	10.11	5.23
Population	606	701	761	785	661	674	684

Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

# City of Memphis

## All Public Plans-Total Fund

As of December 31, 2023



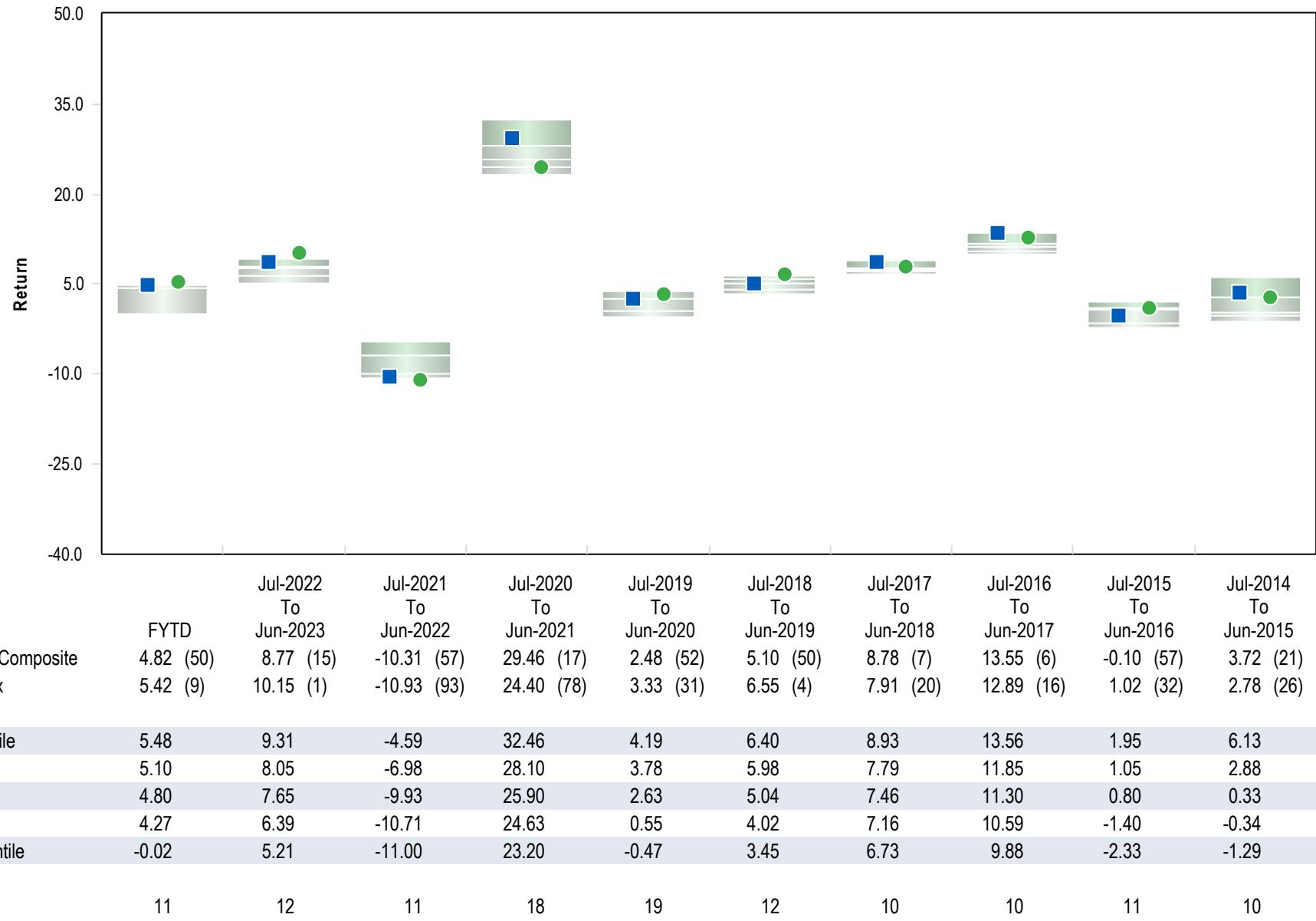
Parentheses contain percentile rankings.

Calculation based on monthly periodicity.

# City of Memphis

All Public Plans \$1B - \$3B

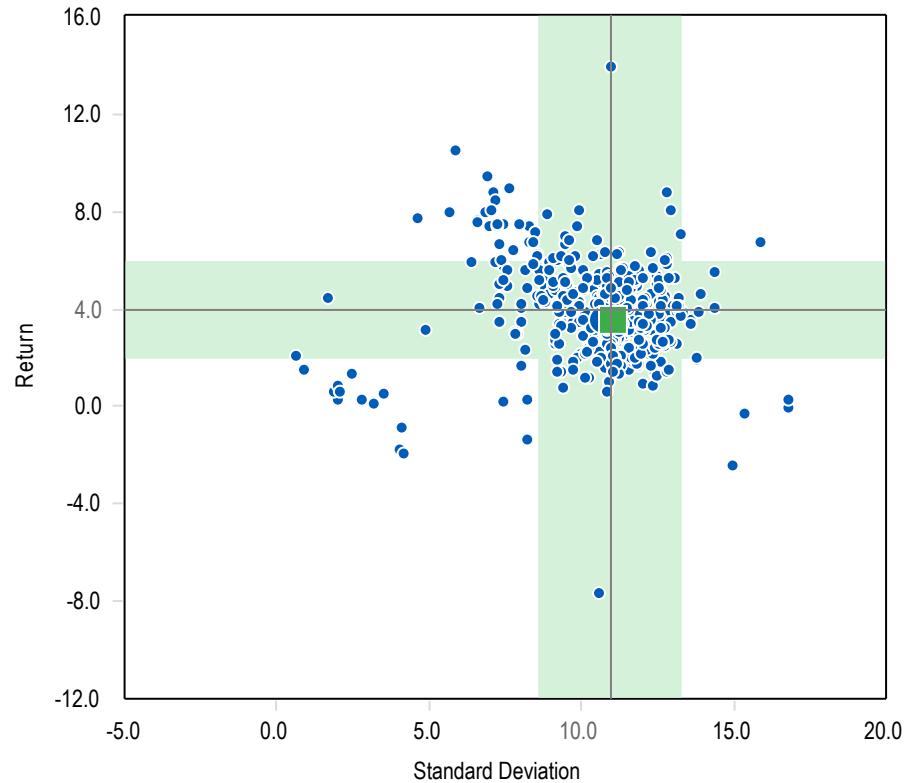
As of December 31, 2023



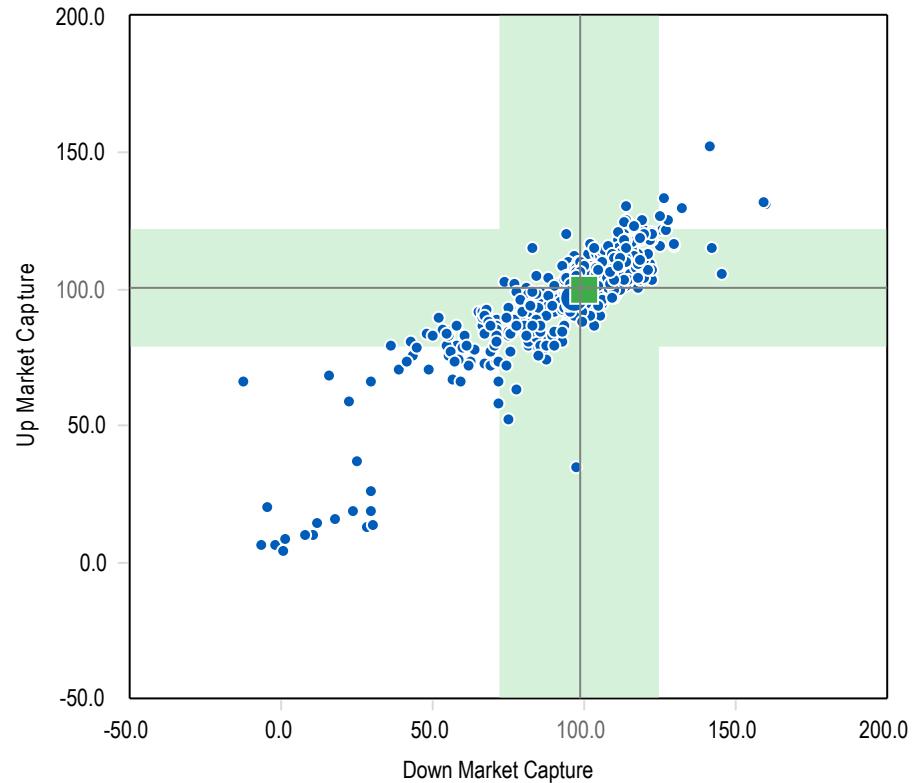
Parentheses contain percentile rankings.

Calculation based on monthly periodicity.

3 Years Annualized Return vs. Annualized Standard Deviation



3 Years Upside Capture Ratio vs. Downside Capture Ratio

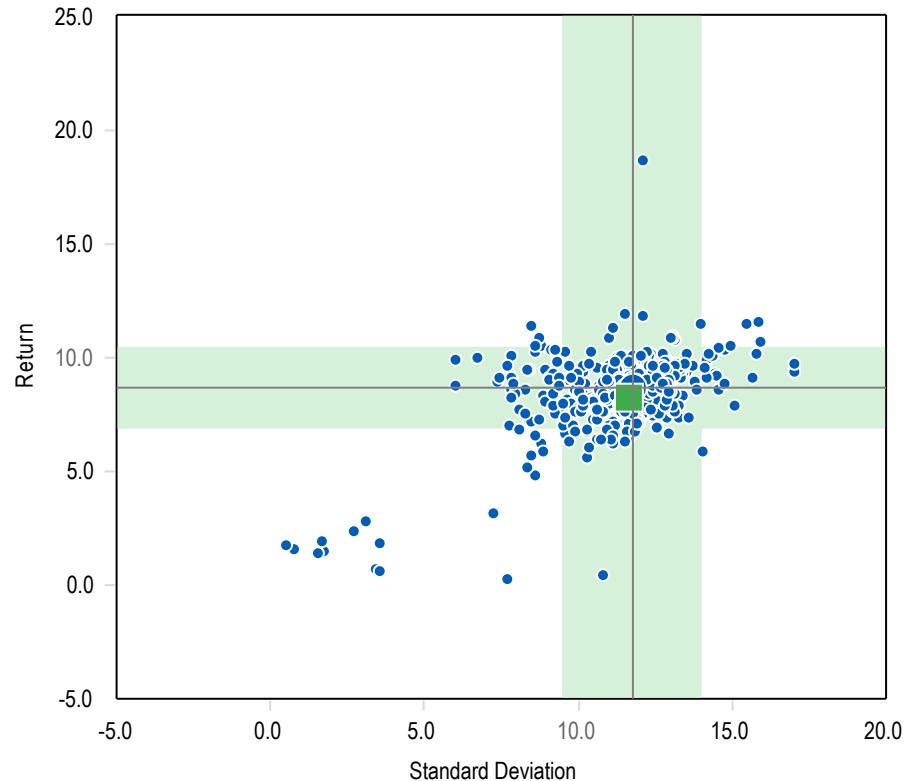


	Return	Standard Deviation
Total Fund Composite	3.5	10.7
Policy Index	3.5	11.1
Median	4.0	10.9
Population	425	425

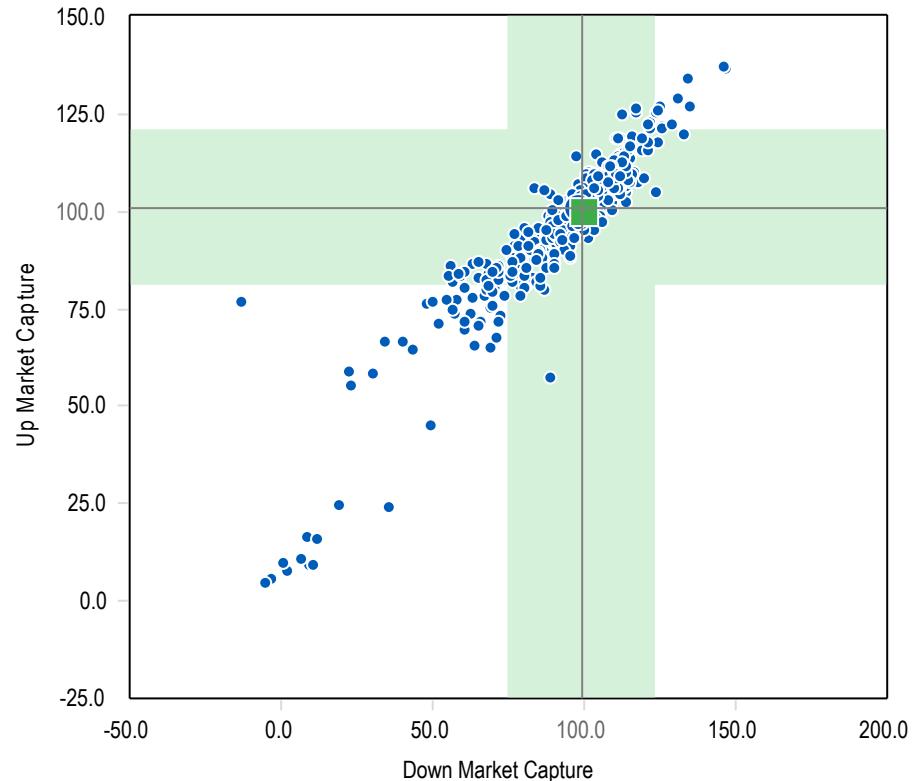
	Up Market Capture	Down Market Capture
Total Fund Composite	97.3	96.7
Policy Index	100.0	100.0
Median	100.7	98.6
Population	425	425

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	8.7	11.8
Policy Index	8.2	11.7
Median	8.7	11.8
Population	409	409

	Up Market Capture	Down Market Capture
Total Fund Composite	100.7	97.8
Policy Index	100.0	100.0
Median	100.9	99.1
Population	409	409

The shaded area is one sigma range from the median.

# City of Memphis Policy Index

As of December 31, 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

# City of Memphis Policy Index

As of December 31, 2023

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

**City of Memphis  
Policy Index2**

**As of December 31, 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	4.0
Bloomberg U.S. Aggregate	40.0	HFRI FOF: Composite	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	4.0
		HFRI FOF: Composite	4.0
		Credit Suisse High Yield Index	5.0
		Morningstar LSTA US Leveraged Loan	2.0

**City of Memphis  
Policy Index<sup>2</sup>**

**As of December 31, 2023**

<b>Policy Index</b>	<b>Weight (%)</b>
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	5.0
HFRI FOF: Composite	4.0
Credit Suisse High Yield Index	5.0
Morningstar LSTA US Leveraged Loan	2.0

# City of Memphis

## International Equity Index

As of December 31, 2023

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 December 31, 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 December 31, 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
2023	2,373,704,216	-127,483,649	281,085,950	2,527,306,516	12.2

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

## Appendix

**City of Memphis  
Manager Roster  
As of December 31, 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>
Barrow Hanley	12/31/2023	\$153,881,140	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	\$472,203	0.31%	0.54%
Rhumble Russell 1000 Growth Index	12/31/2023	\$85,279,242	Equity Only	Russell 1000 Growth	Large Cap Growth	3 bps on first \$100.0M, 2 bps on next \$200.0M (Assets of Rhumble S&P 500 combined with Rhumble Russell 1000 Growth Index for pricing)	\$19,700	0.02%	0.55%
Winslow Capital	12/31/2023	\$88,366,780	Equity Only	Russell 1000 Growth	Large Cap Growth	60 bps for the first \$50M, 55 bps next \$50M, and 50 bps next \$150M	\$511,017	0.58%	0.55%
Rhumble S&P 500 Index	12/31/2023	\$223,393,258	Equity Only	S&P 500	Large Cap Core	3 bps on first \$100.0M, 2 bps on next \$200.0M (Assets of Rhumble S&P 500 combined with Rhumble Russell 1000 Growth Index for pricing)	\$51,600	0.02%	N/A
Northern Trust	12/31/2023	\$53,068,143	Equity Only	S&P 400	Mid Cap Core	5 bps on first \$50.0M, 4 bps thereafter	\$26,227	0.05%	N/A
Capital Prospects SMID	12/31/2023	\$60,438,534	Equity Only	Russell 2500 Index	SMID Cap	75 bps on all assets	\$453,289	0.75%	0.85%
Capital Prospects SCV	12/31/2023	\$71,708,761	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	\$537,816	0.75%	0.90%
Nicholas Investment Partners	12/31/2023	\$26,229,025	Equity Only	Russell 2000 Growth	Small Cap Growth	100 bps on all assets	\$262,290	1.00%	0.91%
Conestoga Small Cap Growth	12/31/2023	\$26,474,706	Equity Only	Russell 2000 Growth	Small Cap Growth	90 bps on first \$10.0M, 80 bps on next \$15.0M, 65 bps thereafter	\$219,586	0.83%	0.91%
1607 Capital Partners	12/31/2023	\$114,201,056	Int'l Equity	MSCI EAFE	Int'l Equity	70 bps on all assets	\$799,407	0.70%	0.60%
Principal Global Investors	12/31/2023	\$109,424,066	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	\$626,832	0.57%	0.66%
Marathon Asset Management	12/31/2023	\$109,284,534	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	\$736,244	0.67%	0.60%
Strategic Global Advisors	12/31/2023	\$68,686,005	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	\$495,802	0.72%	0.66%
Acadian	12/31/2023	\$91,475,350	Emerging Markets	MSCI EM	Emerging Markets	75 basis points on the first \$50 million and 65 basis points thereafter	\$644,590	0.70%	0.85%
JPMorgan	12/31/2023	\$84,356,946	Emerging Markets	MSCI EM	Emerging Markets	80 bps on first \$100.0M, 75 bps on balance	\$674,856	0.80%	0.85%

**City of Memphis  
Manager Roster**  
**As of December 31, 2023**

Manager	Date	Assets Under Management	Assignment	Benchmark	Stated Style	Fee Structure	Estimated Annual Fee (\$)	Estimated Annual Fee (bps)	Universe Median Fee (bps)
PIMCO	12/31/2023	\$98,000,625	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	\$338,752	0.35%	0.25%
Garcia Hamilton	12/31/2023	\$75,878,741	Fixed Income	Barclays US Aggregate	Fixed Income	20 bps on first \$50.0M, 16 bps on next \$50.0M, 14 bps thereafter	\$141,406	0.19%	0.25%
Barrow Hanley	12/31/2023	\$32,760,233	Fixed Income	Barclays US Aggregate	Fixed Income	30 bps on first \$50M	\$98,281	0.30%	0.25%
Prudential	12/31/2023	\$93,574,956	Fixed Income	Barclays US Aggregate	Fixed Income	12 bps on first \$100.0M, 7 bps on next \$100.0M, 5 bps thereafter	\$115,502	0.12%	0.25%
Brandywine	12/31/2023	\$205,383,859	Global FI	Barclays Global Aggregate	Global Fixed Income	37 bps on the first \$220.0M; 35 bps thereafter	\$762,844	0.37%	0.35%
Mackay Shields	12/31/2023	\$130,681,258	High Yield FI	Credit Suisse HY	High Yield Fixed Income	50 bps on first \$100.0M, 40 bps over \$100.0M	\$622,725	0.48%	0.48%
BlackRock US Core Property	12/31/2023	\$62,168,264	Real Estate	NCREIF Property Index	Real Estate	66 bps on net capital contributions, 14 bps on reinvested amounts	\$621,683	1.00%	0.75% - 1.50%
RREEF II	12/31/2023	\$16,923,722	Real Estate	NCREIF Property Index	Real Estate	50-55 bps on net asset value + performance fee	\$166,152	0.98%	0.75% - 1.50%
Vanguard REIT Index	12/31/2023	\$3,635,506	Real Estate	Wilshire US REIT	Real Estate	10 bps on all assets	\$3,636	0.10%	N/A
TA Realty Core Property Fund	12/31/2023	\$28,890,950	Real Estate	NCREIF Property Index	Real Estate	70 bps on all assets	\$202,237	0.70%	0.75% - 1.50%
Cornerstone (Barings) Real Estate Fund X	12/31/2023	\$28,009	Real Estate	NCREIF Property Index	Real Estate	1.5% of equity investment	\$86,149	0.97%	1.00% - 1.50%
Dune Real Estate Fund IV	9/30/2023	\$27,415,339	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 December 31, 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>
Green Cities III	9/30/2023	\$7,760,193	Real Estate	NCREIF Property Index	Real Estate	1.5% on committed capital until end of investment period, 1.5% of unreturned capital contributions	\$114,568	0.57%	1.00% - 1.50%
Green Cities IV	9/30/2023	\$17,917,016	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	9/30/2023	\$239,785	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	12/31/2023	\$234,311	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	N/A	N/A	1.00% - 1.50%
Long Wharf RE Partners V	12/31/2023	\$11,503,322	Real Estate	NCREIF Property Index	Real Estate	1.5% of committed capital during investment period; 1.5% of invested capital after investment period	\$137,656	0.69%	1.00% - 1.50%
Long Wharf RE Partners VI	12/31/2023	\$13,727,609	Real Estate	NCREIF Property Index	Real Estate	1.5% of committed capital during investment period; 1.5% of invested capital after investment period	\$195,068	0.98%	1.00% - 1.50%
Long Wharf RE Partners VII	12/31/2023	\$2,660,432	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	9/30/2023	\$27,341,099	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	9/30/2023	\$1,355,814	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.	\$16,270	1.20%	1.00% - 1.50%
TA Realty Associates Fund XIII	9/30/2023	\$7,500,000	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.	\$252,748	1.20%	1.00% - 1.50%
Pantheon Global Secondary Fund V	9/30/2023	\$29,448,327	Private Equity	S&P + 3%	Secondaries	1% on committed capital during investment period; 90% annual reduction of prior year	\$148,836	0.30%	1.00% - 2.00%
RPS Ventures II	9/30/2023	\$1,817,457	Private Equity	S&P + 3%	Venture Capital	Year 1-5: 2% on committed; Year 6-10: 0.25% annual step down	\$300,000	2.00%	
SSM Growth Equity Fund II	9/30/2023	\$7,972,956	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	9/30/2023	\$18,784,006	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	9/30/2023	\$54,076,912	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	9/30/2023	\$5,189,542	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	12/31/2023	\$7,233,594	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	9/30/2023	\$4,819,671	Private Debt	Barclays US Aggregate	Direct Lending	1.5% on equity capital	\$72,295	1.50%	1.00% - 2.00%
Churchill Middle Market Senior Loan Fund III	12/31/2023	\$7,645,530	Private Debt	Barclays US Aggregate	Direct Lending	0.50% on invested capital	\$38,228	0.50%	1.00% - 2.00%
Neuberger Berman Private Debt Fund IV	12/31/2023	\$25,130,000	Private Debt	Barclays US Aggregate	Direct Lending	0.50% on invested capital through June 2022	\$125,650	0.50%	1.00% - 2.00%
Aetos	12/31/2023	\$48,516,532	Hedge Fund	90 Day T Bills + 5%	Hedge Fund of Funds	75 bps plus a 5% performance fee	\$495,268	0.68%	1.00%-2.00%
Grosvenor	12/31/2023	\$50,150,324	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	\$539,003	1.07%	1.00% - 2.00%
Preserver	12/31/2023	\$2,439,793	Hedge Fund	90 Day T Bills + 5%	Hedge Fund of Funds	1.00% on all assets	\$24,398	1.00%	1.00% - 2.00%
<b>TOTAL</b>		<b>\$2,495,073,230</b>					<b>\$14,672,511</b>	<b>0.59%</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.