



4Q 2022 QUARTERLY PERFORMANCE REPORT EXECUTIVE SUMMARY

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TOTAL FUND PERFORMANCE SUMMARY

COMPARED TO ASSET ALLOCATION BENCHMARK & STRATEGIC TARGET ALLOCATION

	Market Value (\$)	1 Yr (%)	5 Yrs (%)	10 Yrs (%)
Total Fund	35,376,783,112	-5.86	4.89	6.03
Actual Allocation Benchmark		-12.25	3.29	5.08
Over/Under		6.39	1.60	0.95
Strategic Target Allocation Index		-12.03	4.32	6.00
Over/Under		6.17	0.57	0.03

- **For the one-year ended December 31, 2022, the Trust Fund returned -5.86%, exceeding the Asset Allocation Benchmark by 6.39%.**
 - Private Equity, Other Public & Private Markets, Fixed Income, and Real Estate exceeded the Benchmark, while Hedge Funds and Global Equity trailed.
- **For the five-year ended December 31, 2022, the Trust Fund returned 4.89%, exceeding the Asset Allocation Benchmark by 1.60%.**
 - Private Equity, Other Public and Private Markets, Fixed Income, and Real Estate exceeded the Benchmark, while Hedge Funds and Global Equity trailed.

Performance returns are net of fees.



TOTAL FUND PERFORMANCE SUMMARY

COMPARED TO OTHER PUBLIC PENSION PLANS GREATER THAN \$10 BILLION IN ASSETS

	1 Yr (%)	Quartile Rank	5 Yrs (%)	Quartile Rank	10 Yrs (%)	Quartile Rank
Total Fund	-5.86	1st	4.89	4th	6.03	4th
Actual Allocation Benchmark	-12.25	4 th	3.29	4 th	5.08	4 th
Strategic Target Allocation Index	-12.03	4 th	4.32	4 th	6.00	4 th
<i>InvMetrics Public DB > \$10 Billion Median</i>	<i>8.93</i>		<i>6.07</i>		<i>7.52</i>	

- For the one-year ended December 31, 2022, the Trust Fund returned -5.86% and ranked in the first quartile among other Public Defined Benefit plans greater than \$10 billion in assets.
- For the five-years ended December 31, 2022, the Trust Fund returned 4.89% and ranked in the fourth quartile among other Public Defined Benefit plans greater than \$10 billion in assets.



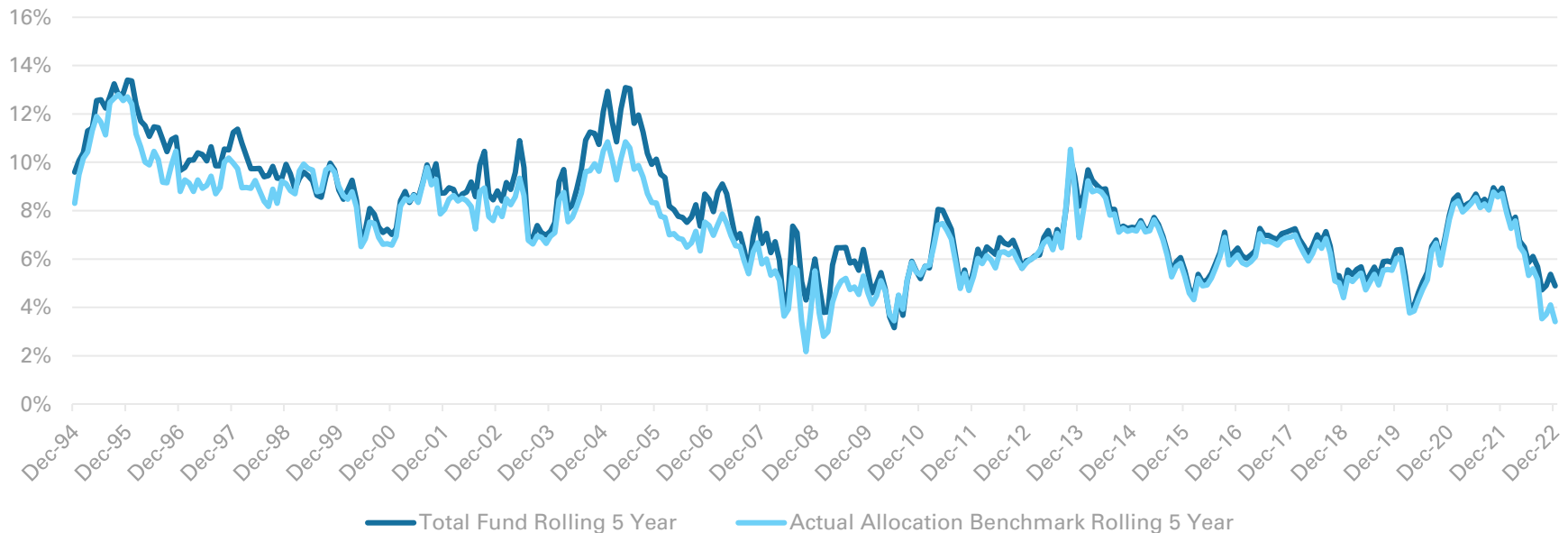
Performance returns are net of fees.

TOTAL FUND PERFORMANCE

VERSUS ACTUAL ALLOCATION BENCHMARK

- **The Trust Fund performance expectation, as stated in the Investment Policy Statement, is to exceed the Actual Allocation Benchmark over rolling five-year periods.**
- **In the five-year period ended December 31, 2022, TMRS outperformed the Actual Allocation Benchmark by 1.60%, net of fees.**

Rolling 5 Year Total Fund Performance vs. Actual Allocation Benchmark



TOTAL FUND PERFORMANCE

VERSUS STRATEGIC TARGET ALLOCATION INDEX AND ASSUMED RATE OF RETURN

- For the five-year period ended December 31, 2022, the Trust Fund's return of 4.89% trailed the Board's Assumed Long-Term Rate of Return of 6.75%.
- The five-year return for the Strategic Target Allocation Index was 4.32% as of December 31, 2022.

Rolling 5 Year Total Fund Performance vs. Strategic Target Allocation Index vs.
Historical Actuarial Rate of Return



TOTAL FUND PERFORMANCE SUMMARY

RISK, RETURN AND RISK-ADJUSTED RETURNS

1 Year Ending December 31, 2022						
	Risk	Quartile Rank	Return	Quartile Rank	Risk-Adjusted Return	Quartile Rank
Total Fund	8.06	4th	-5.86	1st	-0.90	1st
Actual Allocation Benchmark	10.50	2 nd	-12.25	4 th	-1.30	4 th
Strategic Target Allocation Index	11.05	2 nd	-12.03	4 th	-1.23	4 th
<i>InvMetrics Public DB > \$10 Billion Median</i>	<i>9.79</i>		<i>-8.93</i>		<i>-1.04</i>	

- **The Trust Fund's risk profile, as measured by standard deviation, ranks in the fourth quartile among other Public Defined Benefit plans with greater than \$10 billion in assets for the one-year period ending December 31, 2022.**
- **The risk-adjusted return ranked in the first quartile.**

Note: Risk-Adjusted Return is measured by the Sharpe Ratio.

Risk is measured by the Standard Deviation.

The Standard Deviation interquartile range, here, is defined as the lowest Standard Deviation measuring in the lowest quartile.

Performance returns are reported net of fees.



TOTAL FUND PERFORMANCE SUMMARY

RISK, RETURN AND RISK-ADJUSTED RETURNS

5 Years Ending December 31, 2022						
	Risk	Quartile Rank	Return	Quartile Rank	Risk-Adjusted Return	Quartile Rank
Total Fund	6.83	4th	4.89	4th	0.54	3rd
Actual Allocation Benchmark	7.60	4 th	3.29	4 th	0.32	4 th
Strategic Target Allocation Index	7.58	4 th	4.32	4 th	0.43	4 th
<i>InvMetrics Public DB > \$10 Billion Median</i>	<i>8.76</i>		<i>6.07</i>		<i>0.56</i>	

- **The Trust Fund's risk profile, as measured by standard deviation, ranks in the fourth quartile among other Public Defined Benefit plans with greater than \$10 billion in assets for the five-year period ending December 31, 2022.**
- **The risk-adjusted return ranked in the third quartile.**

Note: Risk-Adjusted Return is measured by the Sharpe Ratio.

Risk is measured by the Standard Deviation.

The Standard Deviation interquartile range, here, is defined as the lowest Standard Deviation measuring in the lowest quartile.

Performance returns are reported net of fees.

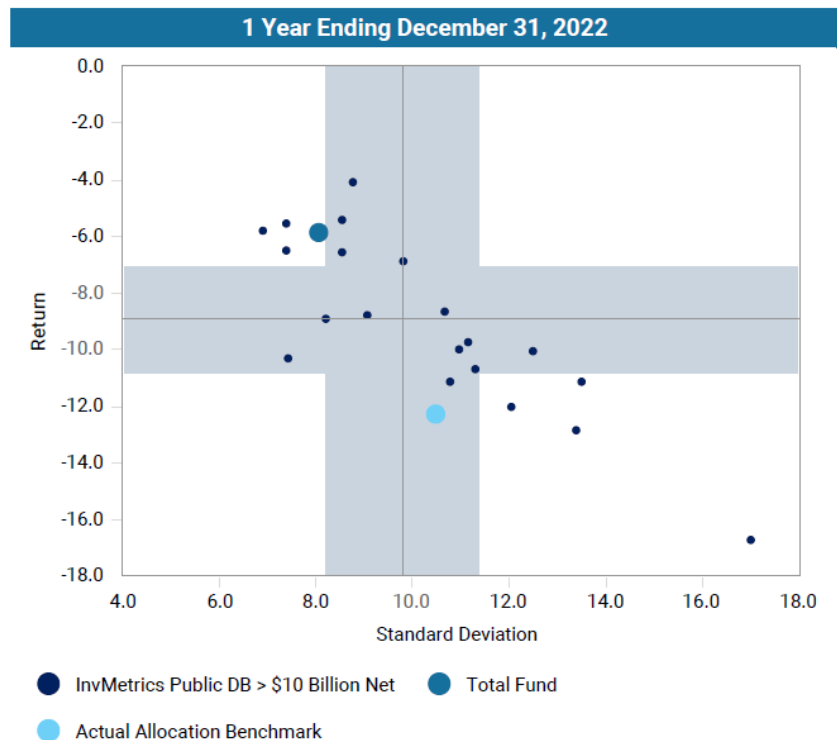
ASSET ALLOCATION COMPLIANCE

ACTUAL ASSET ALLOCATION VS. INVESTMENT POLICY ALLOCATION

	Current (\$)	Current (%)	Policy (%)	Differences* (%)	Policy Range (%)	Within Range
Core Fixed Income	1,815,570,254	5.1	6.0	-0.9	1.0 - 11.0	Yes
Non-Core Fixed Income	6,752,039,419	19.1	20.0	-0.9	15.0 - 25.0	Yes
Global Equity	11,698,166,966	33.1	35.0	-1.9	25.0 - 45.0	Yes
Real Estate	4,859,213,829	13.7	12.0	1.7	7.0 - 17.0	Yes
Other Public and Private Markets	4,097,219,220	11.6	12.0	-0.4	7.0 - 17.0	Yes
Hedge Funds	2,222,425,281	6.3	5.0	1.3	0.0 - 10.0	Yes
Private Equity	3,721,742,006	10.5	10.0	0.5	5.0 - 15.0	Yes
Cash Composite	210,406,137	0.6	0.0	0.6	0.0 - 3.0	Yes
Total Fund	35,376,783,112	100.0	100.0	0.0		

- **Actual asset class allocations are in compliance with Board approved Investment Policy ranges as of December 31, 2022.**

TOTAL FUND RISK VS. RETURN



1 Year Ending December 31, 2022				
	Risk	Quartile Rank	Return	Quartile Rank
Total Fund	8.06	4th	-5.86	1st
Actual Allocation Benchmark	10.50	2 nd	-12.25	4 th
<i>InvMetrics Public DB > \$10 Billion Median</i>	<i>9.79</i>		<i>-8.93</i>	

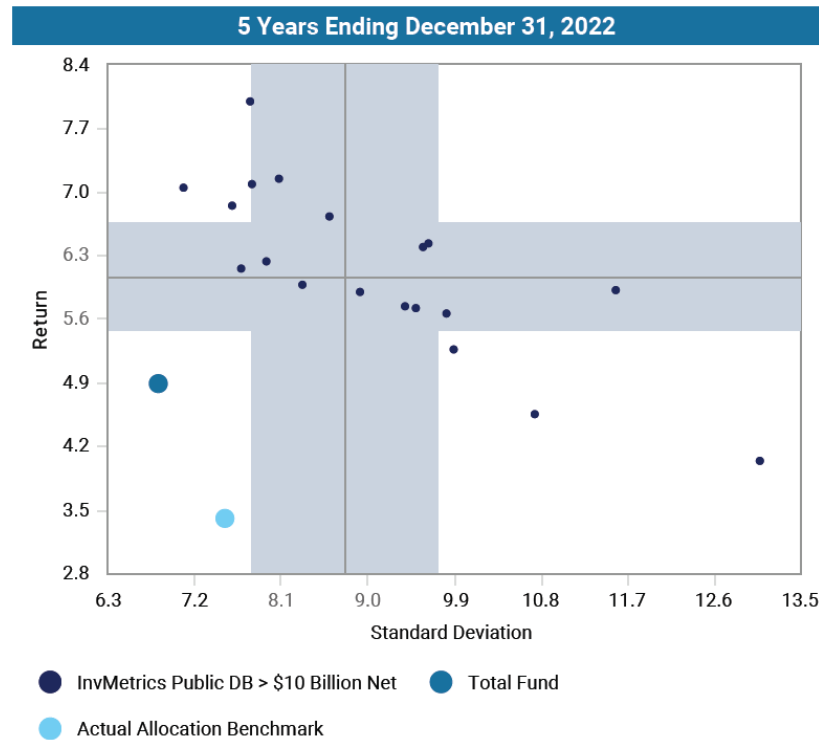
Risk is measured by the Standard Deviation.

The Standard Deviation interquartile range, here, is defined as the lowest Standard Deviation measuring in the lowest quartile.

Performance returns are reported net of fees.

InvMetrics Public DB>\$10B Median includes 21 observations.

TOTAL FUND RISK VS. RETURN



5 Years Ending December 31, 2022				
	Risk	Quartile Rank	Return	Quartile Rank
Total Fund	6.83	4th	4.89	4th
Actual Allocation Benchmark	7.60	4th	3.29	4th
<i>InvMetrics Public DB > \$10 Billion Median</i>	<i>8.76</i>		<i>6.07</i>	

Risk is measured by the Standard Deviation.

The Standard Deviation interquartile range, here, is defined as the lowest Standard Deviation measuring in the lowest quartile.

Performance returns are reported net of fees.

InvMetrics Public DB>\$10B Median includes 20 observations.

PERFORMANCE DETAIL

	Allocation		Performance (%)							
	Market Value (\$)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Fund	35,376,783,112	100.0	4.06	-5.86	4.37	4.89	6.42	6.03	8.08	Jan-89
Actual Allocation Benchmark			<u>1.91</u>	<u>-12.25</u>	<u>1.88</u>	<u>3.29</u>	<u>5.16</u>	<u>5.08</u>	<u>7.37</u>	
Over/Under			2.15	6.39	2.49	1.60	1.26	0.95	0.71	
Strategic Target Allocation Index			<u>2.40</u>	<u>-12.03</u>	<u>3.06</u>	<u>4.32</u>	<u>6.22</u>	<u>6.00</u>	<u>7.63</u>	
Over/Under			1.66	6.17	1.31	0.57	0.20	0.03	0.45	
Global Equity	11,698,166,966	33.1	9.78	-19.01	2.94	4.35	7.67	8.07	5.24	Jan-08
Total Equity Index			<u>9.84</u>	<u>-18.40</u>	<u>3.89</u>	<u>5.06</u>	<u>8.20</u>	<u>8.41</u>	<u>5.42</u>	
Over/Under			-0.06	-0.61	-0.95	-0.71	-0.53	-0.34	-0.18	
Core Fixed Income	1,815,570,254	5.1	2.27	-12.94	-2.35	0.32	1.18	1.25	6.56	Jan-89
Fixed Income Benchmark			<u>1.87</u>	<u>-13.01</u>	<u>-2.71</u>	<u>0.02</u>	<u>0.89</u>	<u>1.06</u>	<u>6.06</u>	
Over/Under			0.40	0.07	0.36	0.30	0.29	0.19	0.50	
Non-Core Fixed Income	6,752,039,419	19.1	0.49	-2.24	2.61	3.59	4.42		3.88	Oct-14
Total Non-Core Fixed Income Weighted Index			<u>-2.02</u>	<u>-12.30</u>	<u>-1.22</u>	<u>1.20</u>	<u>2.60</u>		<u>2.00</u>	
Over/Under			2.51	10.06	3.83	2.39	1.82		1.88	
Other Public and Private Markets	4,097,219,220	11.6	5.35	-5.52	3.17	3.62	4.79	2.71	3.72	Feb-11
Total Real Return Index			<u>0.04</u>	<u>-21.53</u>	<u>-3.07</u>	<u>-0.36</u>	<u>2.08</u>	<u>0.86</u>	<u>2.11</u>	
Over/Under			5.31	16.01	6.24	3.98	2.71	1.85	1.61	
Real Estate	4,859,213,829	13.7	2.05	21.07	11.87	10.69	10.90	11.77	10.97	Nov-11
Real Estate Benchmark			<u>0.31</u>	<u>20.96</u>	<u>11.86</u>	<u>9.94</u>	<u>9.63</u>	<u>10.76</u>	<u>11.01</u>	
Over/Under			1.74	0.11	0.01	0.75	1.27	1.01	-0.04	
Hedge Funds	2,222,425,281	6.3	0.99	0.36	4.46	4.00	4.51		4.23	Aug-14
Hedge Fund Blended Index			<u>-2.16</u>	<u>2.28</u>	<u>5.93</u>	<u>4.32</u>	<u>3.88</u>		<u>3.45</u>	
Over/Under			3.15	-1.92	-1.47	-0.32	0.63		0.78	
Private Equity	3,721,742,006	10.5	-1.28	10.19	23.29	22.10	17.39		17.17	Dec-15
Private Equity Index			<u>-6.64</u>	<u>-21.18</u>	<u>6.51</u>	<u>11.84</u>	<u>10.25</u>		<u>10.13</u>	
Over/Under			5.36	31.37	16.78	10.26	7.14		7.04	
Cash Composite	210,406,137	0.6	0.85	1.70	0.72	1.22	1.05	0.85	0.68	Jun-08
FTSE 1 Month US T-Bill index			<u>0.88</u>	<u>1.48</u>	<u>0.66</u>	<u>1.20</u>	<u>1.00</u>	<u>0.71</u>	<u>0.55</u>	
Over/Under			-0.03	0.22	0.06	0.02	0.05	0.14	0.13	

Texas Municipal Retirement System

PERFORMANCE DETAIL

December 31, 2022

Composite Benchmark Comments

The Actual Allocation Benchmark is calculated monthly using beginning of month asset class weights applied to each corresponding benchmark return and currently consists of the following:

- Total Equity Benchmark
- Fixed Income Benchmark
- Non-Core Fixed Income Benchmark
- OPFM Benchmark
- Real Estate Benchmark
- Hedge Funds Benchmark
- Private Equity Benchmark
- FTSE 30 Day T-Bill Index

The Strategic Target Allocation Index represents asset allocation targets adopted historically and currently consists of the following:

- 35.0% Total Equity Benchmark
- 6.0% Fixed Income Benchmark
- 20.0% Non-Core Fixed Income Benchmark
- 12.0% OPFM Benchmark
- 12.0% Real Estate Benchmark
- 5.0% Hedge Funds Benchmark
- 10.0% Private Equity Benchmark

Asset Class Composite Benchmarks:

The Total Equity Benchmark is calculated monthly and consists of 50% Russell 3000 Index and 50% MSCI EAFE Index (USD) (Net) through 07/31/2010; a blend of the Russell 3000 Index, MSCI ACW Ex US IM Index (USD) (Net) and MSCI EAFE Index (USD) (Net) at beginning of month investment weights through 11/30/2012; and a blend of the Russell 3000 Index and MSCI ACW Ex US IM Index (USD) (Net) at beginning of the month weights through 12/31/2018; and MSCI ACW IM Index (USD) (Net) thereafter.

The Fixed Income Benchmark is calculated monthly and consists of the Bloomberg US Gov't Crdt Lng Trm Bond Index through 06/30/2009; Bloomberg US Agg Bond Index thereafter.

The Non-Core Fixed Income Benchmark is calculated monthly using beginning of the month sub-asset class weights within the Non-Core Fixed Income Composite applied to each sub-asset class primary benchmark return through 6/30/2021, and the Bloomberg US Agg Bond Index + 1.5% on an unlagged, month lagged, or quarter lagged basis in proportion of the managers in the composite on an unlagged, month lagged, or quarter lagged basis.

The OPFM Benchmark is calculated monthly using beginning of the month sub-asset class weights within the OPFM Composite applied to each sub-asset class primary benchmark return through 6/30/2021, and the MSCI ACW IM Index (USD) (Net) on an unlagged, month lagged, or quarter lagged basis in proportion of the managers in the composite on an unlagged, month lagged, or quarter lagged basis.

The Real Estate Benchmark is the NCREIF ODCE Index (Gross), one quarter lag through 06/30/2021, and NCREIF ODCE Index (Net), one quarter lag thereafter.

The Hedge Funds Benchmark is calculated monthly and consists of the HFRI FOF: Dv'd Index (1 Mo Lag) through 6/30/2021, and HFRI Asset Weighted Composite Index (1 Mo Lag) thereafter.

The Private Equity Benchmark is set equal to the Composite return through 6/30/2021, and MSCI ACW IM Index (USD) (Net), one quarter lag thereafter.

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

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