



Metropolitan Board of Education Teacher
Retirement Plan

**ACTUARIAL
VALUATION
REPORT**

as of July 1, 2023

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Introduction

This report has been prepared for the exclusive use of the Metropolitan Board of Public Education. The report summarizes the results of the actuarial valuation of the Metropolitan Board of Education Teacher Retirement Plan as of July 1, 2023. The purpose of the report is to provide an updated measurement of the plan's liabilities and provide information that will inform the financing of the plan and the financial reporting related to the plan. This report provides actuarial advice and does not constitute legal, accounting, tax or investment advice.

The actuarial calculations contained in the report are built on deterministic actuarial modeling, making a single determination of liabilities and costs. Further, these actuarial calculations are based on a combination of demographic and asset data, as well as assumptions concerning future changes in these data. As such, the actuarial calculations contained herein are an estimate of projected future occurrences.


Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law. Due to the limited scope of the assignment, we did not perform an analysis of the potential range of such future measurements. A more detailed discussion of plan-related risks is included herein.

Certification

By signature below, I attest the following:

This report has been prepared under my supervision; I am a member of the American Academy of Actuaries, a Fellow of the Society of Actuaries, and a consulting actuary with USI Consulting Group, and have met the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions herein. To the best of our knowledge this report has been prepared in accordance with generally accepted actuarial standards, including the overall appropriateness of the analysis, assumptions, and results and conforms to appropriate Standards of Practice as promulgated from time to time by the Actuarial Standards Board, which standards form the basis for the actuarial report. We are not aware of any direct or material indirect financial interest or relationship, including investment management or other services that could create, or appear to create, a conflict of interest that would impair the objectivity of our work.

USI Consulting Group

By: 
S. Kevin Sullivan, F.S.A.
(629) 895-7855

Date: December 8, 2023

By: 
Justin Kendle, A.S.A.
(629) 895-7818

Date: December 8, 2023



Summary of Report

An actuarial valuation of the Metropolitan Board of Education Teacher Retirement was performed as of July 1, 2023. The purpose of the valuation was to examine the liabilities and to determine an actuarially determined contribution sufficient to fund the plan.

Historical Perspective

When the Metropolitan Board of Education Teacher Retirement was initially developed, the intent was that funding of benefits in excess of state reimbursements would be shared in the aggregate equally by the Board and by the teachers, with the employer assuming past service costs. The concept was discarded because the plan was closed to new entrants in 1969. At that point, the membership represented an aging population with no young new entrants to create a stable population that would have permitted such a concept to continue to apply. In 1977, the Board adopted a funding method that amortized costs over the average life expectancy of all active and retired members.

The valuation performed in 1993 set forth funding levels that were significantly higher than the amount of funds available from the budget. As a result, the Board of Education, at the recommendation of the Administrative Retirement Committee, accepted an interim funding schedule, the "1994 Interim Funding Schedule". The purpose of the 1994 Interim Funding Schedule was to provide an actuarially sound method to bring the budgeted amount up to the Actuarially Determined Funding Level over time.

The 1994 Interim Funding Schedule projected that the Board could return to the Actuarially Determined Funding Level by the 2005-2006 fiscal year. Due primarily to actuarial gains from investment returns above those assumed, a return to the Actuarially Determined Funding Level was permitted during the 1999-2000 fiscal year (that is, the Actuarially Determined Funding Level for the 1999-2000 fiscal year was less than the amount set forth in the 1994 Interim Funding Schedule). In effect, the plan had "caught-up". Regardless, the actual funding was limited by continuing budget constraints.

Beginning on July 1, 2000, the Plan became a component of the Guaranteed Payment Program (GPP), an umbrella plan created by the state and local government to ensure actuarially sound funding for a group of five plans supervised by the Metro Benefit Board and the Board of Education. Under the GPP, unfunded liabilities of the aggregate plan are amortized over a period of no more than thirty years. Payments for the Plan move to a payment account from which distributions are paid to the constituent plans of the GPP as necessary to satisfy current benefit needs and to satisfy funding objectives of the GPP. Funding issues that are specific to the GPP are addressed in a separate report.



Comparison of Plan Information from Recent Valuations

	2023-24*	2022-23	2021-22 *	2020-21	2019-20*
Retired Participants					
Number	628	652	715	773	824
Average Age	82.85	82.04	81.54	81.13	80.52
Gross Pensions	\$24,423,796	\$24,932,354	\$26,556,286	\$28,311,068	\$29,567,853
Average Gross Pension	38,891	38,240	37,142	36,625	35,883
Vested Terminations					
Number	0	0	0	0	1
Gross Pensions	\$0	\$0	\$0	\$0	\$16,991
Average Gross Pension	0	0	0	0	16,991
Total Participants					
	628	652	715	773	825
Actuarial Asset Value	\$178,133,416	\$158,625,990	\$140,682,924	\$120,867,843	\$109,465,715
Present Value of Future Benefits	149,395,846	147,817,250	161,255,514	155,996,918	166,472,644
Funded Status	119.2%	107.3%	87.2%	77.5%	65.8%
Actuarially Determined Contribution	0	0	2,882,016	4,888,535	7,437,048
Actual Board Contribution	---	4,285,000	4,285,000	4,285,000	4,285,000
Transfer For Current Year From (To)					
Guaranteed Payment Program	---	22,601,893	22,042,618	21,065,034	20,057,682
Assumed Rate of Return	4.50%	5.50%	5.50%	7.25%	7.25%

* Indicates a change in actuarial assumptions and/or actuarial methods.

The Actuarial Computations section sets forth details of the determination of an actuarially determined contribution and provides a projection of expected benefit payments over the next 20 years under the existing plan. The Basis of Valuation section of this report sets forth a summary of benefits provided under the Metropolitan Board of Education Teacher Retirement, summarizes the actuarial assumptions on which the valuation was based, and summarizes the employee data on which this valuation was based.

The Administrative Retirement Committee adopted a change in actuarial assumptions (updating the mortality assumption) for 2019 that increased the present value of future benefits by 6.7%. In 2021 the Administrative Retirement Committee adopted a change in actuarial assumptions (lowering the discount rate) that increased the present value of future benefits by 11.9%. In 2023 the Administrative Retirement Committee adopted a change in actuarial assumptions (lowering the discount rate) that increased the present value of future benefits by 6.7%.

All calculations made in this report have been made utilizing employee data supplied by the Metropolitan Board of Public Education, asset information supplied by the Metropolitan Government of Nashville and Davidson County, and the actuarial assumptions summarized herein.



Plan Assets

Balance Sheet, July 1, 2023

	<u>Market Value</u>
Assets	
<i>Cash & Equivalents</i>	\$ 16,845,941
<i>Investments</i>	156,689,151
<i>Net Accruals, including pending trades</i>	<u>2,012,144</u>
Total assets	\$ 175,547,236
Liabilities	
Reserve for plan participants	\$ 175,547,236

Variance from Expected Asset Value

Trust Fund, July 1, 2022 (At Market)	\$ 164,837,879
Assumed Return at 5.50%	9,066,083
Employer Contributions, with Interest	27,626,283
Employee Contributions, with Interest	0
Net Withdrawals for Benefit Payments, with Interest	<u>(18,041,815)</u>
Expected Trust Fund, June 30, 2023	\$ 183,488,430
Actual Trust Fund, June 30, 2023	<u>175,547,236</u>
Variance From Expected Asset Value	\$ (7,941,194)

Historical Variances - (Gain)/Loss

2023	\$ (7,941,194)
2022	(10,402,704)
2021	27,326,675
2020	(4,611,363)

Actuarial Value of Assets

Market Value Assets, June 30, 2023	\$175,547,236
- 80% of prior year's Variance	6,352,955
- 60% of second prior year's Variance	6,241,622
- 40% of third prior year's Variance	(10,930,670)
- 20% of fourth prior year's Variance	<u>922,273</u>
Smoothed Asset Value	\$178,133,416
Valuation Assets, within 20% of Market Value	178,133,416



Actuarial Computations

Determination of Actuarially Determined Contribution

The exhibit below shows the determination of the Actuarially Determined Contribution for the plan year beginning July 1, 2023. The determination is made on an approximate basis.

Present Value of Benefits (Net of State Reimbursements)		
Active Lives	\$	0
Retired Lives		149,395,846
Deferred Vested Lives		<u>0</u>
Total Present Value of Benefits	\$	149,395,846
Actuarial Asset Value		(178,133,416)
Present Value of Future Employee Contributions		<u>0</u>
Present Value of Future Employer Costs	\$	(28,737,570)
Level Dollar, 30-Year Amortization of Future Costs from July 1, 2000		0
Interest Adjustment for Mid-year Payment		<u>0</u>
Actuarially Determined Contribution	\$	0



Schedule of Projected Retirement Payments

The schedule below shows a 20-year projection of payouts from the plan, both on a gross basis and a basis net of the funding provided by the State of Tennessee.

Plan Year	Gross Pensions	State Funding	Net Pensions
2024	\$23,854,721	\$7,947,186	\$15,907,535
2025	23,034,100	7,434,578	15,599,522
2026	22,116,279	6,915,972	15,200,307
2027	21,111,795	6,395,344	14,716,451
2028	20,031,635	5,876,727	14,154,908
2029	18,887,382	5,364,130	13,523,252
2030	17,691,276	4,861,523	12,829,753
2031	16,455,834	4,372,678	12,083,156
2032	15,193,844	3,901,131	11,292,713
2033	13,918,471	3,450,176	10,468,295
2034	12,643,269	3,022,807	9,620,462
2035	11,382,216	2,621,714	8,760,502
2036	10,149,217	2,249,147	7,900,070
2037	8,957,863	1,906,855	7,051,008
2038	7,821,396	1,596,128	6,225,268
2039	6,752,186	1,317,748	5,434,438
2040	5,760,889	1,071,843	4,689,046
2041	4,855,953	857,865	3,998,088
2042	4,043,618	674,774	3,368,844
2043	3,327,249	520,947	2,806,302



Basis of Valuation

Summary of Actuarial Assumptions

Unless noted below, all assumptions are a combination of estimated future experience and estimates inherent in market data or plan experience.

Mortality Rates

110% of the Pub-2010 Teachers mortality table (fully generational) with mortality improvement projected forward from 2010 using mortality improvement scale MP-2018.

Pre-Retirement Decrements

Not applicable

Salary Scale

Not applicable

Discount Rate/Rate of Investment Return

4.50% per annum

Cost of Living Increases

3.00% per annum

Actuarial Valuation Method

Entry Age Normal – with Level Dollar Amortization

The actuarial liabilities shown in this report are determined using software purchased from an outside vendor which was developed for this purpose. Certain information is entered into this model in order to generate the liabilities. These inputs include economic and non-economic assumptions, plan provisions, and census information. We rely on the coding within the software to value the liabilities using the actuarial methods and assumptions selected. Both the input to and the output from the model is checked for accuracy and reviewed for reasonableness.

Asset Valuation Method

Five-year smoothing of difference between market value and expected valuation assets. The resulting actuarial value shall not exceed 120% of the market value, or be less than 80% of the market value.

Other Assumptions

Retirees receiving joint & survivor annuities are assumed to be married with female spouses four years younger than male spouses

LD-ROM Discount Rate

4.13% per annum, compounded annually

Based on the 6/30 S&P Municipal Bond 20-year high grade rate index



Risk Assessment Associated with Assumptions

Risk Factor	Risk Assessment
Investment	Due to the plan's substantial equity exposure, investment returns will likely be much more volatile than liability valuations. Therefore, as the plan becomes better funded, there is a risk that the funded status of the plan, as well as required plan contributions, could be volatile.
Assumed Rate of Return	Due to the plan's estimated duration of 6 to 7, a 1% decrease in the assumed rate of investment return would increase the liability 6% to 7%. More detailed sensitivity analysis is included in the GASB 67 reporting for this plan.
Longevity	Since benefits from the plan must generally be paid as annuities, the plan is sensitive to changes in overall population longevity. As a result, the liabilities will increase if participants live longer than expected and decrease if they live shorter than expected. This risk is largely mitigated due to the maturity of the plan population. Substantially all benefits are in pay status and the average participant age exceeds 80.
Other demographic factors	No known significant risks.
Asymmetries in formula	No known significant risks.
Inflation	Inflation is a component of both cost of living allowances (COLAs) and investment returns over a long period. As a result, changes to inflation can affect funded percentages. Retiree benefits are given increases based on increases in the Consumer Price Index (CPI), a measurement of inflation. The risk associated with the COLAs is mitigated since the annual COLA is capped at 3.0%, and the assumed COLA is the maximum 3.0%. So any impact on plan liabilities due to variations of actual COLAs from assumed COLAs can only result in gains, and not losses.
Low-Default-Risk Obligation Measurement	In accordance with Actuarial Standards of Practice (ASOP) No. 4, the actuary is required to provide a "Low-Default-Risk Obligation Measurement" (LDROM). The intended purpose of the measurement is to show how the pension obligation could hypothetically be settled on the measurement date using current interest rate conditions. This may provide additional information regarding the security of benefits that members have earned. This is not intended to be a precise calculation as assumptions such as early retirement provisions, lump sum election percentages, and various other assumptions may need to be revised to reflect a terminal liability. This disclosure is required and does not imply the plan sponsor has considered or is considering the termination of this plan and may not be appropriate for other uses. As of the valuation date, the Low-Default-Risk Obligation for the plan is \$153,152,637. Using LDROM interest rates the Plan is 97.5% funded compared to a funded level of 119.2% using the Plan's ongoing interest rates

USI Consulting Group can perform more detailed assessments of these risks as desired by the plan sponsor to provide a better understanding of the risks.

This summary is not a Summary Plan Description or a Plan document. You should not rely solely on this summary in making a determination of eligibility for the Plan or its benefits.

Summary of Provisions of the Plan

Eligibility	Employees hired after April 1, 1963 became participants as a condition of employment. Employees on April 1, 1963, whether participants in a former plan, or not, were allowed to become a participant in the present plan provided written application was received prior to July 1, 1965. The Plan was closed to new entrants as of July 1, 1969, and employees hired after that date became members of the Tennessee Consolidated Retirement System.
Retirement Dates	
a. Normal Retirement Date	Age 65, or age 60 with 20 years of service, or prior to age 60 with 25 years of service.
b. Early Retirement Date	Age 55 with 15 years of service.
Retirement Income	
a. Normal	Average annual salary times 2.00% per year of service
b. Early	A benefit deferred to age 65, calculated as above, or an immediate benefit actuarially reduced.
Normal Form of Payment	Single life annuity
Optional Payment Forms:	Option A: 100% joint and survivor Option B: 50% joint and survivor Option C: Social Security option Option D: Life income with guaranteed payments Option E: 100% joint and survivor with pop-up Option F: 50% joint and survivor with pop-up Option G: Special Design
Cost of Living Adjustments	Each July 1, up to 3% of the original retirement benefit is added to a member's retirement benefit. The percentage increase is based on the increase in the Consumer Price Index (all items--United States city average), but will not exceed 3%. In any year when the change of CPI is less than a 1% increase, there is no benefit adjustment made on the following July 1.
Death Benefit (After Retirement)	If a participant dies after retirement benefits have become payable, no death benefit is payable unless an optional form of benefit has been elected which provides for a death benefit.



Summary of Participant Data

Distribution of Active Participants - None

Distribution of Inactive Participants with Average Annual Benefit

Age Group	Number	Annual Pensions (Gross)	
		Total	Average
0 - 64	20	\$353,945	\$17,697
65 - 69	4	25,712	6,428
70 - 74	12	435,813	36,318
75 - 79	208	8,810,463	42,358
80 - 84	182	7,135,182	39,204
85 - 89	133	5,209,868	39,172
90+	69	2,452,812	35,548
TOTAL	628	\$24,423,795	\$38,891

