Montgomery County Public Schools Employees' Retirement and Pension Systems

Actuarial Valuation as of July 1, 2022

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October 25, 2022

Mr. Robert Reilly
Associate Superintendent of Finance
Office of Finance
850 Hungerford Drive, Room 167
Rockville, Maryland 20850

Dear Mr. Reilly:

We are pleased to provide our formal annual Actuarial Valuation Report as of July 1, 2022 for the Montgomery County Public Schools Employees' Retirement and Pension Systems ("Plan"). The actuarial valuation was performed at the request of Montgomery County Public Schools ("MCPS") and is intended for use by MCPS and the Plan and those designated by MCPS and the Plan. This report may be provided to parties other than MCPS and the Plan only in its entirety and only with the permission of MCPS and the Plan. GRS is not responsible for unauthorized use of this report.

The purposes of the July 1, 2022 actuarial valuation are to measure the funding progress of the Plan and to determine the recommended annual contribution to the Plan for the Plan Year commencing July 1, 2023, and ending on June 30, 2024. Information required by GASB Statement Nos. 67 and 68 is provided in a separate report. This report should not be relied on for any purpose other than the purpose described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

The Board contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Section C of this report. This report includes common risk metrics beginning on page A-5 but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

This actuarial valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside the scope of this assignment and was not performed.

The Board contribution rate calculated in this actuarial valuation is approximately 0.04 percent of pay higher than the Board contribution requirement calculated in the last actuarial valuation mainly due to unfavorable investment experience and higher than expected cost of living adjustment (COLA) increases for retired members. Because the Plan is less than 100 percent funded, the Board may want to consider making additional contributions. Additional contributions have been made during fiscal years 2018 through 2021 to the Plan in addition to the Board contribution requirement calculated in the actuarial valuation.

120 North LaSalle Street | Suite 1350 | Chicago, Illinois 60602-3495

The actuarial valuation was based upon information furnished by the Montgomery County Public Schools Employees' Retirement and Pension Systems staff, concerning benefits provided by the Montgomery County Public Schools Employees' Retirement and Pension Systems, financial transactions, plan provisions and census data for active members, terminated members, retirees and beneficiaries as of July 1, 2022. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the MCPS staff.

This report was prepared using actuarial assumptions adopted by the MCPS staff and MCPS Board of Education. All actuarial assumptions used in this report are reasonable for the purposes of this actuarial valuation. Additional information about the actuarial assumptions is included in the Section C of this report. Most of the actuarial assumptions used in this actuarial valuation are based on an experience review covering the period July 1, 2014 to July 1, 2018 and input from MCPS staff and were first adopted for use beginning with the actuarial valuation as of July 1, 2019. The MCPS Board of Education adopted a decrease in the investment return assumption from 7.00 percent to 6.75 percent effective with the actuarial valuation as of July 1, 2021. We recommend an experience study covering the four-year period from July 1, 2018 through July 1, 2022 be performed prior to the July 1, 2023 actuarial valuation.

All plan provisions have remained unchanged since the last actuarial valuation, performed as of July 1, 2021.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled. We are relying on the GRS actuaries and Internal Software, Training and Processes Team who developed and maintain the model.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the Montgomery County Public Schools Employees' Retirement and Pension Systems as of the actuarial valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

This report reflects the impact of COVID-19 through June 30, 2022. However, this report does not reflect the longer term and still developing future impact of COVID-19, which is likely to further influence demographic experience and economic expectations. We will continue to monitor these developments and their impact on the Plan and the actuarial assumptions. Actual experience will be reflected in each subsequent annual valuation, as experience emerges.

Lance J. Weiss, Amy Williams, and Cassie Rapoport are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions herein.

The signing actuaries are independent of the plan sponsor.

Gabriel, Roeder, Smith & Company will be pleased to review this actuarial valuation report with MCPS staff and to answer any questions pertaining to the actuarial valuation.

Respectfully submitted,

Gabriel, Roeder, Smith & Company

Lance J. Weiss

Lance J. Weiss, EA, FCA, MAAA
Senior Consultant and Team Leader

Amy Williams

Amy Williams, ASA, FCA, MAAA
Senior Consultant

Cassie Rapoport

Cassie Rapoport, ASA, MAAA
Senior Analyst

LW/AW/CR:rl

SECTION A

ACTUARIAL VALUATION RESULTS

Comments on the Actuarial Valuation

At your request, we have performed an actuarial valuation of the Montgomery County Public Schools Employees' Retirement and Pension Systems as of July 1, 2022.

The purposes of this actuarial valuation are as follows:

- To determine the funding status of the Plan as of the actuarial valuation date;
- To determine the recommended contribution for the fiscal year beginning July 1, 2023 and ending on June 30, 2024; and
- To provide other data required by the Plan.

Accounting information required under Governmental Accounting Standards Board ("GASB") Statement Nos. 67 and 68 is presented in a separate report.

We received the data from the Montgomery County Public Schools Employees' Retirement and Pension Systems staff. We performed certain checks for reasonableness and found the data to be complete and reliable for actuarial valuation purposes. However, we did not audit the data.

A total of 24,317 active members were included in the actuarial valuation as of July 1, 2022. Between the 2021 and 2022 actuarial valuations, the number of active employees increased by 94 members, or 0.4 percent. The average annual actuarial valuation pay increased by 1.7 percent, from $70,716 to $71,914 between the 2021 and 2022 actuarial valuations. The number of benefit recipients increased from 14,476 to 14,793, or 2.2 percent, since the last actuarial valuation. The average monthly benefit increased by 5.7 percent, from $650 to $687. Section B summarizes the membership data.

Section C outlines the actuarial assumptions and methods used in the actuarial valuation. Most of the actuarial assumptions used in this actuarial valuation are based on an experience review covering the period July 1, 2014 to July 1, 2018 and were first adopted for use beginning with the actuarial valuation as of July 1, 2019. The MCPS Board of Education adopted a decrease in the investment return assumption from 7.00 percent to 6.75 percent effective with the valuation as of July 1, 2021. We recommend an experience study covering the four-year period from July 1, 2018 through July 1, 2022 be performed prior to the July 1, 2023 actuarial valuation.

The assumption for administrative expenses is equal to 105 percent of the average of the prior three years' administrative expenses. This amount has decreased from $1,057,800 to $541,400. The administrative expenses paid during the plan year ending June 30, 2021 were significantly lower than prior years and the administrative expenses during plan year ending June 30, 2022 were equal to $0. Therefore, it would be reasonable to make a higher contribution if future administrative expenses are expected to be at a similar level to those paid prior to plan year ending June 30, 2021.

Section D outlines the principal benefit provisions of the Plan. All plan provisions have remained unchanged since the last actuarial valuation, performed as of July 1, 2021.

During the plan year ending June 30, 2022, the unfunded actuarial accrued liability ("UAAL") increased from $344,620,579 as of July 1, 2021, to $361,175,921 as of July 1, 2022, which is an increase of $16,555,342. The key factors contributing to the increase in the UAAL were unfavorable asset experience and higher than expected cost of living adjustment (COLA) increases for retired members. Members of the Retirement System and members of the Pension System who retired prior to July 1, 1998 received an actual COLA increase of 5.94 percent, compared to an assumed increase of 2.50 percent in last year's actuarial valuation. The actual COLA increase for Pension System members was 3.00 percent for benefits attributable to service prior to July 1, 2011 and 2.00 percent for benefits attributable to service on or after July 1, 2011, compared to an assumed COLA increase of 2.35 percent from last year's actuarial valuation for benefits attributable to service prior to July 1, 2011, and an assumed COLA increase of 1.85 percent for benefits attributable to service on or after July 1, 2011. The unfavorable asset and COLA experience were partially offset by favorable demographic experience and lower than expected salary increases.

On a market value basis, the Plan assets had an investment return of approximately -9.63 percent (net of investment expenses, as estimated by GRS). Partial recognition of the fiscal year ending 2019, 2020 and 2022 investment losses were partially offset by recognition of deferred investment gains during fiscal years ending 2018 and 2021, which resulted in an estimated net asset rate of return of 5.63 percent on an actuarial value of assets basis, which compares to the assumed rate of return of 6.75 percent for fiscal year 2022.

The funded ratio (ratio of assets to liabilities) decreased slightly from 85.9 percent to 85.8 percent on an actuarial value of assets basis, and decreased from 93.5 percent to 79.9 percent on a market value of assets basis between the 2021 and 2022 actuarial valuations.

Recommended Board Contributions

The total contribution rate is equal to the normal cost rate plus amortization of the unfunded liability as a level percentage of payroll. The unfunded actuarial accrued liability is amortized using level-percentage of pay amortization based on a 15-year open amortization period for the unfunded liability not attributable to plan changes, a 30-year closed amortization period for the unfunded liability attributable to the 2006 and 2010 plan changes, and a 15-year closed amortization period for the unfunded liability attributable to the 2020 plan changes. The Board contribution rate is equal to the total contribution rate minus the employee contribution rate.

The single equivalent amortization period as of July 1, 2022, is 14.6 years. The current unfunded liability as of July 1, 2022, that is attributable to the 2006, 2010, and 2020 plan changes is expected to be fully paid off at the end of the closed amortization periods. The unfunded liability not attributable to plan changes is not expected to be fully paid off even if all assumptions are realized due to the open amortization period.

The unfunded liability is amortized as a level percentage of payroll and assumes that total payroll will increase by 2.75 percent each year. If all assumptions are realized, the unfunded liability contribution will decrease slightly as a percentage of payroll by using open period amortization. As the unfunded liability from the plan changes are fully amortized, there will be larger changes in the unfunded liability contribution rate.

The actuarial valuation as of July 1, 2021, established the Board contribution rate for fiscal year beginning July 1, 2022 and ending June 30, 2023. This actuarial valuation as of July 1, 2022, establishes the Board contribution rate for fiscal year beginning July 1, 2023, and ending June 30, 2024. The Board contribution rate is 3.73 percent of pay for fiscal year ending June 30, 2023, and is 3.77 percent for fiscal year ending June 30, 2024.

Comments on the Actuarial Valuation

Following is a summary of the Board contribution rate for fiscal ending June 30, 2024 and for fiscal year ending June 30, 2023 split between the cost of the core and supplemental benefits and for the Board normal cost and for amortization of the unfunded liability.

	Fiscal Year 2024		
	Core Benefit	Supplemental Benefit	Total
Board Normal Cost	0.92%	1.00%	1.92%
Amortization of Unfunded Liability	0.89%	0.96%	1.85%
Total	1.81%	1.96%	3.77%
	Fiscal Year 2023		
	Core Benefit	Supplemental Benefit	Total
Board Normal Cost	0.94%	1.02%	1.96%
Amortization of Unfunded Liability	0.85%	0.92%	1.77%
Total	1.79%	1.94%	3.73%

The Board contribution rate calculated in this actuarial valuation is approximately 0.04 percent of pay higher than the Board contribution requirement calculated in the last actuarial valuation mainly due to unfavorable investment experience and higher than expected cost of living adjustment (COLA) increases for retired members. The unfavorable experience was partially offset by the decrease in the normal cost rate due to lower assumed administrative expenses. Because the Plan is less than 100 percent funded, the Board may want to consider making additional contributions.

The actuarial value of assets is approximately 107 percent of the market value of assets. There is $151,565,974 in net asset losses currently being deferred that will be phased into the actuarial value of assets over the next four years. Assuming all future actuarial assumptions are realized, there is projected to be an increase in the recommended Board contribution as the remaining deferred asset losses are recognized.

In fiscal year 2021, an additional amount of approximately $9.2 million was contributed to the Plan. (An additional $5.0 million was contributed to the Plan in addition to the Board contribution requirement calculated in the actuarial valuation in fiscal years 2018 and 2019 as well as an additional $9.8 million in fiscal year 2020.) No additional contributions were made during fiscal year 2022.

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected Plan Contributions and Funded Status

Given the Plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the Plan earning 6.75 percent on the actuarial value of assets), it is expected that:

1) The Board normal cost as a percentage of pay will decrease to the level of the normal cost for members hired on or after July 1, 2011 as time passes and the majority of the active population is comprised of these members. The unfunded liability contribution will decrease as a level as a percentage of pay as the funded status improves and the unfunded liability is re-amortized over a 15-year period;

2) The unfunded actuarial accrued liabilities attributable to plan changes will be fully amortized at the end of the closed amortization periods. The remaining unfunded liability will never be fully amortized; and
3) The funded status of the plan will increase gradually towards a 100 percent funded ratio (but will not reach 100 percent using an open amortization period).

Limitations of Funded Status Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

1) The funded ratio and unfunded actuarial accrued liability are useful for assessing the need for and the amount of future unfunded liability contributions (excludes normal cost contributions). They are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the Plan's benefit obligations, for example: transferring the liability to an unrelated third party in a free market type transaction.
2) The measurement is dependent upon the actuarial cost method which, in combination with the Plan's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100 percent is not synonymous with no required future contributions. If the funded status were 100 percent, the Plan would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets.

Risk Measures

Risks Associated with Measuring the Accrued Liability and Board Contribution

The determination of the accrued liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

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 due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. **Investment Risk** – actual investment returns may differ from the expected returns;
2. **Asset/Liability Mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. **Contribution Risk** – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll or other relevant contribution base;
4. **Salary and Payroll Risk** – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. **Longevity Ris**k – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
6. **Other Demographic Risks** – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The Board contribution rate shown on page A-7 may be considered as a minimum contribution rate that complies with the Board's funding policy. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

Risk Measures

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	2018	2019	2020	2021	2022
Ratio of the market value of assets to total payroll	1.11	1.14	1.10	1.33	1.16
Ratio of actuarial accrued liability to payroll	1.45	1.38	1.37	1.42	1.46
Ratio of actives to retirees and beneficiaries	1.69	1.67	1.70	1.67	1.64
Ratio of net non-investment cash flow to market value of assets	0.46%	0.55%	0.15%	-0.68%	-1.03%

RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 1.0 times the payroll, a return on assets 5% different than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 1.5 times the payroll, a change in liability 2% other than assumed would equal 3% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of actives to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

ADDITIONAL RISK ASSESSMENT

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability.

Summary of Actuarial Valuation Results

	July 1, 2021 Results	July 1, 2022 Results
Membership Data		
Active Members	24,223	24,317
Inactive Members (not in Pay Status)	3,578	3,726
Inactive Members (Contribution Balance Only)	4,536	5,658
Retirees and Beneficiaries	14,476	14,793
TOTAL	46,813	48,494
Plan Liabilities		
Actuarial Accrued Liability:		
Active Members	$ 1,092,094,054	$ 1,099,639,945
Inactive Members	58,270,372	67,220,998
Retirees and Beneficiaries	1,285,502,374	1,382,911,336
TOTAL	$ 2,435,866,800	$ 2,549,772,279
Actuarial Value of Assets at Valuation Date	$ 2,091,246,221	$ 2,188,596,358
Unfunded (Overfunded) Actuarial Accrued Liability	$ 344,620,579	$ 361,175,921
Funded Position of Plan's Actuarial Accrued Liability [1]	85.9 %	85.8 %

Recommended Annual Contribution Requirements [2]	Fiscal Year 2023	Fiscal Year 2024
Annual Normal Cost with Interest	$ 61,262,338	$ 62,405,497
Normal Cost Expense Load	1,057,800	541,400
Amortization Payment	30,332,535	32,265,051
Total Annual Required Contribution	92,652,673	95,211,948
Expected Employee Contributions	27,216,539	27,892,151
Board Contribution Requirement	$ 65,436,134	$ 67,319,797
Contribution Basis Payroll:		
For Normal Cost	$ 1,791,063,454	$ 1,828,503,908
For Amortization of Unfunded Liability	$ 1,712,963,560	$ 1,748,733,399
Board Contribution % of Payroll		
Employer Normal Cost[3]	1.96%	1.92%
Amortization of Unfunded Liability	1.77%	1.85%
Total	3.73%	3.77%
Average Employee Contribution Rate	1.52%	1.53%

[1] *Equals the ratio of the actuarial value of assets to the total actuarial accrued liability.*

[2] *Board contributions are made during the first week of September. In the actuarial valuation, Board contributions are assumed to be made on October 1.*

[3] *The employer normal cost decreased by 0.03% of pay due to administrative expenses of $0 during plan year 2022.*

Actuarial Valuation Results
Summary by Plan and Benefit Type

	Valuation as of July 1, 2022										July 1, 2021	
	Retirement System				Pension System							
	Teacher		Staff		Teacher		Staff		Total	% of Payroll	Total	% of Payroll
Active Members												
Number	14		11		19,004		5,288		24,317		24,223	
Average Age	71.8		66.6		44.9		51.4		46.3		46.2	
Average Eligibility Service	36.5		38.2		12.0		11.9		12.0		12.1	
Total Base Payroll	$ 1,685,335		$ 724,704		$ 1,490,574,056		$ 255,749,304		$ 1,748,733,399		$ 1,712,963,560	
Contribution Basis Payroll:												
For Normal Cost	$ 1,722,695		$ 742,631		$ 1,558,883,134		$ 267,155,448		$ 1,828,503,908		$ 1,791,063,454	
For Amortization of Unfunded Liability	1,685,335		724,704		1,490,574,056		255,749,304		1,748,733,399		1,712,963,560	
Annual Gross Normal Cost												
Benefits	$ 27,064	(1.57%)	$ 107,477	(14.47%)	$ 23,271,026	(1.49%)	$ 38,999,930	(14.60%)	$ 62,405,497	(3.42%)	$ 61,262,338	(3.42%)
Expenses of Administration	510	(0.03%)	220	(0.03%)	461,568	(0.03%)	79,102	(0.03%)	541,400	(0.03%)	1,057,800	(0.06%)
Total	27,574	(1.60%)	107,697	(14.50%)	23,732,594	(1.52%)	39,079,032	(14.63%)	62,946,897	(3.45%)	62,320,138	(3.48%)
Amortization of Unfunded Liability [1]	$ 31,095	(1.85%)	$ 13,371	(1.85%)	$ 27,501,875	(1.85%)	$ 4,718,709	(1.85%)	$ 32,265,050	(1.85%)	$ 30,332,535	(1.77%)
Annual Contribution Requirement:												
Board Portion	$ 50,056	(2.95%)	$ 65,371	(8.85%)	$ 43,440,052	(2.87%)	$ 23,764,317	(8.98%)	$ 67,319,796	(3.77%)	$ 65,436,134	(3.73%)
Employee Portion	8,613	(0.50%)	55,697	(7.50%)	7,794,417	(0.50%)	20,033,424	(7.50%)	27,892,151	(1.53%)	27,216,539	(1.52%)
Total	58,669	(3.45%)	121,068	(16.35%)	51,234,469	(3.37%)	43,797,741	(16.48%)	95,211,947	(5.30%)	92,652,673	(5.25%)
Normal Cost (Benefits) Detail												
Supplemental Benefit												
Board Portion	$ 18,451	(1.07%)	$ 7,035	(0.95%)	$ 15,476,609	(0.99%)	$ 2,595,811	(0.97%)	$ 18,097,906	(0.99%)	$ 17,756,742	(0.99%)
Employee Portion	8,613	(0.50%)	3,713	(0.50%)	7,794,417	(0.50%)	1,335,777	(0.50%)	9,142,520	(0.50%)	8,955,317	(0.50%)
Total	27,064	(1.57%)	10,748	(1.45%)	23,271,026	(1.49%)	3,931,588	(1.47%)	27,240,426	(1.49%)	26,712,059	(1.49%)
Core Benefit												
Board Portion			$ 44,745	(6.03%)			$ 16,370,695	(6.13%)	$ 16,415,440	(0.89%)	$ 16,289,057	(0.91%)
Employee Portion			51,984	(7.00%)			18,697,647	(7.00%)	18,749,631	(1.03%)	18,261,222	(1.02%)
Total			96,729	(13.03%)			35,068,342	(13.13%)	35,165,071	(1.92%)	34,550,279	(1.93%)
Supplemental Benefit - Retirement System/Pension System			Total Retirement System				Total Pension System		Total Retirement System and Pension System			
Board Portion			$ 25,486	(1.03%)			$ 18,072,420	(0.99%)	$ 18,097,906	(0.99%)	$ 17,756,742	(0.99%)
Employee Portion			12,326	(0.50%)			9,130,194	(0.50%)	9,142,520	(0.50%)	8,955,317	(0.50%)
Total			37,812	(1.53%)			27,202,614	(1.49%)	27,240,426	(1.49%)	26,712,059	(1.49%)
Core Benefit - Retirement System/Pension System												
Board Portion			$ 44,745	(1.81%)			$ 16,370,695	(0.90%)	$ 16,415,440	(0.90%)	$ 16,289,057	(0.91%)
Employee Portion			51,984	(2.11%)			18,697,647	(1.02%)	18,749,631	(1.02%)	18,261,222	(1.02%)
Total			96,729	(3.92%)			35,068,342	(1.92%)	35,165,071	(1.92%)	34,550,279	(1.93%)

[1] *The unfunded actuarial accrued liability is amortized using level-percentage of pay amortization based on a 15-year open amortization period for the unfunded liability not attributable to plan changes, a 30-year closed amortization period for the unfunded liability attributable to the 2006 and 2010 plan changes and a 15-year closed amortization period for the unfunded liability attributable to the 2020 plan changes.*

Actuarial Valuation Results
Amortization of Unfunded Actuarial Accrued Liability and Amortization Payments

Base Year	Description	Initial Unfunded Liability Base	Initial Financing Period	Remaining Unfunded Liability Base	Remaining Financing Period		Amortization Factor	Amortization Payment	Amortization Payment with Interest Adjustment
2006	Plan Change	$ 118,820,991	30	$ 117,134,124	14	yrs.	11.052311	$ 10,598,157	$ 10,772,644
2010	Plan Change	(16,681,502)	30	(17,421,483)	18		13.267302	(1,313,114)	(1,334,733)
2020	Plan Change	(923,353)	15	(875,610)	13		10.443641	(83,841)	(85,221)
2022	Remaining Unfunded Liability	262,338,890	15	262,338,890	15		11.638172	22,541,244	22,912,361
Unfunded Liability				$ 361,175,921	14.6	yrs.	11.378327	$ 31,742,446	$ 32,265,051

Board contributions are made during the first week of September. In the actuarial valuation, Board contributions are assumed to be made on October 1.

Actuarial Valuation Results
Gain/Loss Analysis

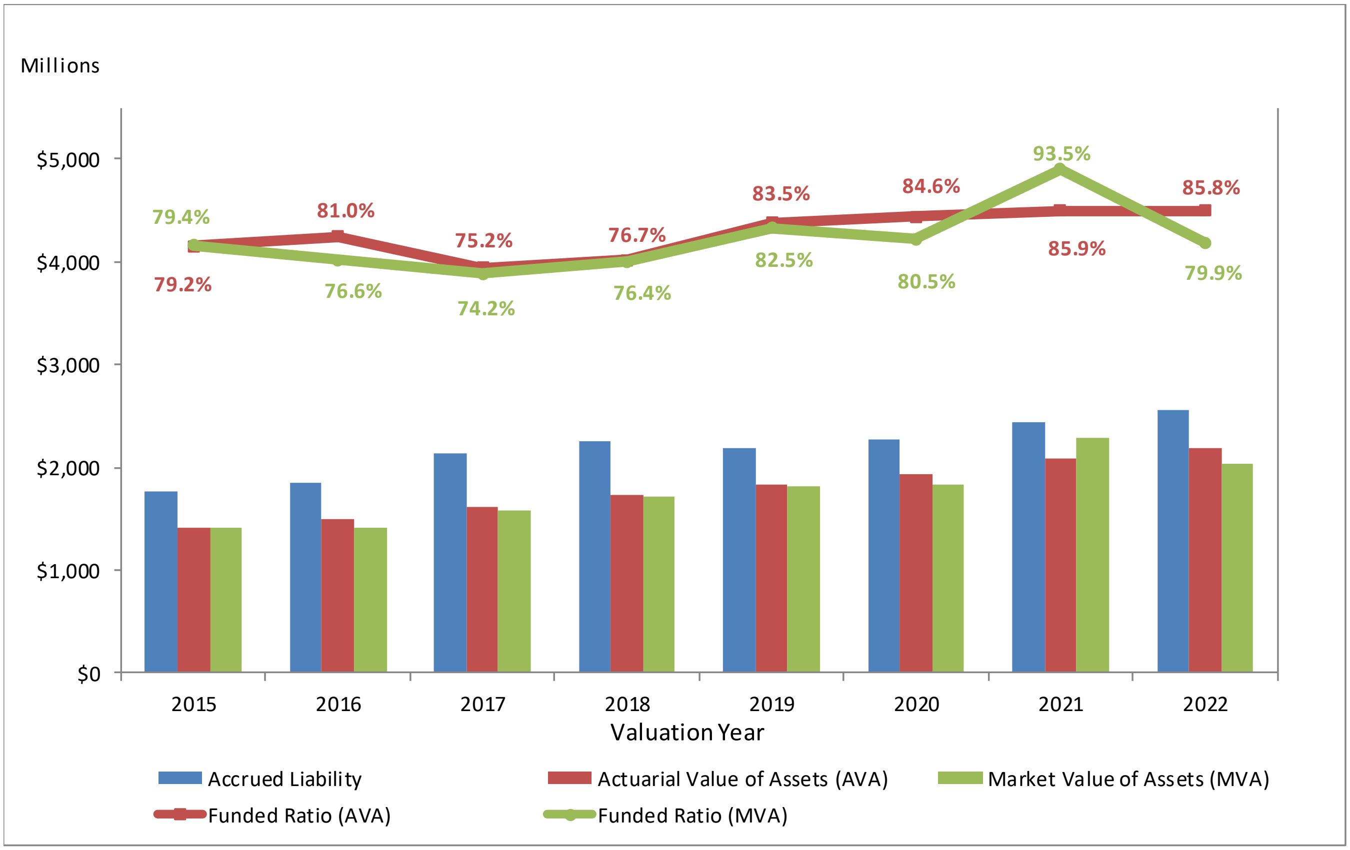
		Unfunded Liability
Unfunded liability at previous valuation	$	344,620,579
Expected unfunded liability at current valuation		
Normal cost for plan year		62,320,138
Interest on unfunded liability and normal cost		25,330,850
Contributions with interest to current valuation date		(101,405,788)
Total expected change in unfunded liability at current valuation		(13,754,800)
Total expected unfunded liability at current valuation		330,865,779
Change due to:		
Recognition of asset (gains)/losses		21,213,306
Salary increases		(1,682,303)
COLA increases		16,288,156
Additional contributions with interest to current valuation date		-
Demographic experience and other		(5,509,017)
Change in actuarial assumptions		-
Plan changes		-
Total change		30,310,142
Unfunded liability at current valuation	$	361,175,921

	Board Contribution	Funded Status (AVA)
FY 2023 Board Contribution/July 1, 2021 Funded Ratio	3.73%	85.9%
Expected FY 2024 Board Contribution/July 1, 2022 Funded Ratio	3.64%	87.0%
Change due to:		
Recognition of asset (gains)/losses	0.11%	-0.8%
Salary increases	-0.01%	0.1%
COLA increases	0.08%	-0.6%
Additional contributions with interest to current valuation date	0.00%	0.0%
Demographic experience and other	-0.05%	0.1%
Change in actuarial assumptions	0.00%	0.0%
Plan changes	0.00%	0.0%
Total change	0.13%	-1.2%
FY 2024 Board Contribution/July 1, 2022 Funded Ratio	3.77%	85.8%

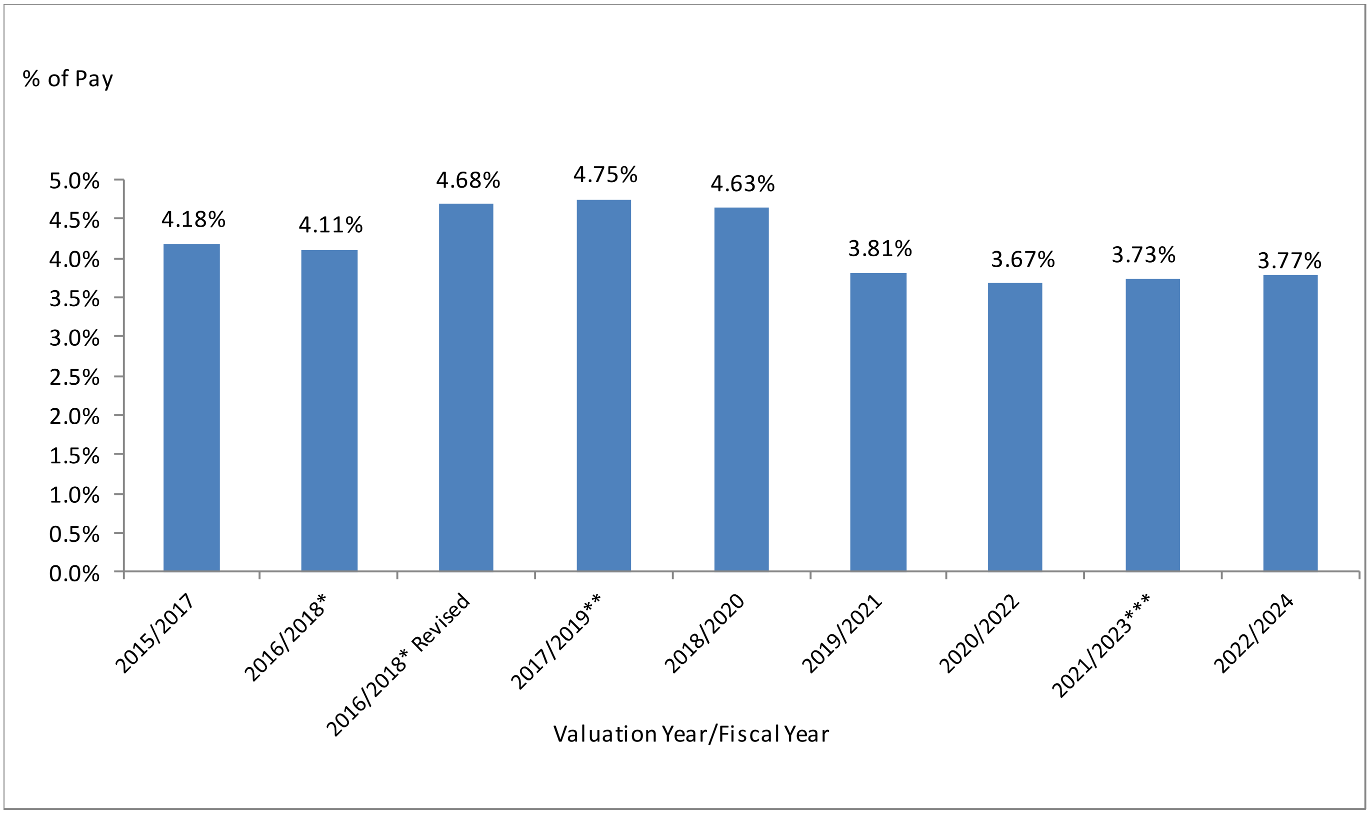
Demographic Experience and other includes changes due to retirement, mortality, disability and termination experience that varied from the actuarial assumptions, and data changes.
Demographic Experience and other also includes a decrease of 0.03% of pay due to administrative expenses of $0 during plan year 2022, which decreased the normal cost expense load.

Historical Trends of Funded Ratio and Employer Contributions

Funded Ratio History



Employer Contribution Rate History



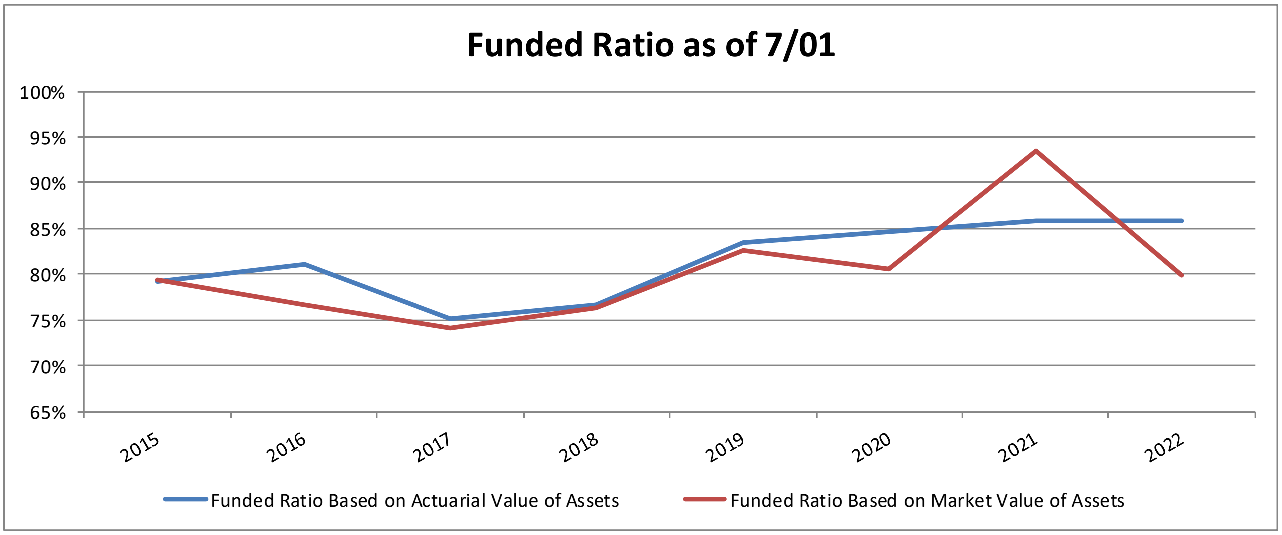
* *Board contribution for fiscal year 2018 was updated based on an investment return assumption of 7.25% and is 4.68%.*

** *Board contribution for fiscal year 2019 is based on an investment return assumption of 7.00% and an update in the actuarial cost method from Projected Unit Credit to Entry Age Normal and an update in the normal cost expense load assumption methodology.*

*** *Board contribution for fiscal year 2023 is based on an investment return assumption of 6.75%.*

Funded Ratio History

Actuarial Valuation Date	Actuarial Value of Assets (AVA) (a)	Market Value of Assets (MVA) (b)	Actuarial Accrued Liability (AAL) (c)	Unfunded AAL (UAAL) (c – a)	Funded Ratio (AVA) (a / c)	Funded Ratio (MVA) (b / c)
7/1/2015	$ 1,403,989,771	$ 1,407,972,029	$ 1,772,177,288	$ 368,187,517	79.2 %	79.4 %
7/1/2016	1,495,465,475	1,415,147,443	1,846,373,931	350,908,456	81.0	76.6
7/1/2017	1,608,060,359	1,586,455,212	2,139,353,692	531,293,333	75.2	74.2
7/1/2018	1,727,086,221	1,719,166,655	2,251,206,537	524,120,316	76.7	76.4
7/1/2019	1,830,579,963	1,808,730,209	2,191,342,014	360,762,051	83.5	82.5
7/1/2020	1,925,721,794	1,831,569,488	2,275,516,639	349,794,845	84.6	80.5
7/1/2021	2,091,246,221	2,278,066,970	2,435,866,800	344,620,579	85.9	93.5
7/1/2022	2,188,596,358	2,037,030,384	2,549,772,279	361,175,921	85.8	79.9



Statement of Fiduciary Net Position

	Fiscal Year Ending	
Assets	**June 30, 2021**	**June 30, 2022**
Investments, at fair value		
Global equities	$ 1,354,273,551	$ 1,069,808,657
Fixed income securities	550,556,973	516,408,879
Real estate	88,341,330	109,522,646
Alternative investments	240,599,022	299,169,170
Short-term investments	45,936,417	41,370,347
Total Investments	2,279,707,293	2,036,279,699
Accounts receivable	-	-
Due from general fund	-	750,685
Total assets	2,279,707,293	2,037,030,384
Liabilities		
Accounts payable	$ -	$ -
Claims payable	-	-
Due to general fund	1,640,323	-
Total liabilities	1,640,323	-
Net position restricted for pensions	$ 2,278,066,970	$ 2,037,030,384

Statement of Changes in Fiduciary Net Position

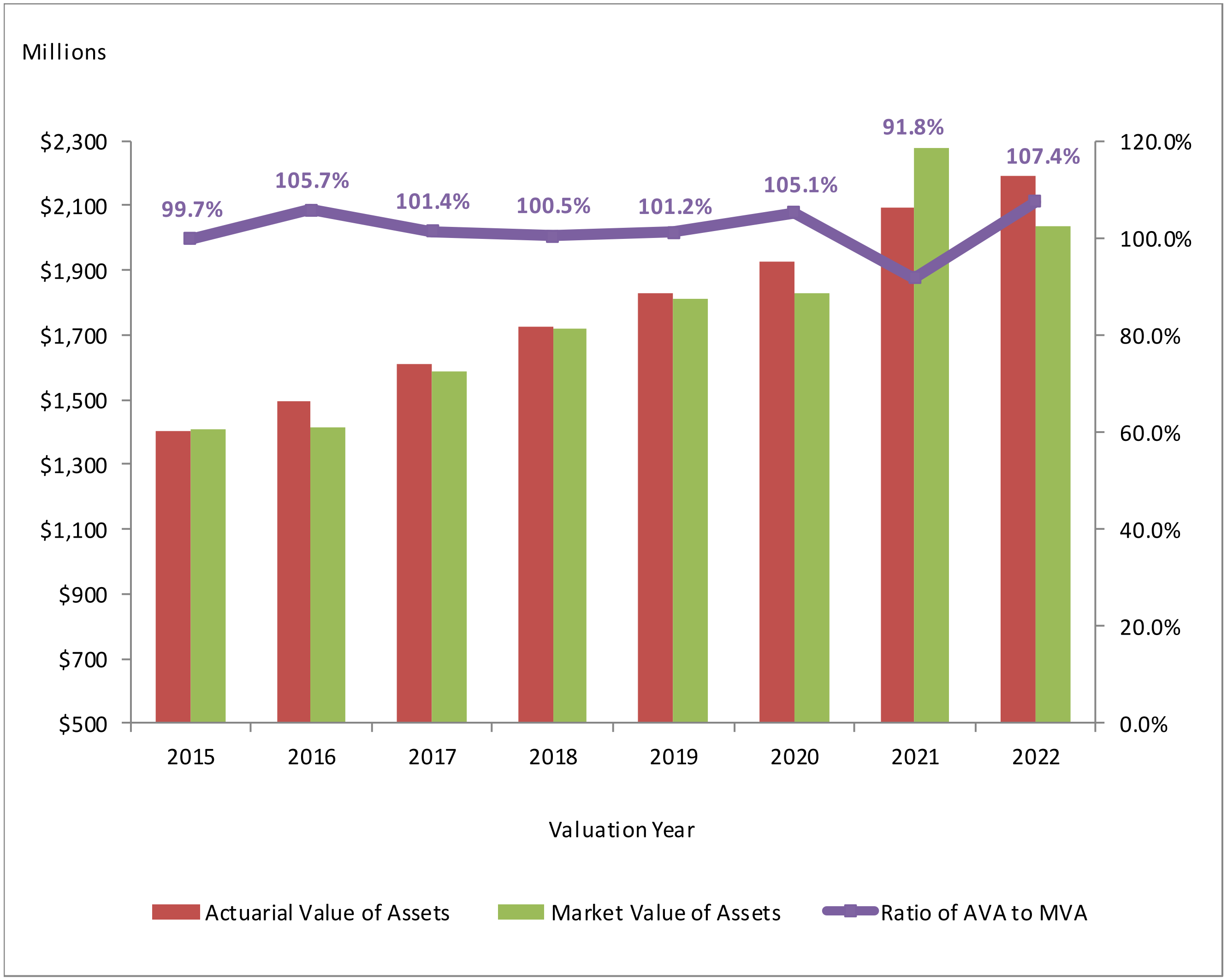
	Fiscal Year Ending	
	June 30, 2021	**June 30, 2022**
Additions:		
Contributions:		
Employer	$ 70,919,230	$ 70,507,843
Members	25,715,329	26,478,722
Total contributions	96,634,559	96,986,565
Other Income	-	2,139,761
Total income from investment activities	471,950,926	(207,182,231)
Less investment expenses	10,072,095	12,963,651
Net income (loss) from investment activities	461,878,831	(220,145,882)
Total additions (deductions)	558,513,390	(121,019,556)
Deductions:		
Retiree benefits	111,635,349	120,017,030
Administrative expenses	380,559	-
Total deductions	112,015,908	120,017,030
Net increase in net position	446,497,482	(241,036,586)
Net position restricted for pensions		
Beginning of year	1,831,569,488	2,278,066,970
End of year	$ 2,278,066,970	$ 2,037,030,384

Development of Actuarial Value of Assets

Fiscal Year Ending	2021	2022	2023	2024	2025	2026
Beginning of Year:						
(1) Market Value of Assets	$ 1,831,569,488	$ 2,278,066,970				
(2) Actuarial Value of Assets	1,925,721,794	2,091,246,221				
End of Year:						
(3) Market Value of Assets	2,278,066,970	2,037,030,384				
(4) Contributions and Disbursements						
(4a) Board Contributions	70,919,230	70,507,843				
(4b) Employee Contributions [1]	25,715,329	28,618,483				
(4c) Net Disbursements	112,015,908	120,017,030				
(5) Total Investment Income (Net of investment expenses)						
=(3)-(1)-(4a)-(4b)+(4c)	461,878,831	(220,145,882)				
(6) Projected Rate of Return	7.00%	6.75%				
(7) Projected Investment Income						
=(1)x(6)+([1+(6)]^.5-1)x(4b-4c)+([1+(6)]^.75-1)x(4a)	128,932,026	154,275,346				
(8) Asset Adjustment	-	-				
(9) Investment Income in Excess of Projected Income						
=(5)-(7)	332,946,805	(374,421,228)				
(10) Excess Investment Income Recognized						
This Year (5-year recognition)						
(10a) From This Year	$ 66,589,361	$ (74,884,246)				
(10b) From One Year Ago	(21,629,921)	66,589,361	$ (74,884,246)			
(10c) From Two Years Ago	(8,537,235)	(21,629,921)	66,589,361	$ (74,884,246)		
(10d) From Three Years Ago	2,427,534	(8,537,235)	(21,629,921)	66,589,361	$ (74,884,246)	
(10e) From Four Years Ago	13,124,011	2,427,536	(8,537,235)	(21,629,919)	66,589,361	$ (74,884,244)
(10f) Total Recognized Investment Gain/(Loss)	51,973,750	(36,034,505)	(38,462,041)	(29,924,804)	(8,294,885)	(74,884,244)
(11) Change in Actuarial Value of Assets						
=(4a)+(4b)-(4c)+(7)+(8)+(10f)	165,524,427	97,350,137				
End of Year:						
(3) Market Value of Assets	**$ 2,278,066,970**	**$ 2,037,030,384**				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	2,091,246,221	2,188,596,358				
(12a) Upper Corridor Limit 120% x (3)	2,733,680,364	2,444,436,461				
(12b) Lower Corridor Limit 80% x (3)	1,822,453,576	1,629,624,307				
(13) Adjustment to Remain within 20% Corridor	-	-				
(14) Final Actuarial Value of Assets as of 6/30 = (2)+(11)	**$ 2,091,246,221**	**$ 2,188,596,358**				
(15) Difference Between Market & Actuarial Values	186,820,749	(151,565,974)				
(16) Estimated Market Value Rate of Return on Total Plan Assets	25.08%	(9.63)%				
(17) Actuarial Value Rate of Return	9.35%	5.63%				
(18) Ratio of Actuarial Value to Market Value	92%	107%				

[1] *Includes other income of $2,139,761 for fiscal year ending June 30, 2022.*

Historical Comparison of Actuarial Value of Assets to Market Value of Assets



SECTION B

ACTUARIAL VALUATION DATA

Age/Service by Group as of July 1, 2022

Employees' Retirement System – Teachers

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25										0	$ -
25-29										0	-
30-34										0	-
35-39										0	-
40-44										0	-
45-49										0	-
50-54										0	-
55-59										0	-
60-64										0	-
65-69						1	1	4	2	8	993,931
70-74								1		1	98,595
75 and Over								5		5	592,809
Total	-	-	-	-	-	1	1	10	2	14	$ 1,685,335

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Current Valuation		Previous Valuation	
Total Participants:	14	Total Participants:	18
Average Age:	71.8	Average Age:	70.7
Average Service:	36.5	Average Service:	35.5
Average Annual Pay:	$ 120,381	Average Annual Pay:	$ 116,249

Employees' Retirement System – Non-Teachers

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25										0	$ -
25-29										0	-
30-34										0	-
35-39										0	-
40-44										0	-
45-49										0	-
50-54										0	-
55-59										0	-
60-64								4		4	262,518
65-69								4	1	5	279,653
70-74									1	1	88,322
75 and Over								1		1	94,211
Total	-	-	-	-	-	-	-	9	2	11	$ 724,704

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Current Valuation		Previous Valuation	
Total Participants:	11	Total Participants:	13
Average Age:	66.6	Average Age:	65.4
Average Service:	38.2	Average Service:	37.8
Average Annual Pay:	$ 65,882	Average Annual Pay:	$ 65,010

Age/Service by Group as of July 1, 2022

Employees' Pension System – Teachers

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25	506	3								**509**	**$ 23,124,303**
25-29	1,222	553	4							**1,779**	**96,988,089**
30-34	734	1,162	425	2						**2,323**	**155,910,411**
35-39	547	632	741	483						**2,403**	**189,213,730**
40-44	520	491	378	860	382	1				**2,632**	**233,582,543**
45-49	464	414	252	508	736	169	1			**2,544**	**232,873,948**
50-54	428	424	298	401	592	476	79			**2,698**	**242,436,005**
55-59	250	307	284	363	393	221	166	41	1	**2,026**	**168,696,073**
60-64	144	169	168	293	279	142	90	61	19	**1,365**	**101,825,112**
65-69	48	70	67	104	82	69	35	23	11	**509**	**33,693,183**
70-74	12	17	25	30	22	25	14	11	8	**164**	**9,832,487**
75 and Over	8	5	5	15	8	2	5		4	**52**	**2,398,172**
Total	**4,883**	**4,247**	**2,647**	**3,059**	**2,494**	**1,105**	**390**	**136**	**43**	**19,004**	**$ 1,490,574,056**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Current Valuation		Previous Valuation	
Total Participants:	19,004	Total Participants:	18,958
Average Age:	44.9	Average Age:	44.7
Average Service:	12.0	Average Service:	11.9
Average Annual Pay:	$ 78,435	Average Annual Pay:	$ 77,054

Employees' Pension System – Non-Teachers

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25	80	1								**81**	**$ 2,566,570**
25-29	131	49	2							**182**	**6,866,746**
30-34	152	115	24	7						**298**	**12,659,348**
35-39	177	125	64	55	6					**427**	**20,087,527**
40-44	203	146	70	81	40	1				**541**	**26,883,466**
45-49	203	146	81	84	58	37				**609**	**29,468,936**
50-54	192	149	131	168	123	42	24	2		**831**	**41,636,571**
55-59	178	181	129	222	133	85	47	17	1	**993**	**49,846,322**
60-64	104	127	96	178	147	73	34	24	13	**796**	**40,339,634**
65-69	47	58	59	85	78	23	16	4	14	**384**	**19,034,531**
70-74	6	12	21	24	20	9	8	4	1	**105**	**4,592,521**
75 and Over		3	6	11	7	9	2	1	2	**41**	**1,767,132**
Total	**1,473**	**1,112**	**683**	**915**	**612**	**279**	**131**	**52**	**31**	**5,288**	**$ 255,749,304**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Current Valuation		Previous Valuation	
Total Participants:	5,288	Total Participants:	5,234
Average Age:	51.4	Average Age:	51.4
Average Service:	11.9	Average Service:	12.4
Average Annual Pay:	$ 48,364	Average Annual Pay:	$ 47,619

Inactive Member Data Summary as of July 1, 2022

	Inactive Members				
	Vested with Deferred Benefits		Non-Vested or without Deferred Benefits		
Age Group	Number	Annual Deferred Pension	Number	Contribution Balance	Total Number
Under 25	-	$ -	115	$ 83,615	**115**
25-29	-	-	783	731,671	**783**
30-34	50	116,250	1,234	1,609,061	**1,284**
35-39	396	505,898	852	1,480,506	**1,248**
40-44	620	988,487	614	986,041	**1,234**
45-49	724	1,202,351	510	939,456	**1,234**
50-54	651	1,497,345	539	1,109,427	**1,190**
55-59	491	1,189,358	411	871,114	**902**
60-64	367	787,205	315	622,557	**682**
65-69	203	358,757	164	259,892	**367**
70-74	146	296,667	73	114,558	**219**
75 and Over	78	145,296	48	31,191	**126**
Total	**3,726**	**$ 7,087,614**	**5,658**	**$ 8,839,089**	**9,384**

	Retirees		Beneficiaries		Total	
Age Group	Number	Annual Pension	Number	Annual Pension	Number	Annual Pension
Under 50	46	$ 751,773	4	$ 17,211	**50**	**$ 768,984**
50-54	108	1,725,993	10	166,132	**118**	**1,892,125**
55-59	446	5,575,521	14	117,233	**460**	**5,692,754**
60-64	1,298	15,226,489	47	601,762	**1,345**	**15,828,252**
65-69	2,625	26,123,458	77	784,504	**2,702**	**26,907,962**
70-74	3,428	27,313,540	122	959,637	**3,550**	**28,273,178**
75-79	2,983	20,111,152	126	976,877	**3,109**	**21,088,029**
80-84	1,652	11,662,020	132	1,029,984	**1,784**	**12,692,004**
85-89	890	4,787,968	99	583,161	**989**	**5,371,130**
90-94	459	2,344,606	50	305,412	**509**	**2,650,018**
94-99	130	552,732	20	194,504	**150**	**747,236**
100 and Over	25	69,571	2	3,043	**27**	**72,613**
Total	**14,090**	**$ 116,244,824**	**703**	**$ 5,739,460**	**14,793**	**$ 121,984,284**

Average Age:	74.2
Average Annual Benefit:	$8,246

SECTION C

ACTUARIAL VALUATION METHODS AND ASSUMPTIONS

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the actuarial valuation date were determined using the ***Individual Entry-Age Normal*** *actuarial cost method* having the following characteristics:

- The normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and
- Each annual normal cost is a constant percentage of the member's year by year projected covered pay.

The Entry Age Normal actuarial cost method was first effective with the actuarial valuation as of July 1, 2017. The actuarial cost method that was used previously was the Projected Unit Credit actuarial cost method.

Financing of Unfunded Actuarial Accrued Liabilities. The unfunded actuarial accrued liability is amortized using level-percentage of pay amortization based on a 15-year open amortization period for the unfunded liability not attributable to plan changes and a 30-year closed amortization period for the unfunded liability attributable to the 2006 and 2010 plan changes and a 15-year closed amortization period for the unfunded liability attributable to the 2020 plan changes.

Actuarial Value of Pension Plan Assets. The calculated value is determined by (1) adjusting the market value of assets to reflect the investment gains and losses (the difference between the actual investment return and the expected investment return) during each of the last five years at the rate of 20 percent per year and (2) applying a 20% corridor.

Actuarial Assumptions in the Valuation Process

The contribution and benefit values of the Plan are calculated by applying actuarial assumptions to the benefit provisions and census information furnished, using the actuarial cost method described on the previous page.

The principal areas of financial risk which require assumptions about future experiences are:

- Long-term rates of investment return to be generated by the assets of the Plan;
- Patterns of pay increases to members;
- Rates of mortality among members, retirees and beneficiaries;
- Rates of withdrawal of active members;
- Rates of disability among members; and
- The age patterns of actual retirement.

In an actuarial valuation, the monetary effect of each actuarial assumption is calculated for as long as a present covered person survives; a period of time which can be as long as a century.

Actual experience of the Plan will not coincide exactly with assumed experience. Each actuarial valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time-to-time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations). An experience review of the Montgomery County Public Schools Employees' Retirement and Pension Systems was most recently completed in August 2019 covering the years 2014 through 2018. Most of the actuarial assumptions described in this section were adopted for use beginning with the July 1, 2019 actuarial valuation, except as noted. Additional information regarding the rationale for the actuarial assumptions may be found in the 2019 experience review report and the letter dated October 22, 2021 with a review of the investment return assumption. All actuarial assumptions are expectations of future experience, not current market measures.

GRS believes the assumptions are reasonable for the purpose of the measurement.

Actuarial Valuation Assumptions

Rate of Investment Return. 6.75% per annum. This assumption is net of investment expenses. (First effective with the actuarial valuation as of July 1, 2021.)

Price Inflation (Increase in Consumer Price Index "CPI"). The assumed rate is 2.50% per annum.

Payroll Growth. The assumed rate of total payroll growth is 2.75%.

Social Security Taxable Wage Base Increase. The assumed rate is 3.50% per annum.

Cost of Living Adjustment "COLA."
Employees' Retirement System

- 2.50% compound COLA

Employees' Pension System

- Members in original pension plan (retired before July 1, 1998)
    - 2.50% simple COLA
- Members in the enhanced pension plan (retired after July 1, 1998)
    - 2.35% compound COLA for the benefit attributable to service prior to July 1, 2011
    - 1.85% compound COLA for the benefit attributable to service on/after to July 1, 2011

Mortality. The mortality assumptions are as follows:

Pre-Retirement	Pub-2010 Employee mortality table (for General Employees), sex distinct, with generational mortality improvements from 2010 using scale MP-2018
Post-Retirement Healthy Lives	Pub-2010 Healthy Retiree mortality table (for General Employees), sex distinct, with generational mortality improvements from 2010 using scale MP-2018
Disabled Lives	Pub-2010 Disabled Retiree mortality table (for General Employees), sex distinct, with generational mortality improvements from 2010 using scale MP-2018

The provision for future mortality improvement for healthy and disabled lives is based on the generational application of the MP-2018 improvement scales.

	Healthy Mortality				Disabled Mortality	
	Pre-Retirement Future Life Expectancy (years) in 2022		Post-Retirement Future Life Expectancy (years) in 2022		Future Life Expectancy (years) in 2022	
Age	Male	Female	Male	Female	Male	Female
20	71.08	73.56	67.79	70.94	53.60	57.00
25	65.79	68.24	62.41	65.54	48.69	51.76
30	60.50	62.92	57.02	60.14	43.73	46.56
35	55.26	57.63	51.67	54.75	39.05	41.68
40	50.05	52.37	46.36	49.40	34.61	37.16
45	44.87	47.13	41.07	44.07	30.38	32.95
50	39.74	41.92	35.92	38.85	26.44	29.09
55	34.67	36.76	31.00	33.87	22.93	25.65
60	29.71	31.68	26.25	28.98	19.78	22.45
65	24.89	26.69	21.73	24.22	16.87	19.20
70	20.19	21.79	17.44	19.64	14.06	15.84
75	15.60	17.02	13.48	15.36	11.31	12.56
80	11.12	12.40	9.98	11.51	8.74	9.62
85	7.19	8.31	7.11	8.24	6.53	7.23
90	4.97	5.74	4.97	5.74	4.73	5.43
95	3.50	4.01	3.50	4.01	3.46	3.98
100	2.51	2.81	2.51	2.81	2.51	2.81
105	1.89	2.05	1.89	2.05	1.89	2.05

Annual Compensation Increases. The total assumed increase follows:

Staff

	Years of Credited Service						
Age	**0**	**1-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25+**
Under 25	13.50%	12.50%	8.50%	6.50%	3.75%	3.25%	3.25%
25-29	11.50%	10.50%	7.00%	6.50%	3.75%	3.25%	3.25%
30-34	9.50%	8.50%	6.00%	5.50%	3.75%	3.25%	3.25%
35-39	9.00%	8.00%	5.75%	5.25%	3.75%	3.25%	3.25%
40-44	9.00%	8.00%	5.75%	4.75%	3.75%	3.25%	3.25%
45-49	9.00%	8.00%	5.75%	4.75%	3.25%	3.00%	3.00%
50-54	9.00%	8.00%	5.25%	4.25%	3.25%	2.75%	2.75%
55-59	9.00%	8.00%	5.25%	3.75%	3.00%	2.75%	2.75%
60-64	9.00%	8.00%	4.75%	3.75%	3.00%	2.75%	2.75%
65-69	8.00%	7.00%	4.75%	3.75%	3.00%	2.75%	2.75%
70+	8.00%	7.00%	4.25%	2.75%	2.50%	2.50%	2.50%

Teachers

	Years of Credited Service						
Age	**0**	**1-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25+**
Under 25	7.75%	5.75%	5.25%	6.50%	5.00%	3.00%	2.75%
25-29	9.50%	7.50%	7.00%	6.50%	5.00%	3.00%	2.75%
30-34	9.50%	7.50%	6.00%	5.75%	5.00%	3.00%	2.75%
35-39	9.50%	7.50%	6.00%	5.75%	5.00%	3.00%	2.75%
40-44	9.50%	7.50%	6.00%	5.25%	4.50%	3.00%	2.75%
45-49	9.50%	7.50%	6.00%	4.75%	3.50%	2.50%	2.75%
50-54	9.50%	7.50%	6.00%	4.75%	3.25%	2.50%	2.50%
55-59	7.50%	7.50%	5.00%	4.50%	3.25%	2.50%	2.50%
60-64	7.50%	7.50%	5.00%	3.75%	2.75%	2.50%	2.50%
65-69	7.50%	7.50%	4.25%	3.25%	2.50%	2.50%	2.50%
70+	7.50%	7.50%	3.75%	3.25%	2.50%	2.50%	2.50%

Disability. A table of disability incidence with rates follows:

	Staff		Teacher	
Age	**Male**	**Female**	**Male**	**Female**
Under 25	0.02%	0.02%	0.01%	0.01%
25	0.02%	0.02%	0.01%	0.01%
26	0.04%	0.02%	0.01%	0.01%
27	0.06%	0.02%	0.01%	0.01%
28	0.08%	0.02%	0.01%	0.01%
29	0.10%	0.02%	0.01%	0.01%
30	0.10%	0.04%	0.03%	0.02%
31	0.11%	0.06%	0.03%	0.02%
32	0.12%	0.08%	0.03%	0.02%
33	0.13%	0.10%	0.03%	0.02%
34	0.14%	0.12%	0.03%	0.02%
35	0.15%	0.12%	0.04%	0.03%
36	0.16%	0.14%	0.04%	0.04%
37	0.17%	0.16%	0.04%	0.05%
38	0.18%	0.18%	0.04%	0.06%
39	0.19%	0.20%	0.04%	0.07%
40	0.20%	0.24%	0.06%	0.08%
41	0.22%	0.26%	0.07%	0.09%
42	0.24%	0.28%	0.08%	0.10%
43	0.26%	0.30%	0.09%	0.11%
44	0.28%	0.32%	0.10%	0.12%
45	0.30%	0.36%	0.12%	0.13%
46	0.33%	0.39%	0.14%	0.14%
47	0.36%	0.42%	0.16%	0.15%
48	0.39%	0.45%	0.18%	0.16%
49	0.42%	0.48%	0.20%	0.17%
50	0.45%	0.50%	0.22%	0.18%
51	0.48%	0.56%	0.25%	0.21%
52	0.51%	0.62%	0.28%	0.24%
53	0.54%	0.68%	0.31%	0.27%
54	0.57%	0.74%	0.34%	0.31%
55	0.60%	0.80%	0.35%	0.35%
56	0.63%	0.85%	0.35%	0.35%
57	0.66%	0.90%	0.35%	0.35%
58	0.69%	0.95%	0.35%	0.35%
59	0.72%	1.00%	0.35%	0.35%
60	0.75%	1.05%	0.35%	0.35%
61	0.80%	1.10%	0.35%	0.35%
62+	0.85%	1.15%	0.35%	0.35%

20% of disabilities for Staff and 10% of disabilities for Teachers are assumed to be accidental disabilities. Disability rates do not apply once members are eligible for normal retirement.

Retirement. Upon eligibility, active members are assumed to retire as follows:

Staff

Staff Hired Before July 1, 2011
Years of Eligibility Service

Age	2	3	4	5-9	10-14	15-19	20-24	25-29	30+
Under 55									8%
55						4%	4%	4%	9%
56						6%	7%	7%	9%
57						6%	7%	7%	9%
58						6%	7%	7%	9%
59						6%	7%	7%	9%
60						6%	7%	7%	11%
61						6%	7%	7%	13%
62				6%	10%	10%	10%	20%	20%
63			4%	6%	10%	10%	10%	20%	25%
64		4%	4%	6%	10%	10%	10%	20%	25%
65	4%	4%	4%	15%	15%	20%	20%	20%	25%
66	4%	4%	4%	15%	15%	20%	20%	20%	25%
67	4%	4%	4%	15%	15%	20%	20%	20%	35%
68	4%	4%	4%	12%	15%	20%	20%	20%	30%
69	4%	4%	4%	12%	15%	20%	20%	20%	30%
70-79	4%	4%	4%	20%	25%	25%	30%	30%	35%
80+	100%	100%	100%	100%	100%	100%	100%	100%	100%

Staff Hired On or After July 1, 2011
Years of Eligibility Service

Age	10	11-14	15	16-19	20-24	25-29	30+
Under 55							8%
55							9%
56							9%
57							9%
58							9%
59							9%
60			6%	6%	7%	7%	11%
61			6%	6%	7%	7%	13%
62			10%	6%	7%	10%	20%
63			15%	6%	7%	15%	25%
64			20%	6%	7%	20%	25%
65	25%	15%	35%	20%	20%	20%	25%
66	35%	15%	20%	20%	20%	20%	25%
67	40%	15%	20%	20%	20%	20%	35%
68	45%	15%	20%	20%	20%	20%	30%
69	50%	15%	20%	20%	20%	20%	30%
70-79	50%	25%	25%	25%	30%	30%	35%
80+	100%	100%	100%	100%	100%	100%	100%

Retirement. Upon eligibility, active members are assumed to retire as follows:

Teachers

Teachers Hired Before July 1, 2011
Years of Eligibility Service

Age	2	3	4	5-9	10-14	15-19	20-24	25-29	30+
Under 55									11%
55						4%	4%	4%	13%
56						6%	7%	7%	13%
57						6%	7%	7%	13%
58						6%	7%	7%	13%
59						6%	7%	7%	13%
60						6%	7%	7%	15%
61						6%	7%	7%	17%
62				10%	10%	17%	17%	21%	25%
63			4%	10%	10%	17%	17%	21%	25%
64		4%	4%	10%	10%	17%	17%	21%	25%
65	4%	4%	4%	20%	20%	20%	25%	25%	30%
66	4%	4%	4%	20%	20%	20%	25%	25%	30%
67	4%	4%	4%	20%	20%	20%	25%	25%	30%
68	4%	4%	4%	15%	15%	20%	25%	25%	30%
69	4%	4%	4%	15%	15%	20%	25%	25%	30%
70-79	4%	4%	4%	25%	25%	25%	30%	30%	35%
80+	100%	100%	100%	100%	100%	100%	100%	100%	100%

Teachers Hired On or After July 1, 2011
Years of Eligibility Service

Age	10	11-14	15	16-19	20-24	25-29	30+
Under 55							11%
55							13%
56							13%
57							13%
58							13%
59							13%
60			6%	6%	7%	7%	15%
61			6%	6%	7%	7%	17%
62			17%	6%	7%	10%	25%
63			22%	6%	7%	15%	25%
64			27%	6%	7%	25%	25%
65	35%	20%	35%	25%	25%	30%	30%
66	45%	20%	20%	25%	25%	30%	30%
67	55%	20%	20%	25%	25%	30%	30%
68	55%	15%	20%	25%	25%	30%	30%
69	60%	15%	20%	25%	25%	30%	30%
70-79	60%	25%	25%	30%	30%	35%	35%
80+	100%	100%	100%	100%	100%	100%	100%

Actuarial Valuation Assumptions

General Turnover. A sample of these rates follows:

	Staff				Teachers
	Age				
Service	Under 30	30-34	35+	Service	
0	15.50%	12.50%	11.00%	0	11.00%
1	14.00%	11.00%	9.50%	1	9.00%
2	12.50%	9.50%	8.00%	2	7.50%
3	11.50%	8.50%	7.00%	3	6.75%
4	10.00%	7.00%	5.50%	4	6.00%
5	8.00%	5.00%	3.50%	5	5.50%
6	7.75%	4.75%	3.25%	6	5.00%
7	7.50%	4.50%	3.00%	7	4.25%
8	7.25%	4.25%	2.75%	8	4.00%
9	7.00%	4.00%	2.50%	9	3.50%
10	6.75%	3.75%	2.25%	10	3.00%
11	6.50%	3.50%	2.00%	11	2.75%
12	6.25%	3.25%	1.75%	12	2.50%
13+	6.00%	3.00%	1.50%	13	2.25%
				14	2.00%
				15	1.75%
				16	1.50%
				17	1.25%
				18	1.00%
				19+	0.75%

Benefit Commencement Age. Terminated vested members eligible for a deferred benefit are assumed to commence benefits at the following ages:

Employees' Retirement System

- Age 60

Employees' Pension System

- Age 60 with 15 or more years of eligibility service
- Age 62 with less than 15 years of eligibility service

Administrative Expenses. Assumed administrative expenses were added to the Normal Cost and are equal to 105% of the average administrative expenses over the past three years. (First effective with the actuarial valuation as of July 1, 2017.)

Valuation	Actual Administrative Expenses				Assumed Expenses
Year	3 Years Prior	2 Years Prior	1 Year Prior	3-Year Average	Added to Normal Cost
2020	$ 1,209,068	$ 1,475,279	$ 1,166,352	$ 1,283,566	$ 1,347,700
2021	1,475,279	1,166,352	380,559	1,007,397	1,057,800
2022	1,166,352	380,559	-	515,637	541,400

Actuarial Valuation Assumptions

Unused Sick Leave. Benefit service is increased by 1.7% to take into account benefit service credited for unused sick leave.

Marital Status. 80% of active members are assumed to be married.

Spouse Age. The female spouse is assumed to be three years younger than the male spouse.

***Part Time Employees*.**
Employees' Retirement System
- Assumed to annually earn a full year of credited service. Benefit equals scheduled pay times credited service.

Employees' Pension System
- Assumed to annually earn a full year of eligibility service and a partial year of credited service. The partial year of credited service is based on the employee's full time equivalent factor. Benefit equals full time equivalent pay times credited service.

Form of Payment Election. Members are assumed to elect a life annuity.

Benefit Service. Exact fractional years of service are used to determine the amount of benefit payable.

Decrement Timing. Retirements and terminations are assumed to occur at the end of the year and deaths and disabilities are assumed to occur in the middle of the year. (First effective with the actuarial valuation as of July 1, 2017.)

Decrement Operation. Turnover decrements do not operate after the member reaches retirement eligibility. Disability decrements operate during retirement eligibility.

Pay Increase rates are applied based on credited service.

Retirement rates are applied based on eligibility service.

Termination rates are applied based on the difference between participant age based on Date of Birth and hire age based on Plan Entry Date.

Eligibility Testing. Eligibility for benefits is determined based upon the exact age and service on the date the decrement is assumed to occur.

Pay Increase Timing. Beginning of the (fiscal) year. (First effective with the actuarial valuation as of July 1, 2017.)

Assumption for Missing Data. If the scheduled pay provided was equal to $0, the scheduled pay was set equal to the annualized pay provided. If scheduled and annualized pay that were provided were both equal to $0, then the scheduled pay was assumed to be $45,000.

SECTION D

BRIEF SUMMARY OF PLAN PROVISIONS AS OF JULY 1, 2022

Brief Summary of Plan Provisions as of July 1, 2022

It should be noted that the purpose of this section is to describe the benefit structures of MCPS for which actuarial values have been generated. Some portions are described in a manner which is not intended to be legally complete or precise.

It is not our intent to provide an exhaustive description of all benefits provided under MCPS or the policies and procedures utilized by MCPS staff.

Employees' Pension System/Employees' Retirement System

1. Membership

All permanent MCPS employees (non-teachers) hired on or after January 1, 1980, who are budgeted to work more than 500 hours in their first fiscal year are enrolled in both the Montgomery County Public Schools Core Plan and Supplemental Plan. Teachers hired on or after January 1, 1980, who are automatically enrolled in the Maryland State Teachers' Pension System are enrolled in the Montgomery County Public Schools Supplemental Plan. Members hired before January 1, 1980, participate in the Retirement System.

2. Member Contributions

- Teachers
  - 0.1% of compensation earned from July 1, 1998 through July 1, 2006
  - 0.3% of compensation earned from July 1, 2006 through June 30, 2007
  - 0.4% of compensation earned from July 1, 2007 through June 30, 2008
  - 0.5% of compensation earned on or after July 1, 2008
- Non-Teachers
  - 2.1% of compensation earned from July 1, 1998 through July 1, 2006
  - 3.3% of compensation earned from July 1, 2006 through June 30, 2007
  - 4.4% of compensation earned from July 1, 2007 through June 30, 2008
  - 5.5% of compensation earned from July 1, 2008 through June 30, 2010
  - 7.5% of compensation earned on or after July 1, 2010

The contribution rate for the Supplemental Plan is 0.5% of compensation. The contribution rate to the Core Plan is the total member contribution rate less the Supplemental Plan contribution rate.

Interest earned on all employee contributions is 5% per year.

Effective July 1, 2020, non-vested employees who terminate their employment after June 30, 2020, or non-vested employees who have already terminated their employment will not accrue interest on their accumulated contribution and interest.

3. Service Retirement Allowance

Eligibility:

<u>Pension System</u>
Hired before July 1, 2011 - 30 years of eligibility service or attainment of one of the following:

Age 62 with 5 years of eligibility service.
Age 63 with 4 years of eligibility service.
Age 64 with 3 years of eligibility service.
Age 65 and older with 2 years of eligibility service.

Hired on or after July 1, 2011: Combined age and eligibility service of at least 90 years or age 65 after 10 years of eligibility service.

Retirement System
30 years of credited service or attainment of age 60 with at least 5 years of credited service.

Allowance:

Pension System
Hired before July 1, 2011
Supplemental Benefit (Applicable to Teachers and Non-Teachers)
The sum 1) and 2):

1) For each year of creditable service on or before June 30, 1998
   a. 0.08% of average final compensation for the three highest consecutive years as an employee up to the Social Security integration level plus 0.15% of average final compensation over the integration level;
2) For each year of creditable service after June 30, 1998
   b. 0.2% of average final compensation for the three highest consecutive years as an employee.

Core Benefit (Applicable to Non-Teachers only)
The sum 1) and 2):

1) For each year of creditable service on or before June 30, 1998, the greater of a) and b)
   a) 0.8% of average final compensation for the three highest consecutive years as an employee up to the Social Security integration level plus 0.15% of average final compensation over the integration level;
   b) 1.2% of average final compensation for the three highest consecutive years as an employee;
2) For each year of creditable service after June 30, 1998
   c) 1.8% of average final compensation for the three highest consecutive years as an employee.

Hired on or after July 1, 2011
Supplemental Benefit (Applicable to Teachers and Non-Teachers)

1) For each year of creditable service after June 30, 1998, 0.2% of average final compensation for the five highest consecutive years as an employee.

Core Benefit (Applicable to Non-Teachers only)

2) For each year of creditable service after June 30, 1998, 1.5% of average final compensation for the five highest consecutive years as an employee.

Retirement System
Supplemental Benefit (Applicable to Teachers and Non-Teachers)

1) For each year of creditable service, 0.18181% of average final compensation for the three highest years as an employee.

Core Benefit (Applicable to Non-Teachers only)

2) For each year of creditable service, 1.8181% of average final compensation for the three highest years as an employee.

4. Early Retirement Allowance

Eligibility:

Pension System
Hired before July 1, 2011: Attainment of age 55 with at least 15 years of eligibility service.

Hired on or after July 1, 2011: Attainment of age 60 with at least 15 years of eligibility service.

Retirement System
25 years of credited service.

Allowance:

Service Retirement allowance reduced by .005 for each month that date of retirement precedes normal retirement age (Pension System: age 62 if hired before July 1, 2011, age 65 if hired on or after July 1, 2011, Retirement System: the earlier of age 60 or the date the member would have completed 30 years of credited service). Maximum reduction of 42% if hired before July 1, 2011, and 30% if hired on or after July 1, 2011.

5. Disability Retirement Allowance

Ordinary

Eligibility: Five years of eligibility service (10 years of eligibility service if hired on or after July 1, 2011) and certification of the medical board designated by the Board of Trustees that member is mentally or physically incapacitated from the performance of the normal duties of the member's position, that incapacity is permanent and there is no other available assignment for which the member is qualified or capable of performing.

Allowance: The benefit is the service retirement allowance computed on the basis that service continues until the member attains his/her normal retirement date, without any change in rate of earnable compensation. If disability occurs after age normal retirement age, the benefit is based on creditable service at time of retirement.

Accidental

Eligibility:

- Totally and permanently disabled as the direct result of a specific accident which occurs at a definite time and place;
- Accident occurs while person is performing assigned duties;
- Person is not responsible for the accident through willful negligence; and
- No other available assignment for which the employee is capable or qualified of performing.

Allowance: The benefit is 66 2/3% of average final compensation for the three highest years as a member (five years if hired on or after July 1, 2011), plus the annuity provided by accumulated member contributions. When the individual attains normal retirement, the amount of service-related disability (accidental disability) benefit will revert to the normal retirement benefit. The individual will receive service credits as if one worked until his/her normal retirement date for the purpose of calculating benefits.

An individual eligible for a normal retirement benefit who is approved for service-related disability will continue to receive his/her normal retirement benefit.

6. Death Benefits

Eligibility: One year of eligibility service.

Benefit: One time lump sum payment of member's annual earnable compensation at time of death plus accumulated contributions. If member dies prior to accruing one year of service, payment is only the return of accumulated member contributions.

Spouse Law

Eligibility:
Hired before July 1, 2011
Deceased member was eligible to retire (age 62 with five years) or was age 55 with at least 15 years of eligibility service.

Hired on or after July 1, 2011
Deceased member was eligible to retire (age 65 with 10 years) or was age 60 with at least 15 years of eligibility service.

Benefit: Surviving spouse may elect a one-time lump sum payment of member's annual earnable compensation at time of death plus accumulated member contributions, or a monthly allowance reduced for early retirement age.

7. Vested Retirement Allowance

Eligibility:

Hired before July 1, 2011
Five years of eligibility service.

Hired on or after July 1, 2011
10 years of eligibility service.

Allowance: Accrued retirement allowance payable at normal retirement age, provided member does not withdraw accumulated contributions.

8. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the change in the Consumer Price Index (CPI) from September to September of the previous year. The index that is used is the Urban Wage Earners and Clerical Workers – United States City Average by the Bureau of Labor Statistics. The Cost-of-living adjustment is capped at the lesser of 3% or the increase in CPI for benefits attributable to service before July 1, 2011, and capped at the lesser of 2% or the increase in CPI for benefits attributable to service on or after July 1, 2011. The COLA is not capped for Retirement System members.

A simple COLA (increase based on the original benefit at retirement) is granted for members with no service on or after July 1, 1998, and is compound (increase based on the previous year's benefit including all prior COLAs) for members with service on or after July 1, 1998.

In years in which COLAs would be less than zero due to a decline in the CPI, retirement allowances will not be adjusted. COLAs in succeeding years are adjusted until the difference between the negative COLA that would have applied and the zero COLA is fully recovered.
The retirees of the MCPS core and/or supplemental plans must be retired for at least one month as of January 1 to receive a COLA.

Any adjustments are effective January 1. Following are the recent COLA increases granted January 1.

COLA Granted January 1	Retired before January 1, 2016*	Retired on or after January 1, 2016*
2017	0.58%	1.22%
COLA Granted January 1	**Benefits Attributable to Service Prior to July 1, 2011**	**Benefits Attributable to Service on or After July 1, 2011**
2018	2.31%	2.00%
2019	2.33%	2.00%
2020	1.50%	1.50%
2021	1.50%	1.50%
2022	3.00% - Pension System Members 5.94% - Retirement System Members	2.00%

** Different COLAs applied as a result of the negative COLA that needed to be offset for members who retired before January 1, 2016.*

9. Optional Forms of Payment

Normal service allowance is a single life annuity.

The following options are available:

Option	Option Description
Cash Refund Option A	Upon the retiree's death, provides a lump sum of the remaining accumulated employee contributions in excess of the retirement benefits paid out.
Cash Refund Option B	Upon the retiree's death, provides a lump sum of the remaining present value of benefits in excess of the retirement benefits paid out.
50% Joint and Survivor	Continuation of 50% of the retiree benefit to the beneficiary upon the retiree's death.
100% Joint and Survivor	Continuation of 100% of the retiree benefit to the beneficiary upon the retiree's death.

10. Change in Benefits

There have been no changes in benefits since the last actuarial valuation as of July 1, 2021.

SECTION E

GLOSSARY OF TERMS

Glossary of Terms

Actuarial Accrued Liability (AAL). The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."

Actuarial Assumptions. Estimates of future plan experience such as investment return, expected lifetimes and the likelihood of receiving a pension from the Pension Plan. Demographic, or "people" assumptions, include rates of mortality, retirement and separation. Economic, or "money" assumptions, include expected investment return, inflation and salary increases.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Present Value of Future Plan Benefits. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Actuarial Value of Assets (AVA). Smoothed value of assets that recognizes the difference between the expected investment return using the valuation assumption of 7.50 percent and the actual investment return over a five-year period. Dampens volatility of asset value over time.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Annual Required Contribution. The sum of the normal cost and amortization of the unfunded actuarial accrued liability.

Asset Return. The net investment return for the asset divided by the mean asset value. Example: if $1.00 is invested and yields $1.07 after a year, the asset return is 7.00 percent.

Funded Ratio. The actuarial value of assets divided by the actuarial accrued liability. Measures the portion of the actuarial accrued liability that is currently funded.

Market Value of Assets (MVA). The value of assets currently held in the trust available to pay for benefits of the Pension Plan. Each of the investments in the trust is valued at market price which is the price at which buyers and sellers trade similar items in the open market.

Normal Cost (NC). The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

Unfunded Actuarial Accrued Liability (UAAL). The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability."