Middlesex County Retirement System

Actuarial Valuation and Review as of January 1, 2024

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Segal

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August 14, 2024

Retirement Board
Middlesex County Retirement System
25 Linnell Circle
Billerica, MA 01865

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of January 1, 2024. It summarizes the actuarial data used in the valuation, analyzes the preceding two years' experience, and establishes the funding requirements for fiscal 2025 and later years.

This report has been prepared in accordance with generally accepted actuarial principles and practices for the exclusive use and benefit of the Board, based upon information provided by the staff of the Middlesex County Retirement System and the Middlesex County Retirement System's other service providers.

Segal does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. To the extent we can, however, Segal does review the data for reasonableness and consistency. Based on our review of the data, we have no reason to doubt the substantial accuracy of the information on which we have based this report and we have no reason to believe there are facts or circumstances that would affect the validity of these results.

The measurements shown in this actuarial valuation may not be applicable for other purposes. 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; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

The actuarial calculations were directed under the supervision of Bridget P. Orr, ASA, FCA, MAAA, EA. She is a member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of her knowledge, the information supplied in this actuarial valuation is complete and accurate. The assumptions used in this actuarial valuation were selected by the Board based upon our analysis and recommendations. In her

opinion, the assumptions are reasonable and take into account the experience of the Middlesex County Retirement System and reasonable expectations. In addition, in her opinion, the combined effect of these assumptions is expected to have no significant bias.

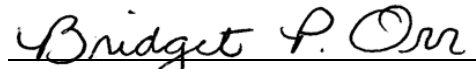
Segal makes no representation or warranty as to the future status of the Middlesex County Retirement System and does not guarantee any particular result. This document does not constitute legal, tax, accounting or investment advice or create or imply a fiduciary relationship. The Board is encouraged to discuss any issues raised in this report with the System's legal, tax and other advisors before taking, or refraining from taking, any action.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

Segal

Kathleen A. Riley, FSA, MAAA, EA
Senior Vice President and Chief Actuary



Bridget P. Orr, ASA, FCA, MAAA, EA
Consulting Actuary

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Section 1: Actuarial Valuation Summary

Purpose and basis

This report has been prepared by Segal to present a valuation of the Middlesex County Retirement System as of January 1, 2024. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits.

The contribution requirements presented in this report are based on:

- The benefit provisions of Massachusetts General Law Chapter 32;
- The characteristics of covered active participants, inactive participants, and retired participants and beneficiaries as of December 31, 2023, provided by the staff of the Retirement System;
- The assets of the System as of December 31, 2023, provided by the staff of the Retirement System;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions regarding employee terminations, retirement, death, etc.

Certain disclosure information required by GASB Statements No. 67 and 68 as of December 31, 2023 for the Middlesex County Retirement System is provided in a separate report.

Valuation highlights

- Segal strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance. The funding policy adopted by the Middlesex County Retirement System meets this standard and funds the unfunded actuarial accrued liability of the plan by June 30, 2036.
- The rate of return on the market value of assets was 10.42% and -11.35% for the years ending December 31, 2023 and December 31, 2022, respectively. The return on the actuarial value of assets was 7.26% and 6.57% for the two years, respectively, due to the recognition of prior years' investment gains and losses. This resulted in an actuarial loss of $8.7 million when measured against the assumed rate of return of 7.15%.
- The actuarial value of assets is 104.2% of the market value of assets. The investment experience in the past years has only been partially recognized in the actuarial value of assets. As the deferred net loss is recognized in future years, the cost of the System is likely to increase unless the net loss is offset by future experience. The deferred investment losses are not reflected in the funding schedule shown in Section 2.
- The Board adopted a one-time increase in the Cost-of-Living Adjustment (COLA) from 3% to 5% effective July 1, 2022, which increased the January 1, 2024 unfunded liability by $18.7 million.
- In addition to the investment loss discussed above, there was a loss from sources other than investments of $56.0 million that was due to salaries increasing more than expected for continuing actives and new active participants with high service amounts, partially offset by a gain due to mortality experience.
- The unfunded actuarial accrued liability was expected to decrease by $48 million from $1,569 million as of January 1, 2022 to $1,521 million as of January 1, 2024. The actual unfunded liability of $1,604 million is $83 million higher than expected due to the losses and plan changes discussed above.
- With this valuation, the administrative expense assumption has been reset from $3,650,000 for calendar year 2022, increasing 3.25% per year, to $3,650,000 for calendar year 2024, increasing 3.25% per year.
- The funded ratio (the ratio of the actuarial value of assets to actuarial accrued liability) is 57.50%, compared to the prior year funded ratio of 54.54%. This ratio is one measure of funding status, and its history is a measure of funding progress. Using the market value of assets, the funded ratio is 55.20%, compared to 61.14% as of the prior valuation date. These measurements are not necessarily appropriate for assessing the sufficiency of the plan assets to cover the estimated cost of settling the System's benefit obligation or the need for or the amount of future contributions.

Section 1: Actuarial Valuation Summary

- The funding schedule included in this report shows a projection of the actuarially determined contribution. The fiscal 2025 total appropriation has been set equal to $177,336,277 as determined with the prior valuation. For fiscal 2026 through fiscal 2031, each year's total appropriation increases 6.50%, with an amortization payment on the unfunded liability increasing 4.0% per year thereafter, so that the System will be fully funded by June 30, 2036, if all assumptions are met and there are no changes in the plan of benefits or assumptions. The prior funding schedule fully funded the System by June 30, 2036 with 6.50% increases through fiscal 2028.
- In December 2021, the Actuarial Standards Board issued a revision of Actuarial Standard of Practice No. 4 (ASOP 4) *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions.* ASOP 4 requires the disclosure of the impact of smoothing the increases in the appropriation over the years remaining on the funding schedule and the disclosure of a Low-Default-Risk Obligation Measure (LDROM) when performing a funding valuation. This additional information is included in Section 2.
- It is important to note that this actuarial valuation is based on plan assets as of December 31, 2023. The System's funded status does not reflect short-term fluctuations of the market, but rather is based on the market values as of the last day of the plan year. Segal is available to prepare projections of potential outcomes of market conditions and other demographic experience upon request.
- Since the actuarial valuation results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience proves to be different from the assumptions. We have not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the System's future financial condition, but have included a brief discussion of some risks that may affect the System in Section 2.

Summary of key valuation results

Valuation Result	Current	Prior
Actuarially Determined Contributions		
• For fiscal years 2025 and 2023	$177,336,277	$156,350,175
• For fiscal years 2026 and 2024	188,863,135	166,512,936
• For fiscal years 2027 and 2025	201,139,239	177,336,277
Actuarial accrued liability for plan year beginning	**January 1, 2024**	**January 1, 2022**
• Retired participants and beneficiaries	$2,171,619,020	$1,902,403,168
• Inactive vested participants	68,225,307	48,639,439
• Inactive participants due a refund of employee contributions	30,807,826	25,073,000
• Active participants	1,504,498,197	1,474,382,904
• Total	3,775,150,350	3,450,498,511
• Normal cost including administrative expenses for plan year beginning January 1	89,097,261	82,533,633
Assets for plan year beginning January 1		
• Market value of assets (MVA)	$2,084,032,552	$2,109,770,999
• Actuarial value of assets (AVA)	2,170,733,980	1,881,791,125
• Actuarial value of assets as a % of market value of assets	104.2%	89.2%
Funded status for plan year beginning January 1		
• Unfunded actuarial accrued liability on market value of assets	$1,691,117,798	$1,340,727,512
• Funded percentage on MVA basis	55.20%	61.14%
• Unfunded actuarial accrued liability on actuarial value of assets	$1,604,416,370	$1,568,707,386
• Funded percentage on AVA basis	57.50%	54.54%

Section 1: Actuarial Valuation Summary

Valuation Result	Current	Prior
Key assumptions		
• Net investment return	7.15%	7.15%
• Inflation rate	3.25%	3.25%
Demographic data for plan year beginning January 1		
• Number of retired participants and beneficiaries	6,607	6,284
• Number of inactive vested participants	470	403
• Number of inactive participants due a refund of employee contributions	4,227	3,581
• Number of active participants	9,603	9,432
• Average compensation[1]	$59,069	$55,051

[1] Compensation figures are for the prior year and reflect annualized salaries for participants hired during the year.

Important information about actuarial valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Input Item	Description
Plan provisions	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant information	An actuarial valuation for a plan is based on data provided to the actuary by the Middlesex County Retirement System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Financial information	Part of the cost of a plan will be paid from existing assets — the balance will need to come from future contributions and investment income. The valuation is based on the asset values as of the valuation date, typically reported by the Middlesex County Retirement System. A snapshot as of a single date may not be an appropriate value for determining a single year's contribution requirement, especially in volatile markets. Plan sponsors often use an "actuarial value of assets" that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of participants in each year, as well as forecasts of the plan's benefits for each of those events. In addition, the benefits forecasted for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan's assets. All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions are selected within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model may use approximations and estimates that will have an immaterial impact on our results. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.

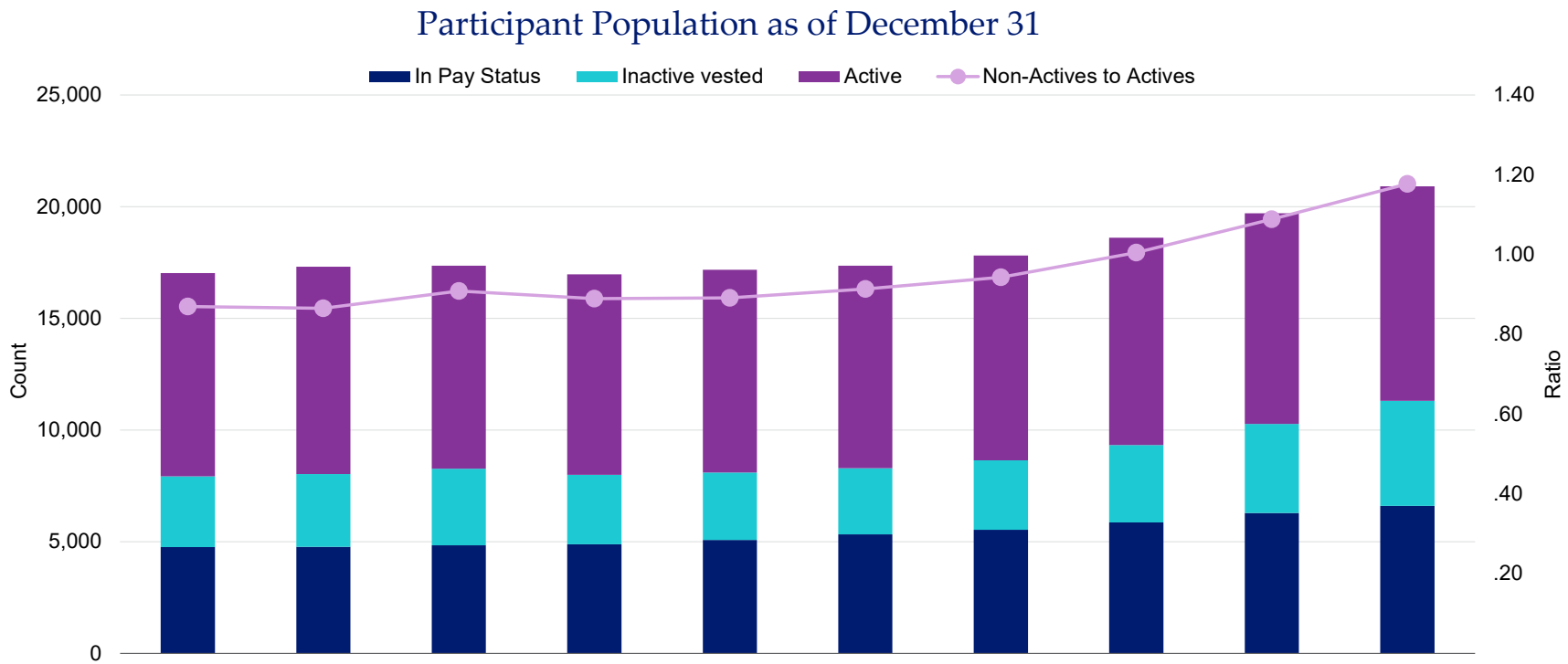
Section 1: Actuarial Valuation Summary

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The actuarial valuation is prepared at the request of the Middlesex County Retirement System. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement at a specific date — it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted.
- If the Middlesex County Retirement System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice and is not acting as a fiduciary to the Middlesex County Retirement System. The valuation is based on Segal's understanding of applicable guidance in these areas and of the Middlesex County Retirement System's provisions, but they may be subject to alternative interpretations. The Middlesex County Retirement System should look to their other advisors for expertise in these areas.
- While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
- Segal's report shall be deemed to be final and accepted by the Middlesex County Retirement System upon delivery and review. The Board should notify Segal immediately of any questions or concerns about the final content.

Section 2: Actuarial Valuation Results

Participant information



Legend	2005	2007	2009	2011	2013	2015	2017	2019	2021	2023
In Pay Status	4,763	4,764	4,833	4,886	5,077	5,327	5,531	5,862	6,284	6,607
Inactive Vested[1]	3,158	3,267	3,430	3,102	3,016	2,961	3,114	3,463	3,984	4,697
Active	9,106	9,285	9,093	8,979	9,082	9,072	9,168	9,282	9,432	9,603
Ratio	0.87	0.86	0.91	0.89	0.89	0.91	0.94	1.00	1.09	1.18

[1] Including terminated participants due a refund of employee contributions.

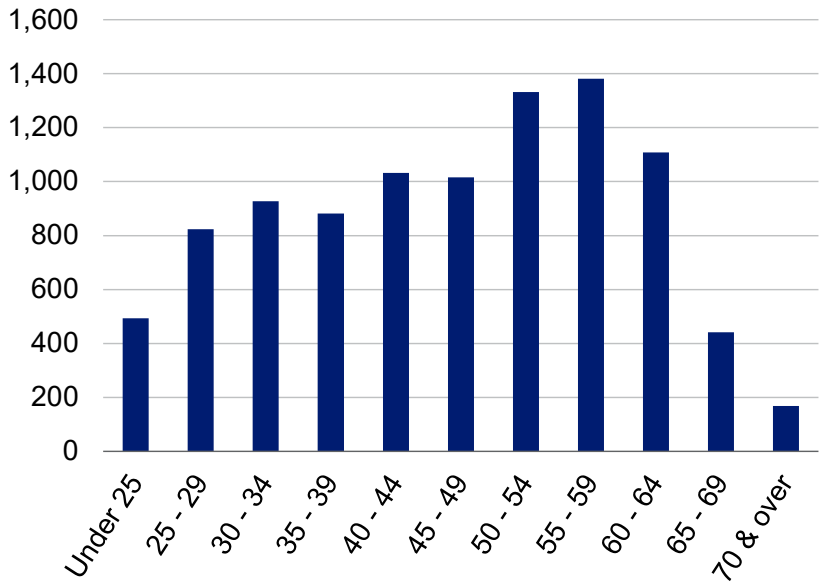
Active participants

As of December 31,	2023	2021	Change
Active participants	9,603	9,432	1.8%
Average age	46.8	47.2	-0.4
Average years of service	10.0	10.6	-0.6
Average compensation	$59,069	$55,051	7.3%

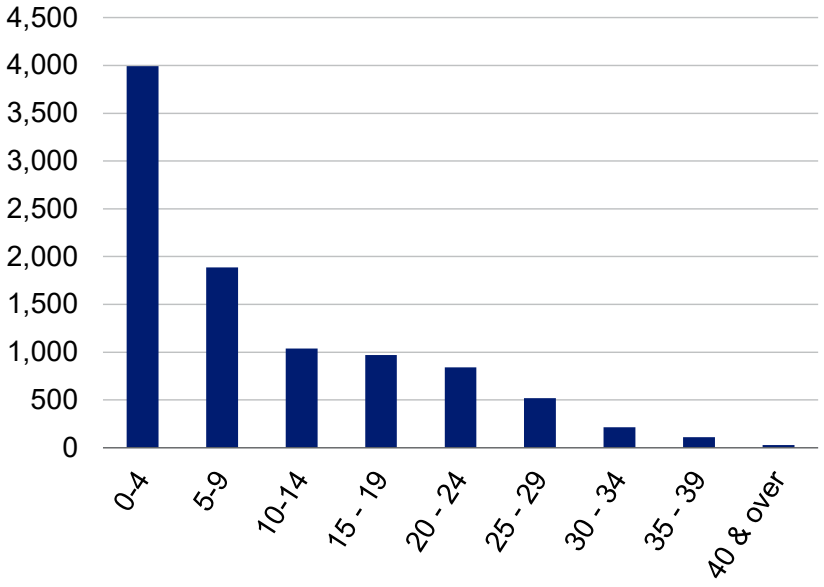
Among the active participants, there were none with unknown service information.

Distribution of Active Participants as of December 31, 2023

Actives by Age



Actives by Years of Service



Inactive participants

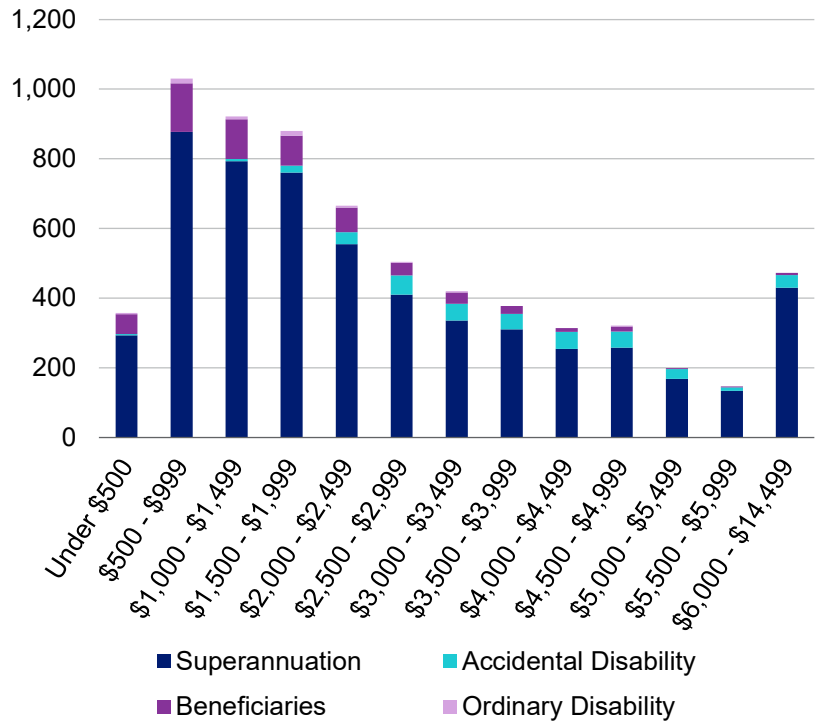
In this year's valuation, there were 470 inactive participants with a vested right to a deferred or immediate vested benefit. In addition, there were 4,227 inactive participants entitled to a return of their employee contributions.

Retired participants and beneficiaries

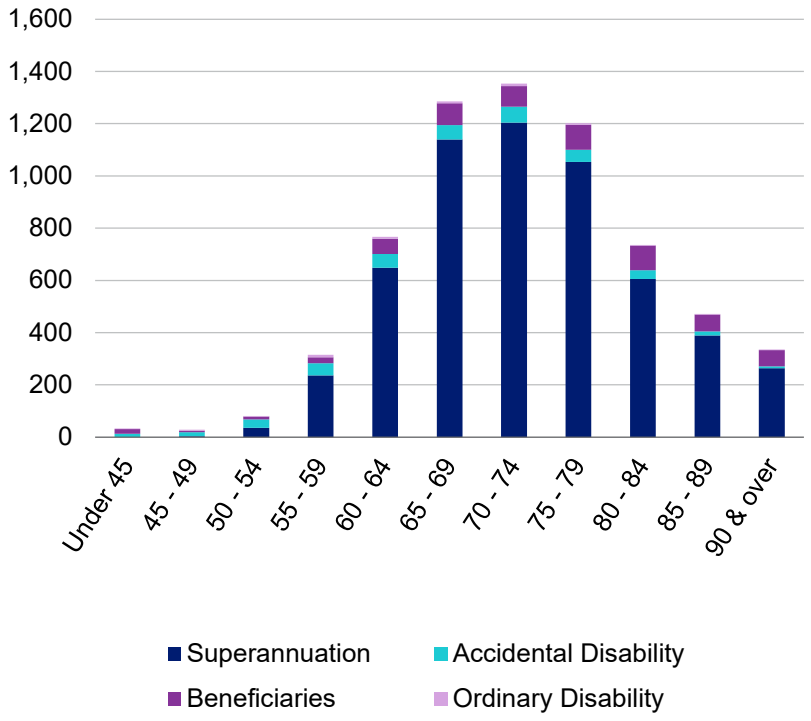
As of December 31,	2023	2021	Change
Retired participants	6,013	5,690	5.7%
Beneficiaries	594	594	0.0%
Average age	72.8	72.8	0.0
Average amount[1]	$2,655	$2,445	8.6%
Total monthly amount[1]	17,539,211	15,363,381	14.2%

Distribution of Retired Participants and Beneficiaries as of December 31, 2023

By Type and Monthly Amount



By Type and Age

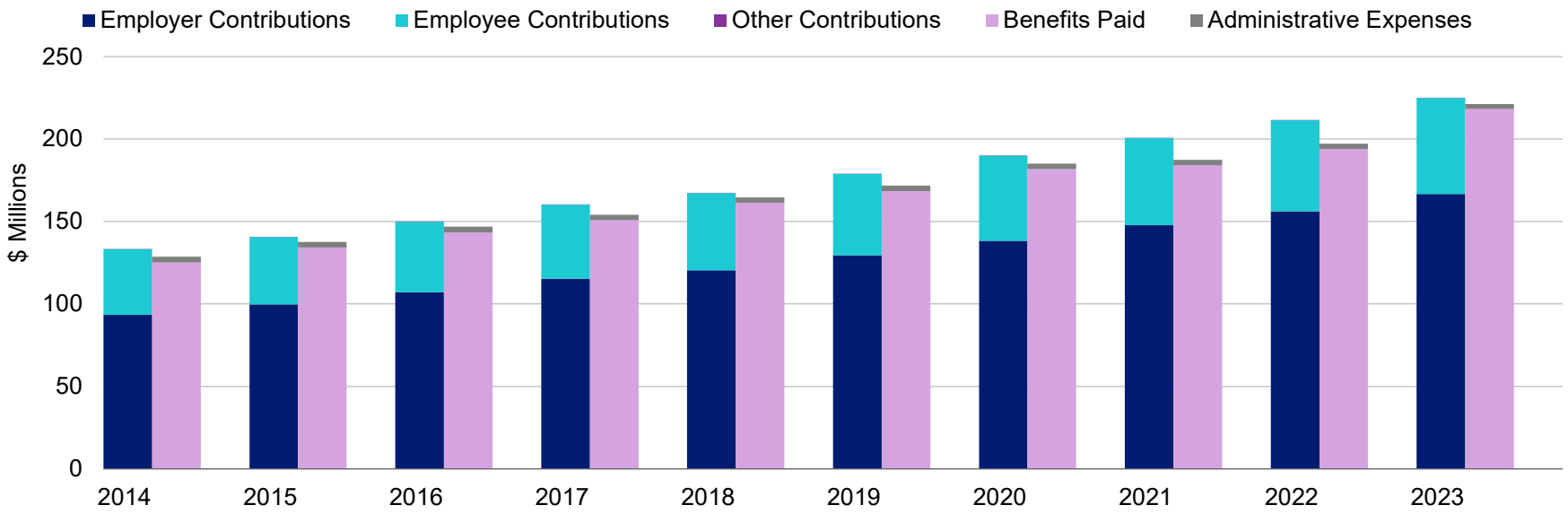


[1] Excludes COLAs reimbursed by the Commonwealth.

Financial information

- Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and investment earnings (less investment fees) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components.

Comparison of Contributions with Benefits and Expenses
for Years Ended December 31



Section 2: Actuarial Valuation Results

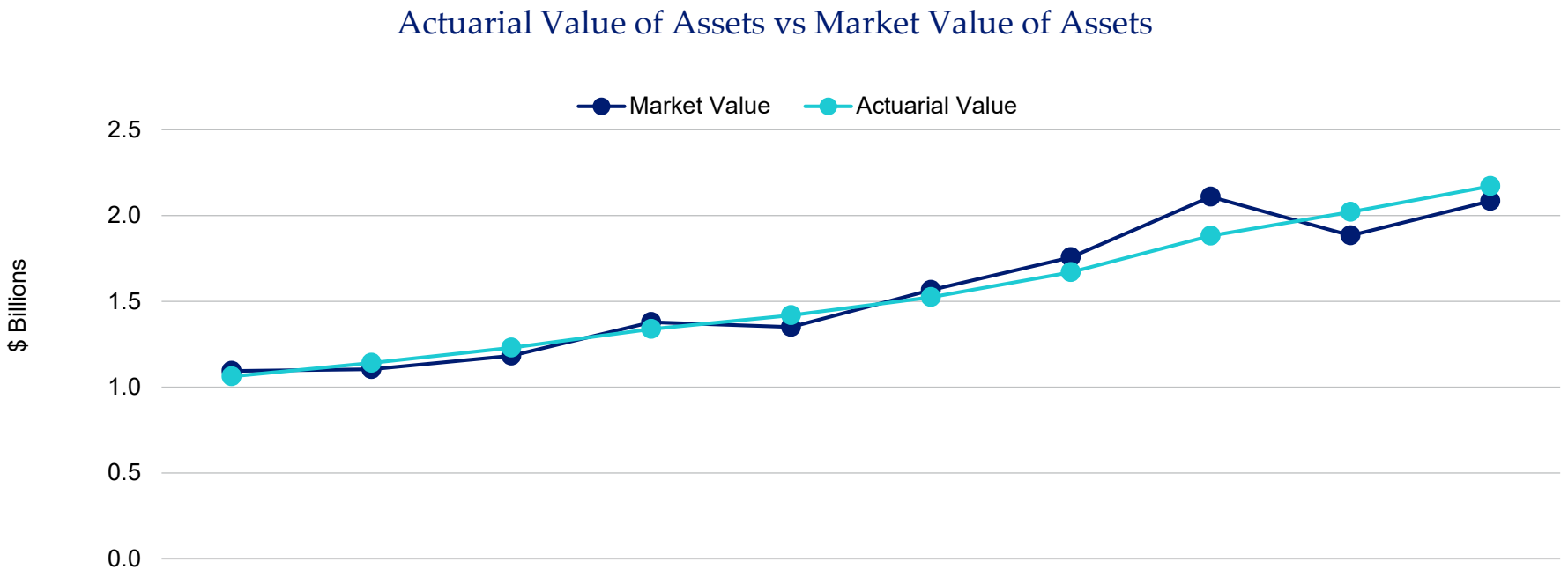
It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

Determination of Actuarial Value of Assets

	Component	Original Amount[1]	Percent Deferred	Amount as of December 31, 2023	Amount as of December 31, 2022
1.	Market value of assets			$2,084,032,552	$1,883,767,318
2.	Calculation of unrecognized return[2]				
a.	Year ended December 31, 2023	$61,710,261	80%	$49,368,209	0
b.	Year ended December 31, 2022	-391,674,536	60%	-235,004,721	-313,339,629
c.	Year ended December 31, 2021	211,787,556	40%	84,715,022	127,072,533
d.	Year ended December 31, 2020	71,100,312	20%	14,220,062	28,440,124
e.	Year ended December 31, 2019	106,954,044	0%	0	21,390,809
f.	Total unrecognized return			-$86,701,428	-$136,436,163
3.	Preliminary actuarial value: **(1) - (2f)**			2,170,733,980	2,020,203,481
4.	Adjustment to be within 20% corridor			0	0
5.	**Final actuarial value of assets: (3) + (4)**			**$2,170,733,980**	**$2,020,203,481**
6.	Actuarial value as a percentage of market value: **(5) ÷ (1)**			104.2%	107.2%
7.	Amount deferred for future recognition: **(1) - (5)**			-$86,701,428	-$136,436,163

1 Total return minus expected return on a market value basis.
2 Recognition at 20% per year over five years.

Asset history for years ended December 31

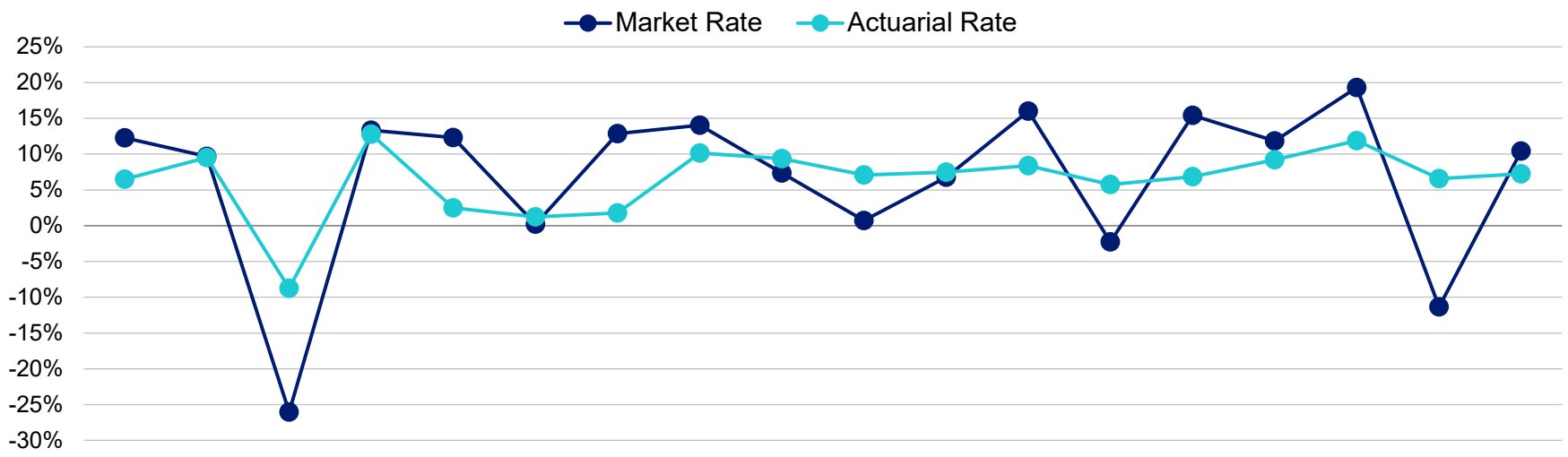


Legend	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Actuarial value[1]	$1.06	$1.14	$1.23	$1.34	$1.42	$1.52	$1.67	$1.88	$2.02	$2.17
Market value[6]	1.09	1.10	1.18	1.38	1.35	1.57	1.76	2.11	1.88	2.08
Ratio	0.972	1.033	1.040	0.972	1.051	0.973	0.951	0.892	1.072	1.042

[1] In $ billions

Historical investment returns

Market and Actuarial Rates of Return for Years Ended December 31



Legend	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Market rate	12.26%	9.66%	-26.04%	13.34%	12.32%	0.19%	12.86%	14.05%	7.38%	0.71%	6.77%	15.99%	-2.25%	15.40%	11.83%	19.31%	-11.35%	10.42%
Actuarial rate	6.49%	9.53%	-8.73%	12.77%	2.49%	1.22%	1.77%	10.14%	9.36%	7.10%	7.46%	8.38%	5.76%	6.87%	9.21%	11.89%	6.57%	7.26%

Average Rates of Return	Actuarial Value	Market Value
Most recent five-year average return	8.30%	7.95%
Most recent ten-year average return	7.98%	6.96%
Most recent 15-year average return	7.43%	7.68%
18-year average return	6.86%	6.57%

Actuarial experience

Assumptions should consider experience and should be based on reasonable expectations for the future.

Each year actual experience is compared to that projected by the assumptions. Differences are reflected in the actuarial valuation.

Assumptions are not changed if experience is believed to be a short-term development that will not continue over the long term. On the other hand, if experience is expected to continue, assumptions are changed.

Actuarial Experience for Two-Year Period Ended December 31, 2023

	Source of gain/(loss)	Amount
1.	(Loss) from investments	-$8,737,598
2.	Gain from administrative expenses	1,574,327
3.	(Loss) from other experience	-57,573,058
4.	**Net experience (loss): 1 + 2 + 3**	**-$64,736,329**

Investment experience

Actuarial planning is long term. The obligations of a pension plan are expected to continue for the lifetime of all its participants.

The assumed long-term rate of return of 7.15% considers past experience, the asset allocation policy of the Board and future expectations. We will continue to monitor the System's actual and anticipated investment returns and may revise our assumed long-term rate of return in a future actuarial valuation, if warranted.

Investment Experience for Years Ended December 31, 2023 and December 31, 2022

	Investment	2023 Market Value	2023 Actuarial Value	2022 Market Value	2022 Actuarial Value
1.	Net investment income	$196,533,050	$146,798,315	-$240,314,305	$124,101,732
2.	Average value of assets	1,885,633,410	2,022,069,573	2,116,926,311	1,888,946,437
3.	Rate of return: **1 ÷ 2**	10.42%	7.26%	-11.35%	6.57%
4.	Assumed rate of return	7.15%	7.15%	7.15%	7.15%
5.	Expected investment income: **2 x 4**	$134,822,789	$144,577,974	$151,360,231	$135,059,670
6.	**Investment gain/(loss): 1 – 5**	**$61,710,261**	**$2,220,341**	**-$391,674,536**	**-$10,957,938**

Non-investment experience

Administrative expenses

Administrative expenses for the two years ended December 31, 2023 totaled $6,178,689, as compared to the assumption of $3,650,000 for calendar year 2022 and $3,768,625 for calendar year 2023. This resulted in an experience gain of $1,574,327 for the two-year period, including an adjustment for interest.

Other experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- Mortality experience (more or fewer than expected deaths)
- The extent of turnover among participants
- Retirement experience (earlier or later than projected)
- The number of disability retirements (more or fewer than projected)
- Salary increases (greater or smaller than projected)

The net loss from this other experience for the two-year period ending December 31, 2023 amounted to $57,573,058, which is 1.5% of the actuarial accrued liability.

Liability Changes Due to Demographic Experience for Two-Year Period Ended December 31, 2023

Other Experience	Gain or Loss
(Loss) due to salaries increasing more than expected for continuing actives	-$36,362,470
Gain due to pensioner mortality experience (net of unexpected changes in benefit amounts)	8,260,205
(Loss) due to miscellaneous experience, primarily due to new active participants with high service amounts	-29,470,793
Net (loss)	**-$57,573,058**

Actuarial assumptions

With this valuation, the administrative expense assumption has been reset from $3,650,000 for calendar year 2022, increasing 3.25% per year, to $3,650,000 for calendar year 2024, increasing 3.25% per year.

Plan provisions

Pursuant to Chapter 269 of the Acts of 2022, the Board approved a one-time increase in the COLA from 3% to 5% effective July 1, 2022, which increased the January 1, 2024 unfunded liability by $18.7 million.

Unfunded actuarial accrued liability

Development of Unfunded Actuarial Accrued Liability

	Unfunded Actuarial Accrued Liability	Year Ended December 31, 2023	Year Ended December 31, 2022
1.	Unfunded actuarial accrued liability at beginning of year	$1,550,961,033	$1,568,707,386
2.	Normal cost at beginning of year	85,215,976	82,533,633
3.	Total contributions	-224,933,911	-211,499,132
4.	Interest on 1, 2 & 3	109,707,290	111,219,146
5.	**Expected unfunded actuarial accrued liability**	**$1,520,950,388**	**$1,550,961,033**
6.	Changes due to:		
	a. Net experience loss	$64,736,329	—
	b. Adoption of 5% COLA	18,729,653	—
	c. Total changes	**$83,465,982**	—
7.	**Unfunded actuarial accrued liability at end of year**	**$1,604,416,370**	**$1,550,961,033**

Actuarially determined contribution

The actuarially determined contribution is equal to the employer normal cost payment and a payment on the unfunded actuarial accrued liability.

The funding schedule included in this report fully funds the System by June 30, 2036, if all assumptions are met and there are no changes in the plan of benefits or actuarial assumptions. The fiscal 2025 total appropriation has been set equal to $177,336,277 as determined with the prior valuation. For fiscal 2026 through fiscal 2031, each year's total appropriation increases 6.50%, with an amortization payment on the unfunded liability increasing 4.0% per year thereafter. The prior funding schedule fully funded the System by June 30, 2036 with 6.50% increases through fiscal 2028. The current funding schedule is intended to result in predictable employer contributions that eliminate the unfunded actuarial accrued liability within 12 years, thereby providing benefit security to plan participants while balancing the needs of current and future contributors to the plan.

Actuarially Determined Contribution for Years Beginning July 1, 2024 and July 1, 2022

Component	2024 Amount	2024 Percent of Projected Payroll	2022 Amount	2022 Percent of Projected Payroll
1. Total normal cost	$85,447,261	14.44%	$78,883,633	14.57%
2. Administrative expenses	3,650,000	0.62%	3,650,000	0.67%
3. Expected employee contributions	-59,059,358	-9.98%	-53,477,004	-9.88%
4. Employer normal cost: (1) + (2) + (3)	**$30,037,903**	**5.08%**	**$29,056,629**	**5.37%**
5. Actuarial accrued liability	$3,775,150,350		$3,450,498,511	
6. Actuarial value of assets	2,170,733,980		1,881,791,125	
7. Unfunded actuarial accrued liability: (5) - (6)	**$1,604,416,370**		**$1,568,707,386**	
Projection to beginning of fiscal year				
8. Employer normal cost projected to July 1, 2024 and 2022, adjusted for timing	$31,053,652	5.17%	$30,039,196	5.46%
9. Projected unfunded actuarial accrued liability	1,660,784,076		1,623,820,534	
10. Payment on unfunded actuarial accrued liability, adjusted for timing	146,282,625	24.34%	126,310,979	22.97%
11. Actuarially determined contribution: (8) + (10)	**$177,336,277**	**29.50%**	**$156,350,175**	**28.43%**
12. Projected payroll as of July 1	$601,084,136		$549,958,073	

Notes:
Actuarially Determined Contributions are assumed to be paid in two equal installments on July 1 and December 31.
Actuarially Determined Contributions are set equal to the budgeted amounts determined with the prior valuation.

Section 2: Actuarial Valuation Results

The funding schedule adopted by the Board is designed to reduce the volatility of the actuarially determined contribution by limiting the increase in the total contribution to a maximum of 6.50% over the prior year and by setting the upcoming year's contribution equal to the amount determined with the prior valuation. As noted in Section 1, ASOP 4 requires the disclosure of the impact of smoothing the increases in the appropriation over the funding schedule. If the actuarially determined contribution were determined by amortizing the unfunded actuarial accrued liability in amortization payments that increase 3.25% per year for 12 years without regard to the 6.50% cap, plus payment of the employer normal cost, the actuarially determined contribution for fiscal 2025 would increase from $177,336,277 to $202,307,488 and increase by approximately 3.32% per year through 2036.

Funding schedule

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of Unfunded Liability	(4) Actuarially Determined Contribution (ADC): (2)+(3)	(5) Total Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(6) Percent Increase in ADC
2025	$31,053,652	$146,282,625	$177,336,277	$1,660,784,076	- -
2026	32,199,707	156,663,428	188,863,135	1,625,471,208	6.50%
2027	33,387,667	167,751,572	201,139,239	1,576,700,829	6.50%
2028	34,619,053	179,594,237	214,213,290	1,512,765,784	6.50%
2029	35,895,438	192,241,716	228,137,154	1,431,787,169	6.50%
2030	37,218,458	205,747,611	242,966,069	1,331,698,771	6.50%
2031	38,589,802	220,169,061	258,758,863	1,210,230,191	6.50%
2032	40,011,222	229,807,001	269,818,223	1,064,888,521	4.27%
2033	41,484,533	238,999,281	280,483,814	899,004,634	3.95%
2034	43,011,614	248,559,252	291,570,866	711,579,113	3.95%
2035	44,594,414	258,501,622	303,096,036	500,684,493	3.95%
2036	46,234,953	268,841,687	315,076,640	264,240,008	3.95%
2037	47,935,318	0	47,935,318	0	-84.79%

Notes:
Actuarially determined contribution for fiscal year 2025 is set equal to the amount determined with the prior valuation.
Actuarially determined contributions are assumed to be paid in two equal installments on July 1 and December 31.
Item (2) reflects 3.25% growth in payroll and a 0.15% adjustment to total normal cost to reflect the effect of mortality improvements due to the generational mortality assumption.
Item (3) increases at 4% per year beginning in fiscal 2033.
Projected normal cost does not reflect the future impact of pension reform for new hires.
Projected unfunded actuarial accrued liability does not reflect the recognition of deferred investment gains or losses.

Low-Default-Risk Obligation Measure (LDROM)

As noted in Section 1, ASOP 4 requires the disclosure of a Low-Default-Risk Obligation Measure (LDROM) when performing a funding valuation. The LDROM presented in this report is calculated using the same methodology and assumptions used to determine the Actuarial Accrued Liability (AAL) used for funding, except for the discount rate. The LDROM is required to be calculated using "a discount rate…derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future."

The LDROM is a calculation assuming a plan's assets are invested in an all-bond portfolio, generally lowering expected long-term investment returns. The discount rate selected and used for this purpose is the Bond Buyer General Obligation 20-year Municipal Bond Index Rate, published at the end of each week. The last published rate in December of the measurement period, by The Bond Buyer (www.bondbuyer.com), is 3.26% for use effective December 31, 2023. This is the rate used to determine the discount rate for valuing reported public pension plan liabilities in accordance with Governmental Accounting Standards when plan assets are projected to be insufficient to make projected benefit payments, and the 20-year period reasonably approximates the duration of plan liabilities. The LDROM is not used to determine a plan's funded status or Actuarially Determined Contribution. The plan's expected return on assets, currently 7.15%, is used for these calculations.

As of December 31, 2023, the LDROM for the system is $5,981,768,263. The difference between the plan's AAL of $3,775,150,350 and the LDROM can be thought of as the increase in the AAL if the entire portfolio were invested in low-default-risk securities. Alternatively, this difference could also be viewed as representing the expected savings from investing in the plan's diversified portfolio compared to investing only in low-default-risk securities.

ASOP 4 requires commentary to help the intended user understand the significance of the LDROM with respect to the funded status of the plan, plan contributions, and the security of participant benefits. In general, if plan assets were invested exclusively in low-default-risk securities, the funded status would be lower and the Actuarially Determined Contribution would be higher. While investing in a portfolio with low-default-risk securities may be more likely to reduce investment volatility and the volatility of employer contributions, it also may be more likely to result in higher employer contributions or lower benefits.

Risk

The actuarial valuation results are dependent on a single set of assumptions; however, there is a risk that emerging results may differ significantly as actual experience proves to be different from the current assumptions.

We have not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the System's future financial condition but have included a brief discussion of some risks that may affect the System.

- Economic and Other Related Risks. Potential implications for the System due to the following economic effects (that were not reflected as of the valuation date) include:
  - Volatile financial markets and investment returns lower than assumed
  - High inflationary environment impacting salary increases
- Investment Risk (the risk that returns will be different than expected)

  If the actual return on market value for the prior plan year were 1% different (either higher or lower), the unfunded actuarial liability would change by 1.18%, or about $18,856,334, disregarding the asset smoothing method.

  The market value rate of return over the last 18 years has ranged from a low of -26.04% to a high of 19.31%.
- Longevity Risk (the risk that mortality experience will be different than expected)

  The actuarial valuation includes an expectation of future improvement in life expectancy. Emerging plan experience that does not match these expectations will result in either an increase or decrease in the actuarially determined contribution.
- Contribution Risk (the risk that actual contributions will be different from actuarially determined contribution)

  Massachusetts General Law Chapter 32 requires payment of the actuarially determined contribution. If future experience matches current assumptions, we project the unfunded actuarial accrued liability to be paid off within 12 years.
- Demographic Risk (the risk that participant experience will be different than assumed)

  Examples of this risk include:
  - Actual retirements occurring earlier or later than assumed.
  - More or less active participant turnover than assumed.
  - Disability retirement experience different than assumed.
  - Salary increases greater or less than expected.

Section 2: Actuarial Valuation Results

- There are external factors including legislative or financial reporting changes that could impact the System's funding and disclosure requirements. While we do not assume any changes in such external factors, it is important to understand that they could have significant consequences for the System.
- Actual Experience Over the Last Ten Years

  Past experience can help demonstrate the sensitivity of key results to the System's actual experience. Over the past ten years:

  – The investment gain(loss) for a year has ranged from a loss of $391,674,536 to a gain of $211,787,556 and the non-investment gain(loss) for a year has ranged from a loss of $55,998,731 to a gain of $10,633,096.

Plan Year Ended	Investment Gain/(Loss)	All Other Gains and (Losses)
2014	-$5,071,171	N/A
2015	-78,422,911	-$7,422,238
2016	-10,796,891	N/A
2017	97,658,911	10,633,096
2018	-134,459,875	N/A
2019	106,954,044	-46,443,263
2020	71,100,312	N/A
2021	211,787,556	-1,121,818
2022	-391,674,536	N/A
2023	61,710,261	-55,998,731

  – The funded percentage on the actuarial value of assets has ranged from a low of 45.8% as of January 1, 2016 to a high of 57.5% as of January 1, 2024.

- Maturity measures

  As pension plans mature, the cash needed to fulfill benefit obligations will increase over time. Therefore, cash flow projections and analysis should be performed to assure that the System's asset allocation is aligned to meet emerging pension liabilities.

  Currently the System has a non-active to active participant ratio of 1.18.

  For the prior year, benefits paid and administrative expenses were $3,732,184 less than contributions received. While this excess continues, the System is not dependent on investment returns to pay future benefits.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Total		
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 594 beneficiaries in pay status)		6,607
2. Participants active during the year ended December 31, 2023		9,603
3. Inactive participants entitled to a return of their employee contributions		4,227
4. Inactive participants with a vested right to a deferred or immediate benefit		470
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$85,447,261
2. Administrative expenses		3,650,000
3. Expected employee contributions		-59,059,358
4. Employer normal cost: (1) + (2) + (3)		**$30,037,903**
5. Actuarial accrued liability		$3,775,150,350
Retired participants and beneficiaries	$2,171,619,020	
Active participants	1,504,498,197	
Inactive participants	99,033,133	
6. Actuarial value of assets		2,170,733,980
7. Unfunded actuarial accrued liability: **(5) – (6)**		1,604,416,370
8. Reallocated unfunded actuarial accrued liability		0
9. Total unfunded actuarial accrued liability: (7) + (8)		**$1,604,416,370**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$31,053,652	5.17%
2. Projected unfunded actuarial accrued liability	1,660,784,076	
3. Payment on projected unfunded actuarial accrued liability	146,282,625	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$177,336,277**	**29.50%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	174,300,864	29.00%
6. Projected payroll	601,084,136	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$32,199,707	$33,387,667
2. Payment on projected unfunded actuarial accrued liability	156,663,428	167,751,572
3. Total Actuarially Determined Contribution: (1) + (2)	**$188,863,135**	**$201,139,239**
4. Total Actuarially Determined Contribution, payable on July 1	185,630,419	197,696,396

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Middlesex County Retirement Board			1
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 1 beneficiary in pay status)			17
2. Participants active during the year ended December 31, 2023			15
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$152,505
2. Administrative expenses			6,514
3. Expected employee contributions			-133,506
4. Employer normal cost: (1) + (2) + (3)			**$25,513**
5. Actuarial accrued liability			$12,161,993
Retired participants and beneficiaries	$7,295,312		
Active participants	4,864,543		
Inactive participants	2,138		
6. Actuarial value of assets			7,358,481
7. Unfunded actuarial accrued liability: **(5) – (6)**			4,803,512
8. Reallocated unfunded actuarial accrued liability			46,795
9. Total unfunded actuarial accrued liability: (7) + (8)			**$4,850,307**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$26,376	1.99%
2. Projected unfunded actuarial accrued liability		5,020,712	
3. Payment on projected unfunded actuarial accrued liability		467,072	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$493,448**	**37.17%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		485,002	36.53%
6. Projected payroll		1,327,525	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		$27,477	$28,623
2. Payment on projected unfunded actuarial accrued liability		471,087	504,429
3. Total Actuarially Determined Contribution: (1) + (2)		**$498,564**	**$533,052**
4. Total Actuarially Determined Contribution, payable on July 1		490,030	523,928

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Middlesex County			100
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 25 beneficiaries in pay status)			60
2. Participants active during the year ended December 31, 2023			0
3. Inactive participants entitled to a return of their employee contributions			0
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$0
2. Administrative expenses			0
3. Expected employee contributions			0
4. Employer normal cost: (1) + (2) + (3)			**$0**
5. Actuarial accrued liability			$8,846,404
Retired participants and beneficiaries	$8,846,404		
Active participants	0		
Inactive participants	0		
6. Actuarial value of assets			0
7. Unfunded actuarial accrued liability: **(5) – (6)**			8,846,404
8. Reallocated unfunded actuarial accrued liability			-8,846,404
9. Total unfunded actuarial accrued liability: (7) + (8)			**$0**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$0	0.00%
2. Projected unfunded actuarial accrued liability		0	
3. Payment on projected unfunded actuarial accrued liability		0	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$0**	**0.00%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		0	0.00%
6. Projected payroll		0	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$0		$0
2. Payment on projected unfunded actuarial accrued liability	0		0
3. Total Actuarially Determined Contribution: (1) + (2)	**$0**		**$0**
4. Total Actuarially Determined Contribution, payable on July 1	0		0

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Middlesex Hospital				200
The valuation was made with respect to the following data supplied to us:				
1.	Retired participants as of the valuation date (including 3 beneficiaries in pay status)			44
2.	Participants active during the year ended December 31, 2023			0
3.	Inactive participants entitled to a return of their employee contributions			0
4.	Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:				
1.	Normal cost			$0
2.	Administrative expenses			0
3.	Expected employee contributions			0
4.	**Employer normal cost: (1) + (2) + (3)**			**$0**
5.	Actuarial accrued liability			$5,623,266
	Retired participants and beneficiaries	$5,623,266		
	Active participants	0		
	Inactive participants	0		
6.	Actuarial value of assets			0
7.	Unfunded actuarial accrued liability: **(5) – (6)**			5,623,266
8.	Reallocated unfunded actuarial accrued liability			-5,623,266
9.	**Total unfunded actuarial accrued liability: (7) + (8)**			**$0**
The actuarial factors projected to FY25 are as follows:		**Amount**		**% of Payroll**
1.	Projected employer normal cost		$0	0.00%
2.	Projected unfunded actuarial accrued liability		0	
3.	Payment on projected unfunded actuarial accrued liability		0	
4.	**Total FY25 Actuarially Determined Contribution: (1) + (3)**		**$0**	**0.00%**
5.	Total FY25 Actuarially Determined Contribution, payable on July 1		0	0.00%
6.	Projected payroll		0	
The actuarial factors projected to FY26 and FY27 are as follows:		**FY26**		**FY27**
1.	Projected employer normal cost	$0		$0
2.	Payment on projected unfunded actuarial accrued liability	0		0
3.	**Total Actuarially Determined Contribution: (1) + (2)**	**$0**		**$0**
4.	Total Actuarially Determined Contribution, payable on July 1	0		0

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Acton		300
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 22 beneficiaries in pay status)		201
2. Participants active during the year ended December 31, 2023		196
3. Inactive participants entitled to a return of their employee contributions		21
4. Inactive participants with a vested right to a deferred or immediate benefit		10
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$2,496,352
2. Administrative expenses		106,635
3. Expected employee contributions		-1,703,206
4. Employer normal cost: (1) + (2) + (3)		**$899,781**
5. Actuarial accrued liability		$125,408,994
Retired participants and beneficiaries	$77,400,147	
Active participants	45,811,138	
Inactive participants	2,197,709	
6. Actuarial value of assets		72,284,490
7. Unfunded actuarial accrued liability: **(5) – (6)**		53,124,504
8. Reallocated unfunded actuarial accrued liability		482,526
9. Total unfunded actuarial accrued liability: (7) + (8)		**$53,607,030**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$930,208	5.46%
2. Projected unfunded actuarial accrued liability	55,490,397	
3. Payment on projected unfunded actuarial accrued liability	4,825,540	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$5,755,748**	**33.81%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	5,657,229	33.23%
6. Projected payroll	17,025,263	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$964,436	$999,914
2. Payment on projected unfunded actuarial accrued liability	5,240,766	5,611,691
3. Total Actuarially Determined Contribution: (1) + (2)	**$6,205,202**	**$6,611,605**
4. Total Actuarially Determined Contribution, payable on July 1	6,098,989	6,498,436

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Ashby		400
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)		12
2. Participants active during the year ended December 31, 2023		20
3. Inactive participants entitled to a return of their employee contributions		12
4. Inactive participants with a vested right to a deferred or immediate benefit		3
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$219,941
2. Administrative expenses		9,395
3. Expected employee contributions		-110,380
4. Employer normal cost: (1) + (2) + (3)		**$118,956**
5. Actuarial accrued liability		$6,230,784
Retired participants and beneficiaries	$3,342,167	
Active participants	1,926,386	
Inactive participants	962,231	
6. Actuarial value of assets		4,939,778
7. Unfunded actuarial accrued liability: **(5) – (6)**		1,291,006
8. Reallocated unfunded actuarial accrued liability		23,974
9. Total unfunded actuarial accrued liability: (7) + (8)		**$1,314,980**

The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$122,979	10.93%
2. Projected unfunded actuarial accrued liability	1,361,179	
3. Payment on projected unfunded actuarial accrued liability	150,595	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$273,574**	**24.31%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	268,891	23.89%
6. Projected payroll	1,125,511	

The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$127,328	$131,830
2. Payment on projected unfunded actuarial accrued liability	125,285	134,152
3. Total Actuarially Determined Contribution: (1) + (2)	**$252,613**	**$265,982**
4. Total Actuarially Determined Contribution, payable on July 1	248,289	261,429

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Ashland			500
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 15 beneficiaries in pay status)			155
2. Participants active during the year ended December 31, 2023			303
3. Inactive participants entitled to a return of their employee contributions			177
4. Inactive participants with a vested right to a deferred or immediate benefit			21
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$2,487,182
2. Administrative expenses			106,243
3. Expected employee contributions			-1,722,725
4. Employer normal cost: (1) + (2) + (3)			**$870,700**
5. Actuarial accrued liability			$95,940,985
Retired participants and beneficiaries	$46,335,704		
Active participants	45,579,996		
Inactive participants	4,025,285		
6. Actuarial value of assets			60,002,219
7. Unfunded actuarial accrued liability: **(5) – (6)**			35,938,766
8. Reallocated unfunded actuarial accrued liability			369,144
9. Total unfunded actuarial accrued liability: (7) + (8)			**$36,307,910**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost	$900,143		5.10%
2. Projected unfunded actuarial accrued liability	37,583,510		
3. Payment on projected unfunded actuarial accrued liability	3,324,888		
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$4,225,031**		**23.94%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	4,152,712		23.54%
6. Projected payroll	17,644,751		
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$933,380		$967,833
2. Payment on projected unfunded actuarial accrued liability	3,543,817		3,794,637
3. Total Actuarially Determined Contribution: (1) + (2)	**$4,477,197**		**$4,762,470**
4. Total Actuarially Determined Contribution, payable on July 1	4,400,562		4,680,952

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Ayer		600
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 12 beneficiaries in pay status)		83
2. Participants active during the year ended December 31, 2023		106
3. Inactive participants entitled to a return of their employee contributions		12
4. Inactive participants with a vested right to a deferred or immediate benefit		6
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$1,246,314
2. Administrative expenses		53,238
3. Expected employee contributions		-891,083
4. Employer normal cost: (1) + (2) + (3)		**$408,469**
5. Actuarial accrued liability		$53,296,655
Retired participants and beneficiaries	$31,048,350	
Active participants	21,364,206	
Inactive participants	884,099	
6. Actuarial value of assets		32,258,323
7. Unfunded actuarial accrued liability: **(5) – (6)**		21,038,332
8. Reallocated unfunded actuarial accrued liability		205,065
9. Total unfunded actuarial accrued liability: (7) + (8)		**$21,243,397**

The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$422,282	4.76%
2. Projected unfunded actuarial accrued liability	21,989,738	
3. Payment on projected unfunded actuarial accrued liability	1,847,478	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$2,269,760**	**25.57%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	2,230,909	25.13%
6. Projected payroll	8,877,721	

The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$438,001	$454,300
2. Payment on projected unfunded actuarial accrued liability	2,083,387	2,230,843
3. Total Actuarially Determined Contribution: (1) + (2)	**$2,521,388**	**$2,685,143**
4. Total Actuarially Determined Contribution, payable on July 1	2,478,230	2,639,182

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Bedford		700
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 14 beneficiaries in pay status)		227
2. Participants active during the year ended December 31, 2023		378
3. Inactive participants entitled to a return of their employee contributions		239
4. Inactive participants with a vested right to a deferred or immediate benefit		17
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$3,233,854
2. Administrative expenses		138,139
3. Expected employee contributions		-2,314,175
4. Employer normal cost: (1) + (2) + (3)		**$1,057,818**
5. Actuarial accrued liability		$140,884,453
Retired participants and beneficiaries	$79,821,731	
Active participants	57,608,633	
Inactive participants	3,454,089	
6. Actuarial value of assets		85,995,503
7. Unfunded actuarial accrued liability: **(5) – (6)**		54,888,950
8. Reallocated unfunded actuarial accrued liability		542,070
9. Total unfunded actuarial accrued liability: (7) + (8)		**$55,431,020**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,093,589	4.65%
2. Projected unfunded actuarial accrued liability	57,378,469	
3. Payment on projected unfunded actuarial accrued liability	4,822,670	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$5,916,259**	**25.16%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	5,814,992	24.73%
6. Projected payroll	23,518,536	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,134,308	$1,176,527
2. Payment on projected unfunded actuarial accrued liability	5,436,041	5,820,787
3. Total Actuarially Determined Contribution: (1) + (2)	**$6,570,349**	**$6,997,314**
4. Total Actuarially Determined Contribution, payable on July 1	6,457,886	6,877,543

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Billerica		800
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 60 beneficiaries in pay status)		500
2. Participants active during the year ended December 31, 2023		690
3. Inactive participants entitled to a return of their employee contributions		211
4. Inactive participants with a vested right to a deferred or immediate benefit		28
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$6,408,302
2. Administrative expenses		273,742
3. Expected employee contributions		-4,361,191
4. Employer normal cost: (1) + (2) + (3)		**$2,320,853**
5. Actuarial accrued liability		$322,477,200
Retired participants and beneficiaries	$187,150,551	
Active participants	129,276,699	
Inactive participants	6,049,950	
6. Actuarial value of assets		167,242,977
7. Unfunded actuarial accrued liability: **(5) – (6)**		155,234,223
8. Reallocated unfunded actuarial accrued liability		1,240,768
9. Total unfunded actuarial accrued liability: (7) + (8)		**$156,474,991**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$2,399,334	5.39%
2. Projected unfunded actuarial accrued liability	161,972,403	
3. Payment on projected unfunded actuarial accrued liability	14,325,898	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$16,725,232**	**37.59%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	16,438,951	36.94%
6. Projected payroll	44,495,847	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$2,487,577	$2,579,028
2. Payment on projected unfunded actuarial accrued liability	15,273,000	16,353,974
3. Total Actuarially Determined Contribution: (1) + (2)	**$17,760,577**	**$18,933,002**
4. Total Actuarially Determined Contribution, payable on July 1	17,456,575	18,608,931

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Boxborough			900
The valuation was made with respect to the following data supplied to us:			
1.	Retired participants as of the valuation date (including 5 beneficiaries in pay status)		51
2.	Participants active during the year ended December 31, 2023		49
3.	Inactive participants entitled to a return of their employee contributions		14
4.	Inactive participants with a vested right to a deferred or immediate benefit		3
The actuarial factors as of January 1, 2024 are as follows:			
1.	Normal cost		$581,175
2.	Administrative expenses		24,826
3.	Expected employee contributions		-360,577
4.	**Employer normal cost: (1) + (2) + (3)**		**$245,424**
5.	Actuarial accrued liability		$27,288,898
	Retired participants and beneficiaries	$18,398,623	
	Active participants	8,258,737	
	Inactive participants	631,538	
6.	Actuarial value of assets		14,503,988
7.	Unfunded actuarial accrued liability: **(5) – (6)**		12,784,910
8.	Reallocated unfunded actuarial accrued liability		104,997
9.	**Total unfunded actuarial accrued liability: (7) + (8)**		**$12,889,907**
The actuarial factors projected to FY25 are as follows:		**Amount**	**% of Payroll**
1.	Projected employer normal cost	$253,723	6.99%
2.	Projected unfunded actuarial accrued liability	13,342,766	
3.	Payment on projected unfunded actuarial accrued liability	1,094,862	
4.	**Total FY25 Actuarially Determined Contribution: (1) + (3)**	**$1,348,585**	**37.17%**
5.	Total FY25 Actuarially Determined Contribution, payable on July 1	1,325,502	36.53%
6.	Projected payroll	3,628,084	
The actuarial factors projected to FY26 and FY27 are as follows:		**FY26**	**FY27**
1.	Projected employer normal cost	$262,900	$272,406
2.	Payment on projected unfunded actuarial accrued liability	1,266,795	1,356,455
3.	**Total Actuarially Determined Contribution: (1) + (2)**	**$1,529,695**	**$1,628,861**
4.	Total Actuarially Determined Contribution, payable on July 1	1,503,512	1,600,980

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Burlington		1000
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 33 beneficiaries in pay status)		405
2. Participants active during the year ended December 31, 2023		598
3. Inactive participants entitled to a return of their employee contributions		246
4. Inactive participants with a vested right to a deferred or immediate benefit		19
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$5,885,124
2. Administrative expenses		251,391
3. Expected employee contributions		-4,296,953
4. Employer normal cost: (1) + (2) + (3)		**$1,839,562**
5. Actuarial accrued liability		$288,368,482
Retired participants and beneficiaries	$163,860,024	
Active participants	120,808,485	
Inactive participants	3,699,973	
6. Actuarial value of assets		151,164,676
7. Unfunded actuarial accrued liability: **(5) – (6)**		137,203,806
8. Reallocated unfunded actuarial accrued liability		1,109,532
9. Total unfunded actuarial accrued liability: (7) + (8)		**$138,313,338**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,901,768	4.40%
2. Projected unfunded actuarial accrued liability	143,172,679	
3. Payment on projected unfunded actuarial accrued liability	12,639,090	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$14,540,858**	**33.61%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	14,291,966	33.04%
6. Projected payroll	43,261,251	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,972,998	$2,046,864
2. Payment on projected unfunded actuarial accrued liability	13,502,742	14,458,424
3. Total Actuarially Determined Contribution: (1) + (2)	**$15,475,740**	**$16,505,288**
4. Total Actuarially Determined Contribution, payable on July 1	15,210,846	16,222,772

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Carlisle		1100
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 4 beneficiaries in pay status)		63
2. Participants active during the year ended December 31, 2023		114
3. Inactive participants entitled to a return of their employee contributions		64
4. Inactive participants with a vested right to a deferred or immediate benefit		6
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$1,025,349
2. Administrative expenses		43,799
3. Expected employee contributions		-684,987
4. Employer normal cost: (1) + (2) + (3)		**$384,161**
5. Actuarial accrued liability		$41,648,368
Retired participants and beneficiaries	$24,286,986	
Active participants	15,915,164	
Inactive participants	1,446,218	
6. Actuarial value of assets		26,690,971
7. Unfunded actuarial accrued liability: **(5) – (6)**		14,957,397
8. Reallocated unfunded actuarial accrued liability		160,247
9. Total unfunded actuarial accrued liability: (7) + (8)		**$15,117,644**

The actuarial factors projected to FY25 are as follows:	Amount	% of Payroll
1. Projected employer normal cost	$397,152	5.69%
2. Projected unfunded actuarial accrued liability	15,648,770	
3. Payment on projected unfunded actuarial accrued liability	1,117,042	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$1,514,194**	**21.68%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	1,488,276	21.31%
6. Projected payroll	6,983,297	

The actuarial factors projected to FY26 and FY27 are as follows:	FY26	FY27
1. Projected employer normal cost	$411,701	$426,779
2. Payment on projected unfunded actuarial accrued liability	1,502,688	1,609,044
3. Total Actuarially Determined Contribution: (1) + (2)	**$1,914,389**	**$2,035,823**
4. Total Actuarially Determined Contribution, payable on July 1	1,881,621	2,000,976

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Chelmsford		1200
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 40 beneficiaries in pay status)		456
2. Participants active during the year ended December 31, 2023		566
3. Inactive participants entitled to a return of their employee contributions		231
4. Inactive participants with a vested right to a deferred or immediate benefit		21
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$5,076,719
2. Administrative expenses		216,859
3. Expected employee contributions		-3,444,665
4. Employer normal cost: (1) + (2) + (3)		**$1,848,913**
5. Actuarial accrued liability		$227,011,031
Retired participants and beneficiaries	$129,429,937	
Active participants	92,242,655	
Inactive participants	5,338,439	
6. Actuarial value of assets		111,981,135
7. Unfunded actuarial accrued liability: **(5) – (6)**		115,029,896
8. Reallocated unfunded actuarial accrued liability		873,452
9. Total unfunded actuarial accrued liability: (7) + (8)		**$115,903,348**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,911,435	5.44%
2. Projected unfunded actuarial accrued liability	119,975,362	
3. Payment on projected unfunded actuarial accrued liability	10,377,055	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$12,288,490**	**34.95%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	12,078,152	34.35%
6. Projected payroll	35,162,638	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,981,685	$2,054,495
2. Payment on projected unfunded actuarial accrued liability	11,336,726	12,139,103
3. Total Actuarially Determined Contribution: (1) + (2)	**$13,318,411**	**$14,193,598**
4. Total Actuarially Determined Contribution, payable on July 1	13,090,444	13,950,650

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Dracut		1300
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 26 beneficiaries in pay status)		290
2. Participants active during the year ended December 31, 2023		346
3. Inactive participants entitled to a return of their employee contributions		108
4. Inactive participants with a vested right to a deferred or immediate benefit		13
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$3,128,266
2. Administrative expenses		133,628
3. Expected employee contributions		-2,016,218
4. Employer normal cost: (1) + (2) + (3)		**$1,245,676**
5. Actuarial accrued liability		$148,042,410
Retired participants and beneficiaries	$94,687,658	
Active participants	51,468,795	
Inactive participants	1,885,957	
6. Actuarial value of assets		76,889,501
7. Unfunded actuarial accrued liability: **(5) – (6)**		71,152,909
8. Reallocated unfunded actuarial accrued liability		569,611
9. Total unfunded actuarial accrued liability: (7) + (8)		**$71,722,520**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,287,799	6.26%
2. Projected unfunded actuarial accrued liability	74,242,336	
3. Payment on projected unfunded actuarial accrued liability	6,520,700	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$7,808,499**	**37.93%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	7,674,843	37.28%
6. Projected payroll	20,584,778	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,334,661	$1,383,217
2. Payment on projected unfunded actuarial accrued liability	7,005,242	7,501,051
3. Total Actuarially Determined Contribution: (1) + (2)	**$8,339,903**	**$8,884,268**
4. Total Actuarially Determined Contribution, payable on July 1	8,197,151	8,732,199

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Dunstable			1400
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			13
2. Participants active during the year ended December 31, 2023			23
3. Inactive participants entitled to a return of their employee contributions			4
4. Inactive participants with a vested right to a deferred or immediate benefit			3
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$270,219
2. Administrative expenses			11,543
3. Expected employee contributions			-152,763
4. Employer normal cost: (1) + (2) + (3)			**$128,999**
5. Actuarial accrued liability			$9,882,809
Retired participants and beneficiaries	$4,927,313		
Active participants	4,180,905		
Inactive participants	774,591		
6. Actuarial value of assets			6,146,600
7. Unfunded actuarial accrued liability: **(5) – (6)**			3,736,209
8. Reallocated unfunded actuarial accrued liability			38,025
9. Total unfunded actuarial accrued liability: (7) + (8)			**$3,774,234**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost	$133,361		8.68%
2. Projected unfunded actuarial accrued liability	3,906,834		
3. Payment on projected unfunded actuarial accrued liability	260,231		
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$393,592**		**25.62%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	386,855		25.18%
6. Projected payroll	1,536,198		
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**	
1. Projected employer normal cost	$138,128	$143,065	
2. Payment on projected unfunded actuarial accrued liability	377,050	403,737	
3. Total Actuarially Determined Contribution: (1) + (2)	**$515,178**	**$546,802**	
4. Total Actuarially Determined Contribution, payable on July 1	506,360	537,443	

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Groton		1500
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 5 beneficiaries in pay status)		75
2. Participants active during the year ended December 31, 2023		113
3. Inactive participants entitled to a return of their employee contributions		18
4. Inactive participants with a vested right to a deferred or immediate benefit		6
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$1,412,780
2. Administrative expenses		60,349
3. Expected employee contributions		-966,205
4. Employer normal cost: (1) + (2) + (3)		**$506,924**
5. Actuarial accrued liability		$60,610,556
Retired participants and beneficiaries	$31,824,243	
Active participants	27,502,275	
Inactive participants	1,284,038	
6. Actuarial value of assets		38,734,070
7. Unfunded actuarial accrued liability: **(5) – (6)**		21,876,486
8. Reallocated unfunded actuarial accrued liability		233,206
9. Total unfunded actuarial accrued liability: (7) + (8)		**$22,109,692**

The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$524,066	5.45%
2. Projected unfunded actuarial accrued liability	22,886,468	
3. Payment on projected unfunded actuarial accrued liability	2,175,155	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$2,699,221**	**28.07%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	2,653,019	27.59%
6. Projected payroll	9,615,150	

The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$543,360	$563,358
2. Payment on projected unfunded actuarial accrued liability	2,142,733	2,294,389
3. Total Actuarially Determined Contribution: (1) + (2)	**$2,686,093**	**$2,857,747**
4. Total Actuarially Determined Contribution, payable on July 1	2,640,116	2,808,832

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Holliston		1600
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 14 beneficiaries in pay status)		154
2. Participants active during the year ended December 31, 2023		287
3. Inactive participants entitled to a return of their employee contributions		271
4. Inactive participants with a vested right to a deferred or immediate benefit		16
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$2,019,164
2. Administrative expenses		86,251
3. Expected employee contributions		-1,365,397
4. Employer normal cost: (1) + (2) + (3)		**$740,018**
5. Actuarial accrued liability		$80,396,119
Retired participants and beneficiaries	$44,623,774	
Active participants	32,427,723	
Inactive participants	3,344,622	
6. Actuarial value of assets		54,846,954
7. Unfunded actuarial accrued liability: **(5) – (6)**		25,549,165
8. Reallocated unfunded actuarial accrued liability		309,334
9. Total unfunded actuarial accrued liability: (7) + (8)		**$25,858,499**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$765,042	5.41%
2. Projected unfunded actuarial accrued liability	26,766,982	
3. Payment on projected unfunded actuarial accrued liability	2,175,787	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$2,940,829**	**20.78%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	2,890,492	20.42%
6. Projected payroll	14,153,557	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$793,139	$822,259
2. Payment on projected unfunded actuarial accrued liability	2,543,416	2,723,431
3. Total Actuarially Determined Contribution: (1) + (2)	**$3,336,555**	**$3,545,690**
4. Total Actuarially Determined Contribution, payable on July 1	3,279,444	3,484,999

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Hopkinton		1700
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 9 beneficiaries in pay status)		154
2. Participants active during the year ended December 31, 2023		367
3. Inactive participants entitled to a return of their employee contributions		173
4. Inactive participants with a vested right to a deferred or immediate benefit		13
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$3,049,118
2. Administrative expenses		130,247
3. Expected employee contributions		-2,154,293
4. Employer normal cost: (1) + (2) + (3)		**$1,025,072**
5. Actuarial accrued liability		$96,975,568
Retired participants and beneficiaries	$50,887,207	
Active participants	42,813,048	
Inactive participants	3,275,313	
6. Actuarial value of assets		73,105,427
7. Unfunded actuarial accrued liability: **(5) – (6)**		23,870,141
8. Reallocated unfunded actuarial accrued liability		373,125
9. Total unfunded actuarial accrued liability: (7) + (8)		**$24,243,266**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,059,735	4.83%
2. Projected unfunded actuarial accrued liability	25,095,001	
3. Payment on projected unfunded actuarial accrued liability	2,287,791	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$3,347,526**	**15.24%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	3,290,227	14.98%
6. Projected payroll	21,962,341	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,099,059	$1,139,826
2. Payment on projected unfunded actuarial accrued liability	2,359,379	2,526,368
3. Total Actuarially Determined Contribution: (1) + (2)	**$3,458,438**	**$3,666,194**
4. Total Actuarially Determined Contribution, payable on July 1	3,399,241	3,603,441

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Hudson		1800
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 18 beneficiaries in pay status)		258
2. Participants active during the year ended December 31, 2023		388
3. Inactive participants entitled to a return of their employee contributions		262
4. Inactive participants with a vested right to a deferred or immediate benefit		34
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$3,708,454
2. Administrative expenses		158,412
3. Expected employee contributions		-2,444,040
4. Employer normal cost: (1) + (2) + (3)		**$1,422,826**
5. Actuarial accrued liability		$161,642,678
Retired participants and beneficiaries	$94,501,716	
Active participants	61,514,826	
Inactive participants	5,626,136	
6. Actuarial value of assets		94,714,193
7. Unfunded actuarial accrued liability: **(5) – (6)**		66,928,485
8. Reallocated unfunded actuarial accrued liability		621,940
9. Total unfunded actuarial accrued liability: (7) + (8)		**$67,550,425**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,470,940	5.93%
2. Projected unfunded actuarial accrued liability	69,923,663	
3. Payment on projected unfunded actuarial accrued liability	6,587,762	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$8,058,702**	**32.51%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	7,920,764	31.96%
6. Projected payroll	24,785,623	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,524,683	$1,580,375
2. Payment on projected unfunded actuarial accrued liability	6,552,439	7,016,200
3. Total Actuarially Determined Contribution: (1) + (2)	**$8,077,122**	**$8,596,575**
4. Total Actuarially Determined Contribution, payable on July 1	7,938,868	8,449,430

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Lincoln		1900
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 11 beneficiaries in pay status)		127
2. Participants active during the year ended December 31, 2023		217
3. Inactive participants entitled to a return of their employee contributions		116
4. Inactive participants with a vested right to a deferred or immediate benefit		10
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$1,734,660
2. Administrative expenses		74,098
3. Expected employee contributions		-1,267,845
4. Employer normal cost: (1) + (2) + (3)		**$540,913**
5. Actuarial accrued liability		$75,074,220
Retired participants and beneficiaries	$40,693,795	
Active participants	30,573,831	
Inactive participants	3,806,594	
6. Actuarial value of assets		45,116,650
7. Unfunded actuarial accrued liability: **(5) – (6)**		29,957,570
8. Reallocated unfunded actuarial accrued liability		288,857
9. Total unfunded actuarial accrued liability: (7) + (8)		**$30,246,427**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$559,204	4.32%
2. Projected unfunded actuarial accrued liability	31,309,070	
3. Payment on projected unfunded actuarial accrued liability	2,746,743	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$3,305,947**	**25.56%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	3,249,360	25.13%
6. Projected payroll	12,932,519	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$580,156	$601,883
2. Payment on projected unfunded actuarial accrued liability	2,954,530	3,163,642
3. Total Actuarially Determined Contribution: (1) + (2)	**$3,534,686**	**$3,765,525**
4. Total Actuarially Determined Contribution, payable on July 1	3,474,184	3,701,072

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Littleton		2000
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 9 beneficiaries in pay status)		140
2. Participants active during the year ended December 31, 2023		263
3. Inactive participants entitled to a return of their employee contributions		120
4. Inactive participants with a vested right to a deferred or immediate benefit		16
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$2,573,975
2. Administrative expenses		109,951
3. Expected employee contributions		-1,763,965
4. Employer normal cost: (1) + (2) + (3)		**$919,961**
5. Actuarial accrued liability		$88,036,895
Retired participants and beneficiaries	$45,477,974	
Active participants	38,015,748	
Inactive participants	4,543,173	
6. Actuarial value of assets		65,039,118
7. Unfunded actuarial accrued liability: **(5) – (6)**		22,997,777
8. Reallocated unfunded actuarial accrued liability		338,733
9. Total unfunded actuarial accrued liability: (7) + (8)		**$23,336,510**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$951,070	5.35%
2. Projected unfunded actuarial accrued liability	24,156,388	
3. Payment on projected unfunded actuarial accrued liability	2,409,543	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$3,360,613**	**18.92%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	3,303,090	18.60%
6. Projected payroll	17,763,187	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$986,101	$1,022,411
2. Payment on projected unfunded actuarial accrued liability	2,250,089	2,409,343
3. Total Actuarially Determined Contribution: (1) + (2)	**$3,236,190**	**$3,431,754**
4. Total Actuarially Determined Contribution, payable on July 1	3,180,797	3,373,014

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of North Reading		2100
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 25 beneficiaries in pay status)		204
2. Participants active during the year ended December 31, 2023		262
3. Inactive participants entitled to a return of their employee contributions		59
4. Inactive participants with a vested right to a deferred or immediate benefit		9
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$2,316,610
2. Administrative expenses		98,957
3. Expected employee contributions		-1,600,224
4. Employer normal cost: (1) + (2) + (3)		**$815,343**
5. Actuarial accrued liability		$115,423,793
Retired participants and beneficiaries	$67,294,856	
Active participants	46,661,207	
Inactive participants	1,467,730	
6. Actuarial value of assets		64,149,176
7. Unfunded actuarial accrued liability: **(5) – (6)**		51,274,617
8. Reallocated unfunded actuarial accrued liability		444,107
9. Total unfunded actuarial accrued liability: (7) + (8)		**$51,718,724**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$842,914	5.15%
2. Projected unfunded actuarial accrued liability	53,535,750	
3. Payment on projected unfunded actuarial accrued liability	4,806,627	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$5,649,541**	**34.52%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	5,552,840	33.93%
6. Projected payroll	16,365,824	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$874,018	$906,259
2. Payment on projected unfunded actuarial accrued liability	5,040,826	5,397,600
3. Total Actuarially Determined Contribution: (1) + (2)	**$5,914,844**	**$6,303,859**
4. Total Actuarially Determined Contribution, payable on July 1	5,813,601	6,195,958

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Pepperell		2200
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 7 beneficiaries in pay status)		65
2. Participants active during the year ended December 31, 2023		90
3. Inactive participants entitled to a return of their employee contributions		19
4. Inactive participants with a vested right to a deferred or immediate benefit		4
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$1,043,819
2. Administrative expenses		44,588
3. Expected employee contributions		-676,523
4. Employer normal cost: (1) + (2) + (3)		**$411,884**
5. Actuarial accrued liability		$40,902,523
Retired participants and beneficiaries	$23,125,478	
Active participants	16,745,885	
Inactive participants	1,031,160	
6. Actuarial value of assets		25,106,180
7. Unfunded actuarial accrued liability: **(5) – (6)**		15,796,343
8. Reallocated unfunded actuarial accrued liability		157,377
9. Total unfunded actuarial accrued liability: (7) + (8)		**$15,953,720**

The actuarial factors projected to FY25 are as follows:	Amount	% of Payroll
1. Projected employer normal cost	$425,812	6.30%
2. Projected unfunded actuarial accrued liability	16,514,220	
3. Payment on projected unfunded actuarial accrued liability	1,640,436	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$2,066,248**	**30.56%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	2,030,881	30.04%
6. Projected payroll	6,761,167	

The actuarial factors projected to FY26 and FY27 are as follows:	FY26	FY27
1. Projected employer normal cost	$441,322	$457,393
2. Payment on projected unfunded actuarial accrued liability	1,538,938	1,647,859
3. Total Actuarially Determined Contribution: (1) + (2)	**$1,980,260**	**$2,105,252**
4. Total Actuarially Determined Contribution, payable on July 1	1,946,364	2,069,217

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Sherborn		2300
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 2 beneficiaries in pay status)		56
2. Participants active during the year ended December 31, 2023		80
3. Inactive participants entitled to a return of their employee contributions		52
4. Inactive participants with a vested right to a deferred or immediate benefit		6
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$798,116
2. Administrative expenses		34,093
3. Expected employee contributions		-521,737
4. Employer normal cost: (1) + (2) + (3)		**$310,472**
5. Actuarial accrued liability		$30,418,894
Retired participants and beneficiaries	$18,345,134	
Active participants	11,019,101	
Inactive participants	1,054,659	
6. Actuarial value of assets		18,584,967
7. Unfunded actuarial accrued liability: **(5) – (6)**		11,833,927
8. Reallocated unfunded actuarial accrued liability		117,040
9. Total unfunded actuarial accrued liability: (7) + (8)		**$11,950,967**

The actuarial factors projected to FY25 are as follows:	Amount	% of Payroll
1. Projected employer normal cost	$320,971	6.08%
2. Projected unfunded actuarial accrued liability	12,370,838	
3. Payment on projected unfunded actuarial accrued liability	1,015,336	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$1,336,307**	**25.31%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	1,313,434	24.88%
6. Projected payroll	5,279,005	

The actuarial factors projected to FY26 and FY27 are as follows:	FY26	FY27
1. Projected employer normal cost	$332,680	$344,814
2. Payment on projected unfunded actuarial accrued liability	1,174,495	1,257,622
3. Total Actuarially Determined Contribution: (1) + (2)	**$1,507,175**	**$1,602,436**
4. Total Actuarially Determined Contribution, payable on July 1	1,481,377	1,575,008

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Shirley		2400
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 10 beneficiaries in pay status)		45
2. Participants active during the year ended December 31, 2023		36
3. Inactive participants entitled to a return of their employee contributions		25
4. Inactive participants with a vested right to a deferred or immediate benefit		3
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$424,094
2. Administrative expenses		18,116
3. Expected employee contributions		-249,721
4. Employer normal cost: (1) + (2) + (3)		**$192,489**
5. Actuarial accrued liability		$19,369,295
Retired participants and beneficiaries	$12,984,800	
Active participants	5,799,228	
Inactive participants	585,267	
6. Actuarial value of assets		9,339,199
7. Unfunded actuarial accrued liability: **(5) – (6)**		10,030,096
8. Reallocated unfunded actuarial accrued liability		74,526
9. Total unfunded actuarial accrued liability: (7) + (8)		**$10,104,622**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$198,998	7.89%
2. Projected unfunded actuarial accrued liability	10,459,626	
3. Payment on projected unfunded actuarial accrued liability	901,816	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$1,100,814**	**43.66%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	1,081,972	42.92%
6. Projected payroll	2,521,103	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$206,145	$213,546
2. Payment on projected unfunded actuarial accrued liability	988,644	1,058,617
3. Total Actuarially Determined Contribution: (1) + (2)	**$1,194,789**	**$1,272,163**
4. Total Actuarially Determined Contribution, payable on July 1	1,174,338	1,250,388

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Stow		2500
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 4 beneficiaries in pay status)		45
2. Participants active during the year ended December 31, 2023		65
3. Inactive participants entitled to a return of their employee contributions		8
4. Inactive participants with a vested right to a deferred or immediate benefit		3
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$681,595
2. Administrative expenses		29,115
3. Expected employee contributions		-477,870
4. Employer normal cost: (1) + (2) + (3)		**$232,840**
5. Actuarial accrued liability		$31,018,957
Retired participants and beneficiaries	$17,453,499	
Active participants	12,695,292	
Inactive participants	870,166	
6. Actuarial value of assets		17,318,782
7. Unfunded actuarial accrued liability: **(5) – (6)**		13,700,175
8. Reallocated unfunded actuarial accrued liability		119,349
9. Total unfunded actuarial accrued liability: (7) + (8)		**$13,819,524**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$240,714	5.01%
2. Projected unfunded actuarial accrued liability	14,305,043	
3. Payment on projected unfunded actuarial accrued liability	1,206,120	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$1,446,834**	**30.10%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	1,422,069	29.59%
6. Projected payroll	4,806,097	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$249,628	$258,870
2. Payment on projected unfunded actuarial accrued liability	1,354,878	1,450,771
3. Total Actuarially Determined Contribution: (1) + (2)	**$1,604,506**	**$1,709,641**
4. Total Actuarially Determined Contribution, payable on July 1	1,577,042	1,680,378

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Sudbury		2600
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 23 beneficiaries in pay status)		240
2. Participants active during the year ended December 31, 2023		334
3. Inactive participants entitled to a return of their employee contributions		157
4. Inactive participants with a vested right to a deferred or immediate benefit		23
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$3,054,123
2. Administrative expenses		130,461
3. Expected employee contributions		-2,096,241
4. Employer normal cost: (1) + (2) + (3)		**$1,088,343**
5. Actuarial accrued liability		$135,640,708
Retired participants and beneficiaries	$77,897,435	
Active participants	53,516,713	
Inactive participants	4,226,560	
6. Actuarial value of assets		73,644,537
7. Unfunded actuarial accrued liability: **(5) – (6)**		61,996,171
8. Reallocated unfunded actuarial accrued liability		521,894
9. Total unfunded actuarial accrued liability: (7) + (8)		**$62,518,065**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,125,146	5.26%
2. Projected unfunded actuarial accrued liability	64,714,502	
3. Payment on projected unfunded actuarial accrued liability	5,781,211	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$6,906,357**	**32.26%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	6,788,143	31.71%
6. Projected payroll	21,407,949	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,166,603	$1,209,574
2. Payment on projected unfunded actuarial accrued liability	6,096,349	6,527,830
3. Total Actuarially Determined Contribution: (1) + (2)	**$7,262,952**	**$7,737,404**
4. Total Actuarially Determined Contribution, payable on July 1	7,138,634	7,604,965

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Tewksbury		2700
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 28 beneficiaries in pay status)		342
2. Participants active during the year ended December 31, 2023		420
3. Inactive participants entitled to a return of their employee contributions		154
4. Inactive participants with a vested right to a deferred or immediate benefit		12
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$4,258,402
2. Administrative expenses		181,904
3. Expected employee contributions		-2,782,222
4. Employer normal cost: (1) + (2) + (3)		**$1,658,084**
5. Actuarial accrued liability		$208,563,614
Retired participants and beneficiaries	$141,081,630	
Active participants	64,826,731	
Inactive participants	2,655,253	
6. Actuarial value of assets		96,815,149
7. Unfunded actuarial accrued liability: **(5) – (6)**		111,748,465
8. Reallocated unfunded actuarial accrued liability		802,474
9. Total unfunded actuarial accrued liability: (7) + (8)		**$112,550,939**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,714,153	6.10%
2. Projected unfunded actuarial accrued liability	116,505,173	
3. Payment on projected unfunded actuarial accrued liability	10,145,589	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$11,859,742**	**42.22%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	11,656,742	41.50%
6. Projected payroll	28,089,695	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,776,681	$1,841,474
2. Payment on projected unfunded actuarial accrued liability	11,001,849	11,780,525
3. Total Actuarially Determined Contribution: (1) + (2)	**$12,778,530**	**$13,621,999**
4. Total Actuarially Determined Contribution, payable on July 1	12,559,804	13,388,835

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Townsend		2800
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 3 beneficiaries in pay status)		33
2. Participants active during the year ended December 31, 2023		74
3. Inactive participants entitled to a return of their employee contributions		19
4. Inactive participants with a vested right to a deferred or immediate benefit		4
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$811,968
2. Administrative expenses		34,684
3. Expected employee contributions		-466,847
4. Employer normal cost: (1) + (2) + (3)		**$379,805**
5. Actuarial accrued liability		$23,750,121
Retired participants and beneficiaries	$12,697,892	
Active participants	9,400,401	
Inactive participants	1,651,828	
6. Actuarial value of assets		17,651,525
7. Unfunded actuarial accrued liability: **(5) – (6)**		6,098,596
8. Reallocated unfunded actuarial accrued liability		91,381
9. Total unfunded actuarial accrued liability: (7) + (8)		**$6,189,977**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$392,648	8.35%
2. Projected unfunded actuarial accrued liability	6,407,448	
3. Payment on projected unfunded actuarial accrued liability	566,211	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$958,859**	**20.38%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	942,446	20.04%
6. Projected payroll	4,703,985	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$406,709	$421,272
2. Payment on projected unfunded actuarial accrued liability	604,234	647,000
3. Total Actuarially Determined Contribution: (1) + (2)	**$1,010,943**	**$1,068,272**
4. Total Actuarially Determined Contribution, payable on July 1	993,639	1,049,987

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Tyngsborough		2900
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 10 beneficiaries in pay status)		108
2. Participants active during the year ended December 31, 2023		182
3. Inactive participants entitled to a return of their employee contributions		62
4. Inactive participants with a vested right to a deferred or immediate benefit		12
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$1,694,514
2. Administrative expenses		72,384
3. Expected employee contributions		-1,078,681
4. Employer normal cost: (1) + (2) + (3)		**$688,217**
5. Actuarial accrued liability		$63,208,326
Retired participants and beneficiaries	$34,036,924	
Active participants	26,841,176	
Inactive participants	2,330,226	
6. Actuarial value of assets		38,496,248
7. Unfunded actuarial accrued liability: **(5) – (6)**		24,712,078
8. Reallocated unfunded actuarial accrued liability		243,202
9. Total unfunded actuarial accrued liability: (7) + (8)		**$24,955,280**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$711,489	6.46%
2. Projected unfunded actuarial accrued liability	25,832,030	
3. Payment on projected unfunded actuarial accrued liability	2,319,195	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$3,030,684**	**27.52%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	2,978,809	27.05%
6. Projected payroll	11,013,274	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$737,326	$764,095
2. Payment on projected unfunded actuarial accrued liability	2,432,305	2,604,456
3. Total Actuarially Determined Contribution: (1) + (2)	**$3,169,631**	**$3,368,551**
4. Total Actuarially Determined Contribution, payable on July 1	3,115,377	3,310,893

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Wayland		3000
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 21 beneficiaries in pay status)		269
2. Participants active during the year ended December 31, 2023		375
3. Inactive participants entitled to a return of their employee contributions		228
4. Inactive participants with a vested right to a deferred or immediate benefit		25
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$3,355,430
2. Administrative expenses		143,332
3. Expected employee contributions		-2,329,065
4. Employer normal cost: (1) + (2) + (3)		**$1,169,697**
5. Actuarial accrued liability		$142,268,865
Retired participants and beneficiaries	$82,951,438	
Active participants	53,524,393	
Inactive participants	5,793,034	
6. Actuarial value of assets		84,222,240
7. Unfunded actuarial accrued liability: **(5) – (6)**		58,046,625
8. Reallocated unfunded actuarial accrued liability		547,397
9. Total unfunded actuarial accrued liability: (7) + (8)		**$58,594,022**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,209,251	5.11%
2. Projected unfunded actuarial accrued liability	60,652,597	
3. Payment on projected unfunded actuarial accrued liability	5,185,855	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$6,395,106**	**27.00%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	6,285,643	26.54%
6. Projected payroll	23,681,465	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,253,924	$1,300,232
2. Payment on projected unfunded actuarial accrued liability	5,737,301	6,143,369
3. Total Actuarially Determined Contribution: (1) + (2)	**$6,991,225**	**$7,443,601**
4. Total Actuarially Determined Contribution, payable on July 1	6,871,558	7,316,191

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Westford		3100
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 20 beneficiaries in pay status)		307
2. Participants active during the year ended December 31, 2023		544
3. Inactive participants entitled to a return of their employee contributions		224
4. Inactive participants with a vested right to a deferred or immediate benefit		29
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$4,479,708
2. Administrative expenses		191,357
3. Expected employee contributions		-3,033,190
4. Employer normal cost: (1) + (2) + (3)		**$1,637,875**
5. Actuarial accrued liability		$176,824,995
Retired participants and beneficiaries	$91,879,208	
Active participants	80,678,680	
Inactive participants	4,267,107	
6. Actuarial value of assets		119,666,153
7. Unfunded actuarial accrued liability: **(5) – (6)**		57,158,842
8. Reallocated unfunded actuarial accrued liability		680,355
9. Total unfunded actuarial accrued liability: (7) + (8)		**$57,839,197**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,693,261	5.46%
2. Projected unfunded actuarial accrued liability	59,871,252	
3. Payment on projected unfunded actuarial accrued liability	5,359,096	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$7,052,357**	**22.72%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	6,931,644	22.33%
6. Projected payroll	31,035,134	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,755,464	$1,819,934
2. Payment on projected unfunded actuarial accrued liability	5,639,026	6,038,138
3. Total Actuarially Determined Contribution: (1) + (2)	**$7,394,490**	**$7,858,072**
4. Total Actuarially Determined Contribution, payable on July 1	7,267,921	7,723,568

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Weston		3200
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 27 beneficiaries in pay status)		287
2. Participants active during the year ended December 31, 2023		388
3. Inactive participants entitled to a return of their employee contributions		189
4. Inactive participants with a vested right to a deferred or immediate benefit		15
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$3,436,074
2. Administrative expenses		146,777
3. Expected employee contributions		-2,424,208
4. Employer normal cost: (1) + (2) + (3)		**$1,158,643**
5. Actuarial accrued liability		$155,807,475
Retired participants and beneficiaries	$89,231,361	
Active participants	62,208,428	
Inactive participants	4,367,686	
6. Actuarial value of assets		86,673,277
7. Unfunded actuarial accrued liability: **(5) – (6)**		69,134,198
8. Reallocated unfunded actuarial accrued liability		599,488
9. Total unfunded actuarial accrued liability: (7) + (8)		**$69,733,686**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,197,823	4.87%
2. Projected unfunded actuarial accrued liability	72,183,629	
3. Payment on projected unfunded actuarial accrued liability	6,298,988	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$7,496,811**	**30.47%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	7,368,490	29.95%
6. Projected payroll	24,604,134	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,242,254	$1,288,316
2. Payment on projected unfunded actuarial accrued liability	6,815,141	7,297,495
3. Total Actuarially Determined Contribution: (1) + (2)	**$8,057,395**	**$8,585,811**
4. Total Actuarially Determined Contribution, payable on July 1	7,919,479	8,438,850

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Town of Wilmington		3300
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 36 beneficiaries in pay status)		328
2. Participants active during the year ended December 31, 2023		436
3. Inactive participants entitled to a return of their employee contributions		168
4. Inactive participants with a vested right to a deferred or immediate benefit		17
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$4,077,783
2. Administrative expenses		174,188
3. Expected employee contributions		-2,820,248
4. Employer normal cost: (1) + (2) + (3)		**$1,431,723**
5. Actuarial accrued liability		$200,830,631
Retired participants and beneficiaries	$121,168,143	
Active participants	76,339,980	
Inactive participants	3,322,508	
6. Actuarial value of assets		113,224,902
7. Unfunded actuarial accrued liability: **(5) – (6)**		87,605,729
8. Reallocated unfunded actuarial accrued liability		772,720
9. Total unfunded actuarial accrued liability: (7) + (8)		**$88,378,449**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$1,480,138	5.18%
2. Projected unfunded actuarial accrued liability	91,483,435	
3. Payment on projected unfunded actuarial accrued liability	8,179,936	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$9,660,074**	**33.82%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	9,494,725	33.24%
6. Projected payroll	28,566,773	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$1,534,771	$1,591,402
2. Payment on projected unfunded actuarial accrued liability	8,617,337	9,227,245
3. Total Actuarially Determined Contribution: (1) + (2)	**$10,152,108**	**$10,818,647**
4. Total Actuarially Determined Contribution, payable on July 1	9,978,337	10,633,467

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Acton-Boxborough RSD		3400
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 6 beneficiaries in pay status)		183
2. Participants active during the year ended December 31, 2023		367
3. Inactive participants entitled to a return of their employee contributions		145
4. Inactive participants with a vested right to a deferred or immediate benefit		15
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$2,427,029
2. Administrative expenses		103,674
3. Expected employee contributions		-1,697,375
4. Employer normal cost: (1) + (2) + (3)		**$833,328**
5. Actuarial accrued liability		$80,060,814
Retired participants and beneficiaries	$40,957,368	
Active participants	35,824,917	
Inactive participants	3,278,529	
6. Actuarial value of assets		50,120,268
7. Unfunded actuarial accrued liability: **(5) – (6)**		29,940,546
8. Reallocated unfunded actuarial accrued liability		308,044
9. Total unfunded actuarial accrued liability: (7) + (8)		**$30,248,590**

The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$861,507	4.85%
2. Projected unfunded actuarial accrued liability	31,311,309	
3. Payment on projected unfunded actuarial accrued liability	2,779,783	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$3,641,290**	**20.50%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	3,578,963	20.15%
6. Projected payroll	17,763,517	

The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$893,392	$926,446
2. Payment on projected unfunded actuarial accrued liability	2,951,407	3,160,299
3. Total Actuarially Determined Contribution: (1) + (2)	**$3,844,799**	**$4,086,745**
4. Total Actuarially Determined Contribution, payable on July 1	3,778,989	4,016,793

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Acton Water Supply			3500
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			11
2. Participants active during the year ended December 31, 2023			14
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			2
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$105,290
2. Administrative expenses			4,498
3. Expected employee contributions			-122,650
4. Employer normal cost: (1) + (2) + (3)			**-$12,862**
5. Actuarial accrued liability			$10,424,207
Retired participants and beneficiaries		$5,829,332	
Active participants		4,285,041	
Inactive participants		309,834	
6. Actuarial value of assets			6,209,480
7. Unfunded actuarial accrued liability: **(5) – (6)**			4,214,727
8. Reallocated unfunded actuarial accrued liability			40,108
9. Total unfunded actuarial accrued liability: (7) + (8)			**$4,254,835**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost	-$13,297		-1.09%
2. Projected unfunded actuarial accrued liability	4,404,319		
3. Payment on projected unfunded actuarial accrued liability	374,215		
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$360,918**		**29.52%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	354,740		29.02%
6. Projected payroll	1,222,499		
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**	
1. Projected employer normal cost	-$13,561	-$13,827	
2. Payment on projected unfunded actuarial accrued liability	416,856	446,360	
3. Total Actuarially Determined Contribution: (1) + (2)	**$403,295**	**$432,533**	
4. Total Actuarially Determined Contribution, payable on July 1	396,392	425,129	

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Bedford Housing Authority			3600
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 1 beneficiary in pay status)			2
2. Participants active during the year ended December 31, 2023			2
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$18,235
2. Administrative expenses			779
3. Expected employee contributions			-13,869
4. Employer normal cost: (1) + (2) + (3)			**$5,145**
5. Actuarial accrued liability			$951,336
Retired participants and beneficiaries	$223,943		
Active participants	710,597		
Inactive participants	16,796		
6. Actuarial value of assets			603,425
7. Unfunded actuarial accrued liability: **(5) – (6)**			347,911
8. Reallocated unfunded actuarial accrued liability			3,660
9. Total unfunded actuarial accrued liability: (7) + (8)			**$351,571**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$5,319	3.82%
2. Projected unfunded actuarial accrued liability		363,923	
3. Payment on projected unfunded actuarial accrued liability		30,111	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$35,430**	**25.45%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		34,824	25.02%
6. Projected payroll		139,202	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		$5,521	$5,731
2. Payment on projected unfunded actuarial accrued liability		34,527	36,970
3. Total Actuarially Determined Contribution: (1) + (2)		**$40,048**	**$42,701**
4. Total Actuarially Determined Contribution, payable on July 1		39,363	41,970

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Billerica Housing Authority		3700
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 1 beneficiary in pay status)		6
2. Participants active during the year ended December 31, 2023		5
3. Inactive participants entitled to a return of their employee contributions		1
4. Inactive participants with a vested right to a deferred or immediate benefit		0
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$54,601
2. Administrative expenses		2,332
3. Expected employee contributions		-42,530
4. Employer normal cost: (1) + (2) + (3)		**$14,403**
5. Actuarial accrued liability		$3,389,275
Retired participants and beneficiaries	$2,397,761	
Active participants	991,282	
Inactive participants	232	
6. Actuarial value of assets		1,579,680
7. Unfunded actuarial accrued liability: **(5) – (6)**		1,809,595
8. Reallocated unfunded actuarial accrued liability		13,041
9. Total unfunded actuarial accrued liability: (7) + (8)		**$1,822,636**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$14,890	3.54%
2. Projected unfunded actuarial accrued liability	1,886,670	
3. Payment on projected unfunded actuarial accrued liability	108,616	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$123,506**	**29.37%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	121,392	28.86%
6. Projected payroll	420,581	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$15,461	$16,054
2. Payment on projected unfunded actuarial accrued liability	183,814	196,824
3. Total Actuarially Determined Contribution: (1) + (2)	**$199,275**	**$212,878**
4. Total Actuarially Determined Contribution, payable on July 1	195,864	209,234

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Chelmsford Housing Authority		3800
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)		6
2. Participants active during the year ended December 31, 2023		42
3. Inactive participants entitled to a return of their employee contributions		14
4. Inactive participants with a vested right to a deferred or immediate benefit		0
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$443,516
2. Administrative expenses		18,945
3. Expected employee contributions		-382,258
4. Employer normal cost: (1) + (2) + (3)		**$80,203**
5. Actuarial accrued liability		$11,179,438
Retired participants and beneficiaries	$2,150,178	
Active participants	8,870,478	
Inactive participants	158,782	
6. Actuarial value of assets		8,769,876
7. Unfunded actuarial accrued liability: **(5) – (6)**		2,409,562
8. Reallocated unfunded actuarial accrued liability		43,014
9. Total unfunded actuarial accrued liability: (7) + (8)		**$2,452,576**

The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$82,915	2.19%
2. Projected unfunded actuarial accrued liability	2,538,742	
3. Payment on projected unfunded actuarial accrued liability	233,119	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$316,034**	**8.35%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	310,625	8.21%
6. Projected payroll	3,784,545	

The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$86,320	$89,860
2. Payment on projected unfunded actuarial accrued liability	238,517	255,399
3. Total Actuarially Determined Contribution: (1) + (2)	**$324,837**	**$345,259**
4. Total Actuarially Determined Contribution, payable on July 1	319,277	339,349

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Chelmsford Water District			3900
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 2 beneficiaries in pay status)			15
2. Participants active during the year ended December 31, 2023			20
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			1
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$145,636
2. Administrative expenses			6,221
3. Expected employee contributions			-135,367
4. Employer normal cost: (1) + (2) + (3)			**$16,490**
5. Actuarial accrued liability			$9,841,165
Retired participants and beneficiaries	$5,226,823		
Active participants	4,478,303		
Inactive participants	136,039		
6. Actuarial value of assets			9,495,967
7. Unfunded actuarial accrued liability: **(5) – (6)**			345,198
8. Reallocated unfunded actuarial accrued liability			37,865
9. Total unfunded actuarial accrued liability: (7) + (8)			**$383,063**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$17,048	1.21%
2. Projected unfunded actuarial accrued liability		396,521	
3. Payment on projected unfunded actuarial accrued liability		38,867	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$55,915**	**3.96%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		54,958	3.90%
6. Projected payroll		1,410,334	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		$17,835	$18,656
2. Payment on projected unfunded actuarial accrued liability		37,004	39,623
3. Total Actuarially Determined Contribution: (1) + (2)		**$54,839**	**$58,279**
4. Total Actuarially Determined Contribution, payable on July 1		53,900	57,281

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Dracut Housing Authority			4000
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			5
2. Participants active during the year ended December 31, 2023			6
3. Inactive participants entitled to a return of their employee contributions			0
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$53,496
2. Administrative expenses			2,285
3. Expected employee contributions			-46,228
4. Employer normal cost: (1) + (2) + (3)			**$9,553**
5. Actuarial accrued liability			$3,602,241
Retired participants and beneficiaries	$1,556,558		
Active participants	2,045,683		
Inactive participants	0		
6. Actuarial value of assets			1,821,534
7. Unfunded actuarial accrued liability: **(5) – (6)**			1,780,707
8. Reallocated unfunded actuarial accrued liability			13,860
9. Total unfunded actuarial accrued liability: (7) + (8)			**$1,794,567**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$9,876	2.10%
2. Projected unfunded actuarial accrued liability		1,857,615	
3. Payment on projected unfunded actuarial accrued liability		169,602	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$179,478**	**38.15%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		176,406	37.50%
6. Projected payroll		470,471	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		$10,283	$10,705
2. Payment on projected unfunded actuarial accrued liability		174,623	186,983
3. Total Actuarially Determined Contribution: (1) + (2)		**$184,906**	**$197,688**
4. Total Actuarially Determined Contribution, payable on July 1		181,741	194,304

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Dracut Water Supply			4100
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 3 beneficiaries in pay status)			11
2. Participants active during the year ended December 31, 2023			12
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			1
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$89,116
2. Administrative expenses			3,807
3. Expected employee contributions			-78,377
4. Employer normal cost: (1) + (2) + (3)			**$14,546**
5. Actuarial accrued liability			$6,899,251
Retired participants and beneficiaries	$4,052,466		
Active participants	2,800,248		
Inactive participants	46,537		
6. Actuarial value of assets			3,254,244
7. Unfunded actuarial accrued liability: **(5) – (6)**			3,645,007
8. Reallocated unfunded actuarial accrued liability			26,546
9. Total unfunded actuarial accrued liability: (7) + (8)			**$3,671,553**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$15,038	1.89%
2. Projected unfunded actuarial accrued liability		3,800,545	
3. Payment on projected unfunded actuarial accrued liability		329,961	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$344,999**	**43.27%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		339,094	42.53%
6. Projected payroll		797,377	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$15,669		$16,326
2. Payment on projected unfunded actuarial accrued liability	358,996		384,404
3. Total Actuarially Determined Contribution: (1) + (2)	**$374,665**		**$400,730**
4. Total Actuarially Determined Contribution, payable on July 1	368,252		393,871

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for E. Chelmsford Water			4200
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 1 beneficiary in pay status)			2
2. Participants active during the year ended December 31, 2023			3
3. Inactive participants entitled to a return of their employee contributions			0
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$32,047
2. Administrative expenses			1,369
3. Expected employee contributions			-23,909
4. Employer normal cost: (1) + (2) + (3)			**$9,507**
5. Actuarial accrued liability			$1,397,895
Retired participants and beneficiaries	$278,364		
Active participants	1,119,531		
Inactive participants	0		
6. Actuarial value of assets			1,105,718
7. Unfunded actuarial accrued liability: **(5) – (6)**			292,177
8. Reallocated unfunded actuarial accrued liability			5,379
9. Total unfunded actuarial accrued liability: (7) + (8)			**$297,556**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$9,828	3.97%
2. Projected unfunded actuarial accrued liability		308,010	
3. Payment on projected unfunded actuarial accrued liability		27,461	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$37,289**	**15.05%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		36,651	14.79%
6. Projected payroll		247,755	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$10,199		$10,584
2. Payment on projected unfunded actuarial accrued liability	29,021		31,075
3. Total Actuarially Determined Contribution: (1) + (2)	**$39,220**		**$41,659**
4. Total Actuarially Determined Contribution, payable on July 1	38,549		40,946

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for E. Middlesex Mosq Control			4300
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			4
2. Participants active during the year ended December 31, 2023			5
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$34,078
2. Administrative expenses			1,456
3. Expected employee contributions			-35,991
4. Employer normal cost: (1) + (2) + (3)			**-$457**
5. Actuarial accrued liability			$2,781,304
Retired participants and beneficiaries	$1,638,271		
Active participants	1,129,073		
Inactive participants	13,960		
6. Actuarial value of assets			2,081,211
7. Unfunded actuarial accrued liability: **(5) – (6)**			700,093
8. Reallocated unfunded actuarial accrued liability			10,701
9. Total unfunded actuarial accrued liability: (7) + (8)			**$710,794**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		-$472	-0.13%
2. Projected unfunded actuarial accrued liability		735,766	
3. Payment on projected unfunded actuarial accrued liability		71,286	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$70,814**	**19.36%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		69,602	19.03%
6. Projected payroll		365,807	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		-$433	-$391
2. Payment on projected unfunded actuarial accrued liability		68,748	73,614
3. Total Actuarially Determined Contribution: (1) + (2)		**$68,315**	**$73,223**
4. Total Actuarially Determined Contribution, payable on July 1		67,146	71,970

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Greater Lowell RVTSD			4400
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 6 beneficiaries in pay status)			82
2. Participants active during the year ended December 31, 2023			97
3. Inactive participants entitled to a return of their employee contributions			25
4. Inactive participants with a vested right to a deferred or immediate benefit			5
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$695,899
2. Administrative expenses			29,726
3. Expected employee contributions			-537,744
4. Employer normal cost: (1) + (2) + (3)			**$187,881**
5. Actuarial accrued liability			$36,468,394
Retired participants and beneficiaries	$22,187,952		
Active participants	13,576,072		
Inactive participants	704,370		
6. Actuarial value of assets			17,315,848
7. Unfunded actuarial accrued liability: **(5) – (6)**			19,152,546
8. Reallocated unfunded actuarial accrued liability			140,317
9. Total unfunded actuarial accrued liability: (7) + (8)			**$19,292,863**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost	$194,234		3.49%
2. Projected unfunded actuarial accrued liability	19,970,676		
3. Payment on projected unfunded actuarial accrued liability	1,741,340		
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$1,935,574**		**34.80%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	1,902,443		34.20%
6. Projected payroll	5,561,930		
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**	
1. Projected employer normal cost	$201,661	$209,367	
2. Payment on projected unfunded actuarial accrued liability	1,885,649	2,019,110	
3. Total Actuarially Determined Contribution: (1) + (2)	**$2,087,310**	**$2,228,477**	
4. Total Actuarially Determined Contribution, payable on July 1	2,051,582	2,190,333	

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Groton-Dunstable RSD		4500
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 4 beneficiaries in pay status)		118
2. Participants active during the year ended December 31, 2023		124
3. Inactive participants entitled to a return of their employee contributions		80
4. Inactive participants with a vested right to a deferred or immediate benefit		8
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$626,754
2. Administrative expenses		26,773
3. Expected employee contributions		-447,068
4. Employer normal cost: (1) + (2) + (3)		**$206,459**
5. Actuarial accrued liability		$34,227,594
Retired participants and beneficiaries	$23,373,630	
Active participants	9,797,922	
Inactive participants	1,056,042	
6. Actuarial value of assets		19,828,607
7. Unfunded actuarial accrued liability: **(5) – (6)**		14,398,987
8. Reallocated unfunded actuarial accrued liability		131,695
9. Total unfunded actuarial accrued liability: (7) + (8)		**$14,530,682**

The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$213,441	4.49%
2. Projected unfunded actuarial accrued liability	15,041,186	
3. Payment on projected unfunded actuarial accrued liability	1,276,156	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$1,489,597**	**31.33%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	1,464,100	30.79%
6. Projected payroll	4,755,077	

The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$221,381	$229,613
2. Payment on projected unfunded actuarial accrued liability	1,423,791	1,524,563
3. Total Actuarially Determined Contribution: (1) + (2)	**$1,645,172**	**$1,754,176**
4. Total Actuarially Determined Contribution, payable on July 1	1,617,012	1,724,150

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Hudson Housing Authority			4600
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 1 beneficiary in pay status)			5
2. Participants active during the year ended December 31, 2023			7
3. Inactive participants entitled to a return of their employee contributions			2
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$59,453
2. Administrative expenses			2,540
3. Expected employee contributions			-52,117
4. Employer normal cost: (1) + (2) + (3)			**$9,876**
5. Actuarial accrued liability			$2,106,301
Retired participants and beneficiaries	$1,406,281		
Active participants	683,443		
Inactive participants	16,577		
6. Actuarial value of assets			1,260,473
7. Unfunded actuarial accrued liability: **(5) – (6)**			845,828
8. Reallocated unfunded actuarial accrued liability			8,104
9. Total unfunded actuarial accrued liability: (7) + (8)			**$853,932**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$10,210	1.96%
2. Projected unfunded actuarial accrued liability		883,933	
3. Payment on projected unfunded actuarial accrued liability		68,494	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$78,704**	**15.13%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		77,357	14.87%
6. Projected payroll		520,227	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$10,637		$11,081
2. Payment on projected unfunded actuarial accrued liability	84,333		90,301
3. Total Actuarially Determined Contribution: (1) + (2)	**$94,970**		**$101,382**
4. Total Actuarially Determined Contribution, payable on July 1	93,344		99,647

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Lincoln Sudbury		4700
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 2 beneficiaries in pay status)		48
2. Participants active during the year ended December 31, 2023		63
3. Inactive participants entitled to a return of their employee contributions		26
4. Inactive participants with a vested right to a deferred or immediate benefit		4
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$386,501
2. Administrative expenses		16,510
3. Expected employee contributions		-319,015
4. Employer normal cost: (1) + (2) + (3)		**$83,996**
5. Actuarial accrued liability		$21,846,605
Retired participants and beneficiaries	$12,561,895	
Active participants	8,452,447	
Inactive participants	832,263	
6. Actuarial value of assets		12,061,722
7. Unfunded actuarial accrued liability: **(5) – (6)**		9,784,883
8. Reallocated unfunded actuarial accrued liability		84,057
9. Total unfunded actuarial accrued liability: (7) + (8)		**$9,868,940**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$86,836	2.62%
2. Projected unfunded actuarial accrued liability	10,215,664	
3. Payment on projected unfunded actuarial accrued liability	905,588	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$992,424**	**29.96%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	975,437	29.45%
6. Projected payroll	3,312,545	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$90,277	$93,851
2. Payment on projected unfunded actuarial accrued liability	963,066	1,031,229
3. Total Actuarially Determined Contribution: (1) + (2)	**$1,053,343**	**$1,125,080**
4. Total Actuarially Determined Contribution, payable on July 1	1,035,313	1,105,822

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Nashoba Valley THSD			4900
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			13
2. Participants active during the year ended December 31, 2023			25
3. Inactive participants entitled to a return of their employee contributions			12
4. Inactive participants with a vested right to a deferred or immediate benefit			1
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$155,265
2. Administrative expenses			6,632
3. Expected employee contributions			-105,055
4. Employer normal cost: (1) + (2) + (3)			**$56,842**
5. Actuarial accrued liability			$5,840,241
Retired participants and beneficiaries		$2,615,543	
Active participants		2,833,026	
Inactive participants		391,672	
6. Actuarial value of assets			2,291,265
7. Unfunded actuarial accrued liability: **(5) – (6)**			3,548,976
8. Reallocated unfunded actuarial accrued liability			22,471
9. Total unfunded actuarial accrued liability: (7) + (8)			**$3,571,447**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost	$58,764		5.34%
2. Projected unfunded actuarial accrued liability	3,696,922		
3. Payment on projected unfunded actuarial accrued liability	350,411		
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$409,175**		**37.19%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	402,171		36.55%
6. Projected payroll	1,100,375		
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$60,923		$63,160
2. Payment on projected unfunded actuarial accrued liability	346,219		370,723
3. Total Actuarially Determined Contribution: (1) + (2)	**$407,142**		**$433,883**
4. Total Actuarially Determined Contribution, payable on July 1	400,173		426,456

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for N. Chelmsford Water			5000
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 2 beneficiaries in pay status)			5
2. Participants active during the year ended December 31, 2023			8
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$77,346
2. Administrative expenses			3,304
3. Expected employee contributions			-71,306
4. Employer normal cost: (1) + (2) + (3)			**$9,344**
5. Actuarial accrued liability			$4,969,753
Retired participants and beneficiaries	$3,261,811		
Active participants	1,665,830		
Inactive participants	42,112		
6. Actuarial value of assets			3,382,127
7. Unfunded actuarial accrued liability: **(5) – (6)**			1,587,626
8. Reallocated unfunded actuarial accrued liability			19,122
9. Total unfunded actuarial accrued liability: (7) + (8)			**$1,606,748**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$9,660	1.35%
2. Projected unfunded actuarial accrued liability		1,663,198	
3. Payment on projected unfunded actuarial accrued liability		93,811	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$103,471**	**14.50%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		101,700	14.25%
6. Projected payroll		713,643	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		$10,098	$10,554
2. Payment on projected unfunded actuarial accrued liability		162,239	173,722
3. Total Actuarially Determined Contribution: (1) + (2)		**$172,337**	**$184,276**
4. Total Actuarially Determined Contribution, payable on July 1		169,387	181,122

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for North Middlesex RSD		5100
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 7 beneficiaries in pay status)		95
2. Participants active during the year ended December 31, 2023		160
3. Inactive participants entitled to a return of their employee contributions		92
4. Inactive participants with a vested right to a deferred or immediate benefit		9
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$801,659
2. Administrative expenses		34,244
3. Expected employee contributions		-584,983
4. Employer normal cost: (1) + (2) + (3)		**$250,920**
5. Actuarial accrued liability		$33,720,277
Retired participants and beneficiaries	$17,463,290	
Active participants	14,688,816	
Inactive participants	1,568,171	
6. Actuarial value of assets		20,097,033
7. Unfunded actuarial accrued liability: **(5) – (6)**		13,623,244
8. Reallocated unfunded actuarial accrued liability		129,743
9. Total unfunded actuarial accrued liability: (7) + (8)		**$13,752,987**

The actuarial factors projected to FY25 are as follows:	Amount	% of Payroll
1. Projected employer normal cost	$259,405	4.17%
2. Projected unfunded actuarial accrued liability	14,236,169	
3. Payment on projected unfunded actuarial accrued liability	1,268,294	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$1,527,699**	**24.58%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	1,501,550	24.16%
6. Projected payroll	6,214,075	

The actuarial factors projected to FY26 and FY27 are as follows:	FY26	FY27
1. Projected employer normal cost	$269,119	$279,193
2. Payment on projected unfunded actuarial accrued liability	1,341,454	1,436,398
3. Total Actuarially Determined Contribution: (1) + (2)	**$1,610,573**	**$1,715,591**
4. Total Actuarially Determined Contribution, payable on July 1	1,583,005	1,686,226

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Shawsheen Valley RVS		5300
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 6 beneficiaries in pay status)		50
2. Participants active during the year ended December 31, 2023		63
3. Inactive participants entitled to a return of their employee contributions		29
4. Inactive participants with a vested right to a deferred or immediate benefit		3
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$424,870
2. Administrative expenses		18,149
3. Expected employee contributions		-345,723
4. Employer normal cost: (1) + (2) + (3)		**$97,296**
5. Actuarial accrued liability		$19,033,407
Retired participants and beneficiaries	$10,105,186	
Active participants	8,074,223	
Inactive participants	853,998	
6. Actuarial value of assets		9,946,438
7. Unfunded actuarial accrued liability: **(5) – (6)**		9,086,969
8. Reallocated unfunded actuarial accrued liability		73,233
9. Total unfunded actuarial accrued liability: (7) + (8)		**$9,160,202**
The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$100,586	2.84%
2. Projected unfunded actuarial accrued liability	9,482,026	
3. Payment on projected unfunded actuarial accrued liability	864,976	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$965,562**	**27.27%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	949,035	26.80%
6. Projected payroll	3,540,736	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$104,535	$108,636
2. Payment on projected unfunded actuarial accrued liability	891,425	954,517
3. Total Actuarially Determined Contribution: (1) + (2)	**$995,960**	**$1,063,153**
4. Total Actuarially Determined Contribution, payable on July 1	978,912	1,044,955

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for South Middlesex RVTS		5400
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 3 beneficiaries in pay status)		45
2. Participants active during the year ended December 31, 2023		48
3. Inactive participants entitled to a return of their employee contributions		25
4. Inactive participants with a vested right to a deferred or immediate benefit		1
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$367,485
2. Administrative expenses		15,698
3. Expected employee contributions		-268,962
4. Employer normal cost: (1) + (2) + (3)		**$114,221**
5. Actuarial accrued liability		$15,411,040
Retired participants and beneficiaries	$10,354,338	
Active participants	4,809,802	
Inactive participants	246,900	
6. Actuarial value of assets		8,433,105
7. Unfunded actuarial accrued liability: **(5) – (6)**		6,977,935
8. Reallocated unfunded actuarial accrued liability		59,296
9. Total unfunded actuarial accrued liability: (7) + (8)		**$7,037,231**

The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$118,083	4.26%
2. Projected unfunded actuarial accrued liability	7,284,469	
3. Payment on projected unfunded actuarial accrued liability	647,064	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$765,147**	**27.62%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	752,050	27.14%
6. Projected payroll	2,770,644	

The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$122,510	$127,100
2. Payment on projected unfunded actuarial accrued liability	686,599	735,194
3. Total Actuarially Determined Contribution: (1) + (2)	**$809,109**	**$862,294**
4. Total Actuarially Determined Contribution, payable on July 1	795,260	847,534

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Sudbury Water District			5500
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			3
2. Participants active during the year ended December 31, 2023			11
3. Inactive participants entitled to a return of their employee contributions			0
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$100,971
2. Administrative expenses			4,313
3. Expected employee contributions			-107,178
4. Employer normal cost: (1) + (2) + (3)			**-$1,894**
5. Actuarial accrued liability			$6,707,422
Retired participants and beneficiaries	$1,776,934		
Active participants	4,930,488		
Inactive participants	0		
6. Actuarial value of assets			5,698,423
7. Unfunded actuarial accrued liability: **(5) – (6)**			1,008,999
8. Reallocated unfunded actuarial accrued liability			25,808
9. Total unfunded actuarial accrued liability: (7) + (8)			**$1,034,807**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost	-$1,958		-0.18%
2. Projected unfunded actuarial accrued liability	1,071,163		
3. Payment on projected unfunded actuarial accrued liability	172,732		
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$170,774**		**15.42%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	167,851		15.16%
6. Projected payroll	1,107,224		
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	-$1,860		-$1,753
2. Payment on projected unfunded actuarial accrued liability	93,088		99,676
3. Total Actuarially Determined Contribution: (1) + (2)	**$91,228**		**$97,923**
4. Total Actuarially Determined Contribution, payable on July 1	89,666		96,247

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Tewksbury Housing Authority			5600
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 1 beneficiary in pay status)			7
2. Participants active during the year ended December 31, 2023			8
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$66,717
2. Administrative expenses			2,850
3. Expected employee contributions			-56,919
4. Employer normal cost: (1) + (2) + (3)			**$12,648**
5. Actuarial accrued liability			$3,999,523
Retired participants and beneficiaries	$2,389,484		
Active participants	1,607,010		
Inactive participants	3,029		
6. Actuarial value of assets			1,950,948
7. Unfunded actuarial accrued liability: **(5) – (6)**			2,048,575
8. Reallocated unfunded actuarial accrued liability			15,389
9. Total unfunded actuarial accrued liability: (7) + (8)			**$2,063,964**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$13,076	2.29%
2. Projected unfunded actuarial accrued liability		2,136,477	
3. Payment on projected unfunded actuarial accrued liability		158,091	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$171,167**	**30.02%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		168,237	29.51%
6. Projected payroll		570,131	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$13,607		$14,160
2. Payment on projected unfunded actuarial accrued liability	204,590		219,071
3. Total Actuarially Determined Contribution: (1) + (2)	**$218,197**		**$233,231**
4. Total Actuarially Determined Contribution, payable on July 1	214,462		229,239

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Wayland Housing Authority			5700
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			3
2. Participants active during the year ended December 31, 2023			4
3. Inactive participants entitled to a return of their employee contributions			0
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$45,532
2. Administrative expenses			1,945
3. Expected employee contributions			-33,573
4. Employer normal cost: (1) + (2) + (3)			**$13,904**
5. Actuarial accrued liability			$2,107,303
Retired participants and beneficiaries	$902,573		
Active participants	1,204,730		
Inactive participants	0		
6. Actuarial value of assets			1,766,597
7. Unfunded actuarial accrued liability: **(5) – (6)**			340,706
8. Reallocated unfunded actuarial accrued liability			8,108
9. Total unfunded actuarial accrued liability: (7) + (8)			**$348,814**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$14,374	4.16%
2. Projected unfunded actuarial accrued liability		361,069	
3. Payment on projected unfunded actuarial accrued liability		46,512	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$60,886**	**17.64%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		59,844	17.33%
6. Projected payroll		345,246	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$14,914		$15,474
2. Payment on projected unfunded actuarial accrued liability	32,567		34,872
3. Total Actuarially Determined Contribution: (1) + (2)	**$47,481**		**$50,346**
4. Total Actuarially Determined Contribution, payable on July 1	46,668		49,484

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Hopkinton Housing Authority			5800
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			2
2. Participants active during the year ended December 31, 2023			2
3. Inactive participants entitled to a return of their employee contributions			0
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$14,077
2. Administrative expenses			601
3. Expected employee contributions			-10,534
4. Employer normal cost: (1) + (2) + (3)			**$4,144**
5. Actuarial accrued liability			$1,080,033
Retired participants and beneficiaries	$940,872		
Active participants	139,161		
Inactive participants	0		
6. Actuarial value of assets			485,379
7. Unfunded actuarial accrued liability: **(5) – (6)**			594,654
8. Reallocated unfunded actuarial accrued liability			4,156
9. Total unfunded actuarial accrued liability: (7) + (8)			**$598,810**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$4,284	3.95%
2. Projected unfunded actuarial accrued liability		619,848	
3. Payment on projected unfunded actuarial accrued liability		55,186	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$59,470**	**54.86%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		58,452	53.93%
6. Projected payroll		108,394	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$4,446		$4,614
2. Payment on projected unfunded actuarial accrued liability	58,411		62,545
3. Total Actuarially Determined Contribution: (1) + (2)	**$62,857**		**$67,159**
4. Total Actuarially Determined Contribution, payable on July 1	61,781		66,009

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Sudbury Housing Authority			6000
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			3
2. Participants active during the year ended December 31, 2023			2
3. Inactive participants entitled to a return of their employee contributions			3
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$15,260
2. Administrative expenses			652
3. Expected employee contributions			-9,930
4. Employer normal cost: (1) + (2) + (3)			**$5,982**
5. Actuarial accrued liability			$930,909
Retired participants and beneficiaries	$673,006		
Active participants	215,865		
Inactive participants	42,038		
6. Actuarial value of assets			398,881
7. Unfunded actuarial accrued liability: **(5) – (6)**			532,028
8. Reallocated unfunded actuarial accrued liability			3,582
9. Total unfunded actuarial accrued liability: (7) + (8)			**$535,610**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$6,184	6.01%
2. Projected unfunded actuarial accrued liability		554,428	
3. Payment on projected unfunded actuarial accrued liability		51,022	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$57,206**	**55.64%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		56,227	54.69%
6. Projected payroll		102,811	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		$6,410	$6,643
2. Payment on projected unfunded actuarial accrued liability		52,078	55,764
3. Total Actuarially Determined Contribution: (1) + (2)		**$58,488**	**$62,407**
4. Total Actuarially Determined Contribution, payable on July 1		57,487	61,339

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Wilmington Housing Authority			6100
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			3
2. Participants active during the year ended December 31, 2023			4
3. Inactive participants entitled to a return of their employee contributions			2
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$28,779
2. Administrative expenses			1,229
3. Expected employee contributions			-19,233
4. Employer normal cost: (1) + (2) + (3)			**$10,775**
5. Actuarial accrued liability			$527,811
Retired participants and beneficiaries	$289,285		
Active participants	236,146		
Inactive participants	2,380		
6. Actuarial value of assets			408,667
7. Unfunded actuarial accrued liability: **(5) – (6)**			119,144
8. Reallocated unfunded actuarial accrued liability			2,031
9. Total unfunded actuarial accrued liability: (7) + (8)			**$121,175**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$11,139	5.60%
2. Projected unfunded actuarial accrued liability		125,432	
3. Payment on projected unfunded actuarial accrued liability		14,528	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$25,667**	**12.91%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		25,228	12.69%
6. Projected payroll		198,879	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$11,547		$11,970
2. Payment on projected unfunded actuarial accrued liability	11,479		12,291
3. Total Actuarially Determined Contribution: (1) + (2)	**$23,026**		**$24,261**
4. Total Actuarially Determined Contribution, payable on July 1	22,632		23,846

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Acton Housing Authority			6200
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 1 beneficiary in pay status)			6
2. Participants active during the year ended December 31, 2023			7
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$62,551
2. Administrative expenses			2,672
3. Expected employee contributions			-54,213
4. Employer normal cost: (1) + (2) + (3)			**$11,010**
5. Actuarial accrued liability			$2,652,658
Retired participants and beneficiaries	$1,396,105		
Active participants	1,252,933		
Inactive participants	3,620		
6. Actuarial value of assets			1,717,962
7. Unfunded actuarial accrued liability: **(5) – (6)**			934,696
8. Reallocated unfunded actuarial accrued liability			10,206
9. Total unfunded actuarial accrued liability: (7) + (8)			**$944,902**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$11,382	2.07%
2. Projected unfunded actuarial accrued liability		978,099	
3. Payment on projected unfunded actuarial accrued liability		83,838	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$95,220**	**17.32%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		93,590	17.02%
6. Projected payroll		549,861	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$11,852		$12,341
2. Payment on projected unfunded actuarial accrued liability	92,500		99,047
3. Total Actuarially Determined Contribution: (1) + (2)	**$104,352**		**$111,388**
4. Total Actuarially Determined Contribution, payable on July 1	102,566		109,481

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Burlington Housing Authority			6300
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			2
2. Participants active during the year ended December 31, 2023			3
3. Inactive participants entitled to a return of their employee contributions			0
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$39,352
2. Administrative expenses			1,681
3. Expected employee contributions			-23,884
4. Employer normal cost: (1) + (2) + (3)			**$17,149**
5. Actuarial accrued liability			$1,074,373
Retired participants and beneficiaries	$624,663		
Active participants	449,710		
Inactive participants	0		
6. Actuarial value of assets			1,064,380
7. Unfunded actuarial accrued liability: **(5) – (6)**			9,993
8. Reallocated unfunded actuarial accrued liability			4,134
9. Total unfunded actuarial accrued liability: (7) + (8)			**$14,127**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$17,729	7.47%
2. Projected unfunded actuarial accrued liability		14,623	
3. Payment on projected unfunded actuarial accrued liability		1,705	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$19,434**	**8.19%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		19,101	8.05%
6. Projected payroll		237,253	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		$18,368	$19,030
2. Payment on projected unfunded actuarial accrued liability		1,337	1,432
3. Total Actuarially Determined Contribution: (1) + (2)		**$19,705**	**$20,462**
4. Total Actuarially Determined Contribution, payable on July 1		19,368	20,112

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Ayer Housing Authority			6400
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 1 beneficiary in pay status)			2
2. Participants active during the year ended December 31, 2023			3
3. Inactive participants entitled to a return of their employee contributions			3
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$27,735
2. Administrative expenses			1,185
3. Expected employee contributions			-19,815
4. Employer normal cost: (1) + (2) + (3)			**$9,105**
5. Actuarial accrued liability			$1,108,156
Retired participants and beneficiaries	$962,051		
Active participants	106,091		
Inactive participants	40,014		
6. Actuarial value of assets			445,279
7. Unfunded actuarial accrued liability: **(5) – (6)**			662,877
8. Reallocated unfunded actuarial accrued liability			4,264
9. Total unfunded actuarial accrued liability: (7) + (8)			**$667,141**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$9,413	4.71%
2. Projected unfunded actuarial accrued liability		690,580	
3. Payment on projected unfunded actuarial accrued liability		68,459	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$77,872**	**39.00%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		76,539	38.33%
6. Projected payroll		199,672	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		$9,763	$10,126
2. Payment on projected unfunded actuarial accrued liability		64,368	68,924
3. Total Actuarially Determined Contribution: (1) + (2)		**$74,131**	**$79,050**
4. Total Actuarially Determined Contribution, payable on July 1		72,862	77,697

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Holliston Housing Authority			6500
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			1
2. Participants active during the year ended December 31, 2023			2
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$19,001
2. Administrative expenses			812
3. Expected employee contributions			-10,678
4. Employer normal cost: (1) + (2) + (3)			**$9,135**
5. Actuarial accrued liability			$507,873
Retired participants and beneficiaries	$107,817		
Active participants	398,160		
Inactive participants	1,896		
6. Actuarial value of assets			494,368
7. Unfunded actuarial accrued liability: **(5) – (6)**			13,505
8. Reallocated unfunded actuarial accrued liability			1,954
9. Total unfunded actuarial accrued liability: (7) + (8)			**$15,459**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$9,444	8.61%
2. Projected unfunded actuarial accrued liability		16,002	
3. Payment on projected unfunded actuarial accrued liability		11,092	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$20,536**	**18.72%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		20,184	18.40%
6. Projected payroll		109,719	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$9,781		$10,131
2. Payment on projected unfunded actuarial accrued liability	527		564
3. Total Actuarially Determined Contribution: (1) + (2)	**$10,308**		**$10,695**
4. Total Actuarially Determined Contribution, payable on July 1	10,132		10,512

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Littleton Housing Authority			6600
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			3
2. Participants active during the year ended December 31, 2023			0
3. Inactive participants entitled to a return of their employee contributions			0
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$0
2. Administrative expenses			0
3. Expected employee contributions			0
4. Employer normal cost: (1) + (2) + (3)			**$0**
5. Actuarial accrued liability			$671,810
Retired participants and beneficiaries	$671,810		
Active participants	0		
Inactive participants	0		
6. Actuarial value of assets			-6,823
7. Unfunded actuarial accrued liability: **(5) – (6)**			678,633
8. Reallocated unfunded actuarial accrued liability			2,585
9. Total unfunded actuarial accrued liability: (7) + (8)			**$681,218**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$0	0.00%
2. Projected unfunded actuarial accrued liability		705,151	
3. Payment on projected unfunded actuarial accrued liability		61,262	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$61,262**	**0.00%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		60,213	0.00%
6. Projected payroll		0	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		$0	$0
2. Payment on projected unfunded actuarial accrued liability		66,604	71,318
3. Total Actuarially Determined Contribution: (1) + (2)		**$66,604**	**$71,318**
4. Total Actuarially Determined Contribution, payable on July 1		65,464	70,097

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Westford Housing Authority			6700
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			2
2. Participants active during the year ended December 31, 2023			5
3. Inactive participants entitled to a return of their employee contributions			0
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$61,199
2. Administrative expenses			2,614
3. Expected employee contributions			-47,611
4. Employer normal cost: (1) + (2) + (3)			**$16,202**
5. Actuarial accrued liability			$1,798,402
Retired participants and beneficiaries	$854,449		
Active participants	943,953		
Inactive participants	0		
6. Actuarial value of assets			1,060,187
7. Unfunded actuarial accrued liability: **(5) – (6)**			738,215
8. Reallocated unfunded actuarial accrued liability			6,920
9. Total unfunded actuarial accrued liability: (7) + (8)			**$745,135**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$16,750	3.58%
2. Projected unfunded actuarial accrued liability		771,314	
3. Payment on projected unfunded actuarial accrued liability		33,003	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$49,753**	**10.64%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		48,901	10.46%
6. Projected payroll		467,513	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$17,392		$18,059
2. Payment on projected unfunded actuarial accrued liability	76,305		81,706
3. Total Actuarially Determined Contribution: (1) + (2)	**$93,697**		**$99,765**
4. Total Actuarially Determined Contribution, payable on July 1	92,093		98,057

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Shirley Water District			6800
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 2 beneficiaries in pay status)			2
2. Participants active during the year ended December 31, 2023			4
3. Inactive participants entitled to a return of their employee contributions			0
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$23,757
2. Administrative expenses			1,015
3. Expected employee contributions			-25,364
4. Employer normal cost: (1) + (2) + (3)			**-$592**
5. Actuarial accrued liability			$1,816,616
Retired participants and beneficiaries	$416,789		
Active participants	1,399,827		
Inactive participants	0		
6. Actuarial value of assets			1,485,106
7. Unfunded actuarial accrued liability: **(5) – (6)**			331,510
8. Reallocated unfunded actuarial accrued liability			6,990
9. Total unfunded actuarial accrued liability: (7) + (8)			**$338,500**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		-$612	-0.23%
2. Projected unfunded actuarial accrued liability		350,392	
3. Payment on projected unfunded actuarial accrued liability		42,590	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$41,978**	**15.56%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		41,259	15.29%
6. Projected payroll		269,799	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		-$594	-$574
2. Payment on projected unfunded actuarial accrued liability		31,862	34,118
3. Total Actuarially Determined Contribution: (1) + (2)		**$31,268**	**$33,544**
4. Total Actuarially Determined Contribution, payable on July 1		30,733	32,970

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Tyngsboro Housing Authority			6900
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			2
2. Participants active during the year ended December 31, 2023			2
3. Inactive participants entitled to a return of their employee contributions			0
4. Inactive participants with a vested right to a deferred or immediate benefit			2
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$21,051
2. Administrative expenses			899
3. Expected employee contributions			-14,681
4. Employer normal cost: (1) + (2) + (3)			**$7,269**
5. Actuarial accrued liability			$1,019,789
Retired participants and beneficiaries	$381,014		
Active participants	329,314		
Inactive participants	309,461		
6. Actuarial value of assets			471,624
7. Unfunded actuarial accrued liability: **(5) – (6)**			548,165
8. Reallocated unfunded actuarial accrued liability			3,924
9. Total unfunded actuarial accrued liability: (7) + (8)			**$552,089**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$7,515	5.12%
2. Projected unfunded actuarial accrued liability		571,485	
3. Payment on projected unfunded actuarial accrued liability		54,828	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$62,343**	**42.50%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		61,276	41.77%
6. Projected payroll		146,700	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$7,793		$8,081
2. Payment on projected unfunded actuarial accrued liability	53,453		57,236
3. Total Actuarially Determined Contribution: (1) + (2)	**$61,246**		**$65,317**
4. Total Actuarially Determined Contribution, payable on July 1	60,198		64,199

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Pepperell Housing Authority			7000
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			2
2. Participants active during the year ended December 31, 2023			2
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$21,348
2. Administrative expenses			912
3. Expected employee contributions			-11,162
4. Employer normal cost: (1) + (2) + (3)			**$11,098**
5. Actuarial accrued liability			$449,366
Retired participants and beneficiaries	$399,037		
Active participants	36,670		
Inactive participants	13,659		
6. Actuarial value of assets			217,159
7. Unfunded actuarial accrued liability: **(5) – (6)**			232,207
8. Reallocated unfunded actuarial accrued liability			1,729
9. Total unfunded actuarial accrued liability: (7) + (8)			**$233,936**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$11,473	10.05%
2. Projected unfunded actuarial accrued liability		242,155	
3. Payment on projected unfunded actuarial accrued liability		19,474	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$30,947**	**27.10%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		30,417	26.64%
6. Projected payroll		114,195	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$11,880		$12,302
2. Payment on projected unfunded actuarial accrued liability	23,031		24,661
3. Total Actuarially Determined Contribution: (1) + (2)	**$34,911**		**$36,963**
4. Total Actuarially Determined Contribution, payable on July 1	34,313		36,330

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Tyngsboro Water District			7200
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			3
2. Participants active during the year ended December 31, 2023			7
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$29,125
2. Administrative expenses			1,244
3. Expected employee contributions			-20,193
4. Employer normal cost: (1) + (2) + (3)			**$10,176**
5. Actuarial accrued liability			$1,919,987
Retired participants and beneficiaries	$1,451,647		
Active participants	460,320		
Inactive participants	8,020		
6. Actuarial value of assets			1,268,818
7. Unfunded actuarial accrued liability: **(5) – (6)**			651,169
8. Reallocated unfunded actuarial accrued liability			7,387
9. Total unfunded actuarial accrued liability: (7) + (8)			**$658,556**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$10,520	5.16%
2. Projected unfunded actuarial accrued liability		681,693	
3. Payment on projected unfunded actuarial accrued liability		47,090	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$57,610**	**28.24%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		56,624	27.76%
6. Projected payroll		203,999	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$10,909		$11,311
2. Payment on projected unfunded actuarial accrued liability	65,620		70,264
3. Total Actuarially Determined Contribution: (1) + (2)	**$76,529**		**$81,575**
4. Total Actuarially Determined Contribution, payable on July 1	75,219		80,179

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for North Reading Housing Authority			7400
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			2
2. Participants active during the year ended December 31, 2023			1
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$5,723
2. Administrative expenses			244
3. Expected employee contributions			-3,051
4. Employer normal cost: (1) + (2) + (3)			**$2,916**
5. Actuarial accrued liability			$353,178
Retired participants and beneficiaries	$171,252		
Active participants	165,219		
Inactive participants	16,707		
6. Actuarial value of assets			327,428
7. Unfunded actuarial accrued liability: **(5) – (6)**			25,750
8. Reallocated unfunded actuarial accrued liability			1,359
9. Total unfunded actuarial accrued liability: (7) + (8)			**$27,109**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		$3,015	8.94%
2. Projected unfunded actuarial accrued liability		28,061	
3. Payment on projected unfunded actuarial accrued liability		6,109	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$9,124**	**27.05%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		8,968	26.59%
6. Projected payroll		33,725	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost	$3,122		$3,233
2. Payment on projected unfunded actuarial accrued liability	2,278		2,439
3. Total Actuarially Determined Contribution: (1) + (2)	**$5,400**		**$5,672**
4. Total Actuarially Determined Contribution, payable on July 1	5,308		5,575

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for West Groton Water			7500
The valuation was made with respect to the following data supplied to us:			
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)			0
2. Participants active during the year ended December 31, 2023			3
3. Inactive participants entitled to a return of their employee contributions			1
4. Inactive participants with a vested right to a deferred or immediate benefit			0
The actuarial factors as of January 1, 2024 are as follows:			
1. Normal cost			$21,325
2. Administrative expenses			911
3. Expected employee contributions			-23,353
4. Employer normal cost: (1) + (2) + (3)			**-$1,117**
5. Actuarial accrued liability			$762,235
Retired participants and beneficiaries	$0		
Active participants	749,875		
Inactive participants	12,360		
6. Actuarial value of assets			705,323
7. Unfunded actuarial accrued liability: **(5) – (6)**			56,912
8. Reallocated unfunded actuarial accrued liability			2,933
9. Total unfunded actuarial accrued liability: (7) + (8)			**$59,845**
The actuarial factors projected to FY25 are as follows:	**Amount**		**% of Payroll**
1. Projected employer normal cost		-$1,155	-0.48%
2. Projected unfunded actuarial accrued liability		61,948	
3. Payment on projected unfunded actuarial accrued liability		3,728	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)		**$2,573**	**1.06%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1		2,529	1.04%
6. Projected payroll		242,828	
The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**		**FY27**
1. Projected employer normal cost		-$1,158	-$1,160
2. Payment on projected unfunded actuarial accrued liability		6,019	6,445
3. Total Actuarially Determined Contribution: (1) + (2)		**$4,861**	**$5,285**
4. Total Actuarially Determined Contribution, payable on July 1		4,778	5,195

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for Ayer-Shirley RSD		7600
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 2 beneficiaries in pay status)		37
2. Participants active during the year ended December 31, 2023		119
3. Inactive participants entitled to a return of their employee contributions		85
4. Inactive participants with a vested right to a deferred or immediate benefit		10
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$582,736
2. Administrative expenses		24,892
3. Expected employee contributions		-432,568
4. Employer normal cost: (1) + (2) + (3)		**$175,060**
5. Actuarial accrued liability		$19,964,913
Retired participants and beneficiaries	$8,199,531	
Active participants	10,049,584	
Inactive participants	1,715,798	
6. Actuarial value of assets		15,550,326
7. Unfunded actuarial accrued liability: **(5) – (6)**		4,414,587
8. Reallocated unfunded actuarial accrued liability		76,817
9. Total unfunded actuarial accrued liability: (7) + (8)		**$4,491,404**

The actuarial factors projected to FY25 are as follows:	Amount	% of Payroll
1. Projected employer normal cost	$180,980	3.94%
2. Projected unfunded actuarial accrued liability	4,649,200	
3. Payment on projected unfunded actuarial accrued liability	354,659	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$535,639**	**11.65%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	526,471	11.45%
6. Projected payroll	4,598,548	

The actuarial factors projected to FY26 and FY27 are as follows:	FY26	FY27
1. Projected employer normal cost	$187,795	$194,863
2. Payment on projected unfunded actuarial accrued liability	444,131	475,565
3. Total Actuarially Determined Contribution: (1) + (2)	**$631,926**	**$670,428**
4. Total Actuarially Determined Contribution, payable on July 1	621,110	658,952

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 3: Unit Results

Summary of Actuarial Valuation Results for NMRECC		7700
The valuation was made with respect to the following data supplied to us:		
1. Retired participants as of the valuation date (including 0 beneficiaries in pay status)		2
2. Participants active during the year ended December 31, 2023		18
3. Inactive participants entitled to a return of their employee contributions		6
4. Inactive participants with a vested right to a deferred or immediate benefit		1
The actuarial factors as of January 1, 2024 are as follows:		
1. Normal cost		$121,057
2. Administrative expenses		5,171
3. Expected employee contributions		-113,940
4. Employer normal cost: (1) + (2) + (3)		**$12,288**
5. Actuarial accrued liability		$1,670,490
Retired participants and beneficiaries	$759,031	
Active participants	575,399	
Inactive participants	336,060	
6. Actuarial value of assets		1,658,540
7. Unfunded actuarial accrued liability: **(5) – (6)**		11,950
8. Reallocated unfunded actuarial accrued liability		6,427
9. Total unfunded actuarial accrued liability: (7) + (8)		**$18,377**

The actuarial factors projected to FY25 are as follows:	**Amount**	**% of Payroll**
1. Projected employer normal cost	$12,704	1.11%
2. Projected unfunded actuarial accrued liability	19,023	
3. Payment on projected unfunded actuarial accrued liability	55,244	
4. Total FY25 Actuarially Determined Contribution: (1) + (3)	**$67,948**	**5.92%**
5. Total FY25 Actuarially Determined Contribution, payable on July 1	66,785	5.82%
6. Projected payroll	1,146,917	

The actuarial factors projected to FY26 and FY27 are as follows:	**FY26**	**FY27**
1. Projected employer normal cost	$13,310	$13,943
2. Payment on projected unfunded actuarial accrued liability	-3,643	-3,901
3. Total Actuarially Determined Contribution: (1) + (2)	**$9,667**	**$10,042**
4. Total Actuarially Determined Contribution, payable on July 1	9,502	9,870

Note: Actuarially Determined Contributions are assumed to be paid on July 1 and December 31, unless otherwise noted.

Section 4: Supplemental Information

Exhibit A: Table of plan demographics

Category	Year Ended December 31, 2023	Year Ended December 31, 2021	Change From Prior Year
Active participants in valuation:			
• Number	9,603	9,432	1.8%
• Average age	46.8	47.2	-0.4
• Average years of service	10.0	10.6	-0.6
• Average compensation[1]	$59,069	$55,051	7.3%
• Account balances	478,019,352	469,661,019	1.8%
Inactive participants			
• Inactive participants with a vested right to a deferred or immediate benefit	470	403	16.6%
• Inactive participants due a refund of employee contributions	4,227	3,581	18.0%
Retired participants:			
• Number in pay status	5,578	5,265	5.9%
• Average age	73.1	73.1	0.0
• Average monthly benefit	$2,677	$2,466	8.6%
Disabled participants:			
• Number in pay status	435	425	2.4%
• Average age	66.6	67.0	-0.4
• Average monthly benefit	$3,610	$3,383	6.7%
Beneficiaries:			
• Number in pay status	594	594	0.0%
• Average age	74.3	74.9	-0.6
• Average monthly benefit	$1,744	$1,587	9.9%

[1] Compensation figures are for the prior year and reflect annualized salaries for participants hired during the year.

Exhibit B: Participants in active service as of December 31, 2023 by age, years of service, and average compensation[1]

Years of Service

Age	Total	0-4	5-9	10-14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 & over
Under 25	493	488	5	—	—	—	—	—	—	—
	$40,507	$40,502	$40,989	—	—	—	—	—	—	—
25 - 29	824	716	105	3	—	—	—	—	—	—
	$52,630	$50,167	$68,562	$82,894	—	—	—	—	—	—
30 - 34	927	502	366	58	1	—	—	—	—	—
	$61,043	$53,305	$69,140	$77,183	$45,316	—	—	—	—	—
35 - 39	881	404	221	194	61	1	—	—	—	—
	$62,797	$43,286	$71,162	$85,883	$87,243	$126,779	—	—	—	—
40 - 44	1,032	468	199	134	156	72	3	—	—	—
	$60,897	$39,479	$63,921	$77,229	$89,120	$99,031	$89,168	—	—	—
45 - 49	1,015	425	194	86	122	137	50	1	—	—
	$60,082	$39,733	$53,998	$62,065	$84,742	$93,242	$101,498	$95,609	—	—
50 - 54	1,332	355	282	157	150	162	160	56	10	—
	$65,585	$41,477	$51,657	$56,808	$72,824	$87,891	$103,501	$114,970	$98,805	—
55 - 59	1,381	326	267	168	189	176	120	83	50	2
	$61,985	$41,540	$47,034	$54,750	$61,284	$74,845	$89,186	$114,051	$102,040	$139,011
60 - 64	1,108	226	176	155	193	176	90	47	35	10
	$57,145	$40,471	$49,960	$54,314	$56,312	$57,681	$76,680	$98,182	$93,397	$115,382
65 - 69	442	57	59	65	78	85	67	15	8	8
	$53,872	$36,680	$48,130	$58,876	$51,478	$56,598	$59,675	$61,485	$75,471	$87,960
70 & over	168	24	14	17	21	34	28	13	7	10
	$48,083	$27,527	$38,117	$52,568	$48,754	$58,119	$49,568	$45,674	$52,912	$63,804
Total	**9,603**	**3,991**	**1,888**	**1,037**	**971**	**843**	**518**	**215**	**110**	**30**
	$59,069	**$43,963**	**$58,752**	**$65,891**	**$70,054**	**$76,371**	**$86,665**	**$102,933**	**$93,937**	**$92,452**

1 Compensation figures are for the prior year and reflect annualized salaries for those hired during the prior plan year.

Exhibit C: Summary statement of income and expenses on a market value basis

Years Ended December 31, 2023 and December 31, 2022

Item	Income and Expenses	2023 Assets	Income and Expenses	2022 Assets
Net assets at market value at the beginning of the year		**$1,883,767,318**		**$2,109,770,999**
Contribution and other income:				
• Employer contributions	$166,630,036		$156,252,197	
• Employee contributions	58,250,668		55,164,013	
• Federal grant reimbursement and other contributions	53,207		82,922	
• **Total contribution income**		**$224,933,911**		**$211,499,132**
Investment income:				
• Investment income	$206,199,326		-$230,628,905	
• Less investment fees	-9,666,276		-9,685,400	
• **Net investment income**		**$196,533,050**		**-$240,314,305**
• **Total income available for benefits**		**$421,466,961**		**-$28,815,173**
Less benefit payments and administrative expenses:				
• Administrative expenses	-$2,960,685		-$3,218,004	
• Pensions, annuities, refunds, workers' compensation settlements and transfers	-212,746,063		-193,705,455	
• Net 3(8)(c) reimbursements	-5,494,979		-265,049	
• **Net benefit payments and administrative expenses**		**-$221,201,727**		**-$197,188,508**
Change in market value of assets		**$200,265,234**		**-$226,003,681**
Net assets at market value at the end of the year		**$2,084,032,552**		**$1,883,767,318**

Exhibit D: Development of the fund through December 31, 2023

Year Ended December 31	Employer Contributions	Employee Contributions	Other Income	Net Investment Return[1]	Administrative Expenses	Benefit Payments	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value	Employee Contributions as a Percent of Total Contributions
2014	$93,368,685	$39,806,980	$32,261	$74,962,895	$3,540,884	$125,082,678	$1,093,560,674	$1,062,517,426	97.2%	29.88%
2015	99,792,642	40,870,163	27,839	7,817,250	3,290,167	134,295,505	1,104,482,897	1,141,122,663	103.3%	29.05%
2016	107,032,211	42,841,461	35,496	74,917,549	3,460,782	143,428,636	1,182,420,196	1,229,393,319	104.0%	28.58%
2017	115,377,205	44,841,008	183,914	189,543,974	3,234,147	150,780,931	1,378,351,219	1,339,085,622	97.2%	27.96%
2018	120,499,451	46,670,212	35,762	-30,983,338	3,273,735	161,259,804	1,350,039,767	1,419,015,659	105.1%	27.91%
2019	129,610,441	49,170,931	75,313	208,470,212	3,352,400	168,486,003	1,565,528,261	1,523,736,765	97.3%	27.49%
2020	138,229,422	51,832,960	60,815	185,567,914	3,311,597	181,769,445	1,756,138,330	1,669,337,821	95.1%	27.26%
2021	147,785,846	52,748,793	63,837	340,466,229	3,403,912	184,028,124	2,109,770,999	1,881,791,125	89.2%	26.30%
2022	156,252,197	55,164,013	82,922	-240,314,305	3,218,004	193,970,504	1,883,767,318	2,020,203,481	107.2%	26.08%
2023	166,630,036	58,250,668	53,207	196,533,050	2,960,685	218,241,042	2,084,032,552	2,170,733,980	104.2%	25.90%

1 On a market value basis, net of investment fees.

Section 5: Actuarial Valuation Basis

Exhibit 1: Actuarial assumptions, methods and models

Net investment return

7.15%.

The net investment return assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the System's target asset allocation.

Salary increases

Years of Service	Group 1	Group 2	Group 4
0	6.00%	6.00%	7.00%
1	5.50%	5.50%	6.50%
2	5.50%	5.50%	6.00%
3	5.25%	5.25%	5.75%
4	5.25%	5.25%	5.25%
5	4.75%	4.75%	5.25%
6	4.75%	4.75%	4.75%
7	4.50%	4.50%	4.75%
8	4.50%	4.50%	4.50%
9	4.25%	4.25%	4.50%
10	4.25%	4.25%	4.50%
11	4.00%	4.25%	4.50%
12+	4.00%	4.25%	4.50%

Note:
Includes an allowance for wage inflation of 3.25%.

The salary scale assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment.

Interest on employee contributions

3.5%

Administrative expenses

$3,650,000 for calendar 2024, increasing 3.25% per year (previously, $3,650,000 for calendar 2022, increasing 3.25% per year)

The administrative expense assumption is based on information on expected expenses provided by the Retirement System.

Mortality rates

Pre-Retirement: RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2021

Healthy Retiree: RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2021

Disabled Retiree: RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year and projected generationally with Scale MP-2021

The mortality tables reasonably reflect the projected mortality experience of the Retirement System as of the measurement date based on historical and current demographic data. As part of the analysis, a comparison was made between the actual number of retiree deaths and the projected number based on the prior years' assumptions over the most recent ten years. The mortality tables were then adjusted to future years using generational projection under Scale MP-2021 to reflect future mortality improvement.

Termination rates before retirement

Groups 1 and 2

Age	Mortality Male	Mortality Female	Disability
20	0.05%	0.02%	0.02%
25	0.06%	0.02%	0.02%
30	0.06%	0.02%	0.03%
35	0.07%	0.03%	0.06%
40	0.08%	0.04%	0.10%
45	0.13%	0.07%	0.15%
50	0.22%	0.12%	0.19%
55	0.36%	0.19%	0.24%
60	0.61%	0.27%	0.28%

Notes:
Mortality rates do not reflect generational projection.
55% of the disability rates shown represent accidental disability.
20% of the accidental disabilities will die from the same cause as the disability.
55% of the death rates shown represent accidental death.

Group 4

Age	Mortality Male	Mortality Female	Disability
20	0.05%	0.02%	0.20%
25	0.06%	0.02%	0.20%
30	0.06%	0.02%	0.30%
35	0.07%	0.03%	0.30%
40	0.08%	0.04%	0.30%
45	0.13%	0.07%	1.00%
50	0.22%	0.12%	1.25%
55	0.36%	0.19%	1.20%
60	0.61%	0.27%	0.85%

Notes:
Mortality rates do not reflect generational projection.
90% of the disability rates shown represent accidental disability.
60% of the accidental disabilities will die from the same cause as the disability.
90% of the death rates shown represent accidental death.

Withdrawal rates

Years of Service	Groups 1 and 2
0	15.0%
1	12.0%
2	10.0%
3	9.0%
4	8.0%
5 – 9	7.6%
10 – 14	5.4%
15 – 19	3.3%
20 – 24	2.0%
25 - 29	1.0%
30+	0.0%

Years of Service	Group 4
0 – 10	1.5%
11+	0.0%

The termination rates and disability rates were based on historical and current demographic data, adjusted to reflect economic conditions of the area and estimated future experience and professional judgment. As part of the analysis, a comparison was made between the actual number of terminations and disability retirements and the projected number based on the prior years' assumption over the most recent ten years.

Retirement rates

Groups 1 and 2

Age	Male	Female
55 – 59	2.0%	5.5%
60 – 61	12.0%	5.0%
62 – 64	30.0%	15.0%
65 – 68	40.0%	15.0%
69	50.0%	20.0%
70	100.0%	100.0%

Group 4

Age	Male and Female
45 – 49	1.0%
50 – 54	2.0%
55 – 59	15.0%
60 – 61	20.0%
62 – 64	25.0%
65	100.0%

The retirement rates were based on historical and current demographic data, adjusted to reflect economic conditions of the area and estimated future experience and professional judgment. As part of the analysis, a comparison was made between the actual number of retirements by age and the projected number based on the prior years' assumption over the most recent ten years.

Retirement ages for inactive vested participants

Age 60 for Group 1 and Group 2 members and age 55 for Group 4 members hired prior to April 2, 2012. For participants hired April 2, 2012 or later, 60 for Group 1, 55 for Group 2 and 50 for Group 4.

The retirement age for inactive vested participants was based on historical and current demographic data, adjusted to reflect economic conditions of the area and estimated future experience and professional judgment.

Unknown data for participants

Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.

Family composition

75% of participants are assumed to be married. None are assumed to have dependent children. Females are assumed to be three years younger than their male spouses.

Benefit election

All participants are assumed to elect Option A. The benefit election reflects the fact that all benefit options are actuarially equivalent.

2023 salary

2023 salaries are equal to salaries provided in the data, except for actives missing salary and employees with less than one year of service, where salaries are calculated from annualized contributions divided by the contribution rates provided.

Total service

Total creditable service reported in the data.

Net 3(8)(c) liability

No liability is valued for benefits paid to or received from other municipal systems.

Actuarial value of assets

Market value of assets as reported in the System's Annual Statement less unrecognized return in each of the last five years. Unrecognized return is equal to the difference between the actual market value return and the expected market value return and is recognized over a five-year period, further adjusted, if necessary, to be within 20% of the market value.

Actuarial cost method

Entry Age Normal Actuarial Cost Method. Entry Age is the attained age of the participant less Total Service as defined above. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary. Normal Cost is determined using the plan of benefits applicable to each participant.

Actuarial models

Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

Justification for change in actuarial assumptions

Based on past experience and future expectations, the administrative expense assumption was reset to $3,650,000 for calendar year 2024.

Exhibit 2: Summary of plan provisions

This exhibit summarizes the major provisions of the System included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan year

January 1 through December 31

Plan status

Ongoing

Retirement benefits

Employees covered by the Contributory Retirement Law are classified into one of four groups depending on job classification. Group 1 comprises most positions in state and local government. It is the general category of public employees. Group 4 comprises mainly police and firefighters. Group 2 is for other specified hazardous occupations. (Officers and inspectors of the State Police are classified as Group 3.)

For employees hired prior to April 2, 2012, the annual amount of the retirement allowance is based on the member's final three-year average salary multiplied by the number of years and full months of creditable service at the time of retirement and multiplied by a percentage according to the following table based on the age of the member at retirement:

Age Last Birthday at Date of Retirement

Percent	Group 1	Group 2	Group 4
2.5	65 or over	60 or over	55 or over
2.4	64	59	54
2.3	63	58	53
2.2	62	57	52
2.1	61	56	51
2.0	60	55	50
1.9	59	--	49
1.8	58	--	48
1.7	57	--	47
1.6	56	--	46
1.5	55	--	45

A member's final three-year average salary is defined as the greater of the highest consecutive three-year average annual rate of regular compensation and the average annual rate of regular compensation received during the last three years of creditable service prior to retirement.

For employees hired on April 2, 2012 or later, the annual amount of the retirement allowance is based on the member's final five-year average salary multiplied by the number of years and full months of creditable service at the time of retirement and multiplied by a percentage according to the following tables based on the age and years of creditable service of the member at retirement:

For Members with Less Than 30 Years of Creditable Service or Greater
Age Last Birthday at Date of Retirement

Percent	Group 1	Group 2	Group 4
2.50	67 or over	62 or over	57 or over
2.35	66	61	56
2.20	65	60	55
2.05	64	59	54
1.90	63	58	53
1.75	62	57	52
1.60	61	56	51
1.45	60	55	50

For Members with 30 Years of Creditable Service or Greater
Age Last Birthday at Date of Retirement

Percent	Group 1	Group 2	Group 4
2.500	67 or over	62 or over	57 or over
2.375	66	61	56
2.250	65	60	55
2.125	64	59	54
2.000	63	58	53
1.875	62	57	52
1.750	61	56	51
1.625	60	55	50

A member's final five-year average salary is defined as the greater of the highest consecutive five-year average annual rate of regular compensation and the average annual rate of regular compensation received during the last five years of creditable service prior to retirement.

For employees who became members after January 1, 2011, regular compensation is limited to 64% of the federal limit found in 26 U.S.C. 401(a)(17). In addition, regular compensation for members who retire after April 2, 2012 will be limited to prohibit "spiking" of a member's salary to increase the retirement benefit.

For all employees, the maximum annual amount of the retirement allowance is 80 percent of the member's final average salary. Any member who is a veteran also receives an additional yearly retirement allowance of $15 per year of creditable service, not exceeding $300. The veteran allowance is paid in addition to the 80 percent maximum.

Employee contributions

Date of Hire	Contribution Rate
Prior to January 1, 1975	5%
January 1, 1975 – December 31, 1983	7%
January 1, 1984 – June 30, 1996	8%
July 1, 1996 onward	9%

In addition, employees hired after December 31, 1978 contribute an additional 2 percent of salary in excess of $30,000.

Employees hired after 1983 who voluntarily withdraw their contributions with less than 10 ten years of credited service receive 3% interest on their contributions.

Employees in Group 1 hired on or after April 2, 2012 with 30 years of creditable service or greater will pay a base contribution rate of 6%.

Retirement benefits (Superannuation)

Members of Group 1, 2 or 4 hired prior to April 2, 2012 may retire upon the attainment of age 55. For retirement at ages below 55, twenty years of creditable service is required.

Members hired prior to April 2, 2012 who terminate before age 55 with ten or more years of creditable service are eligible for a retirement allowance upon the attainment of age 55 (provided they have not withdrawn their accumulated deductions from the Annuity Savings Fund of the System).

Members of Group 1 hired April 2, 2012 or later may retire upon the attainment of age 60. Members of Group 2 or 4 hired April 2, 2012 or later may retire upon the attainment of age 55. Members of Group 4 may retire upon attainment of age 50 with ten years of creditable service.

Members hired April 2, 2012 or later who terminate before age 55 (60 for members of Group 1) with ten or more years of creditable service are eligible for a retirement allowance upon the attainment of age 55 (60 for members of Group 1) provided they have not withdrawn their accumulated deductions from the Annuity Savings Fund of the System.

Ordinary disability benefit

A member who is unable to perform his or her job due to a non-occupational disability will receive a retirement allowance if he or she has ten or more years of creditable service and has not reached age 55. The annual amount of such allowance shall be determined as if the member retired for superannuation at age 55 (age 60 for Group 1 members hired on or after April 2, 2012), based on the amount of creditable service at the date of disability. For veterans, there is a minimum benefit of 50 percent of the member's most recent year's pay plus an annuity based on his or her own contributions.

Accidental disability benefit

For a job-connected disability, the benefit is 72 percent of the member's most recent annual pay plus an annuity based on his or her own contributions, plus additional amounts for surviving children. Benefits are capped at 75 percent of annual rate of regular compensation for employees who become members after January 1, 1988.

Death benefits

In general, the beneficiary of an employee who dies in active service will receive a refund of the employee's own contributions. Alternatively, if the employee were eligible to retire on the date of death, a spouse's benefit will be paid equal to the amount the employee would have received under Option C. The surviving spouse of a member who dies with two or more years of credited service has the option of a refund of the employee's contributions or a monthly benefit regardless of eligibility to retire, if they were married for at least one year. There is also a minimum widow's pension of $500 per month, and there are additional amounts for surviving children.

If an employee's death is job-connected, the spouse will receive 72 percent of the member's most recent annual pay, in addition to a refund of the member's accumulated deductions, plus additional amounts for surviving children. However, in accordance with Section 100 of Chapter 32, the surviving spouse of a police officer, firefighter or corrections officer is killed in the line of duty will be eligible to receive an annual benefit equal to the maximum salary held by the member at the time of death.

Upon the death of a job-connected disability retiree who retired prior to November 7, 1996 and could not elect an Option C benefit, a surviving spouse will receive an allowance of $12,000 per year if the member dies for a reason unrelated to cause of disability.

"Heart And Lung Law" and cancer presumption

Any case of hypertension or heart disease resulting in total or partial disability or death to a uniformed fireman, permanent member of a police department, or certain employees of a county correctional facility is presumed to have been suffered in the line of duty, unless the contrary is shown by competent evidence. Any case of disease of the lungs or respiratory tract resulting in total disability or death to a uniformed fireman is presumed to have been suffered in the line of duty, unless the contrary is shown by competent evidence. There is an additional presumption for uniformed firemen that certain types of cancer are job-related if onset occurs while actively employed or within five years of retirement.

Options

Members may elect to receive a full retirement allowance payable for life under Option A. Under Option B a member may elect to receive a lower monthly allowance in exchange for a guarantee that at the time of death any contributions not expended for annuity payments will be refunded to the beneficiary. Option C allows the member to take a lesser retirement allowance in exchange for providing a survivor with two-thirds of the lesser amount. Option C pensioners will have benefits converted from a reduced to a full retirement if the beneficiary predeceases the retiree.

Post-retirement benefits

The Board has adopted the provisions of Section 51 of Chapter 127 of the Acts of 1999, which provide that the Retirement Board may approve an annual COLA in excess of the Consumer Price Index but not to exceed a 3% COLA on the first $16,000 of a retirement allowance. Cost-of-living increases granted prior to July 1, 1998 are reimbursed by the Commonwealth and not reflected in this report.

Changes in plan provisions

Pursuant to Chapter 269 of the Acts of 2022, the Board approved a one-time increase in the COLA from 3% to 5% effective July 1, 2022.

Appendix A: Definition of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Term	Definition
Actuarial accrued liability for actives	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial accrued liability for retirees and beneficiaries	Actuarial Present Value of lifetime benefits to existing retirees and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial cost method	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the actuarially determined contribution.
Actuarial gain or loss	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield actuarial liabilities that are larger than projected.
Actuarially equivalent	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial present value	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is: Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.) Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and Discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Appendix A: Definition of Pension Terms

Term	Definition
Actuarial present value of future benefits	The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund of member contributions or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial valuation	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan, as well as Actuarially Determined Contributions.
Actuarial value of assets	The value of the System's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the Actuarially Determined Contribution.
Actuarially determined	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the System.
Actuarially determined contribution	The employer's contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the System's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization method	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the Unfunded Actuarial Accrued Liability. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the Unfunded Actuarial Accrued Liability. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization payment	The portion of the pension plan contribution, or ADC, that is intended to pay off the Unfunded Actuarial Accrued Liability.
Assumptions or actuarial assumptions	The estimates upon which the cost of the System is calculated, including: **Investment return** — the rate of investment yield that the System will earn over the long-term future; **Mortality rates** — the rate or probability of death at a given age for employees and retirees; **Retirement rates** — the rate or probability of retirement at a given age or service; **Disability rates** — the rate or probability of disability retirement at a given age; **Withdrawal rates** — the rate or probability at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; **Salary increase rates** — the rates of salary increase due to inflation, real wage growth and merit and promotion increases.

Appendix A: Definition of Pension Terms

Term	Definition
Closed amortization period	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 20 years, it is 19 years at the end of one year, 18 years at the end of two years, etc. See Open Amortization Period.
Decrements	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.
Defined benefit plan	A retirement plan in which benefits are defined by a formula based on the member's compensation, age and/or years of service.
Defined contribution plan	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer normal cost	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Experience study	A periodic review and analysis of the actual experience of the System that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified based on recommendations from the Actuary.
Funded ratio	The ratio of the Actuarial Value of Assets (AVA) to the Actuarial Accrued Liability (AAL). Plans sometimes also calculate a market funded ratio, using the Market Value of Assets (MVA), rather than the AVA.
GASB 67 and GASB 68	Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.
Investment return	The rate of earnings of the System from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Net Pension Liability (NPL)	The Net Pension Liability is equal to the Total Pension Liability minus the Plan Fiduciary Net Position.
Normal cost	The portion of the Actuarial Present Value of Future Benefits and expenses, if applicable, allocated to a valuation year by the Actuarial Cost Method. Any payment with respect to an Unfunded Actuarial Accrued Liability is not part of the Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of member contributions and employer Normal Cost unless otherwise specifically stated.
Open amortization period	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in each future year in determining the Amortization Period.

Appendix A: Definition of Pension Terms

Term	Definition
Plan Fiduciary Net Position	Market value of assets.
Service costs	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Total Pension Liability (TPL)	The actuarial accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 68.
Unfunded actuarial accrued liability	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus or an Overfunded Actuarial Accrued Liability.
Valuation date or actuarial valuation date	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Benefits is determined. The expected benefits to be paid in the future are discounted to this date.