

Middlesex County Retirement System

**Governmental Accounting Standards Board
Statements No. 67 and 68 (GASB 67/68) Accounting
Valuation as of December 31, 2023**



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June 28, 2024

Retirement Board
Middlesex County Retirement System
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Dear Board Members:

We are pleased to submit this Governmental Accounting Standards Board Statements No. 67 and 68 (GASB 67/68) Accounting Valuation as of December 31, 2023 for the Middlesex County Retirement System. It contains various information that will need to be disclosed in order to comply with GASB 67 and 68. Please refer to the January 1, 2024 Middlesex County Retirement System Preliminary Actuarial Valuation Results, dated May 22, 2024, for the data, assumptions, and plan of benefits underlying these calculations.

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 Retirement System and the Retirement System's other service providers.

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; and changes in plan provisions or applicable law.

The actuarial calculations were completed 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 the 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.

June 28, 2024

Segal makes no representation or warranty as to the future status of the 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 Retirement System's legal, tax and other advisors before taking, or refraining from taking, any action.

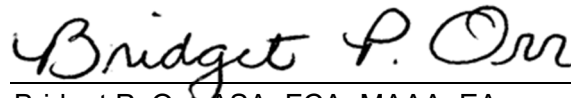
We look forward to reviewing this report with you and to answering any questions.

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 certain disclosure information required by Governmental Accounting Standards Board Statements No. 67 and 68 (GASB 67/68) as of December 31, 2023. This report is based on the Actuarial Valuation and Review as of January 1, 2024, which reflects:

- The benefit provisions of the 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.

Highlights of the valuation

1. The Net Pension Liability (NPL) measured as of December 31, 2023 and December 31, 2022 was determined based upon the results of actuarial valuations as of January 1, 2024 and January 1, 2022, respectively.
2. The NPL is equal to the difference between the Total Pension Liability (TPL) and the System Fiduciary Net Position (FNP). The System Fiduciary Net Position is equal to the market value of assets, and, therefore, the NPL measure is very similar to an Unfunded Actuarial Accrued Liability (UAL) on a market value basis. The NPL decreased from \$1,697,060,700 as of December 31, 2022 to \$1,691,057,798 as of December 31, 2023 and the System Fiduciary Net Position as a percent of the TPL increased from 52.61% to 55.21%.
3. The discount rate used to measure the TPL and NPL was 7.15% as of December 31, 2023 and December 31, 2022.

Section 1: Actuarial Valuation Summary

Important information about actuarial valuations

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

Input Item	Description
Plan of benefits	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 data	An actuarial valuation for a plan is based on data provided to the actuary by the 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.
Assets	The valuation is based on the market value of assets as of the valuation date, as provided by the Retirement System.
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.
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.

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 Board. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the System's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the System will be determined by the actual benefits and expenses paid and the actual investment experience of the System.
- Actuarial results in this report are not rounded, but that does not imply precision.
- If the Board 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 System. This valuation is based on Segal's understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.

Section 2: GASB Information

General information about the pension plan

Plan membership. At December 31, 2023, pension plan membership consisted of the following:

Membership	Number
Retired participants or beneficiaries currently receiving benefits	6,607
Inactive participants with a vested right to a deferred or immediate benefit	470
Inactive participants entitled to a refund of employee contributions	4,227
Active members	9,603
Total	20,907

Section 2: GASB Information

Exhibit 1 – Net Pension Liability

Components of the Net Pension Liability	Current	Prior
Reporting date for employer under GASB 68	June 30, 2024	June 30, 2023
Measurement date	December 31, 2023	December 31, 2022
Total Pension Liability	\$3,775,150,350	\$3,580,828,018
Plan Fiduciary Net Position	2,084,092,552	1,883,767,318
Net Pension Liability	1,691,057,798	1,697,060,700
Plan Fiduciary Net Position as a percentage of the Total Pension Liability ¹	55.21%	52.61%

Actuarial assumptions. The TPL as of December 31, 2023, which was determined based on the results of an actuarial valuation as of January 1, 2024, used the following actuarial assumptions, applied to all periods included in the measurement:

Assumption	Description
Wage inflation	3.25%
Salary increases	Varies by length of service with ultimate rates of 4.00% for Group 1, 4.25% for Group 2 and 4.50% for Group 4
Net investment rate of return	7.15%
Cost-of-living adjustment	5% of the first \$16,000 for fiscal 2023 and 3% of the first \$16,000 thereafter
Mortality	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 projected generationally with Scale MP-2021

Detailed information regarding all actuarial assumptions can be found in the January 1, 2024 Actuarial Valuation and Review.

¹ These funded percentages are not necessarily appropriate for assessing the sufficiency of 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 2: GASB Information

Determination of discount rate and investment rates of return

The long-term expected rate of return on pension plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and adding expected inflation. The target allocation (approved by the Board) and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	22.00%	6.29%
International developed markets equity	9.50%	6.39%
International emerging markets equity	4.50%	7.63%
Core fixed income	15.00%	1.72%
High-yield fixed income	9.00%	3.43%
Real estate	10.00%	3.24%
Timber	4.00%	3.72%
Hedge fund, GTAA, Risk parity	10.00%	2.87%
Private equity	16.00%	9.43%
Total	100.00%	

Note: Some asset classes included in the System's target asset allocation have been combined.

Discount rate. The discount rate used to measure the TPL was 7.15% as of December 31, 2023 and December 31, 2022. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the Plan FNP was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the TPL as of both December 31, 2023 and December 31, 2022.

Section 2: GASB Information

Discount rate sensitivity

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the Net Pension Liability of the Middlesex County Retirement System as of December 31, 2023 calculated using the discount rate of 7.15%, as well as what the Middlesex County Retirement System's NPL would be if it were calculated using a discount rate that is 1-percentage-point lower (6.15%) or 1-percentage-point higher (8.15%) than the current rate.

Item	1% Decrease (6.15%)	Current Discount Rate (7.15%)	1% Increase (8.15%)
Middlesex County Retirement System's Net Pension Liability as of December 31, 2023	\$2,117,083,698	\$1,691,057,798	\$1,332,542,696

Section 2: GASB Information

Exhibit 2 – Schedule of changes in Net Pension Liability

Components of the Net Pension Liability	Current	Prior
Reporting and Measurement Dates		
Reporting date for employer under GASB 68	June 30, 2024	June 30, 2023
Measurement date and reporting date for the System under GASB 67	December 31, 2023	December 31, 2022
Total Pension Liability		
Service cost	\$81,569,522	\$78,883,633
Interest	254,059,307	245,416,378
Change of benefit terms	18,729,653	0
Differences between expected and actual experience	58,204,892	0
Changes of assumptions	0	0
Benefit payments, including refunds of member contributions	-218,241,042	-193,970,504
Net change in Total Pension Liability	\$194,322,332	\$130,329,507
Total Pension Liability — beginning	3,580,828,018	3,450,498,511
Total Pension Liability — ending	\$3,775,150,350	\$3,580,828,018
Plan Fiduciary Net Position		
Contributions — employer	\$167,184,938	\$156,335,119
Contributions — employee	58,250,668	55,164,013
Net investment income	196,544,723	-240,314,305
Benefit payments, including refunds of member contributions	-218,241,042	-193,970,504
Administrative expense	-3,414,053	-3,218,004
Net change in Plan Fiduciary Net Position	\$200,325,234	-\$226,003,681
Plan Fiduciary Net Position — beginning	1,883,767,318	2,109,770,999
Plan Fiduciary Net Position — ending	\$2,084,092,552	\$1,883,767,318

Section 2: GASB Information

Components of the Net Pension Liability	Current	Prior
Net Pension Liability		
Net Pension Liability – ending	\$1,691,057,798	\$1,697,060,700
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	55.21%	52.61%
Covered payroll*	\$567,243,261	\$541,233,353
Plan Net Pension Liability as percentage of covered payroll	298.12%	313.55%

Notes to Schedule:

- **Benefit changes:**

- Effective December 31, 2022:
None
- Effective December 31, 2023:
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.

- **Change of Assumptions:**

- Effective December 31, 2022:
None
- Effective December 31, 2023:
None

* Covered payroll for 2023 and 2022 as estimated in the January 1, 2024, and January 1, 2022 valuations, respectively.
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Middlesex County Retirement System - December 31, 2023 GASB Statements No. 67 and 68 Accounting Valuation Report

Section 2: GASB Information

Exhibit 3 – Schedule of employer contributions

Year Ended December 31	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency / (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
2014	\$92,826,743	\$93,400,946	-\$574,203	\$415,752,810	22.47%
2015	98,792,642	99,820,481	-1,027,839	432,382,921	23.09%
2016	105,246,797	107,067,707	-1,820,910	439,644,322	24.35%
2017	112,017,087	115,426,815	-3,409,728	451,777,105	25.55%
2018	119,298,291	120,614,676	-1,316,385	471,115,185	25.60%
2019	127,151,838	129,685,754	-2,533,916	492,109,775	26.35%
2020	135,472,822	138,290,237	-2,817,415	513,201,283	26.95%
2021	144,255,207	147,852,245	-3,597,038	519,239,588	28.47%
2022	153,677,331	156,335,119	-2,657,788	541,233,353	28.88%
2023	163,724,213	167,184,938	-3,460,725	567,243,261	29.47%

See accompanying notes to this schedule on next page.

Section 2: GASB Information

Methods and assumptions used to determine contribution rates for the year ended December 31, 2023:

Valuation date

Actuarially determined contribution for the year ended December 31, 2023 is determined with the January 1, 2022 actuarial valuation

Actuarial cost method

Entry Age Normal Cost Method

Amortization method

Prior year's total contribution increased by 6.5% per year for fiscal 2023 through fiscal 2028, and thereafter the remaining unfunded liability will be amortized on a 4.0% annual increasing basis

Remaining amortization period

14 years from July 1, 2022

Asset valuation method

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

Investment rate of return

7.15%

Wage inflation rate

3.25%

Section 2: GASB Information

Projected salary increases

Varies by length of service with ultimate rates of 4.00% for Group 1, 4.25% for Group 2 and 4.50% for Group 4

Cost of living adjustments

5% of first \$16,000 for fiscal 2023 and 3% of the first \$16,000 thereafter

Mortality:

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

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

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

Other information

Same as those used in the January 1, 2022 funding actuarial valuation

Section 2: GASB Information

Exhibit 4 – Pension expense

Components of pension expense	Current	Prior
Reporting date for employer under GASB 68	June 30, 2024	June 30, 2023
Measurement date	December 31, 2023	December 31, 2022
Service cost	\$81,569,522	\$78,883,633
Interest	254,059,307	245,416,378
Current-period benefit changes	18,729,653	0
Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	11,640,980	0
Expensed portion of current-period changes of assumptions	0	0
Member contributions	-58,250,668	-55,164,013
Projected earnings on pension plan investments	-134,824,517	-151,360,231
Expensed portion of current-period differences between actual and projected earnings on pension plan investments	-12,344,042	78,334,908
Administrative expense	3,414,053	3,218,004
Recognition of beginning of year deferred outflows of resources as pension expense	107,150,490	55,724,047
Recognition of beginning of year deferred inflows of resources as pension expense	-77,967,851	-77,967,851
Pension expense	\$193,176,927	\$177,084,875

Section 2: GASB Information

Deferred outflows of resources and deferred inflows of resources

Deferred outflows and inflows	Current	Prior
Reporting and Measurement Dates		
Reporting date for employer under GASB 68	June 30, 2024	June 30, 2023
Measurement date	December 31, 2023	December 31, 2022
Deferred outflows of resources		
Changes in proportion and differences between employer's contributions and proportionate share of contributions ¹	\$57,413,811	\$64,007,005
Changes of assumptions	10,866,550	29,302,605
Net difference between projected and actual earnings on pension plan investments	86,694,535	136,437,755
Difference between expected and actual experience in the Total Pension Liability	48,654,218	12,469,834
Total deferred outflows of resources	\$203,629,114	\$242,217,199
Deferred inflows of resources		
Changes in proportion and differences between employer's contributions and proportionate share of contributions*	\$57,413,811	\$64,007,005
Changes of assumptions	0	0
Net difference between projected and actual earnings on pension plan investments	0	0
Difference between expected and actual experience in the Total Pension Liability	0	0
Total deferred inflows of resources	\$57,413,811	\$64,007,005
Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:		
Reporting date for employer under GASB 68 year ended June 30:		
2024	N/A	\$29,182,639
2025	\$27,533,230	28,236,293
2026	41,753,292	42,456,355
2027	77,631,844	78,334,907
2028	-703,063	0
2029	0	0
Thereafter	0	0

Note: Average expected remaining service is 5.00 years as of December 31, 2023 and December 31, 2022.

¹ Calculated in accordance with Paragraphs 54 and 55 of GASB 68

Section 2: GASB Information

Exhibit 5 – Determination of proportionate share

Employer Name	FY 2023 Total Appropriation	Percent of Total NPL as of December 31, 2022	Share of NPL as of December 31, 2022 ¹	FY 2024 Total Appropriation	Percent of Total NPL as of December 31, 2023	Share of NPL as of December 31, 2023
Middlesex County Retirement Board	\$459,165	0.000000%	\$0	\$453,368	0.000000%	\$0
Middlesex County	0	0.000000%	0	0	0.000000%	0
Middlesex Hospital	0	0.000000%	0	0	0.000000%	0
Town of Acton	5,133,300	3.325920%	56,442,883	5,309,325	3.350878%	56,665,288
Town of Ashby	253,936	0.129371%	2,195,503	254,095	0.089032%	1,505,590
Town of Ashland	3,793,010	2.308550%	39,177,494	3,905,242	2.293381%	38,782,403
Town of Ayer	2,058,373	1.245231%	21,132,333	2,096,798	1.335686%	22,587,224
Town of Bedford	5,288,347	3.426139%	58,143,653	5,458,202	3.489180%	59,004,049
Town of Billerica	14,484,999	9.633538%	163,486,989	15,421,709	9.686530%	163,804,814
Town of Boxborough	1,218,757	0.744060%	12,627,142	1,245,470	0.799515%	13,520,255
Town of Burlington	12,543,435	8.456279%	143,508,193	13,403,482	8.569434%	144,914,077
Town of Carlisle	1,265,339	0.795122%	13,493,696	1,402,244	0.958589%	16,210,292
Town of Chelmsford	10,538,132	6.944262%	117,848,343	11,333,552	7.149273%	120,898,338
Town of Dracut	6,554,393	4.424780%	75,091,196	7,203,532	4.440457%	75,090,691
Town of Dunstable	389,434	0.191433%	3,248,740	365,094	0.238203%	4,028,150
Town of Groton	2,538,910	1.481980%	25,150,097	2,494,280	1.401294%	23,696,683
Town of Holliston	2,754,852	1.604840%	27,235,114	2,720,260	1.659494%	28,063,006
Town of Hopkinton	3,087,462	1.710623%	29,030,303	3,104,074	1.602643%	27,101,615
Town of Hudson	6,794,331	4.474350%	75,932,435	7,441,621	4.230286%	71,536,588
Town of Lincoln	2,754,456	1.898817%	32,224,079	3,050,494	1.900000%	32,130,102
Town of Littleton	2,900,040	1.797934%	30,512,028	3,110,711	1.531191%	25,893,317

¹ Net Pension Liability for each employer was determined on an individual basis.

The NPL for the Middlesex County Retirement Board, Middlesex County and the Middlesex Hospital has been allocated amongst the other units in the System in proportion to the remaining units' NPL because the obligation to fund these units is a shared responsibility of these other units.

Section 2: GASB Information

Employer Name	FY 2023 Total Appropriation	Percent of Total NPL as of December 31, 2022	Share of NPL as of December 31, 2022 ¹	FY 2024 Total Appropriation	Percent of Total NPL as of December 31, 2023	Share of NPL as of December 31, 2023
Town of North Reading	4,854,543	3.250018%	55,154,781	5,210,793	3.220779%	54,465,235
Town of Pepperell	1,811,124	1.141560%	19,372,966	1,941,379	1.004996%	16,995,063
Town of Sherborn	1,112,907	0.694909%	11,793,029	1,236,905	0.752365%	12,722,930
Town of Shirley	866,303	0.604890%	10,265,353	1,016,240	0.622370%	10,524,633
Town of Stow	1,147,938	0.835700%	14,182,336	1,334,265	0.860993%	14,559,897
Town of Sudbury	5,993,875	3.938901%	66,845,536	6,370,873	3.884890%	65,695,729
Town of Tewksbury	9,788,110	6.810776%	115,583,007	10,932,548	6.916741%	116,966,080
Town of Townsend	991,340	0.445776%	7,565,089	891,023	0.407010%	6,882,768
Town of Tyngsborough	2,617,413	1.622868%	27,541,050	2,802,097	1.570370%	26,555,868
Town of Wayland	5,728,625	3.538325%	60,047,515	5,907,067	3.673859%	62,127,083
Town of Westford	6,263,082	3.839687%	65,161,824	6,522,668	3.705382%	62,660,156
Town of Weston	6,288,908	4.352341%	73,861,876	6,912,365	4.343046%	73,443,424
Town of Wilmington	8,322,908	5.513544%	93,568,182	8,908,246	5.511542%	93,203,360
Acton-Boxborough RSD	3,320,479	1.933038%	32,804,832	3,367,439	1.910930%	32,314,927
Acton Water Supply	288,240	0.254024%	4,310,937	330,838	0.266981%	4,514,809
Bedford Housing Authority	30,802	0.021058%	357,375	32,681	0.022255%	376,352
Billerica Housing Authority	136,975	0.074859%	1,270,401	113,735	0.112034%	1,894,567
Chelmsford Housing Authority	268,910	0.169320%	2,873,470	297,353	0.165098%	2,791,904
Chelmsford Water District	74,907	0.048313%	819,895	52,448	0.043328%	732,694
Dracut Housing Authority	182,577	0.115957%	1,967,855	164,851	0.110884%	1,875,107
Dracut Water Supply	270,657	0.222326%	3,773,011	316,875	0.225840%	3,819,086
E. Chelmsford Water	40,049	0.021131%	358,607	34,525	0.020120%	340,247
E. Middlesex Mosq Control	62,459	0.049717%	843,725	65,087	0.046854%	792,329
Greater Lowell RVTSD	1,553,947	1.193313%	20,251,238	1,780,273	1.187184%	20,075,975
Groton-Dunstable RSD	1,250,129	0.880808%	14,947,853	1,373,329	0.908794%	15,368,239

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Employer Name	FY 2023 Total Appropriation	Percent of Total NPL as of December 31, 2022	Share of NPL as of December 31, 2022 ¹	FY 2024 Total Appropriation	Percent of Total NPL as of December 31, 2023	Share of NPL as of December 31, 2023
Hudson Housing Authority	62,228	0.047607%	807,927	72,524	0.053613%	906,627
Lincoln Sudbury	808,324	0.604567%	10,259,862	913,596	0.614201%	10,386,487
Nashoba Vally THSD	348,527	0.222370%	3,773,754	377,582	0.217795%	3,683,043
N. Chelmsford Water	84,480	0.072438%	1,229,309	95,159	0.103059%	1,742,783
North Middlesex RSD	1,299,482	0.863850%	14,660,062	1,410,189	0.863025%	14,594,252
Shawsheen Valley RVS	787,076	0.576671%	9,786,464	904,644	0.567396%	9,594,986
South Middlesex RVTS	619,647	0.454024%	7,705,068	704,878	0.437605%	7,400,154
Sudbury Water District	192,116	0.135706%	2,303,019	156,230	0.073972%	1,250,917
Tewksbury Housing Authority	152,028	0.106367%	1,805,120	160,199	0.127218%	2,151,337
Wayland Housing Authority	61,744	0.039571%	671,550	56,113	0.024602%	416,032
Hopkinton Housing Authority	46,820	0.034879%	591,913	55,738	0.036735%	621,215
Sudbury Housing Authority	46,012	0.031488%	534,374	52,795	0.032782%	554,364
Wilmington Housing Authority	37,810	0.013750%	233,342	24,139	0.008104%	137,041
Acton Housing Authority	81,483	0.059839%	1,015,501	87,654	0.060022%	1,015,010
Burlington Housing Authority	37,587	0.011672%	198,080	18,072	0.003139%	53,090
Ayer Housing Authority	71,552	0.044413%	753,718	73,004	0.040721%	688,618
Holliston Housing Authority	21,143	0.009393%	159,405	19,430	0.001988%	33,626
Littleton Housing Authority	51,652	0.038928%	660,639	57,173	0.040584%	686,302
Westford Housing Authority	57,003	0.026907%	456,630	46,868	0.046697%	789,669
Shirley Water District	38,322	0.032903%	558,390	38,447	0.023380%	395,361
Tyngsboro Housing Authority	50,360	0.034014%	577,242	57,544	0.033921%	573,626
Pepperell Housing Authority	25,571	0.014623%	248,169	28,680	0.014411%	243,694
Groton Housing Authority	0	0.000000%	0	0	0.000000%	0
Tyngsboro Water District	46,380	0.035231%	597,899	53,128	0.041987%	710,027

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Employer Name	FY 2023 Total Appropriation	Percent of Total NPL as of December 31, 2022	Share of NPL as of December 31, 2022 ¹	FY 2024 Total Appropriation	Percent of Total NPL as of December 31, 2023	Share of NPL as of December 31, 2023
North Reading Housing Authority	23,748	0.003848%	65,307	8,671	0.002322%	39,272
West Groton Water	2,960	0.004532%	76,911	2,315	0.005089%	86,060
Ayer-Shirley RSD	545,398	0.279695%	4,746,593	497,092	0.301243%	5,094,198
NMRECC	0	0.034323%	582,488	62,893	0.004675%	79,063
Grand totals:	\$153,677,331	100.000000%	\$1,697,060,700	\$163,724,213	100.000000%	\$1,691,057,798

Section 2: GASB Information

Exhibit 6 – Determination of proportionate share amounts by employer

Net Pension Liability by Employer With Discount Rate Sensitivity

Employer Name	2024 Share of Cost Allocation	Net Pension Liability	Covered Employee Payroll	1% Decrease in Discount Rate (6.15%)	Current Discount Rate	1% Increase in Discount Rate (8.15%)
Middlesex County Retirement Board	0.000000%	\$0	\$1,254,426	\$0	\$0	\$0
Middlesex County	0.000000%	0	0	0	0	0
Middlesex Hospital	0.000000%	0	0	0	0	0
Town of Acton	3.350878%	56,665,288	16,048,362	70,940,897	56,665,288	44,651,883
Town of Ashby	0.089032%	1,505,590	1,062,577	1,884,891	1,505,590	1,186,395
Town of Ashland	2.293381%	38,782,403	16,662,527	48,552,801	38,782,403	30,560,285
Town of Ayer	1.335686%	22,587,224	8,362,919	28,277,593	22,587,224	17,798,588
Town of Bedford	3.489180%	59,004,049	22,210,006	73,868,859	59,004,049	46,494,812
Town of Billerica	9.686530%	163,804,814	41,992,311	205,071,941	163,804,814	129,077,145
Town of Boxborough	0.799515%	13,520,255	3,417,136	16,926,395	13,520,255	10,653,874
Town of Burlington	8.569434%	144,914,077	40,805,162	181,422,084	144,914,077	114,191,363
Town of Carlisle	0.958589%	16,210,292	6,599,149	20,294,129	16,210,292	12,773,606
Town of Chelmsford	7.149273%	120,898,338	33,151,794	151,356,092	120,898,338	95,267,115
Town of Dracut	4.440457%	75,090,691	19,399,126	94,008,187	75,090,691	59,170,983
Town of Dunstable	0.238203%	4,028,150	1,445,859	5,042,956	4,028,150	3,174,156
Town of Groton	1.401294%	23,696,683	9,066,226	29,666,556	23,696,683	18,672,834
Town of Holliston	1.659494%	28,063,006	13,368,469	35,132,881	28,063,006	22,113,469
Town of Hopkinton	1.602643%	27,101,615	20,722,283	33,929,288	27,101,615	21,355,899
Town of Hudson	4.230286%	71,536,588	23,371,212	89,558,704	71,536,588	56,370,372
Town of Lincoln	1.900000%	32,130,102	12,243,307	40,224,595	32,130,102	25,318,314
Town of Littleton	1.531191%	25,893,317	16,743,124	32,416,585	25,893,317	20,403,768

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Employer Name	2024 Share of Cost Allocation	Net Pension Liability	Covered Employee Payroll	1% Decrease in Discount Rate (6.15%)	Current Discount Rate	1% Increase in Discount Rate (8.15%)
Town of North Reading	3.220779%	54,465,235	15,445,769	68,186,588	54,465,235	42,918,256
Town of Pepperell	1.004996%	16,995,063	6,374,629	21,276,606	16,995,063	13,392,001
Town of Sherborn	0.752365%	12,722,930	4,971,947	15,928,201	12,722,930	10,025,587
Town of Shirley	0.622370%	10,524,633	2,381,326	13,176,090	10,524,633	8,293,343
Town of Stow	0.860993%	14,559,897	4,529,512	18,227,952	14,559,897	11,473,105
Town of Sudbury	3.884890%	65,695,729	20,232,436	82,246,365	65,695,729	51,767,813
Town of Tewksbury	6.916741%	116,966,080	26,490,728	146,433,186	116,966,080	92,168,520
Town of Townsend	0.407010%	6,882,768	4,446,532	8,616,734	6,882,768	5,423,577
Town of Tyngsborough	1.570370%	26,555,868	10,378,946	33,246,052	26,555,868	20,925,854
Town of Wayland	3.673859%	62,127,083	22,389,383	77,778,675	62,127,083	48,955,743
Town of Westford	3.705382%	62,660,156	29,308,551	78,446,044	62,660,156	49,375,801
Town of Weston	4.343046%	73,443,424	23,232,459	91,945,926	73,443,424	57,872,947
Town of Wilmington	5.511542%	93,203,360	26,917,809	116,683,956	93,203,360	73,443,650
Acton-Boxborough RSD	1.910930%	32,314,927	16,789,694	40,455,983	32,314,927	25,463,955
Acton Water Supply	0.266981%	4,514,809	1,155,228	5,652,219	4,514,809	3,557,640
Bedford Housing Authority	0.022255%	376,352	131,725	471,166	376,352	296,563
Billerica Housing Authority	0.112034%	1,894,567	396,320	2,371,863	1,894,567	1,492,907
Chelmsford Housing Authority	0.165098%	2,791,904	3,573,684	3,495,265	2,791,904	2,200,002
Chelmsford Water District	0.043328%	732,694	1,336,985	917,281	732,694	577,358
Dracut Housing Authority	0.110884%	1,875,107	447,219	2,347,500	1,875,107	1,477,572
Dracut Water Supply	0.225840%	3,819,086	754,572	4,781,223	3,819,086	3,009,415
E. Chelmsford Water	0.020120%	340,247	233,823	425,965	340,247	268,112
E. Middlesex Mosq Control	0.046854%	792,329	345,200	991,939	792,329	624,350
Greater Lowell RVTSD	1.187184%	20,075,975	5,256,908	25,133,688	20,075,975	15,819,739
Groton-Dunstable RSD	0.908794%	15,368,239	4,488,209	19,239,939	15,368,239	12,110,074

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Employer Name	2024 Share of Cost Allocation	Net Pension Liability	Covered Employee Payroll	1% Decrease in Discount Rate (6.15%)	Current Discount Rate	1% Increase in Discount Rate (8.15%)
Hudson Housing Authority	0.053613%	906,627	489,311	1,135,032	906,627	714,416
Lincoln Sudbury	0.614201%	10,386,487	3,127,054	13,003,141	10,386,487	8,184,485
Nashoba Vally THSD	0.217795%	3,683,043	1,043,817	4,610,907	3,683,043	2,902,214
N. Chelmsford Water	0.103059%	1,742,783	672,107	2,181,840	1,742,783	1,373,302
North Middlesex RSD	0.863025%	14,594,252	5,863,270	18,270,962	14,594,252	11,500,177
Shawsheen Valley RVS	0.567396%	9,594,986	3,336,441	12,012,238	9,594,986	7,560,787
South Middlesex RVTS	0.437605%	7,400,154	2,618,631	9,264,465	7,400,154	5,831,274
Sudbury Water District	0.073972%	1,250,917	1,048,146	1,566,059	1,250,917	985,715
Tewksbury Housing Authority	0.127218%	2,151,337	536,594	2,693,320	2,151,337	1,695,240
Wayland Housing Authority	0.024602%	416,032	327,989	520,842	416,032	327,831
Hopkinton Housing Authority	0.036735%	621,215	101,991	777,717	621,215	489,513
Sudbury Housing Authority	0.032782%	554,364	96,896	694,024	554,364	436,835
Wilmington Housing Authority	0.008104%	137,041	188,084	171,565	137,041	107,987
Acton Housing Authority	0.060022%	1,015,010	516,982	1,270,720	1,015,010	799,821
Burlington Housing Authority	0.003139%	53,090	227,257	66,465	53,090	41,835
Ayer Housing Authority	0.040721%	688,618	186,559	862,101	688,618	542,627
Holliston Housing Authority	0.001988%	33,626	103,737	42,097	33,626	26,497
Littleton Housing Authority	0.040584%	686,302	0	859,201	686,302	540,802
Westford Housing Authority	0.046697%	789,669	439,035	988,609	789,669	622,254
Shirley Water District	0.023380%	395,361	256,361	494,964	395,361	311,542
Tyngsboro Housing Authority	0.033921%	573,626	137,933	718,139	573,626	452,014
Pepperell Housing Authority	0.014411%	243,694	109,186	305,087	243,694	192,029
Groton Housing Authority	0.000000%	0	0	0	0	0
Tyngsboro Water District	0.041987%	710,027	191,704	888,903	710,027	559,497

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Employer Name	2024 Share of Cost Allocation	Net Pension Liability	Covered Employee Payroll	1% Decrease in Discount Rate (6.15%)	Current Discount Rate	1% Increase in Discount Rate (8.15%)
North Reading Housing Authority	0.002322%	39,272	31,913	49,166	39,272	30,946
West Groton Water	0.005089%	86,060	228,442	107,741	86,060	67,815
Ayer-Shirley RSD	0.301243%	5,094,198	4,341,290	6,377,572	5,094,198	4,014,195
NMRECC	0.004675%	79,063	1,086,962	98,981	79,063	62,301
Grand totals:	100.000000%	\$1,691,057,798	\$567,243,261	\$2,117,083,698	\$1,691,057,798	\$1,332,542,696

Section 2: GASB Information

Exhibit 6 – Determination of proportionate share by employer

Schedule of Contributions and Pension Expense by Employer

Employer Name	Statutory Required Contribution	Contributions in Relation to the Statutory Required Contribution	Contribution Deficiency / (Excess)	Contributions as a Percentage of Covered Employee Payroll	Proportionate Share of Plan Pension Expense	Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Employer Pension Expense
Middlesex County Retirement Board	\$453,368	\$453,368	\$0	36.14%	\$453,368	\$0	\$453,368
Middlesex County	0	0	0	0.00%	0	0	0
Middlesex Hospital	0	0	0	0.00%	0	0	0
Town of Acton	5,309,325	5,345,128	-35,803	33.31%	6,457,932	-390,605	6,067,327
Town of Ashby	254,095	254,095	0	23.91%	171,586	-66,071	105,515
Town of Ashland	3,905,242	3,905,242	0	23.44%	4,419,886	51,362	4,471,248
Town of Ayer	2,096,798	2,396,798	-300,000	28.66%	2,574,181	396,210	2,970,391
Town of Bedford	5,458,202	5,458,202	0	24.58%	6,724,472	-134,403	6,590,069
Town of Billerica	15,421,709	15,421,709	0	36.73%	18,668,229	-838,094	17,830,135
Town of Boxborough	1,245,470	1,245,470	0	36.45%	1,540,853	184,987	1,725,840
Town of Burlington	13,403,482	13,403,482	0	32.85%	16,515,318	62,668	16,577,986
Town of Carlisle	1,402,244	1,402,244	0	21.25%	1,847,427	793,155	2,640,582
Town of Chelmsford	11,333,552	11,335,407	-1,855	34.19%	13,778,333	-188,726	13,589,607
Town of Dracut	7,203,532	7,203,874	-342	37.14%	8,557,806	359,430	8,917,236
Town of Dunstable	365,094	365,094	0	25.25%	459,073	177,378	636,451
Town of Groton	2,494,280	2,494,280	0	27.51%	2,700,623	-224,135	2,476,488
Town of Holliston	2,720,260	2,720,260	0	20.35%	3,198,236	-61,275	3,136,961
Town of Hopkinton	3,104,074	3,104,074	0	14.98%	3,088,670	406,670	3,495,340
Town of Hudson	7,441,621	7,441,621	0	31.84%	8,152,758	-601,450	7,551,308
Town of Lincoln	3,050,494	3,050,494	0	24.92%	3,661,748	312,115	3,973,863
Town of Littleton	3,110,711	5,167,031	-2,056,320	30.86%	2,950,965	1,056,599	4,007,564

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Employer Name	Statutory Required Contribution	Contributions in Relation to the Statutory Required Contribution	Contribution Deficiency / (Excess)	Contributions as a Percentage of Covered Employee Payroll	Proportionate Share of Plan Pension Expense	Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Employer Pension Expense
Town of North Reading	5,210,793	5,210,793	0	33.74%	6,207,200	-559,494	5,647,706
Town of Pepperell	1,941,379	1,941,379	0	30.45%	1,936,864	-402,632	1,534,232
Town of Sherborn	1,236,905	1,236,905	0	24.88%	1,449,985	123,225	1,573,210
Town of Shirley	1,016,240	1,016,240	0	42.68%	1,199,453	80,903	1,280,356
Town of Stow	1,334,265	1,334,265	0	29.46%	1,659,338	265,242	1,924,580
Town of Sudbury	6,370,873	6,370,873	0	31.49%	7,487,097	-819,033	6,668,064
Town of Tewksbury	10,932,548	10,932,548	0	41.27%	13,330,189	-81,774	13,248,415
Town of Townsend	891,023	891,023	0	20.04%	784,404	-309,478	474,926
Town of Tyngsborough	2,802,097	2,805,247	-3,150	27.03%	3,026,473	295,579	3,322,052
Town of Wayland	5,907,067	5,907,067	0	26.38%	7,080,392	-274,065	6,806,327
Town of Westford	6,522,668	6,522,668	0	22.26%	7,141,145	166,235	7,307,380
Town of Weston	6,912,365	7,912,365	-1,000,000	34.06%	8,370,073	29,525	8,399,598
Town of Wilmington	8,908,246	8,908,630	-384	33.10%	10,622,039	-17,874	10,604,165
Acton-Boxborough RSD	3,367,439	3,367,439	0	20.06%	3,682,811	161,850	3,844,661
Acton Water Supply	330,838	330,838	0	28.64%	514,536	-2,470	512,066
Bedford Housing Authority	32,681	32,681	0	24.81%	42,891	980	43,871
Billerica Housing Authority	113,735	113,735	0	28.70%	215,917	37,690	253,607
Chelmsford Housing Authority	297,353	357,353	-60,000	10.00%	318,182	128,366	446,548
Chelmsford Water District	52,448	52,448	0	3.92%	83,503	45,541	129,044
Dracut Housing Authority	164,851	167,722	-2,871	37.50%	213,699	-110,302	103,397
Dracut Water Supply	316,875	316,875	0	41.99%	435,247	-17,135	418,112
E. Chelmsford Water	34,525	34,525	0	14.77%	38,777	-7,846	30,931
E. Middlesex Mosq Control	65,087	65,087	0	18.85%	90,299	4,508	94,807
Greater Lowell RVTSD	1,780,273	1,780,273	0	33.87%	2,287,984	19,507	2,307,491
Groton-Dunstable RSD	1,373,329	1,373,329	0	30.60%	1,751,461	274,307	2,025,768

Section 2: GASB Information

Employer Name	Statutory Required Contribution	Contributions in Relation to the Statutory Required Contribution	Contribution Deficiency / (Excess)	Contributions as a Percentage of Covered Employee Payroll	Proportionate Share of Plan Pension Expense	Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Employer Pension Expense
Hudson Housing Authority	72,524	72,524	0	14.82%	103,325	-58,111	45,214
Lincoln Sudbury	913,596	913,596	0	29.22%	1,183,709	-17,804	1,165,905
Nashoba Vally THSD	377,582	377,582	0	36.17%	419,743	-52,247	367,496
N. Chelmsford Water	95,159	95,159	0	14.16%	198,619	81,193	279,812
North Middlesex RSD	1,410,189	1,410,189	0	24.05%	1,663,252	68,563	1,731,815
Shawsheen Valley RVS	904,644	904,644	0	27.11%	1,093,505	-28,804	1,064,701
South Middlesex RVTS	704,878	704,878	0	26.92%	843,368	-101,522	741,846
Sudbury Water District	156,230	156,230	0	14.91%	142,563	-203,674	-61,111
Tewksbury Housing Authority	160,199	160,199	0	29.85%	245,180	44,637	289,817
Wayland Housing Authority	56,113	56,113	0	17.11%	47,413	-59,803	-12,390
Hopkinton Housing Authority	55,738	55,738	0	54.65%	70,797	4,391	75,188
Sudbury Housing Authority	52,795	52,795	0	54.49%	63,178	3,253	66,431
Wilmington Housing Authority	24,139	24,139	0	12.83%	15,618	-38,079	-22,461
Acton Housing Authority	87,654	87,654	0	16.95%	115,677	7,115	122,792
Burlington Housing Authority	18,072	18,072	0	7.95%	6,051	-15,474	-9,423
Ayer Housing Authority	73,004	73,004	0	39.13%	78,479	-39,140	39,339
Holliston Housing Authority	19,430	19,430	0	18.73%	3,832	-18,537	-14,705
Littleton Housing Authority	57,173	57,173	0	0.00%	78,215	14,051	92,266
Westford Housing Authority	46,868	46,868	0	10.68%	89,995	33,973	123,968
Shirley Water District	38,447	38,447	0	15.00%	45,058	-18,515	26,543
Tyngsboro Housing Authority	57,544	57,544	0	41.72%	65,374	-1,730	63,644
Pepperell Housing Authority	28,680	28,680	0	26.27%	27,773	6,642	34,415
Groton Housing Authority	0	0	0	0.00%	0	2,839	2,839
Tyngsboro Water District	53,128	53,128	0	27.71%	80,919	32,278	113,197

Section 2: GASB Information

Employer Name	Statutory Required Contribution	Contributions in Relation to the Statutory Required Contribution	Contribution Deficiency / (Excess)	Contributions as a Percentage of Covered Employee Payroll	Proportionate Share of Plan Pension Expense	Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Employer Pension Expense
North Reading Housing Authority	8,671	8,671	0	27.17%	4,475	-17,174	-12,699
West Groton Water	2,315	2,315	0	1.01%	9,808	7,031	16,839
Ayer-Shirley RSD	497,092	497,092	0	11.45%	580,567	29,539	610,106
NMRECC	62,893	62,893	0	5.79%	9,011	7,939	16,950
Grand totals:	\$163,724,213	\$167,184,938	-\$3,460,725	29.47%	\$193,176,927	\$0	\$193,176,927

Section 2: GASB Information

Exhibit 6 – Determination of proportionate share by employer

Deferred Outflows and Inflows of Resources

Employer Name	Differences Between Expected and Actual Experience	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Outflows of Resources	Differences Between Expected and Actual Experience	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Inflows of Resources
Middlesex County Retirement Board	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Middlesex County	0	0	0	0	0	0	0	0	0
Middlesex Hospital	0	0	0	0	0	0	0	0	0
Town of Acton	1,630,344	2,905,028	364,125	265,094	5,164,591	0	0	845,122	845,122
Town of Ashby	43,318	77,186	9,675	277,462	407,641	0	0	453,904	453,904
Town of Ashland	1,115,827	1,988,236	249,211	1,435,197	4,788,471	0	0	1,089,890	1,089,890
Town of Ayer	649,868	1,157,967	145,143	1,929,219	3,882,197	0	0	147,650	147,650
Town of Bedford	1,697,633	3,024,928	379,153	1,722,091	6,823,805	0	0	471,465	471,465
Town of Billerica	4,712,905	8,397,692	1,052,597	1,117,069	15,280,263	0	0	5,232,516	5,232,516
Town of Boxborough	388,998	693,136	86,880	617,690	1,786,704	0	0	318,711	318,711
Town of Burlington	4,169,391	7,429,231	931,202	1,120,488	13,650,312	0	0	4,024,026	4,024,026
Town of Carlisle	466,394	831,044	104,166	3,087,879	4,489,483	0	0	56,178	56,178
Town of Chelmsford	3,478,423	6,198,029	776,879	3,317,307	13,770,638	0	0	4,646,139	4,646,139
Town of Dracut	2,160,470	3,849,633	482,524	1,608,071	8,100,698	0	0	2,117,715	2,117,715
Town of Dunstable	115,896	206,509	25,884	785,225	1,133,514	0	0	191,314	191,314
Town of Groton	681,788	1,214,845	152,272	570,324	2,619,229	0	0	1,797,534	1,797,534
Town of Holliston	807,414	1,438,691	180,330	3,022,225	5,448,660	0	0	1,553,247	1,553,247
Town of Hopkinton	779,753	1,389,404	174,152	4,448,679	6,791,988	0	0	2,642,203	2,642,203
Town of Hudson	2,058,213	3,667,427	459,686	823,827	7,009,153	0	0	2,698,837	2,698,837
Town of Lincoln	924,430	1,647,196	206,464	1,074,257	3,852,347	0	0	87,841	87,841
Town of Littleton	744,989	1,327,459	166,388	3,397,992	5,636,828	0	0	1,203,102	1,203,102

Section 2: GASB Information

Employer Name	Differences Between Expected and Actual Experience	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Outflows of Resources	Differences Between Expected and Actual Experience	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Inflows of Resources
Town of North Reading	1,567,045	2,792,239	349,988	191,293	4,900,565	0	0	1,274,724	1,274,724
Town of Pepperell	488,973	871,277	109,208	6,490	1,475,948	0	0	1,503,977	1,503,977
Town of Sherborn	366,057	652,259	81,756	1,242,276	2,342,348	0	0	0	0
Town of Shirley	302,809	539,561	67,630	510,738	1,420,738	0	0	395,097	395,097
Town of Stow	418,910	746,434	93,560	788,818	2,047,722	0	0	191,290	191,290
Town of Sudbury	1,890,163	3,367,987	422,153	137,566	5,817,869	0	0	2,058,037	2,058,037
Town of Tewksbury	3,365,286	5,996,436	751,611	3,962,833	14,076,166	0	0	5,889,381	5,889,381
Town of Townsend	198,027	352,855	44,228	990,752	1,585,862	0	0	1,199,170	1,199,170
Town of Tyngsborough	764,051	1,361,425	170,645	578,237	2,874,358	0	0	488,332	488,332
Town of Wayland	1,787,487	3,185,035	399,222	2,399,328	7,771,072	0	0	1,349,683	1,349,683
Town of Westford	1,802,825	3,212,364	402,647	4,615,398	10,033,234	0	0	2,983,703	2,983,703
Town of Weston	2,113,075	3,765,184	471,939	1,349,910	7,700,108	0	0	981,494	981,494
Town of Wilmington	2,681,598	4,778,206	598,914	665,797	8,724,515	0	0	1,104,940	1,104,940
Acton-Boxborough RSD	929,748	1,656,672	207,652	920,375	3,714,447	0	0	643,260	643,260
Acton Water Supply	129,898	231,458	29,012	136,588	526,956	0	0	17,150	17,150
Bedford Housing Authority	10,828	19,294	2,418	27,723	60,263	0	0	9,901	9,901
Billerica Housing Authority	54,509	97,128	12,174	394,204	558,015	0	0	176,375	176,375
Chelmsford Housing Authority	80,327	143,131	17,940	500,744	742,142	0	0	36,934	36,934
Chelmsford Water District	21,081	37,563	4,708	1,108,302	1,171,654	0	0	520,106	520,106
Dracut Housing Authority	53,950	96,130	12,049	832	162,961	0	0	308,700	308,700
Dracut Water Supply	109,881	195,791	24,541	127,956	458,169	0	0	203,938	203,938
E. Chelmsford Water	9,789	17,443	2,186	71,406	100,824	0	0	69,319	69,319
E. Middlesex Mosq Control	22,796	40,620	5,091	125,772	194,279	0	0	97,228	97,228
Greater Lowell RVTSD	577,615	1,029,224	129,006	579,466	2,315,311	0	0	1,275,481	1,275,481
Groton-Dunstable RSD	442,167	787,875	98,755	648,413	1,977,210	0	0	27,598	27,598

Section 2: GASB Information

Employer Name	Differences Between Expected and Actual Experience	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Outflows of Resources	Differences Between Expected and Actual Experience	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Inflows of Resources
Hudson Housing Authority	26,085	46,480	5,826	110,520	188,911	0	0	2,748	2,748
Lincoln Sudbury	298,834	532,478	66,742	275,362	1,173,416	0	0	225,273	225,273
Nashoba Vally THSD	105,967	188,817	23,667	104,385	422,836	0	0	349,869	349,869
N. Chelmsford Water	50,142	89,346	11,199	523,229	673,916	0	0	113,259	113,259
North Middlesex RSD	419,898	748,196	93,781	202,593	1,464,468	0	0	42,245	42,245
Shawsheen Valley RVS	276,062	491,901	61,656	216,512	1,046,131	0	0	461,694	461,694
South Middlesex RVTS	212,913	379,380	47,553	118,456	758,302	0	0	353,657	353,657
Sudbury Water District	35,991	64,130	8,038	269,691	377,850	0	0	1,072,756	1,072,756
Tewksbury Housing Authority	61,897	110,291	13,824	219,536	405,548	0	0	44,241	44,241
Wayland Housing Authority	11,970	21,328	2,673	106,725	142,696	0	0	248,149	248,149
Hopkinton Housing Authority	17,873	31,847	3,992	34,342	88,054	0	0	25,745	25,745
Sudbury Housing Authority	15,950	28,420	3,562	34,520	82,452	0	0	26,563	26,563
Wilmington Housing Authority	3,943	7,026	881	9,813	21,663	0	0	117,646	117,646
Acton Housing Authority	29,203	52,036	6,522	47,109	134,870	0	0	26,941	26,941
Burlington Housing Authority	1,527	2,722	341	113,832	118,422	0	0	212,465	212,465
Ayer Housing Authority	19,813	35,303	4,425	316	59,857	0	0	134,975	134,975
Holliston Housing Authority	967	1,724	216	25,912	28,819	0	0	97,996	97,996
Littleton Housing Authority	19,746	35,184	4,410	62,874	122,214	0	0	101,568	101,568
Westford Housing Authority	22,720	40,484	5,074	275,242	343,520	0	0	77,045	77,045
Shirley Water District	11,375	20,269	2,541	80,121	114,306	0	0	160,446	160,446
Tyngsboro Housing Authority	16,504	29,408	3,686	22,221	71,819	0	0	34,355	34,355
Pepperell Housing Authority	7,011	12,493	1,566	1,671	22,741	0	0	11,017	11,017
Groton Housing Authority	0	0	0	573	573	0	0	0	0
Tyngsboro Water District	20,429	36,401	4,563	131,986	193,379	0	0	9,918	9,918

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Employer Name	Differences Between Expected and Actual Experience	Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Outflows of Resources	Differences Between Expected and Actual Experience	Changes of Assumptions	Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	Total Deferred Inflows of Resources
North Reading Housing Authority	1,130	2,013	252	29,034	32,429	0	0	80,264	80,264
West Groton Water	2,476	4,412	553	66,845	74,286	0	0	25,770	25,770
Ayer-Shirley RSD	146,568	261,161	32,735	1,431,054	1,871,518	0	0	655,213	655,213
NMRECC	2,275	4,053	508	198,024	204,860	0	0	318,781	318,781
Grand totals:	\$48,654,218	\$86,694,535	\$10,866,550	\$57,413,811	\$203,629,114	\$0	\$0	\$57,413,811	\$57,413,811

Section 2: GASB Information

Exhibit 6 – Determination of proportionate share by employer

Deferred Inflows/(Outflows) Recognized In Future Pension Expense (Year Ended June 30)

Employer Name	2025	2026	2027	2028	2029	Thereafter
Middlesex County Retirement Board	\$0	\$0	\$0	\$0	\$0	\$0
Middlesex County	0	0	0	0	0	0
Middlesex Hospital	0	0	0	0	0	0
Town of Acton	568,594	1,066,423	2,680,565	3,887	0	0
Town of Ashby	-6,976	3,331	59,415	-102,032	0	0
Town of Ashland	576,988	938,500	2,229,005	-45,912	0	0
Town of Ayer	834,754	1,023,701	1,576,751	299,341	0	0
Town of Bedford	1,220,413	1,793,961	3,242,869	95,098	0	0
Town of Billerica	1,546,788	2,762,979	5,790,872	-52,892	0	0
Town of Boxborough	247,133	346,899	728,640	145,320	0	0
Town of Burlington	1,447,961	2,593,636	5,478,102	106,586	0	0
Town of Carlisle	1,098,479	1,263,193	1,621,009	450,623	0	0
Town of Chelmsford	1,641,814	2,519,896	4,507,226	455,563	0	0
Town of Dracut	1,350,684	1,906,879	2,748,971	-23,551	0	0
Town of Dunstable	192,460	217,318	398,438	133,984	0	0
Town of Groton	-102,397	86,494	1,060,975	-223,377	0	0
Town of Holliston	601,804	905,108	2,243,473	145,027	0	0
Town of Hopkinton	791,792	1,125,440	2,485,437	-252,885	0	0
Town of Hudson	899,437	1,498,658	2,605,674	-693,454	0	0
Town of Lincoln	947,357	1,225,832	1,624,563	-33,245	0	0
Town of Littleton	1,270,864	1,541,802	1,919,298	-298,240	0	0

Section 2: GASB Information

Employer Name	2025	2026	2027	2028	2029	Thereafter
Town of North Reading	602,836	1,050,654	2,115,666	-143,316	0	0
Town of Pepperell	-102,224	34,197	408,758	-368,760	0	0
Town of Sherborn	571,348	676,157	929,104	165,739	0	0
Town of Shirley	250,334	330,607	400,267	44,433	0	0
Town of Stow	510,139	634,056	661,713	50,524	0	0
Town of Sudbury	528,742	1,052,079	2,391,686	-212,675	0	0
Town of Tewksbury	1,791,109	2,633,999	3,608,386	153,291	0	0
Town of Townsend	-78,837	-25,693	569,363	-78,141	0	0
Town of Tyngsborough	530,211	744,033	1,244,906	-133,124	0	0
Town of Wayland	1,001,978	1,548,026	3,529,184	342,201	0	0
Town of Westford	1,367,012	1,971,655	4,075,969	-365,105	0	0
Town of Weston	1,431,781	2,058,064	3,153,313	75,457	0	0
Town of Wilmington	1,509,572	2,279,855	3,931,149	-101,001	0	0
Acton-Boxborough RSD	563,206	803,430	1,748,882	-44,331	0	0
Acton Water Supply	101,114	156,229	237,841	14,623	0	0
Bedford Housing Authority	9,146	13,021	25,601	2,595	0	0
Billerica Housing Authority	44,197	59,188	180,727	97,528	0	0
Chelmsford Housing Authority	186,001	222,892	293,887	2,429	0	0
Chelmsford Water District	117,197	169,789	383,968	-19,407	0	0
Dracut Housing Authority	-87,679	-72,743	34,304	-19,621	0	0
Dracut Water Supply	56,365	91,832	108,882	-2,848	0	0
E. Chelmsford Water	-3,315	1,289	36,548	-3,015	0	0
E. Middlesex Mosq Control	13,696	27,993	66,995	-11,632	0	0
Greater Lowell RVTSD	202,439	383,985	520,196	-66,790	0	0
Groton-Dunstable RSD	457,520	614,350	827,502	50,240	0	0

Section 2: GASB Information

Employer Name	2025	2026	2027	2028	2029	Thereafter
Hudson Housing Authority	45,773	56,145	69,751	14,493	0	0
Lincoln Sudbury	218,350	314,957	411,984	2,853	0	0
Nashoba Vally THSD	6,191	23,189	56,124	-12,538	0	0
N. Chelmsford Water	113,738	141,438	228,521	76,959	0	0
North Middlesex RSD	289,565	421,508	725,473	-14,324	0	0
Shawsheen Valley RVS	121,433	204,065	299,383	-40,444	0	0
South Middlesex RVTS	73,823	145,474	243,252	-57,904	0	0
Sudbury Water District	-254,110	-225,699	-33,627	-181,470	0	0
Tewksbury Housing Authority	75,164	96,147	137,935	52,062	0	0
Wayland Housing Authority	-41,428	-33,617	12,220	-42,627	0	0
Hopkinton Housing Authority	13,740	19,602	24,687	4,280	0	0
Sudbury Housing Authority	13,586	18,681	20,296	3,327	0	0
Wilmington Housing Authority	-37,753	-37,413	-5,735	-15,083	0	0
Acton Housing Authority	18,881	31,025	60,372	-2,349	0	0
Burlington Housing Authority	-45,915	-41,785	17,030	-23,373	0	0
Ayer Housing Authority	-35,282	-29,808	452	-10,480	0	0
Holliston Housing Authority	-20,387	-20,339	-9,167	-19,284	0	0
Littleton Housing Authority	5,934	11,485	581	2,646	0	0
Westford Housing Authority	47,465	55,394	110,027	53,589	0	0
Shirley Water District	-20,657	-12,100	15,819	-29,202	0	0
Tyngsboro Housing Authority	9,847	13,031	14,911	-324	0	0
Pepperell Housing Authority	860	2,378	8,303	184	0	0
Groton Housing Authority	573	0	0	0	0	0
Tyngsboro Water District	42,945	52,788	70,875	16,851	0	0

Section 2: GASB Information

Employer Name	2025	2026	2027	2028	2029	Thereafter
North Reading Housing Authority	-25,308	-26,225	7,390	-3,691	0	0
West Groton Water	9,081	12,933	26,080	422	0	0
Ayer-Shirley RSD	196,057	268,539	689,405	62,304	0	0
NMRECC	9,227	12,505	-56,578	-79,075	0	0
Grand totals:	\$27,533,230	\$41,753,292	\$77,631,844	-\$703,063	\$0	\$0

Appendix: Definition of Terms

Definitions of certain terms as they are used in Statement No. 68. The terms may have different meanings in other contexts.

Term	Definition
Active employees	Individuals employed at the end of the reporting or measurement period, as applicable.
Actual contributions	Cash contributions recognized as additions to a pension Plan Fiduciary Net Position.
Actuarial present value of projected benefit payments	Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial valuation	The determination, as of a point in time (the actuarial valuation date), of the service cost, Total Pension Liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial valuation date	The date as of which an actuarial valuation is performed.
Actuarially determined contribution	A target or recommended contribution to a defined benefit pension plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.
Ad hoc cost-of-living adjustments (Ad Hoc COLAs)	Cost-of-living adjustments that require a decision to grant by the authority responsible for making such decisions.
Ad hoc postemployment benefit changes	Postemployment benefit changes that require a decision to grant by the authority responsible for making such decisions.
Agent employer	An employer whose employees are provided with pensions through an agent multiple-employer defined benefit pension plan.
Agent multiple-employer defined benefit pension plan (agent pension plan)	A multiple-employer defined benefit pension plan in which pension plan assets are pooled for investment purposes but separate accounts are maintained for each individual employer so that each employer's share of the pooled assets is legally available to pay the benefits of only its employees.
Allocated insurance contract	A contract with an insurance company under which related payments to the insurance company are currently used to purchase immediate or deferred annuities for individual employees. Also may be referred to as an annuity contract.
Automatic cost-of-living adjustments (Automatic COLAs)	Cost-of-living adjustments that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).

Appendix: Definition of Terms

Term	Definition
Automatic postemployment benefit changes	Postemployment benefit changes that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).
Closed period	A specific number of years that is counted from one date and declines to zero with the passage of time. For example, if the recognition period initially is five years on a closed basis, four years remain after the first year, three years after the second year, and so forth.
Collective deferred outflows of resources and deferred inflows of resources related to pensions	Deferred outflows of resources and deferred inflows of resources related to pensions arising from certain changes in the collective Net Pension Liability.
Collective Net Pension Liability	The Net Pension Liability for benefits provided through (1) a cost-sharing pension plan or (2) a single-employer or agent pension plan in circumstances in which there is a special funding situation.
Collective pension expense	Pension expense arising from certain changes in the collective Net Pension Liability.
Contributions	Additions to a pension Plan Fiduciary Net Position for amounts from employers, non-employer contributing entities (for example, state government contributions to a local government pension plan), or employees. Contributions can result from cash receipts by the pension plan or from recognition by the pension plan of a receivable from one of these sources.
Cost-of-living adjustments	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-sharing employer	An employer whose employees are provided with pensions through a cost-sharing multiple-employer defined benefit pension plan.
Cost-sharing multiple employer defined benefit pension plan (Cost-sharing pension plan)	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered payroll	The payroll of employees that are provided with pensions through the pension plan.

Appendix: Definition of Terms

Term	Definition
Deferred retirement option program (DROP)	A program that permits an employee to elect a calculation of benefit payments based on service credits and salary, as applicable, as of the DROP entry date. The employee continues to provide service to the employer and is paid for that service by the employer after the DROP entry date; however, the pensions that would have been paid to the employee (if the employee had retired and not entered the DROP) are credited to an individual employee account within the defined benefit pension plan until the end of the DROP period.
Defined benefit pension plans	Pension plans that are used to provide defined benefit pensions.
Defined benefit pensions	Pensions for which the income or other benefits that the employee will receive at or after separation from employment are defined by the benefit terms. The pensions may be stated as a specified dollar amount or as an amount that is calculated based on one or more factors such as age, years of service, and compensation. (A pension that does not meet the criteria of a defined contribution pension is classified as a defined benefit pension for purposes of Statement No. 68.)
Defined contribution pension plans	Pension plans that are used to provide defined contribution pensions.
Defined contribution pensions	Pensions having terms that (1) provide an individual account for each employee; (2) define the contributions that an employer is required to make (or the credits that it is required to provide) to an active employee's account for periods in which that employee renders service; and (3) provide that the pensions an employee will receive will depend only on the contributions (or credits) to the employee's account, actual earnings on investments of those contributions (or credits), and the effects of forfeitures of contributions (or credits) made for other employees, as well as pension plan administrative costs, that are allocated to the employee's account.
Discount rate	The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following: 1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the pension Plan Fiduciary Net Position is projected (under the requirements of Statement No. 68) to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments. 2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.

Appendix: Definition of Terms

Term	Definition
Entry age actuarial cost method	A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the actuarial accrued liability.
Inactive employees	Terminated individuals that have accumulated benefits but are not yet receiving them, and retirees or their beneficiaries currently receiving benefits.
Measurement period	The period between the prior and the current measurement dates.
Multiple-employer defined benefit pension plan	A defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Net Pension Liability (NPL)	The liability of employers and non-employer contributing entities to employees for benefits provided through a defined benefit pension plan.
Non-employer contributing entities	Entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of Statement No. 68, employees are not considered non-employer contributing entities.
Other postemployment benefits	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits, regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
Pension plans	Arrangements through which pensions are determined, assets dedicated for pensions are accumulated and managed and benefits are paid as they come due.
Pensions	Retirement income and, if provided through a pension plan, postemployment benefits other than retirement income (such as death benefits, life insurance, and disability benefits). Pensions do not include postemployment healthcare benefits and termination benefits.
Plan members	Individuals that are covered under the terms of a pension plan. Plan members generally include (1) employees in active service (active plan members) and (2) terminated employees who have accumulated benefits but are not yet receiving them and retirees or their beneficiaries currently receiving benefits (inactive plan members).
Postemployment	The period after employment.
Postemployment benefit changes	Adjustments to the pension of an inactive employee.
Postemployment healthcare benefits	Medical, dental, vision, and other health-related benefits paid subsequent to the termination of employment.

Appendix: Definition of Terms

Term	Definition
Projected benefit payments	All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and their expected future service.
Public employee retirement system	A special-purpose government that administers one or more pension plans; also may administer other types of employee benefit plans, including postemployment healthcare plans and deferred compensation plans.
Real rate of return	The rate of return on an investment after adjustment to eliminate inflation.
Service costs	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Single employer	An employer whose employees are provided with pensions through a single-employer defined benefit pension plan.
Single-employer defined benefit pension plan (Single-employer pension plan)	A defined benefit pension plan that is used to provide pensions to employees of only one employer.
Special funding situations	Circumstances in which a non-employer entity is legally responsible for making contributions directly to a pension plan that is used to provide pensions to the employees of another entity or entities and either of the following conditions exists: 1. The amount of contributions for which the non-employer entity legally is responsible is not dependent upon one or more events or circumstances unrelated to the pensions. 2. The non-employer entity is the only entity with a legal obligation to make contributions directly to a pension plan.
Termination benefits	Inducements offered by employers to active employees to hasten the termination of services, or payments made in consequence of the early termination of services. Termination benefits include early-retirement incentives, severance benefits, and other termination-related benefits.
Total Pension Liability (TPL)	The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of Statement No. 68.