

MIDDLESEX COUNTY RETIREMENT SYSTEM

FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2020

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TABLE OF CONTENTS

Financial Section	1
Independent Auditor's Report	3
Management's Discussion and Analysis.....	5
Financial Statements.....	8
Statement of Fiduciary Net Position	8
Statement of Changes in Fiduciary Net Position.....	9
Notes to Financial Statements.....	10
Required Supplementary Information	21
Schedule of Changes in the Net Pension Liability and Related Ratios.....	22
Schedule of Contributions	24
Schedule of Investment Returns	25
Notes to Required Supplementary Information	26
Audit of Specific Elements, Accounts and Items of Financial Statements	27
Independent Auditor's Report	29
Pension Plan Schedules	31
Schedule of Employer Allocations.....	31
Schedule of Pension Amounts by Employer	32
Notes to Schedule of Employer Allocations and Schedule of Pension Amounts by Employer.....	51

Financial Section

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Independent Auditor's Report

To the Honorable Middlesex County Retirement Board
Middlesex County Retirement System
Billerica, Massachusetts

Report on the Financial Statements

We have audited the accompanying financial statements of Middlesex County Retirement System as of and for the year ended December 31, 2020, and the related notes to the financial statements, which collectively comprise the Middlesex County Retirement System's financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Middlesex County Retirement System as of December 31, 2020, and the results of its operations and changes in its financial position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis; the Schedule of Changes in the Net Pension Liability and Related Ratios; the Schedule of Contributions; and the Schedule of Investment Returns be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the financial statements, and other knowledge we obtained during our audit of the financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated July 13, 2021 on our consideration of the Middlesex County Retirement System's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Middlesex County Retirement System's internal control over financial reporting and compliance.

Restriction on Use

This report is intended solely for the information and use of the Middlesex County Retirement System, the Public Employee Retirement Administration Commission and all member units and is not intended to be and should not be used by anyone other than these specified parties.



July 13, 2021

Management's Discussion and Analysis

As management of the Middlesex County Retirement System (MCRS), we offer readers of these financial statements this narrative overview and analysis of the financial activities for the year ended December 31, 2020. The MCRS complies with financial reporting requirements issued by the Governmental Accounting Standards Board (GASB).

The GASB is the authoritative standard setting body that provides guidance on how to prepare financial statements in conformity with generally accepted accounting principles (GAAP). Users of these financial statements rely on the GASB to establish consistent reporting standards for all governments in the United States. This consistent application is the only way users can assess the financial condition of a public retirement system compared to others.

Financial Highlights

- The MCRS's assets exceeded its liabilities at the close of the most recent year by \$1.8 billion (net position).
- The MCRS's net position increased by \$190.6 million for the year ended December 31, 2020.
- Total investment income was \$192.9 million; investment expenses were \$7.4 million; and net investment income was \$185.4 million.
- Total contributions were \$196.5 million, primarily consisting of \$138.3 million from employers, \$51 million from members, \$5.2 million in transfers from other systems and \$2 million in other contributions.
- Retirement benefits, refunds, and transfers of member deductions to other systems amounted to \$188 million.
- Depreciation, administrative and building expenses were \$3.3 million.
- The total pension liability was \$3.3 billion as of December 31, 2020, while the net pension liability was \$1.5 billion.
- The Plan fiduciary net position as a percentage of the total pension liability was 53.42%.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the MCRS's fiduciary financial statements. These fiduciary financial statements comprise of four components: 1) management's discussion and analysis, 2) fiduciary financial statements, 3) notes to the financial statements and 4) required supplementary information.

Fiduciary Financial Statements

The *statement of fiduciary net position* presents information on all assets and deferred outflows less deferred inflows and liabilities with the difference reported as *net position*. Over time, increases or decreases in net position may serve as a useful indicator of whether the financial position is improving or deteriorating.

The *statement of changes in fiduciary net position* presents information showing how the MCRS's net position changed during the most recent year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, *regardless of the timing of related cash flows*. Thus, additions and deductions are reported in this statement for some items that will only result in cash flows in future periods.

Notes to the financial statements

The notes provide additional information that is essential to a full understanding of the data provided in the fiduciary financial statements.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Schedule of Changes in the Net Pension Liability and Related Ratios; the Schedule of Contributions; and the Schedule of Investment Returns be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context.

Financial Analysis

As noted earlier, net position may serve over time as a useful indicator of the MCRS's financial position. The MCRS's assets exceeded liabilities by \$1.8 billion at the close of 2020.

The assets accumulated are held to provide pension benefits for qualified retirees along with active and inactive employees of the member units. At year-end, the MCRS's net position included investments of \$1.7 billion, cash of \$41.1 million and current accounts receivable of \$4.4 million. The system also had capital assets, net of accumulated depreciation, of \$4.4 million at year-end primarily consisting of land, an office building, and building improvements.

In 2020, the MCRS's contributions were \$196.5 million while deductions were \$191.3 million which resulted in a current surplus of \$5.2 million. In 2019, the MCRS's contributions were \$189 million while deductions were \$181.8 million which resulted in a prior year surplus of \$7.2 million. Therefore, for these two years the MCRS was able to sustain operations independent of investment income.

The primary change in net position over the prior year relates to each year's investment performance. Net investment income was \$185.4 million in 2020, and \$208.3 million in 2019. The annual money weighted rate of return was 12.26% and 16.21% in 2020, and 2019, respectively. The MCRS's investment policy is designed to achieve a long-term rate of return of 7.30% and fluctuation in annual investment returns is expected.

The following tables present summarized financial information for the past two years:

	2020	2019
Assets:		
Cash.....	\$ 41,101,439	\$ 40,093,110
Investments.....	1,706,314,629	1,512,849,318
Receivables.....	4,435,670	8,110,976
Capital assets, net of accumulated depreciation....	4,429,195	4,722,962
Total assets.....	1,756,280,933	1,565,776,366
Liabilities:		
Accounts payable.....	115,997	142,242
Other liabilities.....	26,606	105,862
Total liabilities.....	142,603	248,104
Net Position Restricted for Pensions.....	\$ 1,756,138,330	\$ 1,565,528,262

	<u>2020</u>	<u>2019</u>
Additions:		
Contributions:		
Member contributions..... \$	50,973,950	\$ 48,445,698
Employer contributions.....	138,327,737	129,763,555
Other contributions.....	<u>7,185,413</u>	<u>10,764,996</u>
Total contributions.....	<u>196,487,100</u>	<u>188,974,249</u>
Net investment income:		
Total investment income.....	192,871,896	215,642,272
Less, investment expenses.....	<u>(7,442,169)</u>	<u>(7,319,761)</u>
Net investment income.....	<u>185,429,727</u>	<u>208,322,511</u>
Total additions.....	<u>381,916,827</u>	<u>397,296,760</u>
Deductions:		
Administration.....	2,781,367	2,754,384
Retirement benefits, refunds and transfers.....	187,995,148	178,455,859
Building operations and maintenance.....	208,858	279,208
Depreciation.....	<u>321,386</u>	<u>318,812</u>
Total deductions.....	<u>191,306,759</u>	<u>181,808,263</u>
Net increase (decrease) in fiduciary net position....	190,610,068	215,488,497
Fiduciary net position at beginning of year.....	<u>1,565,528,262</u>	<u>1,350,039,765</u>
Fiduciary net position at end of year..... \$	<u><u>1,756,138,330</u></u>	<u><u>\$ 1,565,528,262</u></u>

Requests for Information

This financial report is designed to provide a general overview of the MCRS's finances for all those with an interest in the MCRS's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the MCRS's Chief Administrative Officer, 25 Linnell Circle, Billerica, Massachusetts 01865.

STATEMENT OF FIDUCIARY NET POSITION

DECEMBER 31, 2020

Assets

Cash and cash equivalents.....	\$ 41,101,439
Investments:	
Investments in Pension Reserve Investment Trust...	1,699,992,348
Pooled alternative investments.....	4,436,774
Pooled real estate funds.....	<u>1,885,507</u>
Total investments.....	<u>1,706,314,629</u>
Receivables, net of allowance for uncollectibles:	
Member deductions.....	3,798,949
Member contributions.....	11,581
Employer pension appropriation.....	21,678
Member make-up payments and redeposits.....	181,472
Transfers from other systems.....	319,912
Other accounts receivable.....	<u>102,059</u>
Total Receivables.....	<u>4,435,651</u>
Interest and dividends.....	19
Capital assets, net of accumulated depreciation.....	<u>4,429,195</u>
Total Assets.....	<u>1,756,280,933</u>
Liabilities	
Accounts payable.....	115,997
Other liabilities.....	<u>26,606</u>
Total Liabilities.....	<u>142,603</u>
Net Position Restricted for Pensions.....	\$ <u><u>1,756,138,330</u></u>

See notes to financial statements.

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

YEAR ENDED DECEMBER 31, 2020

Additions:

Contributions:

Employer pension appropriation.....	\$	138,290,237
Member contributions.....		50,973,950
Transfers from other systems.....		5,197,904
3(8)(c) contributions from other systems.....		614,954
Workers' compensation settlements.....		37,500
Retirement benefits - state COLA reimbursements.....		375,346
Members' makeup payments and redeposits.....		859,010
Interest not refunded.....		138,199

Total contributions..... 196,487,100

Net investment income:

Investment income.....		192,871,896
Less: investment expense.....		<u>(7,442,169)</u>

Net investment income..... 185,429,727

Total additions..... 381,916,827

Deductions:

Administration.....		2,781,367
Building operations and maintenance.....		208,858
Retirement benefits and refunds.....		171,634,862
Transfers to other systems.....		4,377,320
3(8)(c) transfer to other systems.....		11,982,966
Depreciation.....		<u>321,386</u>

Total deductions..... 191,306,759

Net increase (decrease) in fiduciary net position..... 190,610,068

Fiduciary net position at beginning of year..... 1,565,528,262

Fiduciary net position at end of year..... \$ 1,756,138,330

See notes to financial statements.

NOTE 1 – PLAN DESCRIPTION

The Middlesex County Retirement System (MCRS) is a multiple-employer, cost-sharing, contributory defined benefit pension plan covering all employees of the governmental member units deemed eligible by the Middlesex County Retirement Board (the Board), with the exception of school department employees who serve in a teaching capacity. The pensions of such school employees are administered by the Commonwealth of Massachusetts' Teachers Retirement System. Membership in the System is mandatory immediately upon the commencement of employment for all permanent employees working a minimum of 20 hours per week and who are paid annual compensation of no less than \$5,000. As of January 1, 2020, the MCRS had 71 participating employers.

The MCRS is a member of the Massachusetts Contributory Retirement System and is governed by Chapter 32 of the Massachusetts General Laws. Membership in the Plan is mandatory immediately upon the commencement of employment for all permanent, full-time employees.

Massachusetts contributory retirement system benefits are, with certain exceptions, uniform from system to system. The MCRS provides for retirement allowance benefits up to a maximum of 80% of a member's highest three-year average annual rate of regular compensation for those hired prior to April 2, 2012, and the highest five-year average for members hired after that date. Benefit payments are based upon a member's age, length of creditable service, level of compensation, and group classification.

Members become vested after ten years of creditable service. A superannuation retirement allowance may be received upon the completion of 20 years of service or upon reaching the age of 55 with 10 years of service for those hired prior to April 2, 2012. For those hired on or after April 2, 2012, a superannuation allowance may be received upon reaching the age of 60 with 10 years of service. Normal retirement for most employees occurs at age 65 for those hired prior to April 2, 2012, and at age 67 for those hired after April 2, 2012 (except for certain hazardous duty and public safety positions, whose normal retirement is at age 55).

A retirement allowance consists of two parts: an annuity and a pension. A member's accumulated total deductions and the interest they generate constitute the annuity. The differential between the total retirement benefit and the annuity is the pension.

Active members contribute between 5% and 11% of their gross regular compensation. The percentage rate is keyed to the date upon which an employee's membership commences. These deductions are deposited in the Annuity Savings Fund and earn interest at a rate determined by the Public Employee Retirement Administration Commission's (PERAC) actuary. When a member's retirement becomes effective, his/her deductions and related interest are transferred to the Annuity Reserve Fund. Any cost-of-living adjustments granted between 1981 and 1997 and any increase in other benefits imposed by the Commonwealth of Massachusetts' state law during those years are borne by the Commonwealth and are deposited into the Pension Fund. Cost-of-living adjustments granted after 1997 must be approved by the MCRS and all costs are borne by the MCRS.

The pension portion of any retirement benefit is paid from the Pension Fund. The governmental unit employing the member must annually appropriate and contribute the amount of current-year pension assessment.

Administrative expenses are paid from investment income.

Members who become permanently and totally disabled for further duty may be eligible to receive a disability retirement allowance. The amount of benefits to be received in such cases is dependent on several factors, including whether or not the disability is work related, the member's age, years of creditable service, level of compensation, veterans' status and group classification.

Survivor benefits are extended to eligible beneficiaries of members whose death occurs prior to or following retirement.

NOTE 2 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accompanying financial statements of the Middlesex County Retirement System have been prepared in accordance with accounting principles generally accepted in the United States of America (GAAP). The Governmental Accounting Standards Board (GASB) is the recognized standard-setting body for establishing governmental accounting and financial reporting principles.

MCRS is a special-purpose government engaged only in fiduciary activities. Accordingly, the financial statements are reported using the flow of economic resources measurement focus and use the accrual basis of accounting. Under this method, additions are recorded when earned and deductions are recorded when the liabilities are incurred.

Cash and Investments

Cash and cash equivalents are considered to be cash on hand, demand deposits and short-term investments with an original maturity of three months or less from the date of acquisition. Investments are carried at fair value. The fair values were determined by the closing price for those securities traded on national stock exchanges and at the average bid-and-asked quotation for those securities traded in the over-the-counter market. The fair value of private equities are based on management's valuation of estimates and assumptions from information and representations provided by the respective general partners, in the absence of readily ascertainable market values. Real estate assets are reported at fair value utilizing an income approach to valuation along with independent appraisals and estimates by management.

Fair Value Measurements

The MCRS reports required types of financial instruments in accordance with the fair value standards. These standards require an entity to maximize the use of observable inputs (such as quoted prices in active markets) and minimize the use of unobservable inputs (such as appraisals or valuation techniques) to determine fair value. Fair value standards also require the government to classify these financial instruments into a three-level hierarchy, based on the priority of inputs to the valuation technique or in accordance with net asset value practical expedient rules, which allow for either Level 2 or Level 3 depending on lock up and notice periods associated with the underlying funds.

Instruments measured and reported at fair value are classified and disclosed in one of the following categories:

Level 1 – Quoted prices are available in active markets for identical instruments as of the reporting date. Instruments, which are generally included in this category, include actively traded equity and debt securities, U.S. government obligations, and mutual funds with quoted market prices in active markets.

Level 2 – Pricing inputs are other than quoted in active markets, which are either directly or indirectly observable as of the reporting date, and fair value is determined through the use of models or other valuation methodologies. Certain fixed income securities, primarily corporate bonds, are classified as Level 2 because fair values are estimated using pricing models, matrix pricing, or discounted cash flows.

Level 3 – Pricing inputs are unobservable for the instrument and include situations where there is little, if any, market activity for the instrument. The inputs into the determination of fair value require significant management judgment or estimation.

In some instances the inputs used to measure fair value may fall into different levels of the fair value hierarchy and is based on the lowest level of input that is significant to the fair value measurement.

Market price is affected by a number of factors, including the type of instrument and the characteristics specific to the instrument. Instruments with readily available active quoted prices generally will have a higher degree of market price observability and a lesser degree of judgment used in measuring fair value. It is reasonably possible that change in values of these instruments will occur in the near term and that such changes could materially affect amounts reported in these financial statements. For more information on the fair value of the MCRS's financial instruments, see Note 5 – Cash and Investments.

Accounts Receivable

Accounts receivable consist of member deductions, pension fund appropriations, and other miscellaneous reimbursements. These receivables are considered 100% collectible and therefore do not report an allowance for uncollectibles.

Deferred Outflows/Inflows of Resources

In addition to assets, the statement of fiduciary net position will sometimes report a separate section for deferred outflows of resources. This separate financial statement element, *deferred outflows of resources*, represents a consumption of fiduciary net position that applies to a future period(s) and so will not be recognized as an outflow of resources (deduction) until then. The MCRS did not have any items that qualify for reporting in this category.

In addition to liabilities, the statement of fiduciary net position will sometimes report a separate section for deferred inflows of resources. This separate financial statement element, *deferred inflows of resources*, represents an acquisition of net position that applies to a future period(s) and so will not be recognized as an inflow of resources (addition) until that time. The MCRS did not have any items that qualify for reporting in this category.

NOTE 3 – PLAN ADMINISTRATION

The MCRS is administered by a five-person Board of Retirement consisting of a first member, who shall serve as Chairman/Treasurer, who shall be appointed by the other four members, a second member elected by the Advisory Council consisting of representatives from the member units, a third and fourth member who shall be elected by the members in or retired from the service of such system, and a fifth member who shall be chosen by the other four members.

Chairman.....	Thomas F. Gibson	Term Expires:	12/31/2026
Advisory Council Member.....	Brian P. Curtin	Term Expires:	12/31/2021
Elected Member.....	John Brown	Term Expires:	12/31/2023
Elected Member.....	Joseph W. Kearns	Term Expires:	12/31/2022
Appointed Member.....	Robert W. Healy, Jr.	Term Expires:	12/16/2025

Board members are required to meet at least once a month. The Board must keep a record of all of its proceedings. The Board must annually submit to the appropriate authority an estimate of the expenses of administration and cost of operation of the MCRS. The Board must annually file a financial statement of condition

for the MCRS with the Executive Director of PERAC.

The investment of the MCRS’s funds is the responsibility of the Board. All retirement allowances must be approved by the Retirement Board. The PERAC Actuary performs verification prior to payment, unless the MCRS has obtained a waiver for superannuation calculations allowing them to bypass this requirement. All expenses incurred by the MCRS must be approved by a majority vote of the Board. Payments shall be made only upon vouchers signed by three persons designated by the Board.

The following retirement board members and employees are bonded by an authorized agent representing a company licensed to do business in Massachusetts as follows:

- Treasurer-Custodian:) \$10,000,000 Fiduciary
- Ex-Officio Member:) RLI Insurance Company
- Elected Members:)
- Appointed Members:) \$1,000,000 Fidelity
- Staff Employees:) National Union Fire Insurance

NOTE 4 – OFFICE BUILDING

The MCRS owns an office building that was purchased as an investment and for the administrative offices of the System. The building is a two story, 1986-built office building consisting of 62,307 square feet of net rentable area. The property is situated on a 4.23 acre site in Billerica, Middlesex County, Massachusetts

NOTE 5 – CASH AND INVESTMENTS

Custodial Credit Risk - Deposits

At December 31, 2020, the carrying amount of the MCRS’s deposits totaled \$33,445,095, and the bank balance totaled \$39,406,777, all of which was covered by Federal Depository Insurance.

Investments

The MCRS’s investments were as follows:

<u>Investment Type</u>	December 31, 2020
PRIT Pooled Funds.....	\$ 1,699,992,348
Money Market Mutual Funds.....	7,656,344
Pooled Alternative Investments...	4,436,774
Pooled Real Estate Funds.....	1,885,507
Total Investments.....	\$ 1,713,970,973

Approximately 99.2% of the Retirement MCRS’s investments are in Pension Reserve Investment Trust (PRIT). This investment pool was established by the Treasurer of the Commonwealth of Massachusetts, who serves as Trustee. PRIT is administered by the Pension Reserves Investment Management Board. The fair values of the positions in each investment Pool are the same as the value of each Pool’s shares. The Administration does not

have the ability to control any of the investment decisions relative to its funds in PRIT. The effective weighted duration rate for PRIT investments ranged from 0.19 to 16.28 years.

Approximately 0.4% of the MCRS's funds are invested in pooled alternative investments and pooled real estate funds. The market values of assets in those funds are based on the quoted values obtained from each pool.

Approximately 0.4% of the MCRS's funds are invested in money market mutual funds. The market values of assets in those funds are valued using prices quoted in active markets for those securities.

The Administration's annual money-weighted rate of return on pension plan investments was 12.26%. The money-weighted rate of return expresses investment performance, net of pension plan investment expense, adjusted for the changing amounts actually invested, measured monthly.

Fair Value of Investments

The retiree pension defined benefit plan holds significant amounts of investments that are measured at fair value on a recurring basis. Because investing is a key part of the plan's activities, the plan shows greater disaggregation in its disclosures. The plan chooses a tabular format for disclosing the levels within the fair value hierarchy.

The MCRS categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles.

The MCRS had the following recurring fair value measurements as of December 31, 2020:

Investment Type	12/31/2020	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by fair value level:				
Money Market Mutual Funds.....	\$ 7,656,344	\$ 7,656,344	\$ -	\$ -
Pooled Alternative Investments.....	4,436,774	-	-	4,436,774
Pooled Real Estate Funds.....	1,885,507	-	-	1,885,507
Total Investments by fair value level.....	13,978,625	\$ 7,656,344	\$ -	\$ 6,322,281
Investments measured at the net asset value (NAV):				
PRIT Investments.....	1,699,992,348			
Total Investments.....	\$ 1,713,970,973			

Money market mutual funds in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Pooled alternative investments and pooled real estate funds classified in level 3 are valued using either a discounted cash flow or market comparable company's technique.

PRIT Investments are valued using the net asset value (NAV) method.

NOTE 6 – CAPITAL ASSETS

All purchases and building costs in excess of \$25,000 are capitalized at the date of acquisition. Capital assets are depreciated on a straight-line basis. The estimated useful lives of capital assets are as follows:

Capital Asset Type	Estimated Useful Life (in years)
Building.....	40
Building improvements.....	40
Vehicles.....	5
Software and equipment.....	5

Capital asset activity for the year ended December 31, 2020, was as follows:

	Beginning Balance	Increases	Decreases	Ending Balance
<u>Capital assets not being depreciated:</u>				
Land.....	\$ 672,657	\$ -	\$ -	\$ 672,657
<u>Capital assets being depreciated:</u>				
Buildings.....	5,417,136	-	-	5,417,136
Building improvements.....	1,099,492	-	-	1,099,492
Vehicles.....	30,913	-	-	30,913
Software and equipment.....	729,570	27,619	-	757,189
Total capital assets being depreciated.....	7,277,111	27,619	-	7,304,730
<u>Less accumulated depreciation for:</u>				
Buildings.....	(2,306,638)	(135,428)	-	(2,442,066)
Building improvements.....	(461,817)	(29,740)	-	(491,557)
Vehicles.....	(20,608)	(10,304)	-	(30,912)
Software and equipment.....	(437,743)	(145,914)	-	(583,657)
Total accumulated depreciation.....	(3,226,806)	(321,386)	-	(3,548,192)
Total capital assets being depreciated, net.....	4,050,305	(293,767)	-	3,756,538
Total capital assets, net.....	\$ 4,722,962	\$ (293,767)	\$ -	\$ 4,429,195

NOTE 7 – MEMBERSHIP

The following table represents the MCRS’s membership at December 31, 2019:

Active members.....	9,282
Inactive members entitled to a return of their employee contributions.....	3,082
Inactive members with a vested right to a deferred or immediate benefit.....	381
Retirees and beneficiaries currently receiving benefits.....	<u>5,862</u>
 Total.....	 <u><u>18,607</u></u>

NOTE 8 – ACTUARIAL VALUATION

Components of the net pension liability as of December 31, 2020, were as follows:

Total pension liability.....	\$ 3,287,231,456
The pension plan's fiduciary net position.....	<u>1,756,138,330</u>
The net pension liability.....	\$ <u><u>1,531,093,126</u></u>
 The pension plan's fiduciary net position as a percentage of the total pension liability.....	 53.42%

The total pension liability was determined by an actuarial valuation as of January 1, 2020, using the following actuarial assumptions, applied to all periods included in the measurement that was rolled forward to December 31, 2020:

Valuation date.....	January 1, 2020.
Actuarial cost method.....	Entry Age Normal Cost Method.
Amortization method.....	Prior year's total contribution increased by 6.50% for fiscal 2022 through fiscal 2028, and thereafter the remaining unfunded liability will be amortized on a 4.00% annual increasing basis; ERI liability amortized in level payments.
Remaining amortization period.....	17 years from July 1, 2018, for non-ERI liability, 1 year from July 1, 2018, for 2002 ERI, 2 years from July 1, 2018, for 2033 ERI, and 4 years from July 1, 2018, for 2010 ERI.
Asset valuation method.....	The difference between the expected return and the actual investment return on a market value basis is recognized over a five year period. Asset value is adjusted as necessary to be within 20% of the market value.
Investment rate of return/Discount rate..	7.30%, net of pension plan investment expense, including inflation

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.....	3.00% of the first \$16,000 of retirement income.
Mortality Rates:	
Pre-Retirement.....	The RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2017.
Healthy Retiree.....	The RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2017.
Disabled Retiree.....	The RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year and projected generationally with Scale MP-2017.

Investment policy: The MCRS’s policy in regard to the allocation of invested assets is established by PRIT. Plan assets are managed on a total return basis with a long-term objective of achieving a fully funded status for the benefits provided through the pension plan.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges 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 by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the MCRS’s target asset allocation as of December 31, 2020, are summarized in the following table:

Asset Class	Long-Term Expected Asset Allocation	Long-Term Expected Real Rate of Return
Domestic equity.....	22.00%	6.28%
International developed markets equity.....	12.00%	7.00%
International emerging markets equity.....	5.00%	8.82%
Core fixed income.....	15.00%	0.38%
High-yield fixed income.....	8.00%	2.97%
Real estate.....	10.00%	3.50%
Timber.....	4.00%	3.45%
Hedge funds, GTAA, risk parity.....	10.00%	2.35%
Private equity.....	14.00%	10.11%
	<u>100.00%</u>	

Discount rate: The discount rate used to measure the total pension liability was 7.30%. 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 contributions will be made at rates equal to the actuarially determined contribution rate. Based on those assumptions, the MCRS’s fiduciary net position was projected to be available to make all projected future benefit payments of 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 total pension liability.

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability, calculated using the discount rate of 7.30%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.30%) or 1-percentage-point higher (8.30%) than the current rate:

	1% Decrease (6.30%)	Current Discount (7.30%)	1% Increase (8.30%)
Middlesex County Retirement System's net pension liability as of December 31, 2020.....	\$ 1,907,916,916	\$ 1,531,093,126	\$ 1,214,072,425

Contributions: Governmental employers are required to pay an annual appropriation as established by PERAC. The total appropriation includes the amounts to pay the pension portion of each member’s retirement allowance, an amount to amortize the actuarially determined unfunded liability to zero in accordance with the system’s funding schedule, and additional appropriations in accordance with adopted early retirement incentive programs. The pension fund appropriations are allocated amongst employers based on the actuarial valuation.

NOTE 9 – DISPUTE WITH THE COMMONWEALTH AND STATE EMPLOYEES RETIREMENT SYSTEM

The County of Middlesex was abolished on July 11, 1997, pursuant to Chapter 48 of the Acts of 1997. This Act required that active employees of Middlesex County be transferred to the Commonwealth. Therefore, the MCRS was required to transfer the Annuity Savings Fund Balances of these transferred County employees to the State Employees Retirement System (SERS). This transfer, totaling approximately \$18 million, was made during calendar year 1998.

In December of 1999, the State Legislature enacted Massachusetts General Law, Chapter 34B (Abolition of County Government). This legislation, among other things, defines the components of determining the overall surplus or deficit of an abolished County upon transfer to the Commonwealth and how regional retirement systems will be affected. Sections 8 and 18 addressed how the abolished County’s unfunded liabilities in regional retirement systems will be paid for. The MCRS believes, as a result of the abolishment of Middlesex County, that the Commonwealth of Massachusetts owed them \$9,501,680 for the Unfunded Liability for retirees of the former Middlesex County.

The Commonwealth and SERS did not agree with the assertion that the MCRS was owed \$9,501,680. As a result, the MCRS acted to stop 3(8)(c) reimbursements to the State Employees Retirement System and correspondingly the State System began to intercept all COLA reimbursements which were due the MCRS. In 2012 the MCRS reinstated payments for 3(8)(c) reimbursements to the SERS.

In December 2020, the SERS and MCRS finalized the amount owed after accounting for the 3(8)(c) reimbursements and COLA reimbursements which were withheld; a final payment of \$4,104,146 was made from the MCRS to the SERS to resolve the issue. Further, MCRS began to receive COLA payments from the state in December 2020.

NOTE 10 – IMPLEMENTATION OF GASB PRONOUNCEMENTS

There were no GASB pronouncements required to be implemented in 2020 that impacted the MCRS's financial statements.

None of the issued GASB statements that are required to be implemented in future years are anticipated to impact the MCRS's financial statements.

NOTE 11 – SUBSEQUENT EVENTS

Management has evaluated subsequent events through July 13, 2021, which is the date the financial statements were available to be issued.

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Required Supplementary Information

**SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY
AND RELATED RATIOS**

	December 31, 2014	December 31, 2015	December 31, 2016	December 31, 2017
Total pension liability:				
Service cost.....	\$ 52,132,389	\$ 54,217,685	\$ 56,386,392	\$ 60,585,598
Interest.....	172,094,226	179,703,272	187,359,946	200,298,121
Changes in benefit terms.....	-	-	-	-
Differences between expected and actual experience.....	-	-	7,976,453	(9,059,393)
Changes in assumptions.....	-	-	96,500,754	97,195,824
Benefit payments.....	<u>(125,082,678)</u>	<u>(134,295,504)</u>	<u>(143,428,636)</u>	<u>(150,780,931)</u>
Net change in total pension liability.....	99,143,937	99,625,453	204,794,909	198,239,219
Total pension liability - beginning.....	<u>2,195,732,452</u>	<u>2,294,876,389</u>	<u>2,394,501,842</u>	<u>2,599,296,751</u>
Total pension liability - ending (a).....	<u>\$ 2,294,876,389</u>	<u>\$ 2,394,501,842</u>	<u>\$ 2,599,296,751</u>	<u>\$ 2,797,535,970</u>
Plan fiduciary net position:				
Employer pension appropriation.....	\$ 93,368,685	\$ 99,792,641	\$ 107,032,211	\$ 115,377,205
Member contributions.....	39,048,869	40,340,741	42,015,296	44,177,815
Other contributions.....	6,405,881	8,668,378	12,337,414	10,405,773
Net investment income (loss).....	74,904,315	7,732,128	74,917,546	189,343,574
Administrative expenses.....	(2,996,390)	(2,824,803)	(3,062,521)	(2,619,464)
Building operations and maintenance.....	(381,899)	(302,771)	(235,667)	(306,177)
Retirement benefits and refunds.....	(125,082,678)	(134,295,504)	(143,428,636)	(150,780,931)
Other retirement deductions.....	(5,556,930)	(8,025,993)	(11,475,752)	(9,358,262)
Depreciation.....	<u>(162,594)</u>	<u>(162,594)</u>	<u>(162,594)</u>	<u>(308,508)</u>
Net increase (decrease) in fiduciary net position.....	79,547,259	10,922,223	77,937,297	195,931,025
Fiduciary net position - beginning of year.....	<u>1,014,013,415</u>	<u>1,093,560,674</u>	<u>1,104,482,897</u>	<u>1,182,420,194</u>
Fiduciary net position - end of year (b).....	<u>\$ 1,093,560,674</u>	<u>\$ 1,104,482,897</u>	<u>\$ 1,182,420,194</u>	<u>\$ 1,378,351,219</u>
Net pension liability - ending (a)-(b).....	<u>\$ 1,201,315,715</u>	<u>\$ 1,290,018,945</u>	<u>\$ 1,416,876,557</u>	<u>\$ 1,419,184,751</u>
Plan fiduciary net position as a percentage of the total pension liability.....	47.65%	46.13%	45.49%	49.27%
Covered payroll.....	\$ 415,752,810	\$ 432,382,921	\$ 439,644,322	\$ 451,777,105
Net pension liability as a percentage of covered payroll.....	288.95%	298.35%	322.28%	314.13%

Note: this schedule is intended to present information for 10 years.
Until a 10-year trend is compiled, information is presented for those years for which information is available.

See notes to required supplementary information.

	December 31, 2018	December 31, 2019	December 31, 2020
\$	64,615,910	\$ 66,816,001	\$ 73,591,385
	208,614,148	216,905,943	229,825,239
	-	29,156,339	-
	-	46,671,873	-
	-	65,013,900	-
	<u>(161,259,804)</u>	<u>(168,486,003)</u>	<u>(181,769,445)</u>
	111,970,254	256,078,053	121,647,179
	<u>2,797,535,970</u>	<u>2,909,506,224</u>	<u>3,165,584,277</u>
\$	<u>2,909,506,224</u>	<u>3,165,584,277</u>	<u>3,287,231,456</u>
\$	120,614,676	\$ 129,685,755	\$ 138,290,237
	45,984,957	48,445,698	50,973,950
	9,581,643	10,842,796	7,222,913
	(31,074,711)	208,322,511	185,429,727
	(2,645,568)	(2,754,384)	(2,781,367)
	(309,357)	(279,208)	(208,858)
	(161,259,804)	(168,486,003)	(181,769,445)
	(8,884,478)	(9,969,856)	(6,225,703)
	<u>(318,812)</u>	<u>(318,812)</u>	<u>(321,386)</u>
	(28,311,454)	215,488,497	190,610,068
	<u>1,378,351,219</u>	<u>1,350,039,765</u>	<u>1,565,528,262</u>
\$	<u>1,350,039,765</u>	<u>1,565,528,262</u>	<u>1,756,138,330</u>
\$	<u>1,559,466,459</u>	<u>1,600,056,015</u>	<u>1,531,093,126</u>
	46.40%	49.45%	53.42%
\$	471,115,185	\$ 492,109,775	\$ 513,201,283
	331.02%	325.14%	298.34%

SCHEDULE OF CONTRIBUTIONS

Year	Actuarially determined contribution	Contributions in relation to the actuarially determined contribution	Contribution deficiency (excess)	Covered payroll	Contributions as a percentage of covered payroll
December 31, 2020.....	\$ 135,472,822	\$ (138,290,237)	\$ (2,817,415)	\$ 513,201,283	26.95%
December 31, 2019.....	127,151,838	(129,685,754)	(2,533,916)	492,109,775	26.35%
December 31, 2018.....	119,298,291	(120,614,676)	(1,316,385)	471,115,185	25.60%
December 31, 2017.....	112,017,087	(115,426,815)	(3,409,728)	451,777,105	25.55%
December 31, 2016.....	105,246,797	(107,067,707)	(1,820,910)	439,644,322	24.35%
December 31, 2015.....	98,792,642	(99,820,481)	(1,027,839)	432,382,921	23.09%
December 31, 2014.....	92,826,743	(93,400,946)	(574,203)	415,752,810	22.47%

Note: this schedule is intended to present information for 10 years.

Until a 10-year trend is compiled, information is presented for those years for which information is available.

See notes to required supplementary information.

SCHEDULE OF INVESTMENT RETURNS

<u>Year</u>	<u>Annual money-weighted rate of return, net of investment expense</u>
December 31, 2020.....	12.26%
December 31, 2019.....	16.21%
December 31, 2018.....	-2.52%
December 31, 2017.....	17.25%
December 31, 2016.....	7.35%
December 31, 2015.....	0.61%
December 31, 2014.....	7.54%

Note: this schedule is intended to present information for 10 years. Until a 10-year trend is compiled, information is presented for those years for which information is available.

See notes to required supplementary information.

NOTE A – CHANGES IN THE NET PENSION LIABILITY AND RELATED RATIOS

The Schedule of Changes in the Net Pension Liability and Related Ratios includes the detailed changes in the system's total pension liability, changes in the system's net position, and the ending net pension liability. It also demonstrates the plan's net position as a percentage of the total pension liability and the net pension liability as a percentage of covered payroll.

NOTE B – CONTRIBUTIONS

Governmental employers are required to pay an annual appropriation as established by PERAC. The total appropriation includes the amounts to pay the pension portion of each member's retirement allowance, an amount to amortize the actuarially determined unfunded liability to zero in accordance with the system's funding schedule, and additional appropriations in accordance with adopted early retirement incentive programs. The total appropriations are payable on July 1 and January 1. Employers may choose to pay the entire appropriation in July at a discounted rate. Accordingly, actual employer contributions may be less than the "total appropriation". The pension fund appropriations are allocated amongst employers based on the actuarial valuation results. In addition, an employer may contribute more than the amount required.

NOTE C – MONEY WEIGHTED RATE OF RETURN

The money weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense. A money weighted rate of return expresses investment performance, net of pension plan investment expense, adjusted for the changing amounts actually invested. Inputs to the money weighted rate of return calculation are determined monthly.

NOTE D – CHANGES IN ASSUMPTIONS AND PLAN PROVISIONS

The following changes were reflected in the January 1, 2020 actuarial valuation.

Changes in Assumptions

- The net investment return assumption was lowered from 7.50% to 7.30%.

Changes in Plan Provisions

- As permitted by Section 19 of Chapter 188 of the Acts of 2010, the Cost of Living Adjustment base was increased from \$14,000 to \$16,000 as of July 1, 2019.

Audit of Specific Elements, Accounts and Items of Financial Statements

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Independent Auditor's Report

To the Honorable Middlesex County Retirement Board
Middlesex County Retirement System
Billerica, Massachusetts

We have audited the accompanying schedule of employer allocations of the Middlesex County Retirement System (MCRS) as of and for the year ended December 31, 2020, and the related notes. We have also audited the total for all entities of the rows titled net pension liability, total deferred outflows of resources, total deferred inflows of resources, total pension expense and contributions included in the accompanying schedule of pension amounts by employer of the MCRS Pension Plan as of and for the year ended December 31, 2020, and the related notes.

Management's Responsibility for the Schedules

Management is responsible for the preparation and fair presentation of these schedules in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of the schedules that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on the schedule of employer allocations and the specified row totals included in the schedule of pension amounts by employer based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the schedule of employer allocations and specified row totals included in the schedule of pension amounts by employer are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the schedule of employer allocations and the specified row totals included in the schedule of pension amounts by employer. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the schedule of employer allocations and the specified row totals included in the schedule of pension amounts by employer, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the schedule of employer allocations and the specified row totals included in the schedule of pension amounts by employer in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the schedule of employer allocations and the specified row totals included in the schedule of pension amounts by employer.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the schedules referred to above present fairly, in all material respects, the employer allocations and total for all rows titled net pension liability, total deferred outflows of resources, total deferred inflows of resources, total pension expense and contributions for the total of all participating entities for the Middlesex County Retirement System as of and for the year ended December 31, 2020, in accordance with accounting principles generally accepted in the United States of America.

Other Matter

We have audited, in accordance with auditing standards generally accepted in the United States of America, the financial statements of the Middlesex County Retirement System as of and for the year ended December 31, 2020, and our report thereon, dated July 13, 2021, expressed an unmodified opinion on those financial statements.

Restriction on Use

This report is intended solely for the information and use of the Middlesex County Retirement System management, the Middlesex County Retirement System employers and their auditors and is not intended to be and should not be used by anyone other than these specified parties.

A handwritten signature in black ink, appearing to read "Bowers & Sullivan LLC". The signature is written in a cursive, flowing style.

July 13, 2021

SCHEDULE OF EMPLOYER ALLOCATIONS

FOR THE YEAR ENDED DECEMBER 31, 2020

Employer	Share of Net Pension Liability	Percent of Total Net Pension Liability
Middlesex County Retirement Board.....	\$ -	0.000000%
Middlesex County.....	-	0.000000%
Middlesex Hospital.....	-	0.000000%
Town of Acton.....	52,615,628	3.436475%
Town of Ashby.....	1,775,392	0.115956%
Town of Ashland.....	35,887,576	2.343919%
Town of Ayer.....	19,150,544	1.250776%
Town of Bedford.....	51,394,381	3.356712%
Town of Billerica.....	152,215,238	9.941605%
Town of Boxborough.....	12,166,423	0.794623%
Town of Burlington.....	133,422,263	8.714183%
Town of Carlisle.....	10,349,764	0.675972%
Town of Chelmsford.....	110,931,084	7.245221%
Town of Dracut.....	66,580,110	4.348534%
Town of Dunstable.....	3,218,104	0.210183%
Town of Groton.....	24,595,262	1.606386%
Town of Holliston.....	25,050,502	1.636119%
Town of Hopkinton.....	24,095,505	1.573745%
Town of Hudson.....	66,148,477	4.320343%
Town of Lincoln.....	26,477,563	1.729324%
Town of Littleton.....	23,466,261	1.532648%
Town of North Reading.....	50,095,267	3.271863%
Town of Pepperell.....	17,612,899	1.150348%
Town of Sherborn.....	9,801,713	0.640177%
Town of Shirley.....	8,952,975	0.584744%
Town of Stow.....	11,389,407	0.743874%
Town of Sudbury.....	61,745,935	4.032801%
Town of Tewksbury.....	104,198,258	6.805481%
Town of Townsend.....	8,103,799	0.529282%
Town of Tyngsborough.....	24,002,922	1.567698%
Town of Wayland.....	56,416,777	3.684738%
Town of Westford.....	56,098,309	3.663938%
Town of Weston.....	64,849,395	4.235496%
Town of Wilmington.....	86,423,315	5.644550%
Acton-Boxborough Regional School District.....	30,083,545	1.964841%
Acton Water Supply.....	3,548,184	0.231742%
Bedford Housing Authority.....	315,580	0.020611%
Billerica Housing Authority.....	1,612,020	0.105286%
Chelmsford Housing Authority.....	2,016,950	0.131733%
Chelmsford Water District.....	24,164	0.001578%
Dracut Housing Authority.....	2,264,513	0.147902%
Dracut Water Supply.....	3,240,627	0.211654%
East Chelmsford Water District.....	366,619	0.023945%
East Middlesex Mosquito Control.....	649,547	0.042424%
Greater Lowell Regional Vocational Technical School District.....	17,820,793	1.163926%
Groton-Dunstable Regional School District.....	12,381,614	0.808678%
Hudson Housing Authority.....	616,643	0.040275%
Lincoln-Sudbury Regional School District.....	8,715,281	0.569220%
Nashoba Valley Technical High School District.....	3,650,910	0.238451%
North Chelmsford Water District.....	977,691	0.063856%
North Middlesex Regional School District.....	12,806,518	0.836430%
Shawsheen Valley Regional Vocational School.....	8,542,800	0.557954%
South Middlesex Regional Vocational Technical School.....	6,677,782	0.436145%
Sudbury Water District.....	2,449,672	0.159995%
Tewksbury Housing Authority.....	1,645,758	0.107489%
Wayland Housing Authority.....	625,875	0.040878%
Hopkinton Housing Authority.....	517,677	0.033811%
Sudbury Housing Authority.....	465,613	0.030410%
Wilmington Housing Authority.....	370,673	0.024210%
Acton Housing Authority.....	861,176	0.056246%
Burlington Housing Authority.....	327,467	0.021388%
Ayer Housing Authority.....	858,485	0.056070%
Holliston Housing Authority.....	168,599	0.011012%
Littleton Housing Authority.....	607,838	0.039700%
Westford Housing Authority.....	537,128	0.035081%
Shirley Water District.....	453,772	0.029637%
Tyngsborough Housing Authority.....	516,453	0.033731%
Pepperell Housing Authority.....	247,338	0.016154%
Groton Housing Authority.....	-	0.000000%
Tyngsborough Water District.....	440,581	0.028776%
North Reading Housing Authority.....	212,881	0.013904%
West Groton Water.....	18,060	0.001180%
Ayer-Shirley Regional School District.....	4,239,976	0.276925%
Northern Middlesex Regional Emergency Communications Center.....	(14,725)	-0.000962%
Total.....	\$ 1,531,093,126	100.000%

See notes to schedule of employer allocations and schedule of pension amounts by employer.

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Middlesex County Retirement Board	Middlesex County	Middlesex Hospital	Town of Acton
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ -	\$ -	\$ -	\$ 54,966,604
Ending net pension liability/(asset).....	\$ -	\$ -	\$ -	\$ 52,615,628
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ -	\$ -	\$ -	\$ 962,320
Changes of assumptions.....	-	-	-	2,008,534
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	-	-	374,225
Total Deferred Outflows of Resources.....	\$ -	\$ -	\$ -	\$ 3,345,079
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ -	\$ -	\$ -	\$ 62,265
Net difference between projected and actual investment earnings on pension plan investments.....	-	-	-	2,982,703
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	-	-	195,119
Total Deferred Inflows of Resources.....	\$ -	\$ -	\$ -	\$ 3,240,087
Pension Expense				
Proportionate share of plan pension expense.....	\$ 356,333	\$ -	\$ -	\$ 6,017,439
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	-	-	(221,259)
Total Employer Pension Expense.....	\$ 356,333	\$ -	\$ -	\$ 5,796,180
Contributions				
Statutory required contribution.....	\$ 356,333	\$ -	\$ -	\$ 4,615,717
Contribution in relation to statutory required contribution.....	(356,333)	-	-	(4,615,717)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	25.43%	0.00%	0.00%	30.36%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ -	\$ -	\$ -	\$ 704,028
June 30, 2023.....	-	-	-	425,042
June 30, 2024.....	-	-	-	(514,077)
June 30, 2025.....	-	-	-	(510,001)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ -	\$ -	\$ -	\$ 104,992
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ -	\$ -	\$ -	\$ 65,564,739
Current discount rate (7.30%).....	\$ -	\$ -	\$ -	\$ 52,615,628
1% increase (8.30%).....	\$ -	\$ -	\$ -	\$ 41,721,292
Covered Payroll.....	\$ 1,401,093	\$ -	\$ -	\$ 15,204,987
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Town of Ashby	Town of Ashland	Town of Ayer	Town of Bedford
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 1,941,210	\$ 37,703,972	\$ 20,395,526	\$ 54,291,514
Ending net pension liability/(asset).....	\$ 1,775,392	\$ 35,887,576	\$ 19,150,544	\$ 51,394,381
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 32,471	\$ 656,370	\$ 350,256	\$ 939,984
Changes of assumptions.....	67,773	1,369,962	731,047	1,961,914
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	149,757	723,399	290,191	188,088
Total Deferred Outflows of Resources.....	\$ 250,001	\$ 2,749,731	\$ 1,371,494	\$ 3,089,986
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 2,101	\$ 42,469	\$ 22,663	\$ 60,819
Net difference between projected and actual investment earnings on pension plan investments.....	100,644	2,034,414	1,085,616	2,913,472
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	103,740	141,568	212,355	1,639,291
Total Deferred Inflows of Resources.....	\$ 206,485	\$ 2,218,451	\$ 1,320,634	\$ 4,613,582
Pension Expense				
Proportionate share of plan pension expense.....	\$ 203,044	\$ 4,104,317	\$ 2,190,173	\$ 5,877,769
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	21,073	729,031	(122,402)	(827,170)
Total Employer Pension Expense.....	\$ 224,117	\$ 4,833,348	\$ 2,067,771	\$ 5,050,599
Contributions				
Statutory required contribution.....	\$ 251,979	\$ 3,209,995	\$ 1,787,745	\$ 4,786,602
Contribution in relation to statutory required contribution.....	(251,979)	(3,243,063)	(2,087,745)	(4,787,530)
Contribution deficiency/(excess).....	\$ -	\$ (33,068)	\$ (300,000)	\$ (928)
Contributions as a percentage of covered payroll.....	21.72%	21.43%	27.59%	23.42%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 86,876	\$ 605,652	\$ 294,371	\$ (132,021)
June 30, 2023.....	18,395	535,028	169,184	80,209
June 30, 2024.....	(47,619)	(240,701)	(235,821)	(917,073)
June 30, 2025.....	(14,136)	(368,699)	(176,874)	(554,711)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 43,516	\$ 531,280	\$ 50,860	\$ (1,523,596)
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 2,212,330	\$ 44,719,784	\$ 23,863,640	\$ 64,042,933
Current discount rate (7.30%).....	\$ 1,775,392	\$ 35,887,576	\$ 19,150,544	\$ 51,394,381
1% increase (8.30%).....	\$ 1,407,788	\$ 28,456,869	\$ 15,185,325	\$ 40,752,910
Covered Payroll.....	\$ 1,160,138	\$ 15,134,292	\$ 7,568,121	\$ 20,438,300
See notes to schedule of employer allocations and schedule of pension amounts by employer.				

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Town of Billerica	Town of Boxborough	Town of Burlington	Town of Carlisle
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 157,213,941	\$ 12,546,753	\$ 137,604,549	\$ 11,101,958
Ending net pension liability/(asset).....	\$ 152,215,238	\$ 12,166,423	\$ 133,422,263	\$ 10,349,764
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 2,783,960	\$ 222,519	\$ 2,440,244	\$ 189,293
Changes of assumptions.....	5,810,620	464,437	5,093,223	395,089
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,491,321	564,014	3,490,509	296,813
Total Deferred Outflows of Resources.....	\$ 10,085,901	\$ 1,250,970	\$ 11,023,976	\$ 881,195
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 180,130	\$ 14,398	\$ 157,890	\$ 12,248
Net difference between projected and actual investment earnings on pension plan investments.....	8,628,859	689,697	7,563,513	586,713
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,955,419	-	668,051	317,499
Total Deferred Inflows of Resources.....	\$ 10,764,408	\$ 704,095	\$ 8,389,454	\$ 916,460
Pension Expense				
Proportionate share of plan pension expense.....	\$ 17,408,248	\$ 1,391,427	\$ 15,258,969	\$ 1,183,661
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(404,712)	402,845	954,544	46,834
Total Employer Pension Expense.....	\$ 17,003,536	\$ 1,794,272	\$ 16,213,513	\$ 1,230,495
Contributions				
Statutory required contribution.....	\$ 12,782,396	\$ 1,008,914	\$ 10,675,811	\$ 1,057,819
Contribution in relation to statutory required contribution.....	(12,782,396)	(1,008,914)	(10,675,811)	(1,057,819)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	33.10%	28.53%	28.91%	17.57%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 243,239	\$ 299,219	\$ 2,009,237	\$ 77,979
June 30, 2023.....	1,206,980	280,294	1,901,187	170,793
June 30, 2024.....	(876,257)	66,434	(109,644)	(159,511)
June 30, 2025.....	(1,252,469)	(99,072)	(1,166,258)	(124,526)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (678,507)	\$ 546,875	\$ 2,634,522	\$ (35,265)
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 189,676,578	\$ 15,160,673	\$ 166,258,508	\$ 12,896,920
Current discount rate (7.30%).....	\$ 152,215,238	\$ 12,166,423	\$ 133,422,263	\$ 10,349,764
1% increase (8.30%).....	\$ 120,698,291	\$ 9,647,303	\$ 105,796,498	\$ 8,206,792
Covered Payroll.....	\$ 38,618,991	\$ 3,536,280	\$ 36,934,043	\$ 6,020,631
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Town of Chelmsford	Town of Dracut	Town of Dunstable	Town of Groton
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 114,671,152	\$ 68,887,607	\$ 3,317,391	\$ 25,513,416
Ending net pension liability/(asset).....	\$ 110,931,084	\$ 66,580,110	\$ 3,218,104	\$ 24,595,262
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 2,028,888	\$ 1,217,726	\$ 58,858	\$ 449,838
Changes of assumptions.....	4,234,651	2,541,610	122,847	938,892
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,539,688	1,315,405	296,849	870,744
Total Deferred Outflows of Resources.....	\$ 7,803,227	\$ 5,074,741	\$ 478,554	\$ 2,259,474
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 131,274	\$ 78,790	\$ 3,808	\$ 29,106
Net difference between projected and actual investment earnings on pension plan investments.....	6,288,521	3,774,329	182,430	1,394,269
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,105,442	240,727	-	143,377
Total Deferred Inflows of Resources.....	\$ 7,525,237	\$ 4,093,846	\$ 186,238	\$ 1,566,752
Pension Expense				
Proportionate share of plan pension expense.....	\$ 12,686,743	\$ 7,614,498	\$ 368,041	\$ 2,812,861
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(51,174)	534,168	85,680	146,886
Total Employer Pension Expense.....	\$ 12,635,569	\$ 8,148,666	\$ 453,721	\$ 2,959,747
Contributions				
Statutory required contribution.....	\$ 9,511,562	\$ 5,727,650	\$ 292,296	\$ 2,090,290
Contribution in relation to statutory required contribution.....	(9,511,562)	(5,727,860)	(292,296)	(2,090,290)
Contribution deficiency/(excess).....	\$ -	\$ (210)	\$ -	\$ -
Contributions as a percentage of covered payroll.....	32.68%	32.82%	19.42%	25.17%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 1,143,379	\$ 1,015,509	\$ 171,075	\$ 337,566
June 30, 2023.....	711,598	779,136	110,495	511,983
June 30, 2024.....	(685,261)	(270,627)	31,619	61,229
June 30, 2025.....	(891,726)	(543,123)	(20,873)	(218,056)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 277,990	\$ 980,895	\$ 292,316	\$ 692,722
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 138,232,077	\$ 82,965,987	\$ 4,010,104	\$ 30,648,345
Current discount rate (7.30%).....	\$ 110,931,084	\$ 66,580,110	\$ 3,218,104	\$ 24,595,262
1% increase (8.30%).....	\$ 87,962,233	\$ 52,794,356	\$ 2,551,779	\$ 19,502,687
Covered Payroll.....	\$ 29,108,756	\$ 17,454,816	\$ 1,504,932	\$ 8,305,473
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Town of Holliston	Town of Hopkinton	Town of Hudson	Town of Lincoln
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 26,676,612	\$ 26,084,382	\$ 69,381,303	\$ 27,767,333
Ending net pension liability/(asset).....	\$ 25,050,502	\$ 24,095,505	\$ 66,148,477	\$ 26,477,563
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 458,164	\$ 440,698	\$ 1,209,831	\$ 484,265
Changes of assumptions.....	956,271	919,815	2,525,133	1,010,747
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	446,142	1,136,656	199,174	150,639
Total Deferred Outflows of Resources.....	\$ 1,860,577	\$ 2,497,169	\$ 3,934,138	\$ 1,645,651
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 29,644	\$ 28,514	\$ 78,279	\$ 31,333
Net difference between projected and actual investment earnings on pension plan investments.....	1,420,076	1,365,939	3,749,860	1,500,974
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	928,337	489,170	1,008,453	506,474
Total Deferred Inflows of Resources.....	\$ 2,378,057	\$ 1,883,623	\$ 4,836,592	\$ 2,038,781
Pension Expense				
Proportionate share of plan pension expense.....	\$ 2,864,925	\$ 2,755,706	\$ 7,565,135	\$ 3,028,131
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(304,593)	399,656	(220,380)	(257,082)
Total Employer Pension Expense.....	\$ 2,560,332	\$ 3,155,362	\$ 7,344,755	\$ 2,771,049
Contributions				
Statutory required contribution.....	\$ 2,385,594	\$ 2,486,832	\$ 6,204,177	\$ 2,434,008
Contribution in relation to statutory required contribution.....	(2,385,594)	(2,486,832)	(6,207,788)	(2,434,721)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ (3,611)	\$ (713)
Contributions as a percentage of covered payroll.....	20.11%	14.63%	27.47%	22.13%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 100,503	\$ 552,507	\$ 313,855	\$ 20,318
June 30, 2023.....	172,661	649,082	303,009	190,705
June 30, 2024.....	(490,664)	(258,504)	(907,292)	(349,949)
June 30, 2025.....	(299,980)	(329,539)	(612,026)	(254,204)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (517,480)	\$ 613,546	\$ (902,454)	\$ (393,130)
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 31,215,623	\$ 30,025,594	\$ 82,428,126	\$ 32,993,895
Current discount rate (7.30%).....	\$ 25,050,502	\$ 24,095,505	\$ 66,148,477	\$ 26,477,563
1% increase (8.30%).....	\$ 19,863,667	\$ 19,106,407	\$ 52,452,095	\$ 20,995,247
Covered Payroll.....	\$ 11,860,989	\$ 17,002,761	\$ 22,598,280	\$ 11,002,408
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Town of Littleton	Town of North Reading	Town of Pepperell	Town of Sherborn
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 26,056,611	\$ 52,178,434	\$ 18,312,861	\$ 10,450,215
Ending net pension liability/(asset).....	\$ 23,466,261	\$ 50,095,267	\$ 17,612,899	\$ 9,801,713
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 429,189	\$ 916,224	\$ 322,133	\$ 179,270
Changes of assumptions.....	895,794	1,912,322	672,350	374,168
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,320,076	70,700	25,960	100,762
Total Deferred Outflows of Resources.....	\$ 2,645,059	\$ 2,899,246	\$ 1,020,443	\$ 654,200
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 27,770	\$ 59,282	\$ 20,843	\$ 11,599
Net difference between projected and actual investment earnings on pension plan investments.....	1,330,268	2,839,827	998,449	555,645
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	310,142	1,049,585	141,622	755,393
Total Deferred Inflows of Resources.....	\$ 1,668,180	\$ 3,948,694	\$ 1,160,914	\$ 1,322,637
Pension Expense				
Proportionate share of plan pension expense.....	\$ 2,683,744	\$ 5,729,196	\$ 2,014,317	\$ 1,120,983
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	638,992	(534,216)	332,236	(303,272)
Total Employer Pension Expense.....	\$ 3,322,736	\$ 5,194,980	\$ 2,346,553	\$ 817,711
Contributions				
Statutory required contribution.....	\$ 2,355,174	\$ 4,401,955	\$ 1,530,300	\$ 1,087,478
Contribution in relation to statutory required contribution.....	(3,281,774)	(4,401,955)	(1,531,884)	(1,087,478)
Contribution deficiency/(excess).....	\$ (926,600)	\$ -	\$ (1,584)	\$ -
Contributions as a percentage of covered payroll.....	23.93%	30.68%	30.25%	23.79%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 585,195	\$ 36,029	\$ 55,025	\$ (150,323)
June 30, 2023.....	712,148	69,268	131,498	(105,486)
June 30, 2024.....	(49,317)	(699,664)	(169,904)	(323,772)
June 30, 2025.....	(271,147)	(455,081)	(157,090)	(88,856)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 976,879	\$ (1,049,448)	\$ (140,471)	\$ (668,437)
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 29,241,488	\$ 62,424,097	\$ 21,947,569	\$ 12,213,990
Current discount rate (7.30%).....	\$ 23,466,261	\$ 50,095,267	\$ 17,612,899	\$ 9,801,713
1% increase (8.30%).....	\$ 18,607,451	\$ 39,722,784	\$ 13,966,058	\$ 7,772,218
Covered Payroll.....	\$ 13,713,395	\$ 14,347,517	\$ 5,064,259	\$ 4,571,874
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Town of Shirley	Town of Stow	Town of Sudbury	Town of Tewksbury
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 9,325,501	\$ 11,909,143	\$ 64,186,721	\$ 107,519,124
Ending net pension liability/(asset).....	\$ 8,952,975	\$ 11,389,407	\$ 61,745,935	\$ 104,198,258
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 163,747	\$ 208,308	\$ 1,129,310	\$ 1,905,747
Changes of assumptions.....	341,768	434,776	2,357,071	3,977,634
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	38,702	44,864	415,995	1,352,170
Total Deferred Outflows of Resources.....	\$ 544,217	\$ 687,948	\$ 3,902,376	\$ 7,235,551
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 10,595	\$ 13,478	\$ 73,069	\$ 123,307
Net difference between projected and actual investment earnings on pension plan investments.....	507,531	645,649	3,500,287	5,906,847
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	81,437	42,971	1,239,986	1,130,973
Total Deferred Inflows of Resources.....	\$ 599,563	\$ 702,098	\$ 4,813,342	\$ 7,161,127
Pension Expense				
Proportionate share of plan pension expense.....	\$ 1,023,915	\$ 1,302,561	\$ 7,061,635	\$ 11,916,738
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(246,747)	51,934	(313,354)	257,644
Total Employer Pension Expense.....	\$ 777,168	\$ 1,354,495	\$ 6,748,281	\$ 12,174,382
Contributions				
Statutory required contribution.....	\$ 818,964	\$ 1,024,938	\$ 5,389,846	\$ 8,797,968
Contribution in relation to statutory required contribution.....	(818,964)	(1,024,938)	(5,389,846)	(8,807,233)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ (9,265)
Contributions as a percentage of covered payroll.....	39.15%	27.78%	28.94%	36.29%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ (1,447)	\$ 86,640	\$ 319,715	\$ 1,098,016
June 30, 2023.....	88,483	114,535	98,035	534,620
June 30, 2024.....	(67,459)	(108,063)	(784,345)	(731,143)
June 30, 2025.....	(74,923)	(107,262)	(544,371)	(827,069)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (55,346)	\$ (14,150)	\$ (910,966)	\$ 74,424
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 11,156,371	\$ 14,192,428	\$ 76,942,084	\$ 129,842,250
Current discount rate (7.30%).....	\$ 8,952,975	\$ 11,389,407	\$ 61,745,935	\$ 104,198,258
1% increase (8.30%).....	\$ 7,099,216	\$ 9,031,172	\$ 48,961,122	\$ 82,623,473
Covered Payroll.....	\$ 2,091,842	\$ 3,689,219	\$ 18,621,425	\$ 24,269,942
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Town of Townsend	Town of Tynngsborough	Town of Wayland	Town of Westford
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 8,637,189	\$ 25,022,982	\$ 59,191,196	\$ 59,489,841
Ending net pension liability/(asset).....	\$ 8,103,799	\$ 24,002,922	\$ 56,416,777	\$ 56,098,309
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 148,215	\$ 439,005	\$ 1,031,842	\$ 1,026,017
Changes of assumptions.....	309,352	916,281	2,153,638	2,141,481
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	182,913	802,436	117,079	1,001,946
Total Deferred Outflows of Resources.....	\$ 640,480	\$ 2,157,722	\$ 3,302,559	\$ 4,169,444
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 9,590	\$ 28,405	\$ 66,763	\$ 66,386
Net difference between projected and actual investment earnings on pension plan investments.....	459,393	1,360,691	3,198,185	3,180,131
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	530,294	311,089	1,224,644	999,143
Total Deferred Inflows of Resources.....	\$ 999,277	\$ 1,700,185	\$ 4,489,592	\$ 4,245,660
Pension Expense				
Proportionate share of plan pension expense.....	\$ 926,800	\$ 2,745,120	\$ 6,452,162	\$ 6,415,738
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(41,155)	462,648	(1,054,459)	300,562
Total Employer Pension Expense.....	\$ 885,645	\$ 3,207,768	\$ 5,397,703	\$ 6,716,300
Contributions				
Statutory required contribution.....	\$ 911,165	\$ 2,152,711	\$ 5,182,237	\$ 5,473,719
Contribution in relation to statutory required contribution.....	(911,165)	(2,152,711)	(5,182,543)	(5,473,719)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ (306)	\$ -
Contributions as a percentage of covered payroll.....	24.49%	23.68%	24.81%	20.26%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ (144,474)	\$ 165,232	\$ (135,015)	\$ 524,941
June 30, 2023.....	40,309	506,614	272,812	742,237
June 30, 2024.....	(184,101)	(866)	(777,235)	(744,645)
June 30, 2025.....	(70,531)	(213,443)	(547,595)	(598,749)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (358,797)	\$ 457,537	\$ (1,187,033)	\$ (76,216)
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 10,098,206	\$ 29,910,226	\$ 70,301,380	\$ 69,904,534
Current discount rate (7.30%).....	\$ 8,103,799	\$ 24,002,922	\$ 56,416,777	\$ 56,098,309
1% increase (8.30%).....	\$ 6,425,866	\$ 19,032,994	\$ 44,735,393	\$ 44,482,866
Covered Payroll.....	\$ 3,721,241	\$ 9,090,782	\$ 20,891,951	\$ 27,016,988
See notes to schedule of employer allocations and schedule of pension amounts by employer.				

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Town of Weston	Town of Wilmington	Acton- Boxborough Regional School District	Acton Water Supply
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 67,631,236	\$ 91,654,915	\$ 31,360,065	\$ 3,732,674
Ending net pension liability/(asset).....	\$ 64,849,395	\$ 86,423,315	\$ 30,083,545	\$ 3,548,184
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 1,186,071	\$ 1,580,650	\$ 550,217	\$ 64,895
Changes of assumptions.....	2,475,542	3,299,099	1,148,401	135,447
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	337,745	629,969	-
Total Deferred Outflows of Resources.....	\$ 3,661,613	\$ 5,217,494	\$ 2,328,587	\$ 200,342
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 76,742	\$ 102,272	\$ 35,601	\$ 4,199
Net difference between projected and actual investment earnings on pension plan investments.....	3,676,217	4,899,211	1,705,392	201,141
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,287,778	512,919	46,454	180,239
Total Deferred Inflows of Resources.....	\$ 5,040,737	\$ 5,514,402	\$ 1,787,447	\$ 385,579
Pension Expense				
Proportionate share of plan pension expense.....	\$ 7,416,567	\$ 9,883,887	\$ 3,440,535	\$ 405,791
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(965,118)	116,078	456,183	(30,213)
Total Employer Pension Expense.....	\$ 6,451,449	\$ 9,999,965	\$ 3,896,718	\$ 375,578
Contributions				
Statutory required contribution.....	\$ 5,668,652	\$ 7,593,868	\$ 2,794,347	\$ 256,971
Contribution in relation to statutory required contribution.....	(5,668,652)	(9,104,998)	(2,794,347)	(256,971)
Contribution deficiency/(excess).....	\$ -	\$ (1,511,130)	\$ -	\$ -
Contributions as a percentage of covered payroll.....	26.44%	37.07%	18.07%	20.14%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ (247,438)	\$ 706,420	\$ 404,562	\$ (33,702)
June 30, 2023.....	256,687	531,592	488,982	(23,442)
June 30, 2024.....	(777,384)	(745,723)	(104,513)	(77,989)
June 30, 2025.....	(610,989)	(789,197)	(247,891)	(50,104)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (1,379,124)	\$ (296,908)	\$ 541,140	\$ (185,237)
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 80,809,330	\$ 107,692,757	\$ 37,487,337	\$ 4,421,419
Current discount rate (7.30%).....	\$ 64,849,395	\$ 86,423,315	\$ 30,083,545	\$ 3,548,184
1% increase (8.30%).....	\$ 51,421,994	\$ 68,528,923	\$ 23,854,592	\$ 2,813,514
Covered Payroll.....	\$ 21,442,179	\$ 24,560,364	\$ 15,468,104	\$ 1,275,867
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Bedford Housing Authority	Billerica Housing Authority	Chelmsford Housing Authority	Chelmsford Water District
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 332,568	\$ 1,647,762	\$ 2,275,176	\$ 343,766
Ending net pension liability/(asset).....	\$ 315,580	\$ 1,612,020	\$ 2,016,950	\$ 24,164
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 5,772	\$ 29,483	\$ 36,889	\$ 442
Changes of assumptions.....	12,047	61,537	76,994	922
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,770	77,417	223,910	275,404
Total Deferred Outflows of Resources.....	\$ <u>19,589</u>	\$ <u>168,437</u>	\$ <u>337,793</u>	\$ <u>276,768</u>
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 373	\$ 1,908	\$ 2,387	\$ 29
Net difference between projected and actual investment earnings on pension plan investments.....	17,890	91,383	114,338	1,370
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	8,952	19,343	90,196	389,104
Total Deferred Inflows of Resources.....	\$ <u>27,215</u>	\$ <u>112,634</u>	\$ <u>206,921</u>	\$ <u>390,503</u>
Pension Expense				
Proportionate share of plan pension expense.....	\$ 36,091	\$ 184,361	\$ 230,670	\$ 2,765
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	3,306	42,968	156,340	64,781
Total Employer Pension Expense.....	\$ <u>39,397</u>	\$ <u>227,329</u>	\$ <u>387,010</u>	\$ <u>67,546</u>
Contributions				
Statutory required contribution.....	\$ 27,468	\$ 115,453	\$ 241,136	\$ 67,843
Contribution in relation to statutory required contribution.....	<u>(27,468)</u>	<u>(115,453)</u>	<u>(241,136)</u>	<u>(67,843)</u>
Contribution deficiency/(excess).....	\$ <u>-</u>	\$ <u>-</u>	\$ <u>(30,000)</u>	\$ <u>-</u>
Contributions as a percentage of covered payroll.....	15.64%	27.89%	9.93%	4.64%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 958	\$ 28,563	\$ 179,710	\$ 7,526
June 30, 2023.....	541	29,965	26,388	31,760
June 30, 2024.....	(5,483)	11,307	(43,080)	(106,367)
June 30, 2025.....	<u>(3,642)</u>	<u>(14,032)</u>	<u>(32,146)</u>	<u>(46,654)</u>
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ <u>(7,626)</u>	\$ <u>55,803</u>	\$ <u>130,872</u>	\$ <u>(113,735)</u>
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 393,247	\$ 2,008,751	\$ 2,513,337	\$ 30,111
Current discount rate (7.30%).....	\$ 315,580	\$ 1,612,020	\$ 2,016,950	\$ 24,164
1% increase (8.30%).....	\$ 250,238	\$ 1,278,243	\$ 1,599,330	\$ 19,161
Covered Payroll.....	\$ 175,575	\$ 413,931	\$ 2,729,849	\$ 1,463,629
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Dracut Housing Authority	Dracut Water Supply	East Chelmsford Water District	East Middlesex Mosquito Control
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 2,317,408	\$ 3,356,809	\$ 395,631	\$ 712,131
Ending net pension liability/(asset).....	\$ 2,264,513	\$ 3,240,627	\$ 366,619	\$ 649,547
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 41,417	\$ 59,270	\$ 6,705	\$ 11,880
Changes of assumptions.....	86,445	123,707	13,995	24,796
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	44,940	68,943	14,729	44,301
Total Deferred Outflows of Resources.....	\$ 172,802	\$ 251,920	\$ 35,429	\$ 80,977
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 2,680	\$ 3,835	\$ 434	\$ 769
Net difference between projected and actual investment earnings on pension plan investments.....	128,372	183,706	20,783	36,822
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	43,511	94,000	7,321	44,010
Total Deferred Inflows of Resources.....	\$ 174,563	\$ 281,541	\$ 28,538	\$ 81,601
Pension Expense				
Proportionate share of plan pension expense.....	\$ 258,985	\$ 370,617	\$ 41,929	\$ 74,286
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(10,205)	4,119	6,314	5,358
Total Employer Pension Expense.....	\$ 248,780	\$ 374,736	\$ 48,243	\$ 79,644
Contributions				
Statutory required contribution.....	\$ 162,257	\$ 247,338	\$ 35,999	\$ 51,505
Contribution in relation to statutory required contribution.....	(162,257)	(247,338)	(35,999)	(51,505)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	38.00%	33.60%	16.21%	13.61%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 22,176	\$ 55,721	\$ 7,568	\$ 4,150
June 30, 2023.....	7,153	(9,130)	8,380	18,447
June 30, 2024.....	(10,890)	(42,763)	(3,909)	(9,554)
June 30, 2025.....	(20,200)	(33,449)	(5,148)	(13,667)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (1,761)	\$ (29,621)	\$ 6,891	\$ (624)
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 2,821,827	\$ 4,038,170	\$ 456,847	\$ 809,406
Current discount rate (7.30%).....	\$ 2,264,513	\$ 3,240,627	\$ 366,619	\$ 649,547
1% increase (8.30%).....	\$ 1,795,634	\$ 2,569,639	\$ 290,709	\$ 515,055
Covered Payroll.....	\$ 426,964	\$ 736,128	\$ 222,136	\$ 378,327

See notes to schedule of employer allocations and schedule of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Greater Lowell Regional Vocation Technical School District	Groton- Dunstable Regional School District	Hudson Housing Authority	Lincoln- Sudbury Regional School District
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 18,372,432	\$ 13,046,678	\$ 704,593	\$ 9,126,061
Ending net pension liability/(asset).....	\$ 17,820,793	\$ 12,381,614	\$ 616,643	\$ 8,715,281
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 325,936	\$ 226,455	\$ 11,278	\$ 159,399
Changes of assumptions.....	680,286	472,652	23,540	332,695
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	531,315	427,683	-	34,883
Total Deferred Outflows of Resources.....	\$ 1,537,537	\$ 1,126,790	\$ 34,818	\$ 526,977
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 21,089	\$ 14,652	\$ 730	\$ 10,314
Net difference between projected and actual investment earnings on pension plan investments.....	1,010,235	701,896	34,957	494,057
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	189,529	110,392	337,713	288,509
Total Deferred Inflows of Resources.....	\$ 1,220,853	\$ 826,940	\$ 373,400	\$ 792,880
Pension Expense				
Proportionate share of plan pension expense.....	\$ 2,038,095	\$ 1,416,037	\$ 70,523	\$ 996,734
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(48,921)	351,249	(166,362)	(162,808)
Total Employer Pension Expense.....	\$ 1,989,174	\$ 1,767,286	\$ (95,839)	\$ 833,926
Contributions				
Statutory required contribution.....	\$ 1,307,090	\$ 1,077,851	\$ 98,078	\$ 755,859
Contribution in relation to statutory required contribution.....	(1,307,090)	(1,077,851)	(98,078)	(755,859)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	29.23%	26.52%	26.42%	25.23%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 297,608	\$ 277,350	\$ (141,223)	\$ 31
June 30, 2023.....	220,599	233,028	(91,667)	(23,854)
June 30, 2024.....	(23,285)	(67,935)	(97,217)	(151,870)
June 30, 2025.....	(178,238)	(142,593)	(8,475)	(90,210)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 316,684	\$ 299,850	\$ (338,582)	\$ (265,903)
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 22,206,627	\$ 15,428,824	\$ 768,404	\$ 10,860,179
Current discount rate (7.30%).....	\$ 17,820,793	\$ 12,381,614	\$ 616,643	\$ 8,715,281
1% increase (8.30%).....	\$ 14,130,906	\$ 9,817,937	\$ 488,964	\$ 6,910,737
Covered Payroll.....	\$ 4,471,774	\$ 4,064,118	\$ 371,288	\$ 2,995,522
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Nashoba Valley Technical High School District	North Chelmsford Water District	North Middlesex Regional School District	Shawsheen Valley Regional Vocational Technical School
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 3,735,397	\$ 1,074,652	\$ 13,400,780	\$ 8,870,284
Ending net pension liability/(asset).....	\$ 3,650,910	\$ 977,691	\$ 12,806,518	\$ 8,542,800
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 66,774	\$ 17,882	\$ 234,226	\$ 156,245
Changes of assumptions.....	139,369	37,322	488,872	326,110
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	99,809	51,684	99,538	17,943
Total Deferred Outflows of Resources.....	\$ <u>305,952</u>	\$ <u>106,888</u>	\$ <u>822,636</u>	\$ <u>500,298</u>
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 4,320	\$ 1,157	\$ 15,155	\$ 10,109
Net difference between projected and actual investment earnings on pension plan investments.....	206,965	55,424	725,983	484,279
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	80,848	64,687	76,037	161,430
Total Deferred Inflows of Resources.....	\$ <u>292,133</u>	\$ <u>121,268</u>	\$ <u>817,175</u>	\$ <u>655,818</u>
Pension Expense				
Proportionate share of plan pension expense.....	\$ 417,539	\$ 111,814	\$ 1,464,631	\$ 977,006
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(21,989)	(6,457)	(56,911)	(75,606)
Total Employer Pension Expense.....	\$ <u>395,550</u>	\$ <u>105,357</u>	\$ <u>1,407,720</u>	\$ <u>901,400</u>
Contributions				
Statutory required contribution.....	\$ 324,010	\$ 72,338	\$ 1,123,918	\$ 706,293
Contribution in relation to statutory required contribution.....	(324,010)	(72,338)	(1,123,918)	(706,293)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	32.62%	10.81%	20.39%	25.77%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 42,313	\$ 23,136	\$ 90,969	\$ (57,529)
June 30, 2023.....	7,591	10,299	146,283	53,326
June 30, 2024.....	(16,150)	(25,690)	(103,629)	(70,028)
June 30, 2025.....	(19,935)	(22,125)	(128,162)	(81,289)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ <u>13,819</u>	\$ <u>(14,380)</u>	\$ <u>5,461</u>	\$ <u>(155,520)</u>
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 4,549,427	\$ 1,218,308	\$ 15,958,301	\$ 10,645,249
Current discount rate (7.30%).....	\$ 3,650,910	\$ 977,691	\$ 12,806,518	\$ 8,542,800
1% increase (8.30%).....	\$ 2,894,970	\$ 775,255	\$ 10,154,863	\$ 6,773,969
Covered Payroll.....	\$ 993,404	\$ 669,355	\$ 5,512,936	\$ 2,741,245

See notes to schedule of employer allocations and schedule of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	South Middlesex Regional Vocational Technical School	Sudbury Water District	Tewksbury Housing Authority	Wayland Housing Authority
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 7,027,195	\$ 2,571,703	\$ 1,723,517	\$ 675,758
Ending net pension liability/(asset).....	\$ 6,677,782	\$ 2,449,672	\$ 1,645,758	\$ 625,875
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 122,134	\$ 44,804	\$ 30,100	\$ 11,447
Changes of assumptions.....	254,916	93,513	62,825	23,892
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	14,425	254,281	18,666	12,210
Total Deferred Outflows of Resources.....	\$ 391,475	\$ 392,598	\$ 111,591	\$ 47,549
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 7,902	\$ 2,899	\$ 1,948	\$ 741
Net difference between projected and actual investment earnings on pension plan investments.....	378,554	138,868	93,296	35,480
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	341,979	130,042	20,416	53,346
Total Deferred Inflows of Resources.....	\$ 728,435	\$ 271,809	\$ 115,660	\$ 89,567
Pension Expense				
Proportionate share of plan pension expense.....	\$ 763,711	\$ 280,158	\$ 188,221	\$ 71,580
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(174,756)	74,527	22,571	6,616
Total Employer Pension Expense.....	\$ 588,955	\$ 354,685	\$ 210,792	\$ 78,196
Contributions				
Statutory required contribution.....	\$ 599,951	\$ 142,163	\$ 137,197	\$ 55,104
Contribution in relation to statutory required contribution.....	(599,951)	(142,163)	(137,197)	(55,104)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	26.52%	13.24%	32.61%	17.34%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ (145,736)	\$ 34,097	\$ 14,933	\$ (6,315)
June 30, 2023.....	2,396	95,662	11,837	(4,236)
June 30, 2024.....	(122,177)	31,673	(12,662)	(21,341)
June 30, 2025.....	(71,443)	(40,643)	(18,177)	(10,126)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (336,960)	\$ 120,789	\$ (4,069)	\$ (42,018)
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 8,321,235	\$ 3,052,555	\$ 2,050,792	\$ 779,908
Current discount rate (7.30%).....	\$ 6,677,782	\$ 2,449,672	\$ 1,645,758	\$ 625,875
1% increase (8.30%).....	\$ 5,295,113	\$ 1,942,455	\$ 1,304,995	\$ 496,284
Covered Payroll.....	\$ 2,262,465	\$ 1,073,885	\$ 420,708	\$ 317,752
See notes to schedule of employer allocations and schedule of pension amounts by employer.				

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Hopkinton Housing Authority	Sudbury Housing Authority	Wilmington Housing Authority	Acton Housing Authority
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 537,329	\$ 490,188	\$ 382,144	\$ 907,630
Ending net pension liability/(asset).....	\$ 517,677	\$ 465,613	\$ 370,673	\$ 861,176
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 9,468	\$ 8,516	\$ 6,779	\$ 15,751
Changes of assumptions.....	19,762	17,774	14,150	32,874
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	4,801	10,840	12,102	27,910
Total Deferred Outflows of Resources.....	\$ 34,031	\$ 37,130	\$ 33,031	\$ 76,535
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 613	\$ 551	\$ 439	\$ 1,019
Net difference between projected and actual investment earnings on pension plan investments.....	29,346	26,395	21,013	48,819
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	13,069	6,428	466	57,546
Total Deferred Inflows of Resources.....	\$ 43,028	\$ 33,374	\$ 21,918	\$ 107,384
Pension Expense				
Proportionate share of plan pension expense.....	\$ 59,204	\$ 53,250	\$ 42,392	\$ 98,489
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(5,789)	21,075	9,404	(22,108)
Total Employer Pension Expense.....	\$ 53,415	\$ 74,325	\$ 51,796	\$ 76,381
Contributions				
Statutory required contribution.....	\$ 40,023	\$ 43,152	\$ 32,574	\$ 66,700
Contribution in relation to statutory required contribution.....	(40,023)	(43,152)	(32,574)	(66,700)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	49.59%	40.38%	22.35%	15.98%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ (5,181)	\$ 12,274	\$ 8,460	\$ (28,564)
June 30, 2023.....	5,989	2,020	5,782	15,635
June 30, 2024.....	(4,359)	(5,781)	(499)	(6,313)
June 30, 2025.....	(5,446)	(4,757)	(2,630)	(11,607)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (8,997)	\$ 3,756	\$ 11,113	\$ (30,849)
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 645,081	\$ 580,204	\$ 461,898	\$ 1,073,118
Current discount rate (7.30%).....	\$ 517,677	\$ 465,613	\$ 370,673	\$ 861,176
1% increase (8.30%).....	\$ 410,489	\$ 369,205	\$ 293,923	\$ 682,865
Covered Payroll.....	\$ 80,704	\$ 106,861	\$ 145,743	\$ 417,322
See notes to schedule of employer allocations and schedule of pension amounts by employer.				(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Burlington Housing Authority	Ayer Housing Authority	Holliston Housing Authority	Littleton Housing Authority
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 345,712	\$ 879,177	\$ 175,571	\$ 621,840
Ending net pension liability/(asset).....	\$ 327,467	\$ 858,485	\$ 168,599	\$ 607,838
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 5,989	\$ 15,701	\$ 3,084	\$ 11,117
Changes of assumptions.....	12,501	32,772	6,436	23,203
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	121,361	23,323	11,777	60,583
Total Deferred Outflows of Resources.....	\$ 139,851	\$ 71,796	\$ 21,297	\$ 94,903
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 388	\$ 1,016	\$ 200	\$ 719
Net difference between projected and actual investment earnings on pension plan investments.....	18,564	48,666	9,558	34,457
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	14,732	216,044	13,692	7,047
Total Deferred Inflows of Resources.....	\$ 33,684	\$ 265,726	\$ 23,450	\$ 42,223
Pension Expense				
Proportionate share of plan pension expense.....	\$ 37,451	\$ 98,181	\$ 19,282	\$ 69,517
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	30,738	25,658	(10,022)	26,128
Total Employer Pension Expense.....	\$ 68,189	\$ 123,839	\$ 9,260	\$ 95,645
Contributions				
Statutory required contribution.....	\$ 14,349	\$ 62,116	\$ 15,782	\$ 43,356
Contribution in relation to statutory required contribution.....	(14,349)	(62,116)	(15,782)	(43,356)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	6.61%	51.07%	18.71%	105.50%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 44,268	\$ (192,327)	\$ (7,948)	\$ 22,464
June 30, 2023.....	43,838	5,828	5,958	21,400
June 30, 2024.....	24,785	226	1,168	14,241
June 30, 2025.....	(6,724)	(7,657)	(1,331)	(5,425)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 106,167	\$ (193,930)	\$ (2,153)	\$ 52,680
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 408,059	\$ 1,069,765	\$ 210,093	\$ 757,432
Current discount rate (7.30%).....	\$ 327,467	\$ 858,485	\$ 168,599	\$ 607,838
1% increase (8.30%).....	\$ 259,663	\$ 680,731	\$ 133,690	\$ 481,982
Covered Payroll.....	\$ 217,060	\$ 121,622	\$ 84,340	\$ 41,096

See notes to schedule of employer allocations and schedule of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Westford Housing Authority	Shirley Water District	Tyngsborough Housing Authority	Pepperell Housing Authority
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 570,710	\$ 484,781	\$ 528,855	\$ 251,415
Ending net pension liability/(asset).....	\$ 537,128	\$ 453,772	\$ 516,453	\$ 247,338
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 9,824	\$ 8,299	\$ 9,446	\$ 4,524
Changes of assumptions.....	20,504	17,322	19,715	9,442
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	7,328	34,386	13,309	34,014
Total Deferred Outflows of Resources.....	\$ 37,656	\$ 60,007	\$ 42,470	\$ 47,980
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 636	\$ 537	\$ 611	\$ 293
Net difference between projected and actual investment earnings on pension plan investments.....	30,449	25,724	29,277	14,021
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	8,626	26,984	13,439	1,837
Total Deferred Inflows of Resources.....	\$ 39,711	\$ 53,245	\$ 43,327	\$ 16,151
Pension Expense				
Proportionate share of plan pension expense.....	\$ 61,429	\$ 51,897	\$ 59,063	\$ 28,288
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	6,509	(5,788)	5,519	19,979
Total Employer Pension Expense.....	\$ 67,938	\$ 46,109	\$ 64,582	\$ 48,267
Contributions				
Statutory required contribution.....	\$ 50,725	\$ 24,607	\$ 44,565	\$ 18,331
Contribution in relation to statutory required contribution.....	(50,725)	(24,607)	(44,565)	(18,331)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	21.57%	10.91%	24.72%	16.95%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 8,727	\$ 5,085	\$ 6,740	\$ 13,889
June 30, 2023.....	2,076	11,713	639	11,567
June 30, 2024.....	(6,580)	(590)	(5,078)	8,139
June 30, 2025.....	(6,278)	(9,446)	(3,158)	(1,766)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (2,055)	\$ 6,762	\$ (857)	\$ 31,829
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 669,319	\$ 565,449	\$ 643,556	\$ 308,210
Current discount rate (7.30%).....	\$ 537,128	\$ 453,772	\$ 516,453	\$ 247,338
1% increase (8.30%).....	\$ 425,913	\$ 359,816	\$ 409,519	\$ 196,125
Covered Payroll.....	\$ 235,134	\$ 225,565	\$ 180,246	\$ 108,132

See notes to schedule of employer allocations and schedule of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Groton Housing Authority	Tyngsborough Water District	North Reading Housing Authority	West Groton Water
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ -	\$ 481,728	\$ 214,226	\$ 36,784
Ending net pension liability/(asset).....	\$ -	\$ 440,581	\$ 212,881	\$ 18,060
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ -	\$ 8,058	\$ 3,894	\$ 330
Changes of assumptions.....	-	16,819	8,126	689
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	13,074	17,211	34,757	5,727
Total Deferred Outflows of Resources.....	\$ 13,074	\$ 42,088	\$ 46,777	\$ 6,746
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ -	\$ 521	\$ 252	\$ 21
Net difference between projected and actual investment earnings on pension plan investments.....	-	24,976	12,068	1,024
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	4,284	19,950	496	14,465
Total Deferred Inflows of Resources.....	\$ 4,284	\$ 45,447	\$ 12,816	\$ 15,510
Pension Expense				
Proportionate share of plan pension expense.....	\$ -	\$ 50,386	\$ 24,346	\$ 2,067
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	867	(839)	20,657	(1,678)
Total Employer Pension Expense.....	\$ 867	\$ 49,547	\$ 45,003	\$ 389
Contributions				
Statutory required contribution.....	\$ 2,867	\$ 40,250	\$ 17,708	\$ 2,737
Contribution in relation to statutory required contribution.....	(2,867)	(40,250)	(17,708)	(2,737)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	0.00%	19.07%	18.72%	2.11%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2022.....	\$ 546	\$ 3,195	\$ 12,873	\$ (63)
June 30, 2023.....	4,832	8,210	13,639	(1,469)
June 30, 2024.....	2,839	(6,800)	8,178	(3,936)
June 30, 2025.....	573	(7,964)	(729)	(3,296)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 8,790	\$ (3,359)	\$ 33,961	\$ (8,764)
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ -	\$ 549,011	\$ 265,273	\$ 22,505
Current discount rate (7.30%).....	\$ -	\$ 440,581	\$ 212,881	\$ 18,060
1% increase (8.30%).....	\$ -	\$ 349,356	\$ 168,803	\$ 14,321
Covered Payroll.....	\$ -	\$ 211,109	\$ 94,616	\$ 129,814

See notes to schedule of employer allocations and schedule of pension amounts by employer.

(continued)

SCHEDULE OF PENSION AMOUNTS BY EMPLOYER

FOR THE YEAR ENDED DECEMBER 31, 2020

	Ayer-Shirley Regional School District	Northern Middlesex Regional Emergency Communications Center	Totals
Net Pension Liability			
Beginning net pension liability/(asset).....	\$ 4,713,693	\$ -	\$ 1,600,056,015
Ending net pension liability/(asset).....	\$ 4,239,976	\$ (14,725)	\$ 1,531,093,126
Deferred Outflows of Resources			
Differences between expected and actual experience.....	\$ 77,548	\$ (266)	\$ 28,003,125
Changes of assumptions.....	161,856	(565)	58,447,504
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	211,719	-	22,923,004
Total Deferred Outflows of Resources.....	\$ 451,123	\$ (831)	\$ 109,373,633
Deferred Inflows of Resources			
Differences between expected and actual experience.....	\$ 5,018	\$ (20)	\$ 1,811,877
Net difference between projected and actual investment earnings on pension plan investments.....	240,358	(836)	86,795,430
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	442,391	10,452	22,923,004
Total Deferred Inflows of Resources.....	\$ 687,767	\$ 9,596	\$ 111,530,311
Pension Expense			
Proportionate share of plan pension expense.....	\$ 484,910	\$ (1,689)	\$ 175,461,325
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(171,523)	(2,609)	-
Total Employer Pension Expense.....	\$ 313,387	\$ (4,298)	\$ 175,461,325
Contributions			
Statutory required contribution.....	\$ 498,116	\$ -	\$ 135,472,822
Contribution in relation to statutory required contribution.....	(498,116)	-	(138,290,237)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ (2,817,415)
Contributions as a percentage of covered payroll.....	13.58%	0.00%	26.95%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense			
June 30, 2022.....	\$ (48,034)	\$ (2,726)	\$ 11,702,352
June 30, 2023.....	30,394	(2,744)	13,634,748
June 30, 2024.....	(149,980)	(2,485)	(13,273,716)
June 30, 2025.....	(69,024)	(2,472)	(14,220,062)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ (236,644)	\$ (10,427)	\$ (2,156,678)
Discount Rate Sensitivity			
1% decrease (6.30%).....	\$ 5,283,467	\$ (18,351)	\$ 1,907,906,916
Current discount rate (7.30%).....	\$ 4,239,976	\$ (14,725)	\$ 1,531,093,126
1% increase (8.30%).....	\$ 3,362,067	\$ (11,675)	\$ 1,214,072,425
Covered Payroll.....	\$ 3,668,688	\$ -	\$ 513,201,283
See notes to schedule of employer allocations and schedule of pension amounts by employer.			(Concluded)

NOTE A – Schedule of Employer Allocations

Governmental Accounting Standards Board (GASB) Statement #68 requires employers participating in a cost-sharing pension plan to recognize pension liabilities as employees provide services to the government and earn their pension benefits. Employers participating in cost-sharing plans are required to recognize their proportionate share of the plan's collective pension amounts for all benefits provided through the plan including the net pension liability, deferred outflows of resources, deferred inflows of resources, pension expense, and contributions.

GASB Statement #68 requires the allocation of the collective pension amounts be consistent with the manner in which contributions to the plan are determined. As permissible under GASB Statement #68, The Schedule of Employer Allocations is used to demonstrate the allocation of Middlesex County Retirement System's collective pension amounts.

Massachusetts General Law (MGL) Chapter 32 Section 22 Paragraph 7c dictates that Massachusetts cost sharing defined benefit pension plans allocate the annual required pension fund appropriation to employer units based on their proportionate share of the aggregate of the annual rates of regular compensation of all members in service of the system. The Public Employee Retirement Administration Commission (PERAC) approves each system's proportionate share of the annual required contribution. PERAC can accept alternative allocation methodologies and as such the MCRS has elected to use an actuarial based allocation methodology. Accordingly, each member unit's proportionate share of the total pension liability has been calculated based on each member unit's actual current employees, retirees and inactive participants. Each member's share of the MCRS's net position at year end is calculated by starting with the balance carried forward from the prior year. Each member unit is then credited with the actual required contribution received during the year along with any excess contributions received. Each member unit's share is reduced by the actual payment made to their specific retirees. Net investment income is allocated based on each member's money-weighted rate of return. All other shared expenses are allocated based on the proportionate share of the total pension liability. The difference between the total pension liability and the net position is reported as the net pension liability.

The County of Middlesex was abolished on July 11, 1997, pursuant to Chapter 48 of the Acts of 1997. This Act required that active employees of Middlesex County and Middlesex Hospital be transferred to the Commonwealth. The legislation required that County and Hospital retirees and beneficiaries remain with the County Retirement System. The Commonwealth provided a mechanism, in the legislation, that fully funded the actuarially determined liability of those retirees. At December 31, 2018, the remaining liabilities for Middlesex County and the Middlesex Hospital retirees and beneficiaries were actuarially determined and are separately identified in the MCRS's funding schedule. No assets have been allocated to cover the remaining liability and therefore the liability has been allocated to the remaining member units.

The current employees, retirees, beneficiaries and inactive participants of the MCRS have been identified and their total pension liability has been actuarially determined. For transparency purposes, the MCRS has historically paid a contribution as an employer to itself. However, with the implementation of GASB 67 & 68 the net pension liability is allocated to each member unit.

When a member unit accepts an Early Retirement Incentive Program (E.R.I. or ERIP), PERAC completes an analysis of the costs and liabilities attributable to the additional benefits payable in accordance with the ERIP. The accrued liability for the members who accept the ERIP as retirees including the ERIP less the accrued liability for the members as active employees excluding the ERIP represents the increase in accrued liability due to the ERIP. The net increase is amortized for each member unit accepting the ERIP and is separately identified in the MCRS's funding schedule. The 2003 ERIP amortization is straight line ending in fiscal 2020. The 2010 ERIP amortization is straight line ending in fiscal 2022.

NOTE B – Schedule of Pension Amounts by Employer

The Schedule of Pension Amounts by Employer presents the net pension liability, the various categories of deferred outflows of resources and deferred inflows of resources, contributions and pension expense for all participating employers including differences between expected and actual economic experience; differences between projected and actual investment earnings, net; and changes of assumptions.

The following assumption changes were reflected in the January 1, 2020 actuarial valuation.

Changes in Assumptions

- The net investment return assumption was lowered from 7.50% to 7.30%.

Changes in Plan Provisions

- As permitted by Section 19 of Chapter 188 of the Acts of 2010, the Cost of Living Adjustment base was increased from \$14,000 to \$16,000 as of July 1, 2019.