

MIDDLESEX COUNTY RETIREMENT SYSTEM

FINANCIAL STATEMENTS

YEAR ENDED DECEMBER 31, 2019

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YEAR ENDED DECEMBER 31, 2019

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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 (MCRS) as of and for the year ended December 31, 2019, 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, 2019, 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 August 20, 2020, 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.



August 20, 2020

Management's Discussion and Analysis

As management of the Middlesex County Retirement System, we offer readers of these financial statements this narrative overview and analysis of the financial activities for the year ended December 31, 2019. The System 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 System's assets exceeded its liabilities at the close of the most recent year by \$1.6 billion (net position).
- The System's net position increased by \$215.5 million for the year ended December 31, 2019.
- Total investment income was \$215.6 million; investment expenses were \$7.3 million; and net investment income was \$208.3 million.
- Total contributions were \$189 million, primarily consisting of \$129.7 million from employers, \$48.4 from members, \$6.1 million in transfers from other systems and \$4.8 million in other contributions.
- Retirement benefits, refunds, and transfers of member deductions to other systems amounted to \$178.5 million.
- Depreciation, administrative and building expenses were \$3.3 million.
- The total pension liability is \$3.2 billion as of December 31, 2019, while the net pension liability is \$1.6 billion.
- The Plan fiduciary net position as a percentage of the total pension liability is 49.45%.

Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the System 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 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 system'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 System's financial position. The System's assets exceeded liabilities by \$1.6 billion at the close of 2019.

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 system's net position include investments of \$1.5 billion, cash of \$40.1 million and current accounts receivable of \$8.1 million. The system also had capital assets, net of accumulated depreciation of \$4.7 million at year-end primarily consisting of land, an office building, and building improvements.

In 2019, the System's contributions were \$189 million while deductions were \$181.8 million which resulted in a current surplus of \$7.2 million. In 2018, the System's contributions were \$176.2 million while deductions were \$173.4 million which resulted in a prior year surplus of \$2.8 million. Therefore, for these two years the System 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 \$208.3 million in 2019, and net investment loss was \$31.1 million in 2018. The annual money weighted rate of return was 16.21% and -2.52% in 2019, and 2018, respectively. The system'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.

	2019	2018
Assets:		
Cash.....	\$ 40,093,110	\$ 39,515,665
Investments.....	1,512,849,318	1,298,037,245
Receivables.....	8,110,976	7,678,260
Capital assets, net of accumulated depreciation....	4,722,962	5,041,775
Total assets.....	1,565,776,366	1,350,272,945
Liabilities:		
Accounts payable.....	142,242	141,480
Other.....	105,862	91,700
Total liabilities.....	248,104	233,180
Net Position Restricted for Pensions.....	\$ 1,565,528,262	\$ 1,350,039,765

	2019	2018
Additions:		
Contributions:		
Member contributions..... \$	48,445,698	\$ 45,984,957
Employer contributions.....	129,763,555	120,683,218
Other contributions.....	10,764,996	9,513,101
Total contributions.....	188,974,249	176,181,276
Net investment income (loss):		
Total investment income (loss).....	215,642,272	(24,002,304)
Less, investment expenses.....	(7,319,761)	(7,072,407)
Net investment income (loss).....	208,322,511	(31,074,711)
Total additions.....	397,296,760	145,106,565
Deductions:		
Administration.....	2,754,384	2,645,568
Retirement benefits, refunds and transfers.....	178,455,859	170,144,282
Building operations and maintenance.....	279,208	309,357
Depreciation.....	318,812	318,812
Total deductions.....	181,808,263	173,418,019
Net increase (decrease) in fiduciary net position....	215,488,497	(28,311,454)
Fiduciary net position at beginning of year.....	1,350,039,765	1,378,351,219
Fiduciary net position at end of year..... \$	1,565,528,262	\$ 1,350,039,765

Requests for Information

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

STATEMENT OF FIDUCIARY NET POSITION

DECEMBER 31, 2019

Assets

Cash and cash equivalents.....	\$ 40,093,110
Investments:	
Investments in Pension Reserve Investment Trust...	1,507,621,397
Other Investments.....	<u>5,227,921</u>
Total investments.....	<u>1,512,849,318</u>
Receivables, net of allowance for uncollectibles:	
Member deductions.....	2,518,769
Member contributions.....	35,558
Employer pension appropriation.....	830,947
Reimbursements from other systems.....	3,896,021
Member make-up payments and redeposits.....	208,849
Other accounts receivable.....	<u>620,832</u>
Total Receivables.....	<u>8,110,976</u>
Capital assets, net of accumulated depreciation.....	<u>4,722,962</u>
Total Assets.....	<u>1,565,776,366</u>
Liabilities	
Accounts payable.....	142,242
Other liabilities.....	<u>105,862</u>
Total Liabilities.....	<u>248,104</u>
Net Position Restricted for Pensions.....	\$ <u><u>1,565,528,262</u></u>

See notes to financial statements.

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION

YEAR ENDED DECEMBER 31, 2019

Additions:

Contributions:

Employer pension appropriation.....	\$ 129,685,755
Member contributions.....	48,445,698
Transfers from other systems.....	6,071,001
3(8)(c) contributions from other systems.....	3,821,057
Workers' compensation settlements.....	77,800
Members' makeup payments and redeposits.....	725,233
Interest not refunded.....	<u>147,705</u>

Total contributions.....	<u>188,974,249</u>
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Net investment income:

Investment income (loss).....	215,642,272
Less: investment expense.....	<u>(7,319,761)</u>

Net investment income (loss).....	<u>208,322,511</u>
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Total additions.....	<u>397,296,760</u>
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Deductions:

Administration.....	2,754,384
Building operations and maintenance.....	279,208
Retirement benefits and refunds.....	161,550,304
Transfers to other systems.....	5,611,885
3(8)(c) transfer to other systems.....	11,293,670
Depreciation.....	<u>318,812</u>

Total deductions.....	<u>181,808,263</u>
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Net increase (decrease) in fiduciary net position.....	215,488,497
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Fiduciary net position at beginning of year.....	<u>1,350,039,765</u>
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Fiduciary net position at end of year.....	<u><u>\$ 1,565,528,262</u></u>
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See notes to financial statements.

NOTE 1 – PLAN DESCRIPTION

The Middlesex County Retirement System 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 System had 71 participating employers.

The System 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 System 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 System and all costs are borne by the System.

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 System 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 System'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 System 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:	12/31/2020
Advisory Council Member	Brian P. Curtin	Term Expires:	12/31/2021
Elected Member	John Brown	Term Expires:	12/31/2020
Elected Member	Joseph W. Kearns	Term Expires:	12/31/2022
Appointed Member	Robert Healy	Term Expires:	12/17/2020

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 System. The Board must annually file a financial statement of condition for the System with the Executive Director of PERAC.

The investment of the System'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 System has obtained a waiver for superannuation calculations allowing them to bypass this requirement. All expenses incurred by the System 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, 2019, the carrying amount of the System's deposits totaled \$38,412,396, and the bank balance totaled \$40,397,450, all of which was covered by Federal Depository Insurance.

Investments

The System's investments are as follows:

	December 31, 2019
<u>Investment Type</u>	
PRIT Pooled Funds.....	\$ 1,507,621,397
Money Market Mutual Funds.....	1,680,714
Pooled Alternative Investments...	3,421,666
Pooled Real Estate Funds.....	1,806,255
Total Investments.....	\$ 1,514,530,032

Approximately 99.5% of the Retirement System'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 0.14 to 16.03 years.

Approximately 0.3% of the System'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 0.1% of the System'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 16.21%. 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 System categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles.

The System has the following recurring fair value measurements as of December 31, 2019:

Investment Type	12/31/2019	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.....	\$ 1,680,714	\$ 1,680,714	\$ -	\$ -
Pooled Alternative Investments.....	3,421,666	-	-	3,421,666
Pooled Real Estate Funds.....	1,806,255	-	-	1,806,255
Total Investments by fair value level.....	6,908,635	\$ 1,680,714	\$ -	\$ 5,227,921
Investments measured at the net asset value (NAV):				
PRIT Investments.....	1,507,621,397			
Total Investments.....	\$ 1,514,530,032			

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. 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 (PRIM). The fair values of the positions in each investment Pool are the same as the value of each Pool's shares. The System does not have the ability to control any of the investment decisions relative to its funds in PRIT.

NOTE 6 – CAPITAL ASSETS

Capital assets are depreciated on a straight-line basis. The estimated useful lives of capital assets are as follows:

<u>Capital Asset Type</u>	<u>Estimated Useful Life (in years)</u>
Building.....	40
Building improvements....	40
Vehicles.....	5
PTG Software.....	5

Capital asset activity for the year ended December 31, 2019, was as follows:

	<u>Beginning Balance</u>	<u>Increases</u>	<u>Decreases</u>	<u>Ending Balance</u>
<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.....	50,516	-	(19,603)	30,913
PTG Software.....	729,570	-	-	729,570
Total capital assets being depreciated.....	7,296,714	-	(19,603)	7,277,111
<u>Less accumulated depreciation for:</u>				
Buildings.....	(2,171,210)	(135,428)	-	(2,306,638)
Building improvements.....	(434,651)	(27,166)	-	(461,817)
Vehicles.....	(29,907)	(10,304)	19,603	(20,608)
PTG Software.....	(291,828)	(145,915)	-	(437,743)
Total accumulated depreciation.....	(2,927,596)	(318,813)	19,603	(3,226,806)
Total capital assets being depreciated, net.....	4,369,118	(318,813)	-	4,050,305
Total capital assets, net.....	\$ 5,041,775	\$ (318,813)	\$ -	\$ 4,722,962

NOTE 7 – MEMBERSHIP

The following table represents the System's membership at December 31, 2019:

	<u>2019</u>
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>18,607</u>

NOTE 8 – ACTUARIAL VALUATION

Components of the net pension liability as of December 31, 2019, were as follows:

Total pension liability.....	\$ 3,165,584,277
The pension plan's fiduciary net position.....	<u>1,565,528,262</u>
The net pension liability.....	<u>\$ 1,600,056,015</u>
The pension plan's fiduciary net position as a percentage of the total pension liability.....	49.45%

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 back to December 31, 2019:

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 2020 through fiscal 2027, 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 previously 7.50%

Inflation rate.....	3.25%
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, as of July 1, 2019.
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 System'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 System's target asset allocation as of January 1, 2020, are summarized in the following table:

Asset Class	Long-Term Expected Asset Allocation	Long-Term Expected Real Rate of Return
Domestic equity.....	21.00%	6.15%
International developed markets equity.....	13.00%	6.78%
International emerging markets equity.....	5.00%	8.65%
Core fixed income.....	15.00%	1.11%
High-yield fixed income.....	8.00%	3.51%
Real estate.....	10.00%	4.33%
Commodities.....	4.00%	4.13%
Hedge funds, GTAA, risk parity.....	11.00%	3.19%
Private equity.....	13.00%	9.99%
	<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 System'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 position liability to changes in the discount rate. The following presents the net position liability, calculated using the discount rate of 7.30%, as well as what the net position 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, 2019.....	\$ 1,966,342,109	\$ 1,600,056,015	\$ 1,291,835,664

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. The SERS and MCRS are finalizing the amount owed after accounting for the 3(8)(c) reimbursements and COLA reimbursements which were withheld; however, a final payment to resolve the issue has yet to be made.

The net amount of these transactions is not considered significant and has not been reported in these financial statements.

NOTE 10 – IMPLEMENTATION OF GASB PRONOUNCEMENTS

In May of 2020, the GASB issued Statement #95, *Postponement of the Effective Dates of Certain Authoritative Guidance*. The objective of this Statement is to provide temporary relief to governments and other stakeholders in light of the COVID-19 pandemic. This Statement postponed the required implementation of many of the upcoming Statements for one year or longer.

There were no GASB pronouncements required to be implemented in 2019 that impacted the System's financial statements.

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

NOTE 11 – SUBSEQUENT EVENTS

Management has evaluated subsequent events through August 20, 2020, which is the date the financial statements were available to be issued.

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	December 31, 2018	December 31, 2019
Total pension liability:						
Service cost.....	\$ 52,132,389	\$ 54,217,685	\$ 56,386,392	\$ 60,585,598	\$ 64,615,910	\$ 66,816,001
Interest.....	172,094,226	179,703,272	187,359,946	200,298,121	208,614,148	216,905,943
Changes in benefit terms.....	-	-	-	-	-	29,156,339
Differences between expected and actual experience.....	-	-	7,976,453	(9,059,393)	-	46,671,873
Changes in assumptions.....	-	-	96,500,754	97,195,824	-	65,013,900
Benefit payments.....	(125,082,678)	(134,295,504)	(143,428,636)	(150,780,931)	(161,259,804)	(168,486,003)
Net change in total pension liability.....	99,143,937	99,625,453	204,794,909	198,239,219	111,970,254	256,078,053
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>	<u>2,797,535,970</u>	<u>2,909,506,224</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>	<u>\$ 2,909,506,224</u>	<u>\$ 3,165,584,277</u>
Plan fiduciary net position:						
Employer pension appropriation.....	\$ 93,368,685	\$ 99,792,641	\$ 107,032,211	\$ 115,377,205	\$ 120,614,676	\$ 129,685,755
Member contributions.....	39,048,869	40,340,741	42,015,296	44,177,815	45,984,957	48,445,698
Other contributions.....	6,405,881	8,668,378	12,337,414	10,405,773	9,581,643	10,842,796
Net investment income (loss).....	74,904,315	7,732,128	74,917,546	189,343,574	(31,074,711)	208,322,511
Administrative expenses.....	(2,996,390)	(2,824,803)	(3,062,521)	(2,619,464)	(2,645,568)	(2,754,384)
Building operations and maintenance.....	(381,899)	(302,771)	(235,667)	(306,177)	(309,357)	(279,208)
Retirement benefits and refunds.....	(125,082,678)	(134,295,504)	(143,428,636)	(150,780,931)	(161,259,804)	(168,486,003)
Other retirement deductions.....	(5,556,930)	(8,025,993)	(11,475,752)	(9,358,262)	(8,884,478)	(9,969,856)
Depreciation.....	(162,594)	(162,594)	(162,594)	(308,508)	(318,812)	(318,812)
Net increase (decrease) in fiduciary net position.....	79,547,259	10,922,223	77,937,297	195,931,025	(28,311,454)	215,488,497
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>	<u>1,378,351,219</u>	<u>1,350,039,765</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>	<u>\$ 1,350,039,765</u>	<u>\$ 1,565,528,262</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>	<u>\$ 1,559,466,459</u>	<u>\$ 1,600,056,015</u>
Plan fiduciary net position as a percentage of the total pension liability.....	47.65%	46.13%	45.49%	49.27%	46.40%	49.45%
Covered payroll.....	\$ 415,752,810	\$ 432,382,921	\$ 439,644,322	\$ 451,777,105	\$ 471,115,185	\$ 492,109,775
Net pension liability as a percentage of covered payroll.....	288.95%	298.35%	322.28%	314.13%	331.02%	325.14%

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 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, 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, 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, 2019, 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, 2019, 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, 2019, 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, 2019, and our report thereon, dated August 20, 2020, 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", with a stylized flourish at the end.

August 20, 2020

SCHEDULE OF EMPLOYER ALLOCATIONS

FOR THE YEAR ENDED DECEMBER 31, 2019

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.....	54,966,604	3.435292%
Town of Ashby.....	1,941,210	0.121321%
Town of Ashland.....	37,703,972	2.356416%
Town of Ayer.....	20,395,526	1.274676%
Town of Bedford.....	54,291,514	3.393101%
Town of Billerica.....	157,213,941	9.825527%
Town of Boxborough.....	12,546,753	0.784145%
Town of Burlington.....	137,604,549	8.599983%
Town of Carlisle.....	11,101,958	0.693848%
Town of Chelmsford.....	114,671,152	7.166696%
Town of Dracut.....	68,887,607	4.305325%
Town of Dunstable.....	3,317,391	0.207330%
Town of Groton.....	25,513,416	1.594533%
Town of Holliston.....	26,676,612	1.667230%
Town of Hopkinton.....	26,084,382	1.630217%
Town of Hudson.....	69,381,303	4.336180%
Town of Lincoln.....	27,767,333	1.735398%
Town of Littleton.....	26,056,611	1.628481%
Town of North Reading.....	52,178,434	3.261038%
Town of Pepperell.....	18,312,861	1.144514%
Town of Sherborn.....	10,450,215	0.653116%
Town of Shirley.....	9,325,501	0.582823%
Town of Stow.....	11,909,143	0.744295%
Town of Sudbury.....	64,186,721	4.011530%
Town of Tewksbury.....	107,519,124	6.719710%
Town of Townsend.....	8,637,189	0.539805%
Town of Tyngsborough.....	25,022,982	1.563882%
Town of Wayland.....	59,191,196	3.699320%
Town of Westford.....	59,489,841	3.717985%
Town of Weston.....	67,631,236	4.226804%
Town of Wilmington.....	91,654,915	5.728232%
Acton-Boxborough Regional School District.....	31,360,065	1.959935%
Acton Water Supply.....	3,732,674	0.233284%
Bedford Housing Authority.....	332,568	0.020785%
Billerica Housing Authority.....	1,647,762	0.102982%
Chelmsford Housing Authority.....	2,275,176	0.142194%
Chelmsford Water District.....	343,766	0.021485%
Dracut Housing Authority.....	2,317,408	0.144833%
Dracut Water Supply.....	3,356,809	0.209793%
East Chelmsford Water District.....	395,631	0.024726%
East Middlesex Mosquito Control.....	712,131	0.044507%
Greater Lowell Regional Vocational Technical School District.....	18,372,432	1.148237%
Groton-Dunstable Regional School District.....	13,046,678	0.815389%
Hudson Housing Authority.....	704,593	0.044036%
Lincoln-Sudbury Regional School District.....	9,126,061	0.570359%
Nashoba Valley Technical High School District.....	3,735,397	0.233454%
North Chelmsford Water District.....	1,074,652	0.067163%
North Middlesex Regional School District.....	13,400,780	0.837519%
Shawsheen Valley Regional Vocational School.....	8,870,284	0.554373%
South Middlesex Regional Vocational Technical School.....	7,027,195	0.439184%
Sudbury Water District.....	2,571,703	0.160726%
Tewksbury Housing Authority.....	1,723,517	0.107716%
Wayland Housing Authority.....	675,758	0.042233%
Hopkinton Housing Authority.....	537,329	0.033582%
Sudbury Housing Authority.....	490,188	0.030636%
Wilmington Housing Authority.....	382,144	0.023883%
Acton Housing Authority.....	907,630	0.056725%
Burlington Housing Authority.....	345,712	0.021606%
Ayer Housing Authority.....	879,177	0.054947%
Holliston Housing Authority.....	175,571	0.010973%
Littleton Housing Authority.....	621,840	0.038864%
Westford Housing Authority.....	570,710	0.035668%
Shirley Water District.....	484,781	0.030298%
Tyngsborough Housing Authority.....	528,855	0.033052%
Pepperell Housing Authority.....	251,415	0.015713%
Groton Housing Authority.....	-	0.000000%
Tyngsborough Water District.....	481,728	0.030107%
North Reading Housing Authority.....	214,226	0.013389%
West Groton Water.....	36,784	0.002299%
Ayer-Shirley Regional School District.....	4,713,693	0.294595%
Total.....	\$ 1,600,056,015	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, 2019

	Middlesex County Retirement Board	Middlesex County	Middlesex Hospital	Town of Acton
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ -	\$ -	\$ -	\$ 53,545,751
Ending net pension liability/(asset).....	\$ -	\$ -	\$ -	\$ 54,966,604
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ -	\$ -	\$ -	\$ 1,337,455
Changes of assumptions.....	-	-	-	3,785,335
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	-	-	1,201,177
Total Deferred Outflows of Resources.....	\$ -	\$ -	\$ -	\$ 6,323,967
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ -	\$ -	\$ -	\$ 124,487
Net difference between projected and actual investment earnings on pension plan investments.....	-	-	-	1,426,379
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	-	-	1,136,670
Total Deferred Inflows of Resources.....	\$ -	\$ -	\$ -	\$ 2,687,536
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 351,211	\$ -	\$ -	\$ 7,905,662
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	-	-	(182,195)
Total Employer Pension Expense.....	\$ 351,211	\$ -	\$ -	\$ 7,723,467
<u>Contributions</u>				
Statutory required contribution.....	\$ 351,211	\$ -	\$ -	\$ 4,229,480
Contribution in relation to statutory required contribution.....	(351,211)	-	-	(4,236,342)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ (6,862)
Contributions as a percentage of covered payroll.....	26.11%	0.00%	0.00%	29.09%
<u>Deferred Outflows/(Inflows) Recognized in Future Pension Expense</u>				
June 30, 2021.....	\$ -	\$ -	\$ -	\$ 1,492,083
June 30, 2022.....	-	-	-	1,213,723
June 30, 2023.....	-	-	-	934,713
June 30, 2024.....	-	-	-	(4,088)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ -	\$ -	\$ -	\$ 3,636,431
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ -	\$ -	\$ -	\$ 67,549,603
Current discount rate (7.30%).....	\$ -	\$ -	\$ -	\$ 54,966,604
1% increase (8.30%).....	\$ -	\$ -	\$ -	\$ 44,378,333
Covered Payroll.....	\$ 1,345,329	\$ -	\$ -	\$ 14,564,884
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, 2019

		Town of Ashby	Town of Ashland	Town of Ayer	Town of Bedford
<u>Net Pension Liability</u>					
Beginning net pension liability/(asset).....	\$	2,175,376	\$ 36,199,958	\$ 20,317,285	\$ 55,208,123
Ending net pension liability/(asset).....	\$	1,941,210	\$ 37,703,972	\$ 20,395,526	\$ 54,291,514
<u>Deferred Outflows of Resources</u>					
Differences between expected and actual experience.....	\$	47,234	\$ 917,418	\$ 496,267	\$ 1,321,029
Changes of assumptions.....		133,684	2,596,525	1,404,560	3,738,844
Changes in proportion and differences between employer contributions and proportionate share of contributions.....		331,267	1,487,824	672,369	390,107
Total Deferred Outflows of Resources.....	\$	<u>512,185</u>	<u>\$ 5,001,767</u>	<u>\$ 2,573,196</u>	<u>\$ 5,449,980</u>
<u>Deferred Inflows of Resources</u>					
Differences between expected and actual experience.....	\$	4,396	\$ 85,391	\$ 46,191	\$ 122,958
Net difference between projected and actual investment earnings on pension plan investments.....		50,374	978,415	529,262	1,408,861
Changes in proportion and differences between employer contributions and proportionate share of contributions.....		275,943	-	721,875	2,281,555
Total Deferred Inflows of Resources.....	\$	<u>330,713</u>	<u>\$ 1,063,806</u>	<u>\$ 1,297,328</u>	<u>\$ 3,813,374</u>
<u>Pension Expense</u>					
Proportionate share of plan pension expense.....	\$	279,198	\$ 5,422,836	\$ 2,933,420	\$ 7,808,566
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....		41,070	912,073	(90,868)	(762,273)
Total Employer Pension Expense.....	\$	<u>320,268</u>	<u>\$ 6,334,909</u>	<u>\$ 2,842,552</u>	<u>\$ 7,046,293</u>
<u>Contributions</u>					
Statutory required contribution.....	\$	237,579	\$ 3,054,672	\$ 1,687,582	\$ 4,469,908
Contribution in relation to statutory required contribution.....		(237,579)	(3,086,828)	(1,687,582)	(4,470,165)
Contribution deficiency/(excess).....	\$	<u>-</u>	<u>\$ (32,156)</u>	<u>\$ -</u>	<u>\$ (257)</u>
Contributions as a percentage of covered payroll.....		21.34%	21.29%	23.32%	22.79%
<u>Deferred Outflows/(Inflows) Recognized in Future Pension Expense</u>					
June 30, 2021.....	\$	78,474	\$ 1,925,048	\$ 504,435	\$ 921,444
June 30, 2022.....		102,402	977,590	477,440	432,124
June 30, 2023.....		34,026	907,208	352,715	645,057
June 30, 2024.....		(33,430)	128,115	(58,722)	(362,019)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$	<u>181,472</u>	<u>\$ 3,937,961</u>	<u>\$ 1,275,868</u>	<u>\$ 1,636,606</u>
<u>Discount Rate Sensitivity</u>					
1% decrease (6.30%).....	\$	2,385,593	\$ 46,335,195	\$ 25,064,486	\$ 66,719,971
Current discount rate (7.30%).....	\$	1,941,210	\$ 37,703,972	\$ 20,395,526	\$ 54,291,514
1% increase (8.30%).....	\$	1,567,273	\$ 30,441,019	\$ 16,466,716	\$ 43,833,287
Covered Payroll.....	\$	1,113,135	\$ 14,500,500	\$ 7,236,067	\$ 19,611,792
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, 2019

	Town of Billerica	Town of Boxborough	Town of Burlington	Town of Carlisle
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 150,770,372	\$ 11,266,225	\$ 127,441,167	\$ 11,157,139
Ending net pension liability/(asset).....	\$ 157,213,941	\$ 12,546,753	\$ 137,604,549	\$ 11,101,958
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 3,825,352	\$ 305,289	\$ 3,348,213	\$ 270,134
Changes of assumptions.....	10,826,707	864,046	9,476,287	764,548
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	2,472,890	1,000,048	5,600,583	613,663
Total Deferred Outflows of Resources.....	\$ 17,124,949	\$ 2,169,383	\$ 18,425,083	\$ 1,648,345
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 356,055	\$ 28,415	\$ 311,644	\$ 25,143
Net difference between projected and actual investment earnings on pension plan investments.....	4,079,690	325,587	3,570,828	288,095
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	4,147,868	102,818	2,188,101	445,502
Total Deferred Inflows of Resources.....	\$ 8,583,613	\$ 456,820	\$ 6,070,573	\$ 758,740
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 22,611,554	\$ 1,804,557	\$ 19,791,200	\$ 1,596,757
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(994,227)	407,180	710,895	154,825
Total Employer Pension Expense.....	\$ 21,617,327	\$ 2,211,737	\$ 20,502,095	\$ 1,751,582
<u>Contributions</u>				
Statutory required contribution.....	\$ 11,921,516	\$ 943,152	\$ 10,023,321	\$ 991,823
Contribution in relation to statutory required contribution.....	(11,921,516)	(943,152)	(10,023,321)	(991,823)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	32.22%	27.79%	28.31%	17.14%
<u>Deferred Outflows/(Inflows) Recognized in</u>				
<u>Future Pension Expense</u>				
June 30, 2021.....	\$ 4,273,499	\$ 775,140	\$ 5,117,452	\$ 416,985
June 30, 2022.....	1,465,619	395,572	3,145,891	207,138
June 30, 2023.....	2,427,112	376,445	3,035,635	300,298
June 30, 2024.....	375,106	165,406	1,055,532	(34,816)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 8,541,336	\$ 1,712,563	\$ 12,354,510	\$ 889,605
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 193,203,481	\$ 15,418,966	\$ 169,105,092	\$ 13,643,427
Current discount rate (7.30%).....	\$ 157,213,941	\$ 12,546,753	\$ 137,604,549	\$ 11,101,958
1% increase (8.30%).....	\$ 126,929,664	\$ 10,129,860	\$ 111,097,650	\$ 8,963,377
Covered Payroll.....	\$ 37,001,063	\$ 3,393,712	\$ 35,400,619	\$ 5,787,456
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, 2019

	Town of Chelmsford	Town of Dracut	Town of Dunstable	Town of Groton
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 110,995,199	\$ 65,601,775	\$ 2,958,745	\$ 23,290,688
Ending net pension liability/(asset).....	\$ 114,671,152	\$ 68,887,607	\$ 3,317,391	\$ 25,513,416
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 2,790,195	\$ 1,676,183	\$ 80,719	\$ 620,794
Changes of assumptions.....	7,896,954	4,744,020	228,456	1,757,009
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,872,541	1,940,809	416,355	1,421,500
Total Deferred Outflows of Resources.....	\$ 12,559,690	\$ 8,361,012	\$ 725,530	\$ 3,799,303
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 259,704	\$ 156,014	\$ 7,513	\$ 57,782
Net difference between projected and actual investment earnings on pension plan investments.....	2,975,708	1,787,630	86,086	662,071
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	2,182,213	708,170	78,903	599,117
Total Deferred Inflows of Resources.....	\$ 5,417,625	\$ 2,651,814	\$ 172,502	\$ 1,318,970
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 16,492,767	\$ 9,907,873	\$ 477,129	\$ 3,669,509
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(494,360)	458,182	89,762	101,673
Total Employer Pension Expense.....	\$ 15,998,407	\$ 10,366,055	\$ 566,891	\$ 3,771,182
<u>Contributions</u>				
Statutory required contribution.....	\$ 8,872,242	\$ 5,348,633	\$ 274,244	\$ 1,973,053
Contribution in relation to statutory required contribution.....	(9,272,242)	(5,348,633)	(275,072)	(1,973,053)
Contribution deficiency/(excess).....	\$ (400,000)	\$ -	\$ (828)	\$ -
Contributions as a percentage of covered payroll.....	33.21%	32.01%	19.04%	24.75%
<u>Deferred Outflows/(Inflows) Recognized in</u>				
<u>Future Pension Expense</u>				
June 30, 2021.....	\$ 3,340,143	\$ 2,579,458	\$ 178,781	\$ 921,879
June 30, 2022.....	2,014,750	1,547,431	191,209	552,548
June 30, 2023.....	1,581,451	1,310,223	130,573	726,736
June 30, 2024.....	205,721	272,086	52,465	279,170
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 7,142,065	\$ 5,709,198	\$ 553,028	\$ 2,480,333
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 140,921,763	\$ 84,657,413	\$ 4,076,811	\$ 31,353,967
Current discount rate (7.30%).....	\$ 114,671,152	\$ 68,887,607	\$ 3,317,391	\$ 25,513,416
1% increase (8.30%).....	\$ 92,581,936	\$ 55,617,720	\$ 2,678,359	\$ 20,598,742
Covered Payroll.....	\$ 27,918,845	\$ 16,709,878	\$ 1,444,438	\$ 7,971,673
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, 2019

	Town of Holliston	Town of Hopkinton	Town of Hudson	Town of Lincoln
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 27,349,059	\$ 25,369,330	\$ 69,719,052	\$ 27,722,484
Ending net pension liability/(asset).....	\$ 26,676,612	\$ 26,084,382	\$ 69,381,303	\$ 27,767,333
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 649,099	\$ 634,689	\$ 1,688,196	\$ 675,639
Changes of assumptions.....	1,837,114	1,796,329	4,778,019	1,912,228
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	940,604	1,846,714	547,946	250,027
Total Deferred Outflows of Resources.....	\$ 3,426,817	\$ 4,277,732	\$ 7,014,161	\$ 2,837,894
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 60,416	\$ 59,075	\$ 157,133	\$ 62,887
Net difference between projected and actual investment earnings on pension plan investments.....	692,256	676,888	1,800,440	720,560
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,390,777	270,816	1,589,249	821,479
Total Deferred Inflows of Resources.....	\$ 2,143,449	\$ 1,006,779	\$ 3,546,822	\$ 1,604,926
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 3,836,808	\$ 3,751,629	\$ 9,978,880	\$ 3,993,682
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(112,665)	815,351	(164,006)	(193,557)
Total Employer Pension Expense.....	\$ 3,724,143	\$ 4,566,980	\$ 9,814,874	\$ 3,800,125
<u>Contributions</u>				
Statutory required contribution.....	\$ 2,250,407	\$ 2,335,018	\$ 5,798,334	\$ 2,274,023
Contribution in relation to statutory required contribution.....	(2,332,595)	(2,341,404)	(5,804,347)	(2,274,023)
Contribution deficiency/(excess).....	\$ (82,188)	\$ (6,386)	\$ (6,013)	\$ -
Contributions as a percentage of covered payroll.....	20.49%	14.37%	26.77%	21.56%
<u>Deferred Outflows/(Inflows) Recognized in Future Pension Expense</u>				
June 30, 2021.....	\$ 583,903	\$ 1,308,351	\$ 1,913,022	\$ 605,959
June 30, 2022.....	408,547	896,684	929,986	276,095
June 30, 2023.....	481,307	994,351	919,447	446,601
June 30, 2024.....	(190,389)	71,567	(295,116)	(95,687)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 1,283,368	\$ 3,270,953	\$ 3,467,339	\$ 1,232,968
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 32,783,443	\$ 32,055,639	\$ 85,264,126	\$ 34,123,853
Current discount rate (7.30%).....	\$ 26,676,612	\$ 26,084,382	\$ 69,381,303	\$ 27,767,333
1% increase (8.30%).....	\$ 21,537,870	\$ 21,059,722	\$ 56,016,315	\$ 22,418,485
Covered Payroll.....	\$ 11,384,973	\$ 16,296,923	\$ 21,683,348	\$ 10,549,034
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, 2019

	Town of Littleton	Town of North Reading	Town of Pepperell	Town of Sherborn
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 25,332,249	\$ 52,331,338	\$ 17,953,081	\$ 11,725,506
Ending net pension liability/(asset).....	\$ 26,056,611	\$ 52,178,434	\$ 18,312,861	\$ 10,450,215
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 634,013	\$ 1,269,613	\$ 445,591	\$ 254,276
Changes of assumptions.....	1,794,417	3,593,325	1,261,135	719,665
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	2,836,447	167,040	446,020	317,310
Total Deferred Outflows of Resources.....	\$ 5,264,877	\$ 5,029,978	\$ 2,152,746	\$ 1,291,251
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 59,012	\$ 118,172	\$ 41,474	\$ 23,667
Net difference between projected and actual investment earnings on pension plan investments.....	676,167	1,354,026	475,217	271,182
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	921,507	1,731,036	261,895	1,286,104
Total Deferred Inflows of Resources.....	\$ 1,656,686	\$ 3,203,234	\$ 778,586	\$ 1,580,953
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 3,747,635	\$ 7,504,649	\$ 2,633,877	\$ 1,503,019
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	894,825	(626,051)	381,916	(281,130)
Total Employer Pension Expense.....	\$ 4,642,460	\$ 6,878,598	\$ 3,015,793	\$ 1,221,889
<u>Contributions</u>				
Statutory required contribution.....	\$ 2,206,947	\$ 4,161,014	\$ 1,454,092	\$ 1,018,037
Contribution in relation to statutory required contribution.....	(3,086,111)	(4,161,014)	(1,455,491)	(1,018,037)
Contribution deficiency/(excess).....	\$ (879,164)	\$ -	\$ (1,399)	\$ -
Contributions as a percentage of covered payroll.....	23.53%	30.25%	29.99%	23.23%
<u>Deferred Outflows/(Inflows) Recognized in Future Pension Expense</u>				
June 30, 2021.....	\$ 1,494,286	\$ 1,061,788	\$ 889,463	\$ 16,233
June 30, 2022.....	881,183	488,305	210,603	(58,114)
June 30, 2023.....	1,009,987	521,335	286,963	(13,027)
June 30, 2024.....	222,735	(244,684)	(12,869)	(234,794)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 3,608,191	\$ 1,826,744	\$ 1,374,160	\$ (289,702)
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 32,021,511	\$ 64,123,163	\$ 22,505,056	\$ 12,842,487
Current discount rate (7.30%).....	\$ 26,056,611	\$ 52,178,434	\$ 18,312,861	\$ 10,450,215
1% increase (8.30%).....	\$ 21,037,301	\$ 42,127,251	\$ 14,785,237	\$ 8,437,180
Covered Payroll.....	\$ 13,118,371	\$ 13,756,949	\$ 4,853,532	\$ 4,382,868
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, 2019

	Town of Shirley	Town of Stow	Town of Sudbury	Town of Tewksbury
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 9,113,056	\$ 11,645,337	\$ 63,931,576	\$ 104,461,551
Ending net pension liability/(asset).....	\$ 9,325,501	\$ 11,909,143	\$ 64,186,721	\$ 107,519,124
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 226,909	\$ 289,775	\$ 1,561,800	\$ 2,616,171
Changes of assumptions.....	642,211	820,136	4,420,288	7,404,421
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	130,529	138,173	829,093	1,803,116
Total Deferred Outflows of Resources.....	\$ <u>999,649</u>	\$ <u>1,248,084</u>	\$ <u>6,811,181</u>	\$ <u>11,823,708</u>
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 21,120	\$ 26,971	\$ 145,368	\$ 243,506
Net difference between projected and actual investment earnings on pension plan investments.....	241,996	309,041	1,665,641	2,790,113
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	461,149	76,929	2,111,917	2,027,650
Total Deferred Inflows of Resources.....	\$ <u>724,265</u>	\$ <u>412,941</u>	\$ <u>3,922,926</u>	\$ <u>5,061,269</u>
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 1,341,255	\$ 1,712,852	\$ 9,231,760	\$ 15,464,115
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(262,490)	67,330	(466,045)	(206,362)
Total Employer Pension Expense.....	\$ <u>1,078,765</u>	\$ <u>1,780,182</u>	\$ <u>8,765,715</u>	\$ <u>15,257,753</u>
<u>Contributions</u>				
Statutory required contribution.....	\$ 785,020	\$ 957,695	\$ 5,026,152	\$ 8,545,236
Contribution in relation to statutory required contribution.....	(785,020)	(957,695)	(5,026,152)	(8,553,198)
Contribution deficiency/(excess).....	\$ <u>-</u>	\$ <u>-</u>	\$ <u>-</u>	\$ <u>(7,962)</u>
Contributions as a percentage of covered payroll.....	39.11%	27.06%	28.13%	36.79%
<u>Deferred Outflows/(Inflows) Recognized in</u>				
<u>Future Pension Expense</u>				
June 30, 2021.....	\$ 32,089	\$ 420,012	\$ 1,633,379	\$ 3,426,677
June 30, 2022.....	72,978	194,011	858,571	1,902,851
June 30, 2023.....	162,871	221,915	636,481	1,337,797
June 30, 2024.....	7,446	(795)	(240,176)	95,114
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ <u>275,384</u>	\$ <u>835,143</u>	\$ <u>2,888,255</u>	\$ <u>6,762,439</u>
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 11,460,302	\$ 14,635,393	\$ 78,880,396	\$ 132,132,487
Current discount rate (7.30%).....	\$ 9,325,501	\$ 11,909,143	\$ 64,186,721	\$ 107,519,124
1% increase (8.30%).....	\$ 7,529,121	\$ 9,615,073	\$ 51,822,370	\$ 86,807,610
Covered Payroll.....	\$ 2,007,108	\$ 3,539,435	\$ 17,867,775	\$ 23,249,584
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, 2019

	Town of Townsend	Town of Tyngsborough	Town of Wayland	Town of Westford
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 9,256,011	\$ 23,277,997	\$ 59,255,947	\$ 59,376,424
Ending net pension liability/(asset).....	\$ 8,637,189	\$ 25,022,982	\$ 59,191,196	\$ 59,489,841
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 210,161	\$ 608,863	\$ 1,440,249	\$ 1,447,515
Changes of assumptions.....	594,809	1,723,235	4,076,266	4,096,833
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	580,163	1,624,260	253,730	2,155,101
Total Deferred Outflows of Resources.....	<u>\$ 1,385,133</u>	<u>\$ 3,956,358</u>	<u>\$ 5,770,245</u>	<u>\$ 7,699,449</u>
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 19,561	\$ 56,671	\$ 134,054	\$ 134,731
Net difference between projected and actual investment earnings on pension plan investments.....	224,134	649,344	1,536,007	1,543,757
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	992,365	717,689	2,297,638	1,463,064
Total Deferred Inflows of Resources.....	<u>\$ 1,236,060</u>	<u>\$ 1,423,704</u>	<u>\$ 3,967,699</u>	<u>\$ 3,141,552</u>
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 1,242,258	\$ 3,598,971	\$ 8,513,271	\$ 8,556,224
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	12,398	543,313	(1,024,928)	666,524
Total Employer Pension Expense.....	<u>\$ 1,254,656</u>	<u>\$ 4,142,284</u>	<u>\$ 7,488,343</u>	<u>\$ 9,222,748</u>
<u>Contributions</u>				
Statutory required contribution.....	\$ 854,966	\$ 2,014,919	\$ 4,862,852	\$ 5,152,765
Contribution in relation to statutory required contribution.....	(854,966)	(2,018,021)	(4,863,333)	(5,154,547)
Contribution deficiency/(excess).....	<u>\$ -</u>	<u>\$ (3,102)</u>	<u>\$ (481)</u>	<u>\$ (1,782)</u>
Contributions as a percentage of covered payroll.....	23.95%	23.11%	24.25%	19.92%
<u>Deferred Outflows/(Inflows) Recognized in Future Pension Expense</u>				
June 30, 2021.....	\$ 219,985	\$ 1,223,434	\$ 791,218	\$ 2,209,540
June 30, 2022.....	(71,213)	377,685	416,360	1,137,700
June 30, 2023.....	113,772	718,993	824,469	1,356,041
June 30, 2024.....	(113,471)	212,542	(229,501)	(145,384)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	<u>\$ 149,073</u>	<u>\$ 2,532,654</u>	<u>\$ 1,802,546</u>	<u>\$ 4,557,897</u>
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 10,614,421	\$ 30,751,263	\$ 72,741,292	\$ 73,108,303
Current discount rate (7.30%).....	\$ 8,637,189	\$ 25,022,982	\$ 59,191,196	\$ 59,489,841
1% increase (8.30%).....	\$ 6,973,399	\$ 20,202,781	\$ 47,789,138	\$ 48,030,255
Covered Payroll.....	\$ 3,570,490	\$ 8,730,626	\$ 20,058,574	\$ 25,881,068
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, 2019

	Town of Weston	Town of Wilmington	Acton- Boxborough Regional School District	Acton Water Supply
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 66,869,588	\$ 90,145,064	\$ 29,957,174	\$ 3,740,627
Ending net pension liability/(asset).....	\$ 67,631,236	\$ 91,654,915	\$ 31,360,065	\$ 3,732,674
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 1,645,613	\$ 2,230,160	\$ 763,058	\$ 90,824
Changes of assumptions.....	4,657,499	6,311,915	2,159,645	257,055
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	-	1,233,552	1,024,054	80,339
Total Deferred Outflows of Resources.....	\$ 6,303,112	\$ 9,775,627	\$ 3,946,757	\$ 428,218
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 153,169	\$ 207,577	\$ 71,023	\$ 8,454
Net difference between projected and actual investment earnings on pension plan investments.....	1,755,025	2,378,438	813,791	96,863
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	2,209,404	1,359,953	141,912	205,041
Total Deferred Inflows of Resources.....	\$ 4,117,598	\$ 3,945,968	\$ 1,026,726	\$ 310,358
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 9,727,174	\$ 13,182,419	\$ 4,510,412	\$ 536,858
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(1,066,473)	(78,801)	477,365	(16,667)
Total Employer Pension Expense.....	\$ 8,660,701	\$ 13,103,618	\$ 4,987,777	\$ 520,191
<u>Contributions</u>				
Statutory required contribution.....	\$ 5,287,887	\$ 7,080,174	\$ 2,615,376	\$ 243,164
Contribution in relation to statutory required contribution.....	(5,287,887)	(8,088,259)	(2,615,376)	(243,164)
Contribution deficiency/(excess).....	\$ -	\$ (1,008,085)	\$ -	\$ -
Contributions as a percentage of covered payroll.....	25.69%	34.36%	17.61%	19.84%
<u>Deferred Outflows/(Inflows) Recognized in Future Pension Expense</u>				
June 30, 2021.....	\$ 1,125,437	\$ 2,923,985	\$ 1,390,012	\$ 101,838
June 30, 2022.....	361,300	1,517,309	651,181	16,801
June 30, 2023.....	865,255	1,344,099	735,506	27,092
June 30, 2024.....	(166,478)	44,266	143,332	(27,871)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 2,185,514	\$ 5,829,659	\$ 2,920,031	\$ 117,860
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 83,113,432	\$ 112,636,631	\$ 38,539,036	\$ 4,587,161
Current discount rate (7.30%).....	\$ 67,631,236	\$ 91,654,915	\$ 31,360,065	\$ 3,732,674
1% increase (8.30%).....	\$ 54,603,365	\$ 73,999,339	\$ 25,319,145	\$ 3,013,645
Covered Payroll.....	\$ 20,581,451	\$ 23,538,426	\$ 14,855,796	\$ 1,225,561
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, 2019

	Bedford Housing Authority	Billerica Housing Authority	Chelmsford Housing Authority	Chelmsford Water District
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 341,646	\$ 1,441,037	\$ 2,441,133	\$ 708,793
Ending net pension liability/(asset).....	\$ 332,568	\$ 1,647,762	\$ 2,275,176	\$ 343,766
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 8,092	\$ 40,094	\$ 55,360	\$ 8,365
Changes of assumptions.....	22,903	113,475	156,682	23,674
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	13,638	152,286	532,561	794,334
Total Deferred Outflows of Resources.....	\$ 44,633	\$ 305,855	\$ 744,603	\$ 826,373
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 753	\$ 3,732	\$ 5,153	\$ 779
Net difference between projected and actual investment earnings on pension plan investments.....	8,630	42,759	59,041	8,921
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	13,959	55,943	175,437	611,103
Total Deferred Inflows of Resources.....	\$ 23,342	\$ 102,434	\$ 239,631	\$ 620,803
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 47,832	\$ 236,992	\$ 327,231	\$ 49,443
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	5,658	38,724	182,613	167,292
Total Employer Pension Expense.....	\$ 53,490	\$ 275,716	\$ 509,844	\$ 216,735
<u>Contributions</u>				
Statutory required contribution.....	\$ 32,373	\$ 107,339	\$ 225,881	\$ 63,546
Contribution in relation to statutory required contribution.....	(32,373)	(107,339)	(323,132)	(63,546)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ (97,251)	\$ -
Contributions as a percentage of covered payroll.....	19.26%	26.92%	12.37%	4.52%
<u>Deferred Outflows/(Inflows) Recognized in Future Pension Expense</u>				
June 30, 2021.....	\$ 14,254	\$ 92,751	\$ 239,790	\$ 121,793
June 30, 2022.....	4,644	41,997	214,569	59,342
June 30, 2023.....	4,232	43,355	61,449	83,960
June 30, 2024.....	(1,839)	25,318	(10,836)	(59,525)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 21,291	\$ 203,421	\$ 504,972	\$ 205,570
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 408,700	\$ 2,024,969	\$ 2,796,011	\$ 422,461
Current discount rate (7.30%).....	\$ 332,568	\$ 1,647,762	\$ 2,275,176	\$ 343,766
1% increase (8.30%).....	\$ 268,505	\$ 1,330,352	\$ 1,836,907	\$ 277,546
Covered Payroll.....	\$ 168,089	\$ 398,705	\$ 2,612,882	\$ 1,405,409
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, 2019

	Dracut Housing Authority	Dracut Water Supply	East Chelmsford Water District	East Middlesex Mosquito Control
Net Pension Liability				
Beginning net pension liability/(asset).....	\$ 2,173,260	\$ 3,288,228	\$ 381,924	\$ 662,694
Ending net pension liability/(asset).....	\$ 2,317,408	\$ 3,356,809	\$ 395,631	\$ 712,131
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 56,387	\$ 81,678	\$ 9,627	\$ 17,328
Changes of assumptions.....	159,591	231,170	27,246	49,042
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	114,604	171,415	24,255	82,980
Total Deferred Outflows of Resources.....	\$ 330,582	\$ 484,263	\$ 61,128	\$ 149,350
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 5,248	\$ 7,602	\$ 896	\$ 1,613
Net difference between projected and actual investment earnings on pension plan investments.....	60,137	87,109	10,267	18,480
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	127,540	175,593	1,818	39,158
Total Deferred Inflows of Resources.....	\$ 192,925	\$ 270,304	\$ 12,981	\$ 59,251
Pension Expense				
Proportionate share of plan pension expense.....	\$ 333,305	\$ 482,798	\$ 56,902	\$ 102,424
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(26,567)	(6,442)	11,847	24,318
Total Employer Pension Expense.....	\$ 306,738	\$ 476,356	\$ 68,749	\$ 126,742
Contributions				
Statutory required contribution.....	\$ 150,496	\$ 229,578	\$ 33,752	\$ 48,048
Contribution in relation to statutory required contribution.....	(150,496)	(229,578)	(33,752)	(48,048)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	36.78%	32.38%	15.68%	13.23%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2021.....	\$ 60,299	\$ 110,802	\$ 20,236	\$ 34,916
June 30, 2022.....	41,580	88,688	12,920	18,356
June 30, 2023.....	26,498	23,801	13,745	32,694
June 30, 2024.....	9,280	(9,332)	1,246	4,133
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 137,657	\$ 213,959	\$ 48,147	\$ 90,099
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 2,847,911	\$ 4,125,252	\$ 486,199	\$ 875,153
Current discount rate (7.30%).....	\$ 2,317,408	\$ 3,356,809	\$ 395,631	\$ 712,131
1% increase (8.30%).....	\$ 1,871,003	\$ 2,710,184	\$ 319,420	\$ 574,953
Covered Payroll.....	\$ 409,209	\$ 709,022	\$ 215,299	\$ 363,040
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, 2019

	Greater Lowell Regional Vocation Technical School District	Groton- Dunstable Regional School District	Hudson Housing Authority	Lincoln- Sudbury Regional School District
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 16,800,249	\$ 12,305,499	\$ 1,223,133	\$ 9,231,680
Ending net pension liability/(asset).....	\$ 18,372,432	\$ 13,046,678	\$ 704,593	\$ 9,126,061
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 447,041	\$ 317,454	\$ 17,144	\$ 222,057
Changes of assumptions.....	1,265,238	898,474	48,523	628,476
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,039,315	862,403	38,077	102,068
Total Deferred Outflows of Resources.....	\$ 2,751,594	\$ 2,078,331	\$ 103,744	\$ 952,601
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 41,609	\$ 29,548	\$ 1,596	\$ 20,668
Net difference between projected and actual investment earnings on pension plan investments.....	476,763	338,560	18,284	236,821
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	682,815	55,874	528,413	472,168
Total Deferred Inflows of Resources.....	\$ 1,201,187	\$ 423,982	\$ 548,293	\$ 729,657
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 2,642,445	\$ 1,876,460	\$ 101,339	\$ 1,312,571
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(76,011)	455,058	(172,625)	(177,490)
Total Employer Pension Expense.....	\$ 2,566,434	\$ 2,331,518	\$ (71,286)	\$ 1,135,081
<u>Contributions</u>				
Statutory required contribution.....	\$ 1,215,091	\$ 1,022,579	\$ 91,276	\$ 704,071
Contribution in relation to statutory required contribution.....	(1,215,091)	(1,022,579)	(91,276)	(704,071)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	28.26%	26.23%	25.54%	24.38%
<u>Deferred Outflows/(Inflows) Recognized in Future Pension Expense</u>				
June 30, 2021.....	\$ 529,355	\$ 780,455	\$ (141,926)	\$ 127,381
June 30, 2022.....	471,779	421,681	(131,773)	90,538
June 30, 2023.....	394,468	377,490	(82,144)	66,673
June 30, 2024.....	154,805	74,723	(88,706)	(61,648)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 1,550,407	\$ 1,654,349	\$ (444,549)	\$ 222,944
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 22,578,264	\$ 16,033,334	\$ 865,889	\$ 11,215,206
Current discount rate (7.30%).....	\$ 18,372,432	\$ 13,046,678	\$ 704,593	\$ 9,126,061
1% increase (8.30%).....	\$ 14,833,333	\$ 10,533,484	\$ 568,867	\$ 7,368,099
Covered Payroll.....	\$ 4,300,319	\$ 3,898,859	\$ 357,369	\$ 2,887,889
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, 2019

	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).....	\$ 3,632,610	\$ 1,048,622	\$ 12,930,464	\$ 8,565,024
Ending net pension liability/(asset).....	\$ 3,735,397	\$ 1,074,652	\$ 13,400,780	\$ 8,870,284
Deferred Outflows of Resources				
Differences between expected and actual experience.....	\$ 90,890	\$ 26,149	\$ 326,070	\$ 215,833
Changes of assumptions.....	257,242	74,007	922,859	610,862
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	97,183	116,449	181,918	122,522
Total Deferred Outflows of Resources.....	\$ 445,315	\$ 216,605	\$ 1,430,847	\$ 949,217
Deferred Inflows of Resources				
Differences between expected and actual experience.....	\$ 8,460	\$ 2,434	\$ 30,350	\$ 20,089
Net difference between projected and actual investment earnings on pension plan investments.....	96,933	27,887	347,749	230,183
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	170,076	70,684	169,223	331,874
Total Deferred Inflows of Resources.....	\$ 275,469	\$ 101,005	\$ 547,322	\$ 582,146
Pension Expense				
Proportionate share of plan pension expense.....	\$ 537,250	\$ 154,563	\$ 1,927,390	\$ 1,275,783
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(62,505)	17,184	(24,318)	(99,529)
Total Employer Pension Expense.....	\$ 474,745	\$ 171,747	\$ 1,903,072	\$ 1,176,254
Contributions				
Statutory required contribution.....	\$ 302,392	\$ 67,121	\$ 1,049,643	\$ 675,105
Contribution in relation to statutory required contribution.....	(302,392)	(67,121)	(1,049,643)	(675,105)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	31.77%	10.46%	19.87%	25.62%
Deferred Outflows/(Inflows) Recognized in Future Pension Expense				
June 30, 2021.....	\$ 79,023	\$ 39,668	\$ 364,820	\$ 199,393
June 30, 2022.....	60,952	46,119	219,414	22,833
June 30, 2023.....	26,134	33,345	274,748	133,618
June 30, 2024.....	3,737	(3,532)	24,543	11,227
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 169,846	\$ 115,600	\$ 883,525	\$ 367,071
Discount Rate Sensitivity				
1% decrease (6.30%).....	\$ 4,590,507	\$ 1,320,662	\$ 16,468,497	\$ 10,900,876
Current discount rate (7.30%).....	\$ 3,735,397	\$ 1,074,652	\$ 13,400,780	\$ 8,870,284
1% increase (8.30%).....	\$ 3,015,844	\$ 867,641	\$ 10,819,375	\$ 7,161,593
Covered Payroll.....	\$ 951,899	\$ 641,852	\$ 5,281,936	\$ 2,634,703

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, 2019

	South Middlesex Regional Vocational Technical School	Sudbury Water District	Tewksbury Housing Authority	Wayland Housing Authority
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 7,146,118	\$ 2,025,843	\$ 1,647,987	\$ 719,713
Ending net pension liability/(asset).....	\$ 7,027,195	\$ 2,571,703	\$ 1,723,517	\$ 675,758
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 170,987	\$ 62,575	\$ 41,937	\$ 16,443
Changes of assumptions.....	483,935	177,103	118,692	46,537
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	54,348	495,141	57,310	45,269
Total Deferred Outflows of Resources.....	\$ 709,270	\$ 734,819	\$ 217,939	\$ 108,249
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 15,915	\$ 5,824	\$ 3,903	\$ 1,530
Net difference between projected and actual investment earnings on pension plan investments.....	182,355	66,735	44,725	17,536
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	509,543	206,918	22,026	58,226
Total Deferred Inflows of Resources.....	\$ 707,813	\$ 279,477	\$ 70,654	\$ 77,292
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 1,010,698	\$ 369,880	\$ 247,888	\$ 97,192
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(167,189)	89,495	24,548	15,705
Total Employer Pension Expense.....	\$ 843,509	\$ 459,375	\$ 272,436	\$ 112,897
<u>Contributions</u>				
Statutory required contribution.....	\$ 559,609	\$ 131,864	\$ 133,342	\$ 51,279
Contribution in relation to statutory required contribution.....	(559,609)	(131,864)	(133,342)	(51,279)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	25.74%	12.79%	33.22%	16.80%
<u>Deferred Outflows/(Inflows) Recognized in Future Pension Expense</u>				
June 30, 2021.....	\$ 50,982	\$ 171,579	\$ 78,520	\$ 31,729
June 30, 2022.....	(73,506)	74,930	33,170	4,163
June 30, 2023.....	74,686	136,509	30,077	6,267
June 30, 2024.....	(50,705)	72,324	5,518	(11,202)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 1,457	\$ 455,342	\$ 147,285	\$ 30,957
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 8,635,866	\$ 3,160,419	\$ 2,118,066	\$ 830,453
Current discount rate (7.30%).....	\$ 7,027,195	\$ 2,571,703	\$ 1,723,517	\$ 675,758
1% increase (8.30%).....	\$ 5,673,540	\$ 2,076,313	\$ 1,391,514	\$ 545,586
Covered Payroll.....	\$ 2,173,995	\$ 1,031,163	\$ 401,435	\$ 305,259
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, 2019

	Hopkinton Housing Authority	Sudbury Housing Authority	Wilmington Housing Authority	Acton Housing Authority
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 512,474	\$ 485,854	\$ 365,221	\$ 844,128
Ending net pension liability/(asset).....	\$ 537,329	\$ 490,188	\$ 382,144	\$ 907,630
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 13,074	\$ 11,927	\$ 9,298	\$ 22,085
Changes of assumptions.....	37,004	33,757	26,317	62,505
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	17,420	41,148	18,834	67,286
Total Deferred Outflows of Resources.....	\$ <u>67,498</u>	\$ <u>86,832</u>	\$ <u>54,449</u>	\$ <u>151,876</u>
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 1,217	\$ 1,110	\$ 865	\$ 2,056
Net difference between projected and actual investment earnings on pension plan investments.....	13,944	12,720	9,917	23,553
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	28,290	13,498	1,861	100,981
Total Deferred Inflows of Resources.....	\$ <u>43,451</u>	\$ <u>27,328</u>	\$ <u>12,643</u>	\$ <u>126,590</u>
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 77,282	\$ 70,502	\$ 54,962	\$ 130,542
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(1,903)	25,890	8,994	(14,727)
Total Employer Pension Expense.....	\$ <u>75,379</u>	\$ <u>96,392</u>	\$ <u>63,956</u>	\$ <u>115,815</u>
<u>Contributions</u>				
Statutory required contribution.....	\$ 37,224	\$ 40,316	\$ 33,927	\$ 60,962
Contribution in relation to statutory required contribution.....	(37,224)	(40,316)	(33,927)	(60,962)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	48.59%	39.57%	24.27%	15.35%
<u>Deferred Outflows/(Inflows) Recognized in</u>				
<u>Future Pension Expense</u>				
June 30, 2021.....	\$ 11,386	\$ 36,595	\$ 20,352	\$ 9,444
June 30, 2022.....	205	17,090	11,005	(16,833)
June 30, 2023.....	11,371	6,841	8,321	27,376
June 30, 2024.....	1,085	(1,022)	2,128	5,299
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ <u>24,047</u>	\$ <u>59,504</u>	\$ <u>41,806</u>	\$ <u>25,286</u>
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 660,335	\$ 602,402	\$ 469,625	\$ 1,115,405
Current discount rate (7.30%).....	\$ 537,329	\$ 490,188	\$ 382,144	\$ 907,630
1% increase (8.30%).....	\$ 433,823	\$ 395,763	\$ 308,531	\$ 732,792
Covered Payroll.....	\$ 76,603	\$ 101,882	\$ 139,797	\$ 397,270
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, 2019

	Burlington Housing Authority	Ayer Housing Authority	Holliston Housing Authority	Littleton Housing Authority
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 145,929	\$ 800,823	\$ 158,430	\$ 487,306
Ending net pension liability/(asset).....	\$ 345,712	\$ 879,177	\$ 175,571	\$ 621,840
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 8,412	\$ 21,392	\$ 4,272	\$ 15,131
Changes of assumptions.....	23,808	60,545	12,091	42,824
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	183,310	292,180	18,703	99,236
Total Deferred Outflows of Resources.....	\$ 215,530	\$ 374,117	\$ 35,066	\$ 157,191
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 783	\$ 1,991	\$ 398	\$ 1,408
Net difference between projected and actual investment earnings on pension plan investments.....	8,971	22,815	4,556	16,137
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	27,524	460,826	31,815	20,675
Total Deferred Inflows of Resources.....	\$ 37,278	\$ 485,632	\$ 36,769	\$ 38,220
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 49,722	\$ 126,449	\$ 25,251	\$ 89,438
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	46,273	25,164	(6,999)	23,697
Total Employer Pension Expense.....	\$ 95,995	\$ 151,613	\$ 18,252	\$ 113,135
<u>Contributions</u>				
Statutory required contribution.....	\$ 13,577	\$ 57,680	\$ 14,815	\$ 40,463
Contribution in relation to statutory required contribution.....	(13,577)	(57,680)	(14,815)	(40,463)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	6.53%	49.32%	18.27%	103.14%
<u>Deferred Outflows/(Inflows) Recognized in</u>				
<u>Future Pension Expense</u>				
June 30, 2021.....	\$ 45,067	\$ 52,402	\$ (4,852)	\$ 45,047
June 30, 2022.....	51,050	(184,962)	(6,628)	27,672
June 30, 2023.....	50,623	13,172	7,278	26,592
June 30, 2024.....	31,512	7,873	2,499	19,660
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 178,252	\$ (111,515)	\$ (1,703)	\$ 118,971
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 424,853	\$ 1,080,439	\$ 215,763	\$ 764,192
Current discount rate (7.30%).....	\$ 345,712	\$ 879,177	\$ 175,571	\$ 621,840
1% increase (8.30%).....	\$ 279,117	\$ 709,820	\$ 141,751	\$ 502,054
Covered Payroll.....	\$ 207,760	\$ 116,945	\$ 81,096	\$ 39,232
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, 2019

	Westford Housing Authority	Shirley Water District	Tyngsborough Housing Authority	Pepperell Housing Authority
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ 561,187	\$ 406,103	\$ 526,614	\$ 187,001
Ending net pension liability/(asset).....	\$ 570,710	\$ 484,781	\$ 528,855	\$ 251,415
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ 13,887	\$ 11,796	\$ 12,868	\$ 6,117
Changes of assumptions.....	39,303	33,385	36,420	17,314
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	19,196	66,680	17,436	55,577
Total Deferred Outflows of Resources.....	\$ 72,386	\$ 111,861	\$ 66,724	\$ 79,008
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ 1,293	\$ 1,098	\$ 1,198	\$ 569
Net difference between projected and actual investment earnings on pension plan investments.....	14,810	12,580	13,724	6,524
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	7,543	38,910	20,240	6,073
Total Deferred Inflows of Resources.....	\$ 23,646	\$ 52,588	\$ 35,162	\$ 13,166
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ 82,084	\$ 69,725	\$ 76,064	\$ 36,160
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	10,227	699	965	20,305
Total Employer Pension Expense.....	\$ 92,311	\$ 70,424	\$ 77,029	\$ 56,465
<u>Contributions</u>				
Statutory required contribution.....	\$ 47,397	\$ 22,677	\$ 41,548	\$ 17,159
Contribution in relation to statutory required contribution.....	(47,397)	(22,677)	(41,548)	(17,159)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	20.90%	10.46%	23.66%	16.58%
<u>Deferred Outflows/(Inflows) Recognized in Future Pension Expense</u>				
June 30, 2021.....	\$ 25,363	\$ 14,363	\$ 20,161	\$ 27,190
June 30, 2022.....	15,156	14,704	9,721	15,541
June 30, 2023.....	8,517	21,343	3,608	13,210
June 30, 2024.....	(296)	8,863	(1,928)	9,901
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 48,740	\$ 59,273	\$ 31,562	\$ 65,842
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ 701,357	\$ 595,757	\$ 649,921	\$ 308,969
Current discount rate (7.30%).....	\$ 570,710	\$ 484,781	\$ 528,855	\$ 251,415
1% increase (8.30%).....	\$ 460,774	\$ 391,397	\$ 426,981	\$ 202,985
Covered Payroll.....	\$ 226,753	\$ 216,890	\$ 175,579	\$ 103,476
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, 2019

	Groton Housing Authority	Tyngsborough Water District	North Reading Housing Authority	West Groton Water
<u>Net Pension Liability</u>				
Beginning net pension liability/(asset).....	\$ (9,522)	\$ 463,086	\$ 159,024	\$ 39,007
Ending net pension liability/(asset).....	\$ -	\$ 481,728	\$ 214,226	\$ 36,784
<u>Deferred Outflows of Resources</u>				
Differences between expected and actual experience.....	\$ -	\$ 11,721	\$ 5,213	\$ 895
Changes of assumptions.....	-	33,175	14,753	2,533
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	17,077	27,904	51,883	11,782
Total Deferred Outflows of Resources.....	\$ 17,077	\$ 72,800	\$ 71,849	\$ 15,210
<u>Deferred Inflows of Resources</u>				
Differences between expected and actual experience.....	\$ -	\$ 1,091	\$ 485	\$ 83
Net difference between projected and actual investment earnings on pension plan investments.....	-	12,501	5,559	955
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	10,287	12,123	3,204	6,560
Total Deferred Inflows of Resources.....	\$ 10,287	\$ 25,715	\$ 9,248	\$ 7,598
<u>Pension Expense</u>				
Proportionate share of plan pension expense.....	\$ -	\$ 69,285	\$ 30,811	\$ 5,291
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	1,192	6,883	20,608	4,688
Total Employer Pension Expense.....	\$ 1,192	\$ 76,168	\$ 51,419	\$ 9,979
<u>Contributions</u>				
Statutory required contribution.....	\$ 2,809	\$ 37,652	\$ 16,668	\$ 2,545
Contribution in relation to statutory required contribution.....	(2,809)	(37,652)	(16,668)	(2,545)
Contribution deficiency/(excess).....	\$ -	\$ -	\$ -	\$ -
Contributions as a percentage of covered payroll.....	0.00%	18.36%	18.39%	2.05%
<u>Deferred Outflows/(Inflows) Recognized in</u>				
<u>Future Pension Expense</u>				
June 30, 2021.....	\$ 292	\$ 17,861	\$ 26,004	\$ 2,580
June 30, 2022.....	(27)	11,502	13,469	3,523
June 30, 2023.....	4,259	16,545	14,224	2,138
June 30, 2024.....	2,266	1,177	8,904	(629)
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 6,790	\$ 47,085	\$ 62,601	\$ 7,612
<u>Discount Rate Sensitivity</u>				
1% decrease (6.30%).....	\$ -	\$ 592,006	\$ 263,267	\$ 45,205
Current discount rate (7.30%).....	\$ -	\$ 481,728	\$ 214,226	\$ 36,784
1% increase (8.30%).....	\$ -	\$ 388,932	\$ 172,959	\$ 29,698
Covered Payroll.....	\$ -	\$ 205,062	\$ 90,640	\$ 124,349

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, 2019

	Ayer-Shirley Regional School District	Totals
<u>Net Pension Liability</u>		
Beginning net pension liability/(asset).....	\$ 5,157,881	\$ 1,559,466,457
Ending net pension liability/(asset).....	\$ 4,713,693	\$ 1,600,056,015
<u>Deferred Outflows of Resources</u>		
Differences between expected and actual experience.....	\$ 114,694	\$ 38,932,789
Changes of assumptions.....	324,614	110,189,599
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	434,072	43,163,151
Total Deferred Outflows of Resources.....	\$ 873,380	\$ 192,285,539
<u>Deferred Inflows of Resources</u>		
Differences between expected and actual experience.....	\$ 10,675	\$ 3,623,756
Net difference between projected and actual investment earnings on pension plan investments.....	122,320	41,521,333
Changes in proportion and differences between employer contributions and proportionate share of contributions.....	688,041	43,163,151
Total Deferred Inflows of Resources.....	\$ 821,036	\$ 88,308,240
<u>Pension Expense</u>		
Proportionate share of plan pension expense.....	\$ 677,954	\$ 230,481,895
Net amortization of deferred amounts from changes in proportion and differences between employer contributions and proportionate share of contributions.....	(103,306)	-
Total Employer Pension Expense.....	\$ 574,648	\$ 230,481,895
<u>Contributions</u>		
Statutory required contribution.....	\$ 467,540	\$ 127,151,838
Contribution in relation to statutory required contribution.....	(467,540)	(129,685,754)
Contribution deficiency/(excess).....	\$ -	\$ (2,533,916)
Contributions as a percentage of covered payroll.....	13.26%	26.35%
<u>Deferred Outflows/(Inflows) Recognized in</u>		
<u>Future Pension Expense</u>		
June 30, 2021.....	\$ 3,222	\$ 49,253,729
June 30, 2022.....	25,570	25,922,414
June 30, 2023.....	104,340	27,854,810
June 30, 2024.....	(80,788)	946,346
Total Deferred Outflows/(Inflows) Recognized in Future Pension Expense.....	\$ 52,344	\$ 103,977,299
<u>Discount Rate Sensitivity</u>		
1% decrease (6.30%).....	\$ 5,792,755	\$ 1,966,342,109
Current discount rate (7.30%).....	\$ 4,713,693	\$ 1,600,056,015
1% increase (8.30%).....	\$ 3,805,690	\$ 1,291,835,664
Covered Payroll.....	\$ 3,526,825	\$ 492,109,775
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 System 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 System'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 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 System'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 Middlesex County Retirement System have been identified and their total pension liability has been actuarially determined. For transparency purposes, the System 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 system'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.