



WORCESTER REGIONAL RETIREMENT SYSTEM

**ACTUARIAL VALUATION
as of
January 1, 2022**

KMS Actuarial, LLC
52 Hunt Road
Kingston, NH 03848

November, 2022



November 2, 2022

Worcester Regional Retirement Board
Midstate Office Park
23 Midstate Drive, Suite 106
Auburn, MA 01501

Dear Board Members:

We are pleased to present the enclosed report providing the results of our actuarial valuation of the Worcester Regional Retirement System as of January 1, 2022. Our valuation was performed in accordance with the provisions contained in Chapter 32 of the Massachusetts General Laws, "M.G.L.", as of January 1, 2022. Disclosures under GASB Statement No. 67, Financial Reporting for Pension Plans (GASB 67) and GASB Statement No. 68, Accounting and Financial Reporting for Pensions (GASB 68) are provided in a separate report.

The principal results of our valuation are summarized in Section 2. The Summary of Plan Provisions and Actuarial Assumptions and Methods are shown in Sections 5 and 6, respectively. Section 7 summarizes the demographic profile of active members, retired plan members and beneficiaries and disabled plan members. Asset information and actuarial liabilities are presented in Section 2. The development of the required appropriations pursuant to Chapter 32 of the M.G.L. is shown in Section 3, including a 30-year forecast of the required appropriations and projected cash flows. Section 4 includes a summary of valuation information for PERAC as well as information relating to the primary risks to the System and an assessment of those risks.

This valuation is based upon member data provided by the Worcester Regional Retirement Board and asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Retirement Board. Although we did not audit the data used in the valuation, we believe that the information is complete and reliable.

Liabilities presented in this report are based on a long-term investment return rate assumption of 7.25%, net of investment expense, compounded annually.

This report was completed in accordance with generally accepted actuarial standards and procedures, and conforms to the Code of Professional Conduct of the American Academy of Actuaries. The actuarial assumptions used in the determination of costs are reasonably related to the experience of the System and to reasonable expectations, and represent our best estimate of anticipated long-term experience under the System.

K M S A C T U A R I E S

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Future actuarial valuation results may differ significantly from the current results presented in this report. Examples of potential sources of volatility include plan experience differing from that anticipated by the economic or demographic assumptions, the effect of new entrants, changes in economic or demographic assumptions, the effect of law changes and the delayed effect of smoothing techniques.

Our valuation follows generally accepted actuarial methods and we perform such tests as we consider necessary to assure the accuracy of the results. The amounts presented in this report have been appropriately determined according to the actuarial assumptions and methods stated herein.

This report is intended for the sole use of the Worcester Regional Retirement Board and is intended to provide information to comply with the stated purpose of the report. It may not be appropriate for other purposes.

The undersigned credentialed actuaries are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinion contained herein. They are available to answer any questions with regard to this report.

Respectfully submitted,



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SECTION 1 - EXECUTIVE SUMMARY

Background

We have completed the Actuarial Valuation of the Worcester Regional Retirement System as of January 1, 2022. This valuation is based upon census data provided by the Retirement Board and asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Worcester Regional Retirement Board. Information for the prior valuation completed as of January 1, 2020 was obtained from the valuation report prepared by KMS Actuaries, LLC.

Massachusetts General Laws

The valuation was prepared in accordance with Chapter 32 of the Massachusetts General Laws ("M.G.L."). The results are based on the active, inactive and retired members and beneficiaries as of December 31, 2021, the assets as of December 31, 2021 and assumptions regarding investment returns, salary increases, mortality, turnover, disability and retirement.

The valuation does not take into consideration:

- ◆ Changes in the law after the valuation date,
- ◆ Transfers between retirement systems pursuant to Section 3(8)(c) of Chapter 32,
- ◆ State-mandated benefits and
- ◆ Cost-of-living increases granted to members in pay status between 1982 and 1997.

GASB Statement Numbers 67 and 68

In June 2012, the GASB approved two related Statements that significantly changed the way pension plans and governments account and report pension liabilities. Effective for plans with fiscal years beginning after June 15, 2013, GASB Statement No. 67, Financial Reporting for Pension Plans, replaced the requirements of Statement No. 25 and effective for employers with fiscal years beginning after June 15, 2014, GASB Statement No. 68, Accounting and Financial Reporting for Pensions, replaced the requirements of Statement No. 27.

The pension standards reflect changes from those previously in place regarding how governments calculate total pension liability and pension expense. Further, the standards contain requirements for disclosing information in the notes to financial statements and presenting required supplementary information following the notes.

The required disclosures and notes under GASB Statement Number 67 and 68 for the fiscal year ending December 31, 2021 are provided in a separate report.

Assets

This valuation is based upon asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Worcester Regional Retirement Board. The market value of assets increased from \$801,451,132 as of December 31, 2019 to \$1,083,598,832 as of December 31, 2021. During the plan years ended 2020 and 2021, the market value rates of return were 12.53% and 20.38%, respectively.

The actuarial value of assets increased from \$777,921,762 as of January 1, 2020 to \$966,692,771 as of January 1, 2022. During the plan years ended 2020 and 2021, the rates of return on the actuarial value of assets were 9.74% and 12.36%, respectively.

SECTION 1 - EXECUTIVE SUMMARY

Changes Since the Last Valuation

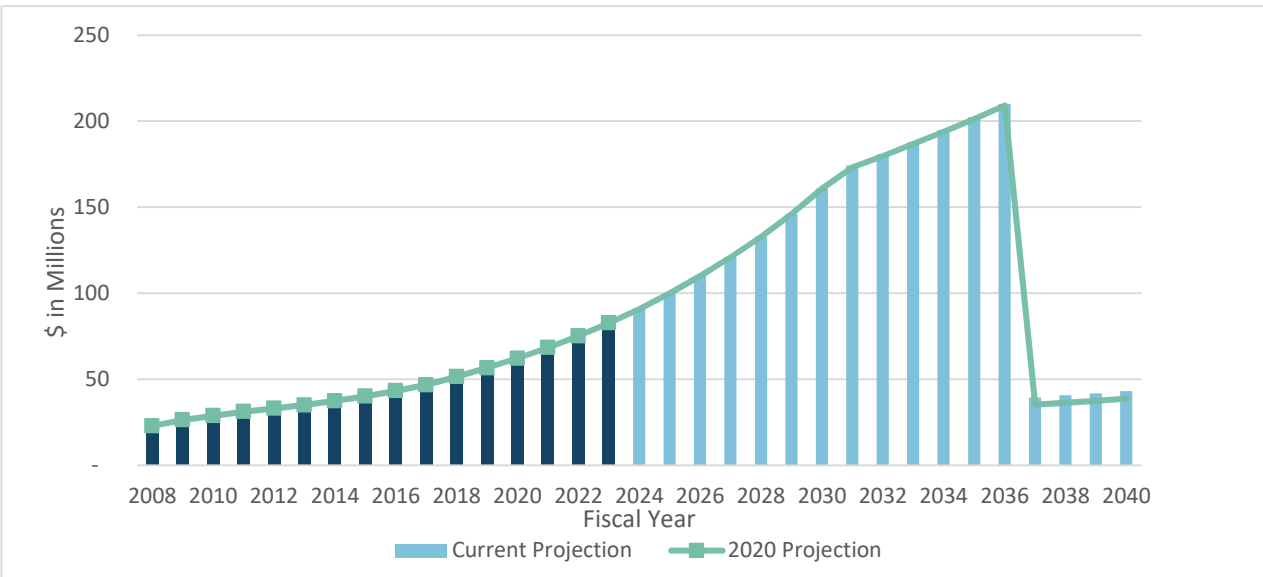
During the two years since the last valuation, the total unfunded actuarial accrued liability of the System was expected to increase from \$898,566,864 as of January 1, 2020 to \$909,343,976 as of January 1, 2022, for a total increase of \$10,777,112. The actual unfunded actuarial accrued liability, before any assumption or plan changes, was \$868,687,810, resulting in an actuarial gain of \$40,656,166. The actuarial gain was primarily due to an asset gain of approximately \$57,972,000 and a demographic experience loss of approximately \$17,315,000. The details of the gain and loss analysis are provided in Section 2, Actuarial Experience.

Appropriations

The funding appropriation for each year is computed as the sum of the normal cost, net 3(8)(c) transfers and an amortization payment to pay off the Unfunded Actuarial Liability, adjusted for semi-annual payments of the appropriation made July 1 and January 1. The appropriation calculated as of the January 1, 2022 valuation is \$108,068,940, and is made up of a normal cost payment of \$21,973,407, net 3(8)(c) transfers of \$4,270,523, and an amortization payment of \$81,825,010. The amortization method is an increasing amortization of the unfunded actuarial accrued liability at 4% over 14 years and is expected to fully pay the unfunded actuarial accrued liability by the year 2036. The development of the appropriation as of January 1, 2022 is presented in Section 3, Annual Appropriations.

For fiscal year 2023, we show the actual appropriation developed under the previous funding schedule and reported on the PERAC "Required Fiscal Year 2023 Appropriation" letter dated December 7, 2021 of \$82,742,153. For fiscal year 2024, we developed an annual appropriation of \$90,974,996, which is made up of a normal cost of \$28,406,663, including net 3(8)(c) transfers of \$4,500,000, and payment toward the unfunded actuarial accrued liability of \$62,568,333. The unfunded actuarial accrued liability is expected to be fully paid by 2036. The Board adopted a schedule that limits the annual increase in appropriation to 9.95% for each year. The current funding schedule is shown in Section 3, Exhibit 3.1.

The chart below shows the historical (navy bars) and projected (blue bars) annual appropriations compared to the projected amounts shown in the prior valuation and funding schedule (green line).



SECTION 1 - EXECUTIVE SUMMARY

Plan Provisions

All Plan provisions used in this valuation are the same as those used in the prior valuation and are summarized in Section 5, Summary of Plan Provisions.

Actuarial Assumptions and Methods

Some Actuarial Assumptions and Methods used in this valuation have changed since the last valuation, including decreasing the investment return rate from 7.65% to 7.25%, increasing administrative expense assumption from \$1,200,000 to \$1,400,000, modifying the net 3(8)(c) transfers assumption from \$3,500,000 to \$3,200,000 for FY2027 and thereafter, decreasing the pay growth assumption from 3.50% to 3.25%, and updating the mortality and mortality improvement rates. Changing these assumptions resulted in a net increase in the unfunded actuarial accrued liability of \$65,190,641 and an increase in the employer normal cost of \$3,969,705. The Actuarial Assumptions and Methods utilized in this valuation are detailed in Section 6, Actuarial Assumptions and Methods.

Census Data

As of January 1, 2022, there are 7,121 active members who may be eligible for benefits in the future, 3,838 retirees and beneficiaries, 2,714 inactives and 274 disabled retirees. Summaries of the active, retired and disabled employees are included in Section 7, Plan Member Information.

COVID-19 Pandemic

The assumptions in this report do not reflect the potential impacts of the COVID-19 pandemic on the Retirement System. Especially in the short range, the pandemic is likely to materially affect the economic and demographic experience in a way not anticipated by the assumptions on which the projections are based.

SECTION 1 - EXECUTIVE SUMMARY

A summary of principal valuation results from the current valuation and the prior valuation follows.

Valuation Date	January 1, 2022	January 1, 2020	% Change
Census Data			
Active Members	7,121	7,024	1.4%
Valuation Salary	\$352,756,822	\$331,209,833	6.5%
Average Salary	\$49,538	\$47,154	5.1%
Retired Members and Beneficiaries	3,838	3,524	8.9%
Total Annual Retirement Allowance	\$91,096,821	\$77,525,219	17.5%
Average Annual Retirement Allowance	\$23,735	\$21,999	7.9%
Disabled Members	274	278	(1.4%)
Total Annual Retirement Allowance	\$10,059,176	\$9,589,804	4.9%
Average Annual Retirement Allowance	\$36,712	\$34,496	6.4%
Inactive Members	2,714	2,247	20.8%
Annuity Savings Fund	\$26,264,607	\$26,500,968	(0.9%)
Funded Status			
Actuarial Accrued Liability (AAL)	\$1,900,571,222	\$1,676,488,626	13.4%
Market Value of Assets (MVA)	\$1,083,598,832	\$801,451,132	35.2%
Unfunded Accrued Liability on MVA	\$816,972,390	\$875,037,494	(6.6%)
Funded Status on MVA	57.0%	47.8%	19.2%
Actuarial Value of Assets (AVA)	\$966,692,771	\$777,921,762	24.3%
Unfunded Accrued Liability on AVA	\$933,878,451	\$898,566,864	3.9%
Funded Status on AVA	50.9%	46.4%	9.7%
Appropriations			
Fiscal Year 2022	N/A	\$75,254,346	N/A
Fiscal Year 2023	\$82,742,153	\$82,742,153	0.0%
Fiscal Year 2024	\$90,974,996	\$90,974,998	0.0%
Fiscal Year 2025	\$100,027,007	\$100,027,010	0.0%

SECTION 2 - PRINCIPAL VALUATION RESULTS

Market Value of Assets

Asset information is reported annually to the Public Employee Retirement Administration Commission by the Worcester Regional Retirement Board. The Market Value of Assets for the three most recent calendar years are as follows:

Calendar Year	2021	2020	2019
Trust Fund Composition at Year-End			
Cash	\$3,913,792	\$4,386,752	\$2,813,343
Short-Term Investments	0	0	0
Fixed Income Securities	0	0	0
Equities	0	0	0
Pooled Short Term Funds	0	0	0
Pooled Domestic Equity Funds	0	0	0
Pooled International Equity Funds	0	0	0
Pooled Global Equity Funds	0	0	0
Pooled Domestic Fixed Income Funds	0	0	0
Pooled International Fixed Income Funds	0	0	0
Pooled Global Fixed Income Funds	0	0	0
Pooled Alternative Investments	47,220	688,422	1,187,279
Pooled Real Estate Funds	0	0	0
Pooled Domestic Balanced Funds	0	0	0
Pooled International Balanced Funds	0	0	0
Hedge Funds	0	0	0
PRIT Cash	0	0	0
PRIT Fund	1,082,662,154	899,736,351	801,583,801
Interest Due & Accrued	0	0	0
Prepaid Expenses	0	0	0
Accounts Receivable	6,944,235	5,656,731	5,363,063
Land	0	0	0
Buildings	0	0	0
Accumulated Depreciation - Buildings	0	0	0
Accounts Payable	(9,968,569)	(8,092,378)	(9,496,354)
Total Market Value of Assets	\$1,083,598,832	\$902,375,878	\$801,451,132

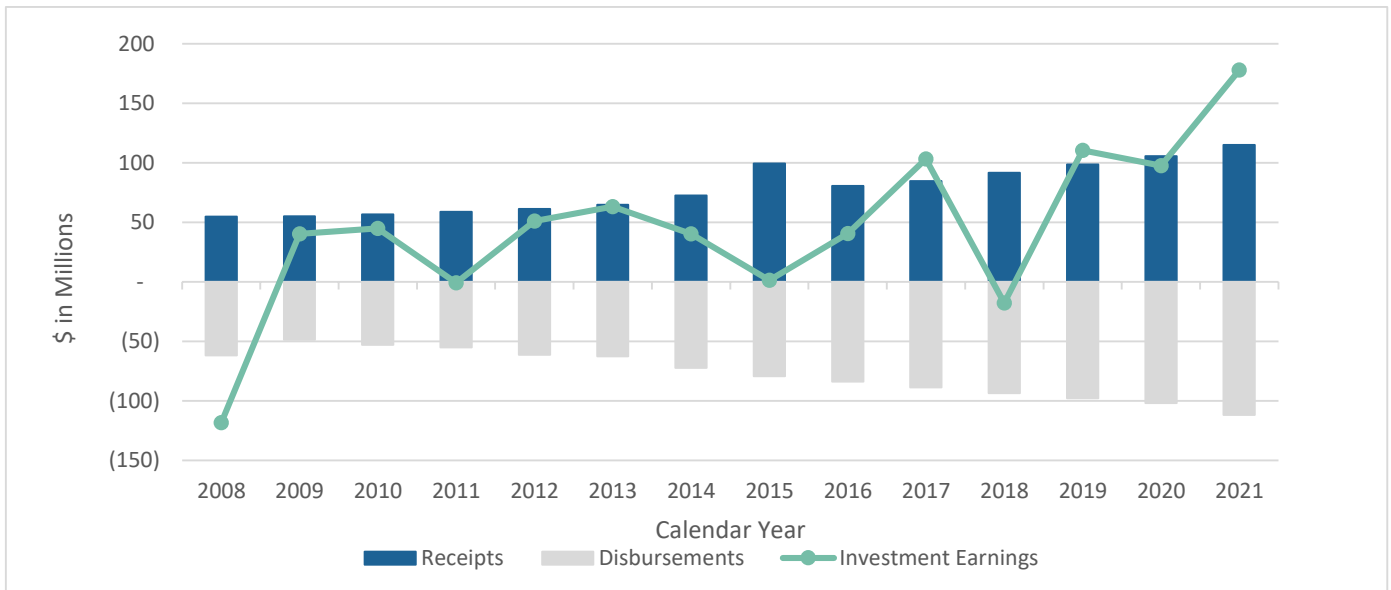
SECTION 2 - PRINCIPAL VALUATION RESULTS

Market Value of Assets

Calendar Year	2021	2020	2019
Funds			
Annuity Savings Fund	\$318,149,271	\$308,550,118	\$297,120,738
Annuity Reserve Fund	88,669,173	83,044,317	78,748,966
Special Military Service Fund	158,080	136,805	129,449
Pension Fund	17,203,477	18,757,671	3,655,463
Expense Fund	0	0	0
Pension Reserve Fund	659,418,831	491,886,967	421,796,516
Total Market Value of Assets	\$1,083,598,832	\$902,375,878	\$801,451,132
Asset Activity			
Market Value as of Beginning of Year	\$902,375,878	\$801,451,132	\$690,298,739
Contributions and Receipts	115,046,086	105,515,386	98,693,701
Benefit Payments and Expenses	(111,791,773)	(102,094,070)	(98,012,054)
Investment Return	177,968,641	97,503,430	110,470,746
Total Market Value of Assets	\$1,083,598,832	\$902,375,878	\$801,451,132

Rate of Return	20.38%	12.53%	16.61%
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Below are the receipts and disbursements during the last 14 years. The green line reflects investment earnings, which vacillate as investment markets fluctuate. Blue bars indicate contributions, from employees and employers, and grey bars show benefit payments and administrative expenses.



SECTION 2 - PRINCIPAL VALUATION RESULTS

Actuarial Value of Assets

The Actuarial Value of Assets is the market value of assets as of the valuation date adjusted to phase in investment gains and losses over a 5-year period, further constrained to be within 20% of the market value of assets. Investment gains and losses are the excess or deficiency of the expected returns over the actual returns.

Valuation Date	January 1, 2022	January 1, 2021	January 1, 2020	
1. Expected Market Value of Assets				
a. Market Value of Assets as of prior January 1	\$902,375,878	\$801,451,132	\$690,298,739	
b. Prior Year Contributions and Receipts	115,046,086	105,515,386	98,693,701	
c. Prior Year Benefit Payments and Expenses	(111,791,773)	(102,094,070)	(98,012,054)	
d. Expected Investment Return Rate	7.65%	7.65%	7.75%	
e. Expected Investment Return	69,166,605	61,452,782	53,526,767	
f. Expected Market Value of Assets	\$974,796,796	\$866,325,230	\$744,507,153	
2. Prior Year Gain/(Loss)				
a. Market Value of Assets as of January 1	\$1,083,598,832	\$902,375,878	\$801,451,132	
b. Expected Market Value of Assets	974,796,796	866,325,230	744,507,153	
c. Prior Year Gain /(Loss)	\$108,802,036	\$36,050,648	\$56,943,979	
3. Phase-In of Asset Gains and Losses				
Calendar Year	Gain / (Loss)	Unrecognized Gain / (Loss)	Unrecognized Gain / (Loss)	Unrecognized Gain / (Loss)
a. 2021	\$108,802,036	\$87,041,629	\$0	\$0
b. 2020	36,050,648	21,630,389	28,840,518	0
c. 2019	56,943,979	22,777,592	34,166,387	45,555,183
d. 2018	(72,717,745)	(14,543,549)	(29,087,098)	(43,630,647)
e. 2017	55,929,938	0	11,185,988	22,371,975
f. 2016	(3,835,703)	0	0	(767,141)
g. Total Deferred Gains/(Losses)		\$116,906,061	\$45,105,795	\$23,529,370

SECTION 2 - PRINCIPAL VALUATION RESULTS

Actuarial Value of Assets

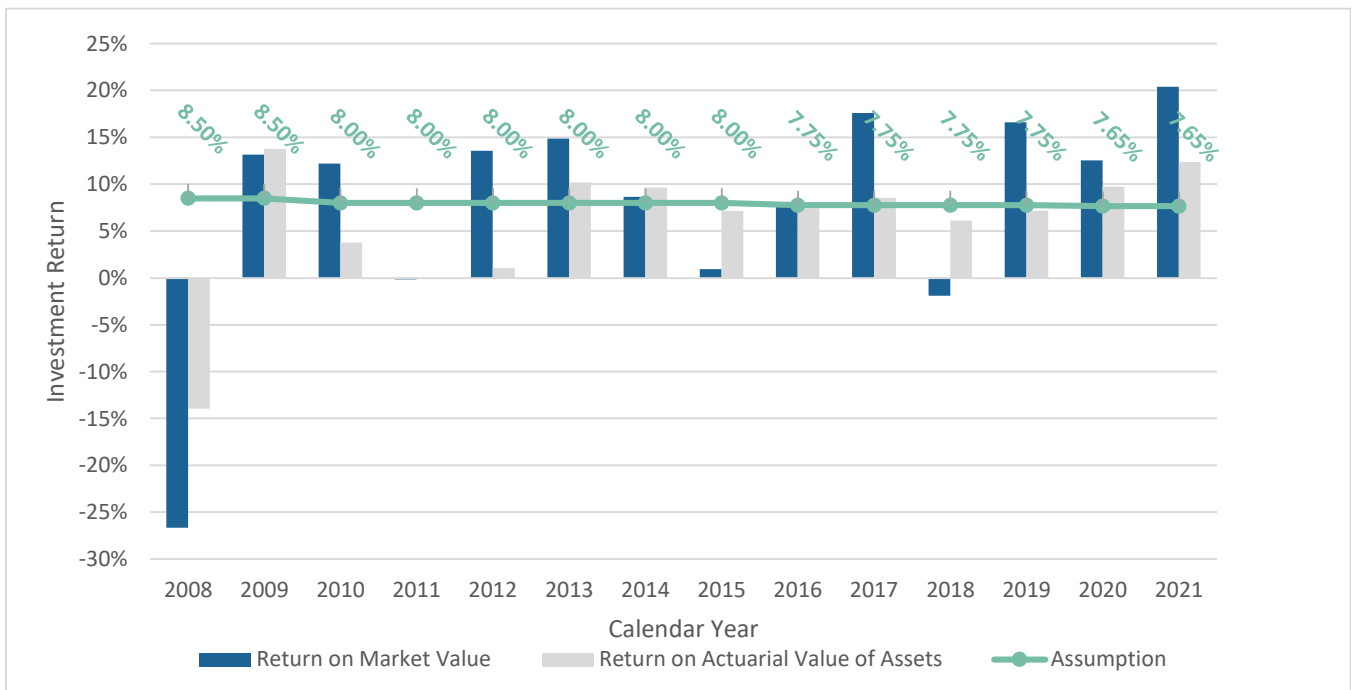
Valuation Date January 1, 2022 January 1, 2021 January 1, 2020

4. Actuarial Value of Assets

a. Market Value of Assets	\$1,083,598,832	\$902,375,878	\$801,451,132
b. Deferred Gains/(Losses)	116,906,061	45,105,795	23,529,370
c. Market Value of Assets Less Deferred Gains/(Losses)	\$966,692,771	\$857,270,083	\$777,921,762
d. 80% of Market Value of Assets	866,879,066	721,900,702	641,160,906
e. 120% of Market Value of Assets	1,300,318,598	1,082,851,054	961,741,358
f. Actuarial Value of Assets, c., but not less than d. and not greater than e.	\$966,692,771	\$857,270,083	\$777,921,762
g. Ratio of Actuarial Value of Assets to Market Value of Assets	89.2%	95.0%	97.1%

5. Rate of Return on Actuarial Value of Assets for Prior Calendar Year	12.36%	9.74%	7.17%
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Below are the investment returns during the last 14 years. The green line reflects the investment return actuarial assumption. Blue bars indicate investment return rates on market value of assets, and grey bars show investment return rates on actuarial value of assets.



SECTION 2 - PRINCIPAL VALUATION RESULTS

Actuarial Liabilities

The **Actuarial Present Value of Future Benefits** is the present value of the cost to finance all benefits payable in the future, discounted to reflect the probability of payment and the time value of money. Below is the Actuarial Present Value of Future Benefits from the current valuation and the prior valuation:

Valuation Date	January 1, 2022	January 1, 2020
Actives	\$1,324,385,808	\$1,179,829,116
Retired Members and Beneficiaries	922,337,478	771,173,424
Disabled Members	118,243,456	111,086,221
Inactive Members	26,264,607	26,500,968
Total Present Value of Future Benefits	\$2,391,231,349	\$2,088,589,729

The **Actuarial Accrued Liability** is the portion of the Actuarial Present Value of Future Benefits which is allocated to all periods prior to a valuation year and therefore is not provided for by future Normal Costs. Below is the Actuarial Accrued Liability from the current valuation and the prior valuation:

Valuation Date	January 1, 2022	January 1, 2020
Actives	\$833,725,681	\$767,728,013
Retired Members and Beneficiaries	922,337,478	771,173,424
Disabled Members	118,243,456	111,086,221
Inactive Members	26,264,607	26,500,968
Total Actuarial Accrued Liability	\$1,900,571,222	\$1,676,488,626

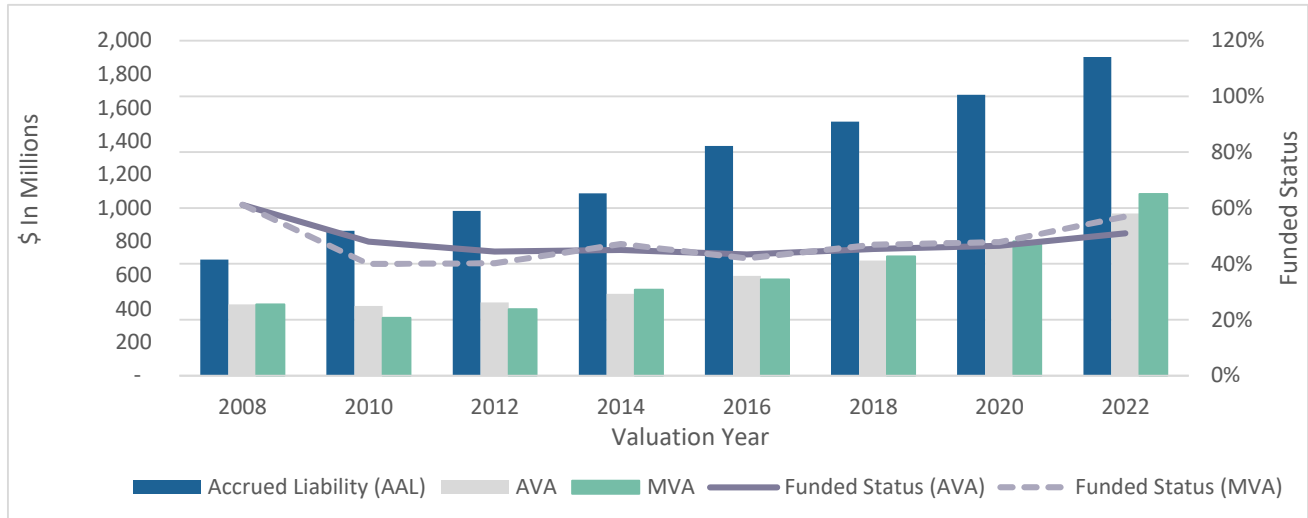
The **Unfunded Actuarial Accrued Liability** is the difference between the Actuarial Accrued Liability and the Actuarial Value of Assets as of the valuation date. The **Funded Status** is the Actuarial Value of Assets divided by the Actuarial Accrued Liability and is a point-in-time measurement of the amount of assets set aside to cover actuarial accrued liabilities. Below is the Unfunded Actuarial Accrued Liability and Funded Status from the current valuation and the prior valuation:

Valuation Date	January 1, 2022	January 1, 2020
Unfunded Actuarial Accrued Liability		
a. Actuarial Accrued Liability	\$1,900,571,222	\$1,676,488,626
b. Actuarial Value of Assets	966,692,771	777,921,762
c. Unfunded Actuarial Accrued Liability (a. - b.)	\$933,878,451	\$898,566,864
d. Funded Status (b. divided by a.)	50.9%	46.4%

SECTION 2 - PRINCIPAL VALUATION RESULTS

Actuarial Liabilities

Below are the accrued liabilities, asset values (actuarial and market) and funded status for each of the last 8 valuations. The purple solid line reflects the funded status on an actuarial value of assets (AVA) basis and the purple dotted line reflects the funded status on a market value (MVA) basis. Blue bars indicate actuarial accrued liabilities, grey bars indicate actuarial value of assets and green bars indicate market value of assets.



The **Normal Cost** is the portion of the Actuarial Present Value of Future Benefits which is allocated to a valuation year. Only active employees who have not reached Normal Retirement Age incur a Normal Cost. Below is the Normal Cost from the current valuation and the prior valuation:

Valuation Date	January 1, 2022	January 1, 2020
Total Normal Cost	\$54,862,658	\$48,003,871
As of Percentage of Salary	15.6%	14.5%
Employee Normal Cost	\$34,217,858	\$31,796,971
As of Percentage of Salary	9.7%	9.6%
Administrative Expenses	\$1,328,607	\$1,135,650
As a Percentage of Salary	0.4%	0.3%
Net Employer Normal Cost	\$21,973,407	\$17,342,550
As a Percentage of Salary	6.2%	5.2%

SECTION 2 - PRINCIPAL VALUATION RESULTS

Actuarial Experience

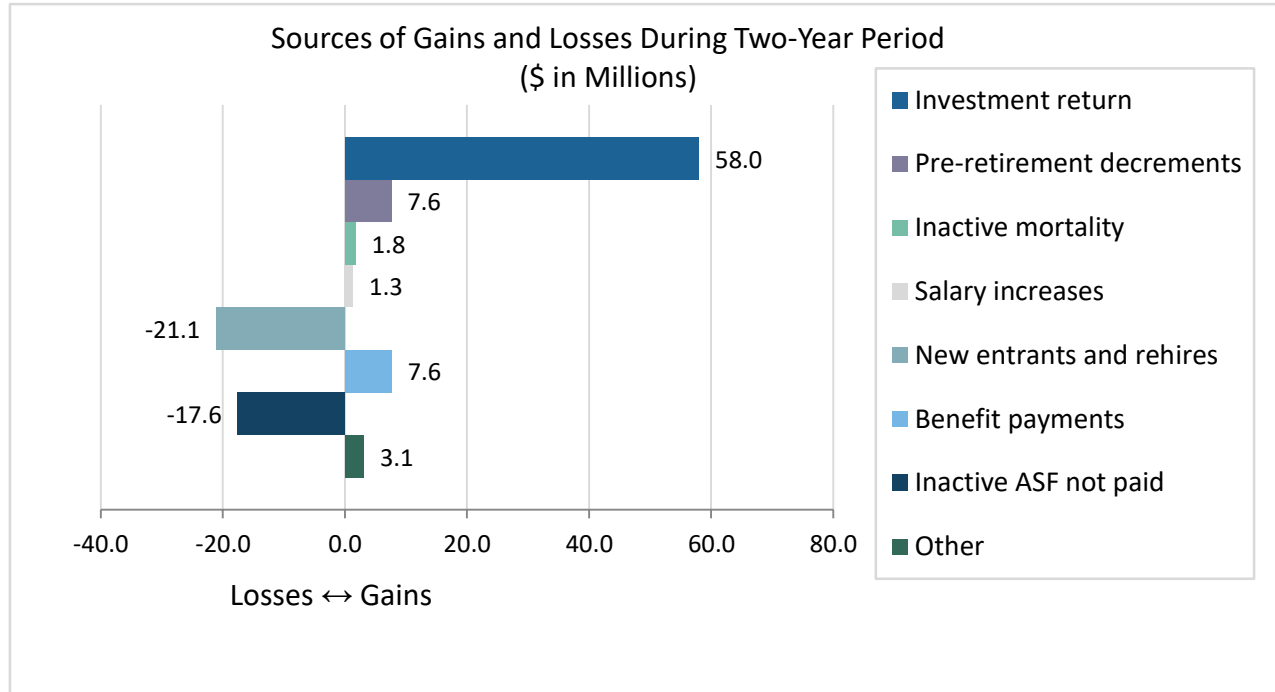
In performing the actuarial valuation, various assumptions are made regarding mortality, retirement, disability and withdrawal rates as well as salary increases and investment returns. A comparison of the results of the current valuation and the prior valuation is made to determine how closely actual experience relates to expected. During the two years since the last valuation, the total unfunded actuarial accrued liability of the System was expected to increase by \$10,777,112. Below is the development of the Actuarial Gain for the current 2-year period:

Calendar Year Ending	December 31, 2021	December 31, 2020
Expected Unfunded Actuarial Accrued Liability		
1. Unfunded Actuarial Accrued Liability, beginning of year	\$909,095,716	\$898,566,864
2. Normal cost, beginning of year	46,925,913	48,003,871
3. Total contributions	115,046,086	105,515,386
4. Interest (full year on 1. and 2., monthly-weighted on 3.)	68,368,432	68,040,367
5. Expected Unfunded Actuarial Accrued Liability	\$909,343,976	\$909,095,716
6. Unfunded Actuarial Accrued Liability (before changes)	868,687,810	
7. (Gain)/Loss (6. - 5.)	(\$40,656,166)	
Asset Gain/(Loss)		
1. Actuarial Value of Assets, Beginning of Year	\$857,270,083	\$777,921,762
2. Contributions and Receipts	115,046,086	105,515,386
3. Benefit Payments and Expenses	(111,791,773)	(102,094,070)
4. Assumed Rate of Return (prior valuation)	7.65%	7.65%
5. Expected Return	65,716,012	59,652,786
6. Actuarial Value of Assets, End of Year	\$966,692,771	\$857,270,083
7. Actual Return	106,168,375	75,927,005
8. Actual Rate of Return	12.36%	9.74%
9. Asset Gain/(Loss) (7. - 5.)	40,452,363	16,274,219
10. Total Asset Gain/(Loss), 2-Year Period	\$57,971,560	

SECTION 2 - PRINCIPAL VALUATION RESULTS

Actuarial Experience

Below are the various sources of gains and losses over the 2-year period. The asset gain during the period was \$57,971,560, and the total demographic loss during the period was \$17,315,394, which totals to an overall gain of \$40,656,166.



Unfunded Actuarial Accrued Liability

1. Changes due to:	
a. Asset Gain	(\$57,971,560)
b. Demographic Experience Loss	17,315,394
c. Total Gain Prior to Changes	(40,656,166)
d. Plan Change	-
e. Assumption and Method Changes	
Mortality and Mortality Improvement Rates	(12,466,691)
Investment Return Rate	77,657,332
Total	65,190,641
f. Total Increase (including changes)	24,534,475
2. Unfunded Actuarial Accrued Liability, End of Year	\$933,878,451

SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

Annual Appropriations

The Annual Appropriation is determined in accordance with the requirements set forth in Sections 22D and 22F of Chapter 32 of the Massachusetts General Laws ("M.G.L."). The appropriation is comprised of the annual employer normal cost and amortization payments to pay the unfunded actuarial accrued liability. Below are the details of the annual appropriations for the current and prior valuations, adjusted for semi-annual payments made July 1 and January 1. The appropriations shown are based on the results of the valuation and do not account for any adjustments made to appropriations in the selected funding schedule.

Valuation Date	January 1, 2022	January 1, 2020
1. Early Retirement Incentive Plan (2002)		
Fully Funded Year	2028	2028
Investment Return Rate	7.25%	7.65%
Balance as of Valuation Date	\$8,928,051	\$10,592,821
Amortization Amount	\$1,586,283	\$1,465,746
Increasing Rate	4.50%	4.50%
Remaining Payment Period from Valuation Date	6	8
2. Early Retirement Incentive Plan (2003)		
Fully Funded Year	2028	2028
Investment Return Rate	7.25%	7.65%
Balance as of Valuation Date	\$1,750,451	\$2,076,849
Amortization Amount	\$311,010	\$287,377
Increasing Rate	4.50%	4.50%
Remaining Payment Period from Valuation Date	6	8
3. Early Retirement Incentive Plan (2010)		
Fully Funded Year	2022	2022
Investment Return Rate	7.25%	7.65%
Balance as of Valuation Date	\$0	\$10,522
Amortization Amount	\$0	\$5,455
Increasing Rate	0.00%	0.00%
Remaining Payment Period from Valuation Date	0	2
3. Unfunded Actuarial Accrued Liability		
Fully Funded Year	2036	2036
Investment Return Rate	7.25%	7.65%
Balance as of Valuation Date	\$923,199,949	\$885,886,672
Amortization Amount	\$79,927,717	\$70,816,892
Increasing Rate	4.00%	4.00%
Remaining Payment Period from Valuation Date	14	16

SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

Annual Appropriations

4.	Total Amortization Payments	\$81,825,010	\$72,575,470
5.	Normal Cost	\$21,973,407	\$17,342,550
6.	Net 3(8)(c) Transfers ¹	\$4,270,523	\$4,258,687
7.	Total Appropriation as of January 1	\$108,068,940	\$94,176,707
8.	Adjusted for Semi-Annual Payments as of July 1 and January 1	\$113,876,047	\$99,513,106

¹ Net 3(8)(c) transfers from 2020 valuation updated to the fiscal year equivalence of \$4,500,000.

SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

Exhibit 3.1 - 30-Year Forecast of Annual Appropriations

Fiscal Year Ending	Employer Normal Cost	Amortization Payment of UAL	Amortization Payment of ERI 2002	Amortization Payment of ERI 2003	Amortization Payment of ERI 2010	Total Employer Cost	Increase over Prior Year	Unfunded Actuarial Accrued Liability
2023	\$27,450,827	\$53,292,082	\$1,671,522	\$327,722	\$0	\$82,742,153		\$933,878,451
2024	28,406,663	60,479,123	1,746,741	342,469	-	90,974,996	9.95%	945,308,692
2025	29,183,629	68,660,154	1,825,344	357,880	-	100,027,007	9.95%	950,161,030
2026	29,985,847	77,712,377	1,907,485	373,985	-	109,979,694	9.95%	946,942,756
2027	29,514,138	89,024,402	1,993,321	390,815	-	120,922,676	9.95%	934,177,737
2028	30,369,347	100,093,711	2,083,022	408,401	-	132,954,481	9.95%	908,869,293
2029	31,252,351	114,931,102	-	-	-	146,183,453	9.95%	870,350,359
2030	32,164,052	128,564,655	-	-	-	160,728,707	9.95%	816,472,979
2031	33,105,385	141,071,065	-	-	-	174,176,450	8.37%	744,813,152
2032	34,077,310	146,713,907	-	-	-	180,791,217	3.80%	655,228,864
2033	35,080,822	152,582,464	-	-	-	187,663,286	3.80%	553,406,386
2034	36,116,949	158,685,763	-	-	-	194,802,712	3.80%	438,228,714
2035	37,186,750	165,033,193	-	-	-	202,219,943	3.81%	308,488,676
2036	38,291,318	171,634,521	-	-	-	209,925,839	3.81%	162,882,021
2037	39,431,786	-	-	-	-	39,431,786	-81.22%	-
2038	40,609,320	-	-	-	-	40,609,320	2.99%	-
2039	41,825,123	-	-	-	-	41,825,123	2.99%	-
2040	43,080,439	-	-	-	-	43,080,439	3.00%	-
2041	44,376,554	-	-	-	-	44,376,554	3.01%	-
2042	45,714,791	-	-	-	-	45,714,791	3.02%	-
2043	47,096,522	-	-	-	-	47,096,522	3.02%	-
2044	48,523,160	-	-	-	-	48,523,160	3.03%	-
2045	49,996,163	-	-	-	-	49,996,163	3.04%	-
2046	51,517,038	-	-	-	-	51,517,038	3.04%	-
2047	53,087,341	-	-	-	-	53,087,341	3.05%	-
2048	54,708,679	-	-	-	-	54,708,679	3.05%	-
2049	56,382,710	-	-	-	-	56,382,710	3.06%	-
2050	58,111,149	-	-	-	-	58,111,149	3.07%	-
2051	59,895,761	-	-	-	-	59,895,761	3.07%	-
2052	61,738,373	-	-	-	-	61,738,373	3.08%	-

SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

Exhibit 3.2 - 30-Year Forecast of Cash Flow

Calendar Year	Market Value of Assets, BOY	Benefit Payments	Employee Contributions	Employer Contributions	Investment Return	Market Value of Assets, EOY
2022	\$1,083,598,832	\$137,005,618	\$34,217,858	\$78,522,718	\$81,354,282	\$1,140,688,072
2023	1,140,688,072	117,160,017	35,329,938	86,335,728	86,919,675	1,232,113,396
2024	1,232,113,396	122,984,358	36,478,161	94,926,133	94,025,334	1,334,558,666
2025	1,334,558,666	128,874,173	37,663,701	104,371,283	101,992,043	1,449,711,520
2026	1,449,711,520	135,056,937	38,887,771	115,989,933	111,028,920	1,580,561,207
2027	1,580,561,207	141,440,796	40,151,624	126,174,470	121,094,831	1,726,541,336
2028	1,726,541,336	147,800,696	41,456,552	138,728,830	132,433,431	1,891,359,453
2029	1,891,359,453	154,006,348	42,803,890	152,532,349	145,237,480	2,077,926,824
2030	2,077,926,824	160,110,858	44,195,016	165,294,324	159,549,985	2,286,855,291
2031	2,286,855,291	166,172,390	45,631,354	171,571,772	175,018,507	2,512,904,534
2032	2,512,904,534	171,966,629	47,114,373	178,093,400	191,759,869	2,757,905,547
2033	2,757,905,547	179,705,127	48,645,590	184,868,751	209,820,772	3,021,535,533
2034	3,021,535,533	187,791,858	50,226,572	191,907,740	229,241,321	3,305,119,308
2035	3,305,119,308	196,242,492	51,858,936	199,220,674	250,117,815	3,610,074,241
2036	3,610,074,241	205,073,404	53,544,351	37,420,963	260,271,964	3,756,238,115
2037	3,756,238,115	214,301,707	55,284,542	38,538,448	270,713,623	3,906,473,021
2038	3,906,473,021	223,945,284	57,081,290	39,692,251	281,440,858	4,060,742,136
2039	4,060,742,136	234,022,822	58,936,432	40,883,553	292,450,483	4,218,989,782
2040	4,218,989,782	244,553,849	60,851,866	42,113,572	303,737,920	4,381,139,291
2041	4,381,139,291	255,558,772	62,829,552	43,383,566	315,297,044	4,547,090,681
2042	4,547,090,681	267,058,917	64,871,512	44,694,836	327,120,008	4,716,718,120
2043	4,716,718,120	279,076,568	66,979,836	46,048,722	339,197,065	4,889,867,175
2044	4,889,867,175	291,635,014	69,156,681	47,446,609	351,516,359	5,066,351,810
2045	5,066,351,810	304,758,590	71,404,273	48,889,927	364,063,712	5,245,951,132
2046	5,245,951,132	318,472,727	73,724,912	50,380,153	376,822,385	5,428,405,855
2047	5,428,405,855	332,804,000	76,120,972	51,918,811	389,772,818	5,613,414,456
2048	5,613,414,456	347,780,180	78,594,904	53,507,475	402,892,353	5,800,629,008
2049	5,800,629,008	363,430,288	81,149,238	55,147,772	416,154,926	5,989,650,656
2050	5,989,650,656	379,784,651	83,786,588	56,841,378	429,530,740	6,180,024,711
2051	6,180,024,711	396,874,960	86,509,652	58,590,026	442,985,908	6,371,235,337

SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

Forecast Notes

Exhibit 3.1:

- ◆ The Total Normal Cost is expected to increase 3.25% per year.
- ◆ The Unfunded Actuarial Accrued Liability ("UAL") is computed as of January 1 of each year assuming no future gains or losses.
- ◆ The Amortization Payment of UAL is an increasing payment at 4% paid over 14 years through 2036.
- ◆ The Amortization Payment of the Early Retirement Incentive Plan (2002) is an increasing payment at 4.5% paid over 6 year(s) through 2028.
- ◆ The Amortization Payment of the Early Retirement Incentive Plan (2003) is an increasing payment at 4.5% paid over 6 year(s) through 2028.
- ◆ Net 3(8)(c) transfers are a level dollar amount based on the net transfers expected to be paid by the Worcester Regional Retirement Board during the current year offset by the amount received during the same period. For this valuation, we assumed net 3(8)(c) transfers of \$4,500,000 for FY2024 through FY2026, and \$3,200,000 thereafter.
- ◆ Total Employer Cost is the sum of the Employer Normal Cost, net 3(8)(c) transfers and the Amortization of the UAL, all computed as of January 1 of each year and adjusted for semi-annual payments made on July 1 and January 1.
- ◆ For fiscal year 2023, we show the actual appropriation developed under the previous funding schedule of \$82,742,153. For fiscal years 2024 and later, the Board has selected a funding schedule that fully amortizes the unfunded actuarial accrued liability by 2036, with annual employer costs limited to increases of 9.95% over the prior year.

Exhibit 3.2:

- ◆ Expected benefit payments include payments expected to be made to retired members, beneficiaries, disabled members and active members expected to retire. In addition, expected benefit payments include distribution of the annuity savings fund attributed to inactive members.
- ◆ Benefit payments exclude cost-of-living increases granted to members in pay status between 1982 and 1997. In addition, benefit payments are as expected for the first ten years of the forecast, then increase by the greater of 4.5% per year thereafter or the expected future payments for the current population projected by our computer model.
- ◆ Calendar year cash flow entries are developed as of each January 1.

SECTION 4 - DISCLOSURES

4.1 - GASB 67 and GASB 68 Disclosures

In June 2012, the GASB approved two related Statements that significantly changed the way pension plans and governments account and report pension liabilities. Effective for plans with fiscal years beginning after June 15, 2013, GASB Statement No. 67, *Financial Reporting for Pension Plans*, replaced the requirements of Statement No. 25 and effective for employers with fiscal years beginning after June 15, 2014, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions*, replaced the requirements of Statement No. 27.

The pension standards reflect changes from those previously in place regarding how governments calculate total pension liability and pension expense. Further, the standards contain requirements for disclosing information in the notes to financial statements and presenting required supplementary information following the notes.

GASB 67 requires defined benefit pension plans, such as the Worcester Regional Retirement System, to present a statement of fiduciary net position (pension plan assets) and a statement of changes in fiduciary net position. Further, the statement requires that notes to financial statements include descriptive information such as the types of benefits provided, the classes of plan members covered and the composition of the pension plan's retirement board. Finally, GASB 67 requires pension plans to present in required supplementary information the sources of the changes in the net pension liability and information about the actuarially determined contributions compared with the actual contributions made to the plan and related ratios.

GASB 67 and GASB 68 require projected benefit payments be discounted to their actuarial present value using the single rate that reflects:

- (1) a long-term expected rate of return on pension plan investments *to the extent that the pension plan's assets are sufficient to pay benefits and pension plan assets are expected to be invested using a strategy to achieve that return* and
- (2) a tax-exempt, high-quality municipal bond rate *to the extent that the conditions for use of the long-term expected rate of return are not met.*

GASB 68 establishes standards for measuring and recognizing liabilities, deferred outflows of resources, deferred inflows of resources and pension expense by state and local governments.

The effective date for GASB 67 is for plan years beginning after June 15, 2013, which is the fiscal year ending December 31, 2014 for the Worcester Regional Retirement System. The effective date for GASB 68 is for employers' fiscal years beginning after June 15, 2014. The GASB report, submitted under separate cover and prepared as of December 31, 2021 (the measurement date), presents information to assist the Worcester Regional Retirement Board in providing the required information under GASB 68 to participating employers.

SECTION 4 - DISCLOSURES

4.2 - PERAC Disclosure Information

The most recent actuarial valuation of the System was prepared by KMS Actuaries, LLC as of January 1, 2022.

Normal Cost - Employees	\$34,217,858	9.7% of payroll
Normal Cost - Employers	\$21,973,407	6.2% of payroll
Actuarial Liability - Active Members	\$833,725,681	44% of total AAL
Actuarial Liability - Retired and Inactive Members	<u>1,066,845,541</u>	56% of total AAL
Total Actuarial Liability (AAL)	<u>\$1,900,571,222</u>	
System Assets	\$966,692,771	
Unfunded Actuarial Accrued Liability	\$933,878,451	
Funded Status	50.9%	

Principal actuarial assumptions used in the valuation:

Investment Return	7.25%
Rate of Salary Increase	Based on service, 6% graded down to 4.25% for Group 1 Based on service, 7% graded down to 4.75% for Group 4

SECTION 4 - DISCLOSURES

4.3 - Risk Measures

The Worcester Regional Retirement System is subject to certain risks that could affect the plan's future financial condition. Here we identify the primary risks to the System, provide some background information about those risks, and provide an assessment of those risks in accordance with Actuarial Standards of Practice (ASOP) 51.

Risk is the potential of actual future measurements deviating from expected future measurements resulting from actual future experience deviating from actuarially assumed experience. Examples of potential risks that may be reasonably anticipated to significantly affect the future financial condition of the plan include the following:

- ◆ **Investment Risk** - the potential that investment returns will be different than expected.
- ◆ **Asset/Liability Mismatch Risk** - the potential that changes in asset values are not matched by changes in the value of liabilities.
- ◆ **Interest Rate Risk** - the potential that interest rates will be different than expected.
- ◆ **Longevity and Other Demographic Risks** - the potential that mortality or other demographic experience will be different than expected.
- ◆ **Contribution Risk** - the potential of actual future contributions deviating from expected future contributions. For example, that actual contributions are not made in accordance with the plan's funding policy, that other anticipated payments to the plan are not made, or that material changes occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base.

We have provided several risk measures in this section that we believe are most significant for the plan. However, we believe that a more rigorous assessment of risk would be beneficial to the Board to understand the risks identified above, such as:

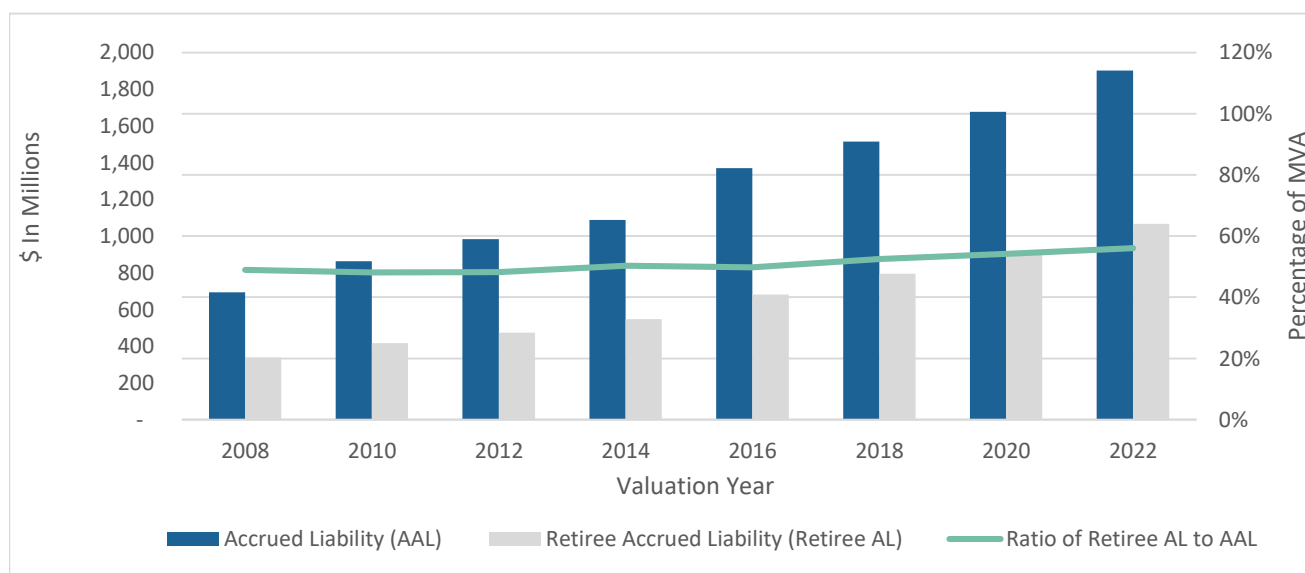
- ◆ **Scenario Test** - a process for assessing the impact of one possible event, or several simultaneous or sequentially occurring possible events, on a plan's financial condition.
- ◆ **Sensitivity Test** - a process for assessing the impact of a change in an actuarial assumption on an actuarial measurement.
- ◆ **Stochastic Modeling** - a process for generating numerous potential outcomes by allowing for random variations in one or more inputs over time for the purpose of assessing the distribution of those outcomes.
- ◆ **Stress Test** - a process for assessing the impact of adverse changes in one or relatively few factors affecting a plan's financial condition.

SECTION 4 - DISCLOSURES

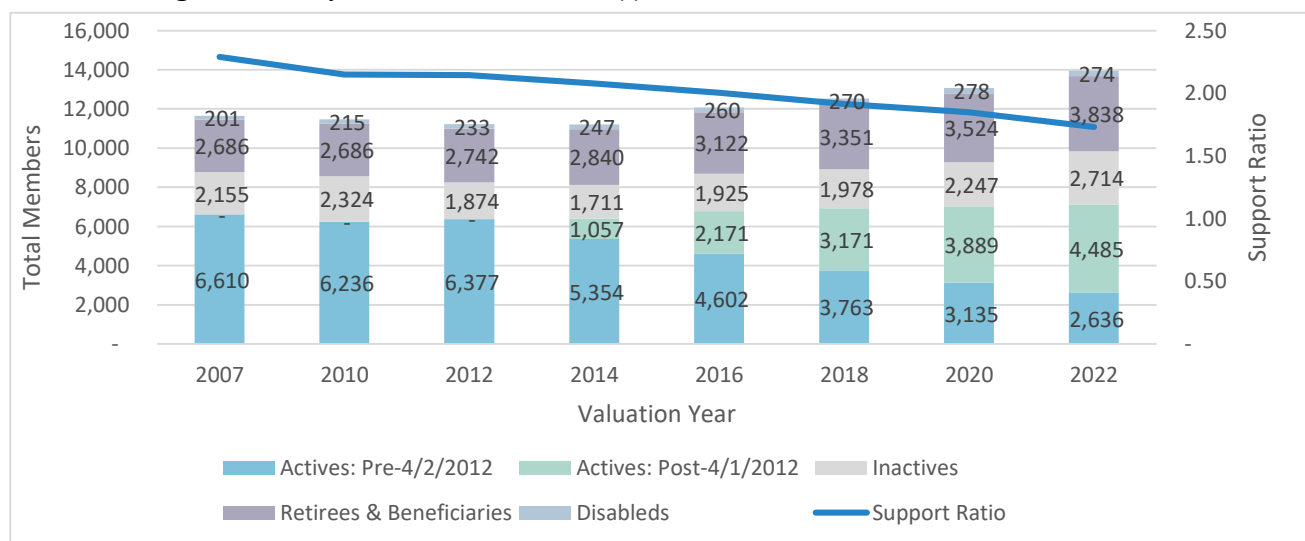
4.3 - Risk Measures

Maturity Measures

As retirement systems mature they become much more sensitive to risks. This is because a higher proportion of the actuarial liability is attributable to participants who are no longer active. Plan maturity measures are helpful in understanding the risks associated with a plan. One such maturity measure is the ratio of the system's retiree liability to its total liability. A retirement system in its infancy will have a very low ratio of retiree liability to total liability. As the system matures, the ratio starts increasing. A mature plan will often have a ratio above 60%. For the Worcester Regional Retirement System and other retirement systems in the United States these ratios have been steadily increasing in recent years.



Another maturity measure is the ratio of actives to retirees, or support ratio. A retirement system in its infancy will have a very high ratio of active to retired members. As the system matures, and members retire, the support ratio starts declining. A mature system will often have a support ratio near or below one.



SECTION 4 - DISCLOSURES

4.3 - Risk Measures

Volatility Indices

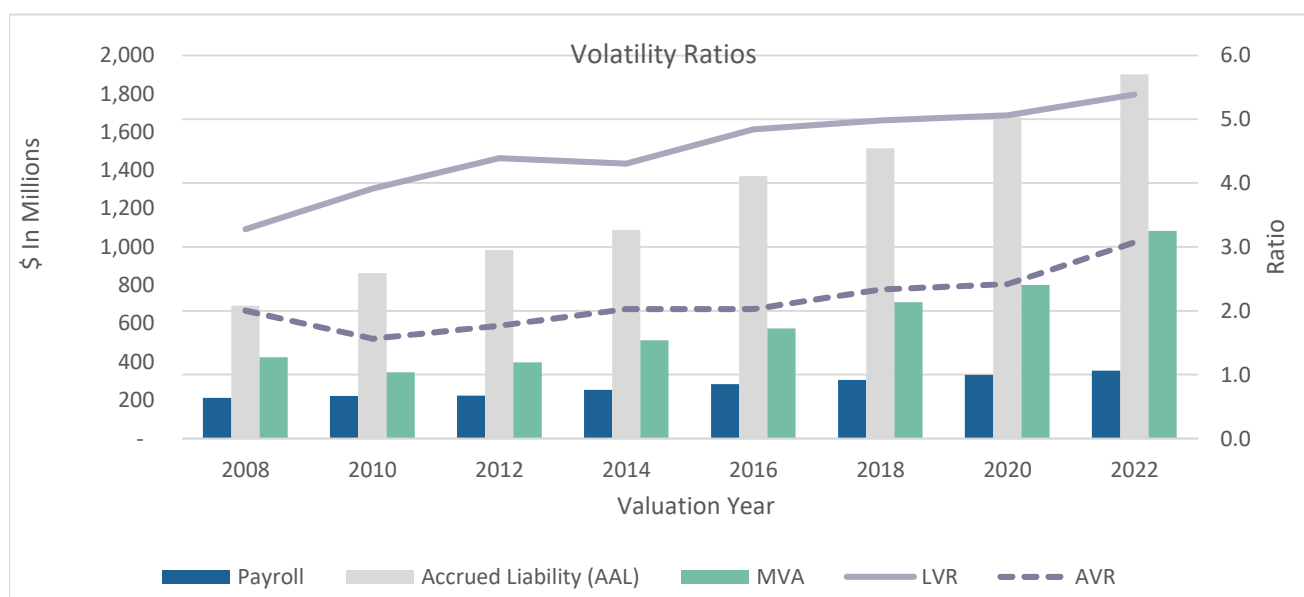
Volatility indices are measures of the relative sensitivity of employer contributions to changes in assets or liabilities. Below we present two such indices - the Asset Volatility Ratio (AVR) and the Liability Volatility Ratio (LVR):

Asset Volatility Ratio (AVR)

The Asset Volatility Ratio (AVR) is the ratio of the Market Value of Assets (MVA) to Payroll. Systems with a higher AVR experience more volatile employer contributions (as a percentage of payroll) due to investment return. This ratio indicates a measure of the system's current contribution volatility. The AVR increases over time but generally tends to stabilize as the system matures.

Liability Volatility Ratio (LVR)

The Liability Volatility Ratio (LVR) is the ratio of the Actuarial Accrued Liability (AAL) to Payroll. Due to the investment return assumption, systems with a higher LVR experience more volatile employer contributions (as a percentage of payroll). This ratio indicates a longer-term potential for contribution volatility. The AVR, described above, will tend to move close to the LVR as the system matures.

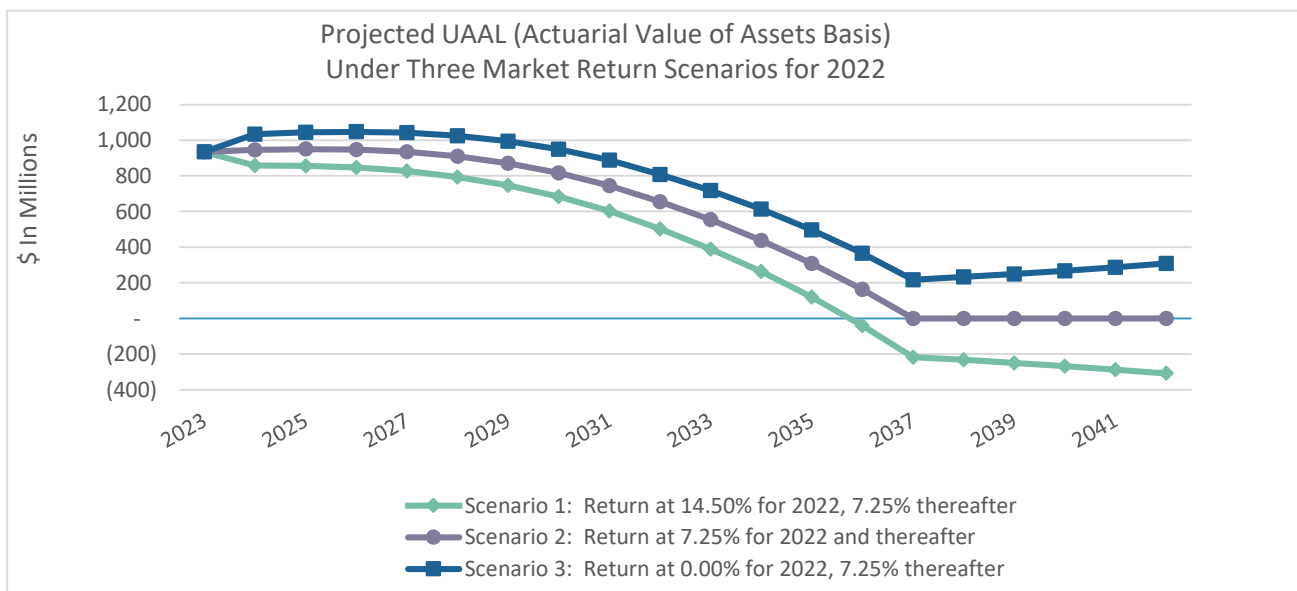


SECTION 4 - DISCLOSURES

4.3 - Risk Measures

Market Return Scenarios

Below we illustrate the projected effect on funding levels of a single year of investment return above or below the assumed investment return. Scenario 1 assumes a one-year return of 2 times the assumed return and the expected return thereafter, Scenario 2 assumes assets earn the expected return every year and Scenario 3 assumes a one-year return of 0% and the expected return thereafter.



Sensitivity Analysis

The following presents the Actuarial Accrued Liability and Funded Status calculated using the investment return rate of 7.25%, as well as what the Actuarial Accrued Liability and Funded Status would be if it were calculated using an investment return rate 1-percentage point lower (6.25%) or 1-percentage point higher (8.25%) than the assumed investment return rate:

	1% Decrease (6.25%)	Current Investment Return Rate (7.25%)	1% Increase (8.25%)
Actuarial Accrued Liability	\$2,119,299,868	\$1,900,571,222	\$1,715,619,274
% Change	12%		-10%
Actuarial Value of Assets	\$966,692,771	\$966,692,771	\$966,692,771
Unfunded Actuarial Accrued Liability	1,152,607,097	933,878,451	748,926,503
% Change	23%	N/A	-20%
Funded Status	45.6%	50.9%	56.3%

SECTION 4 - DISCLOSURES

4.3 - Risk Measures

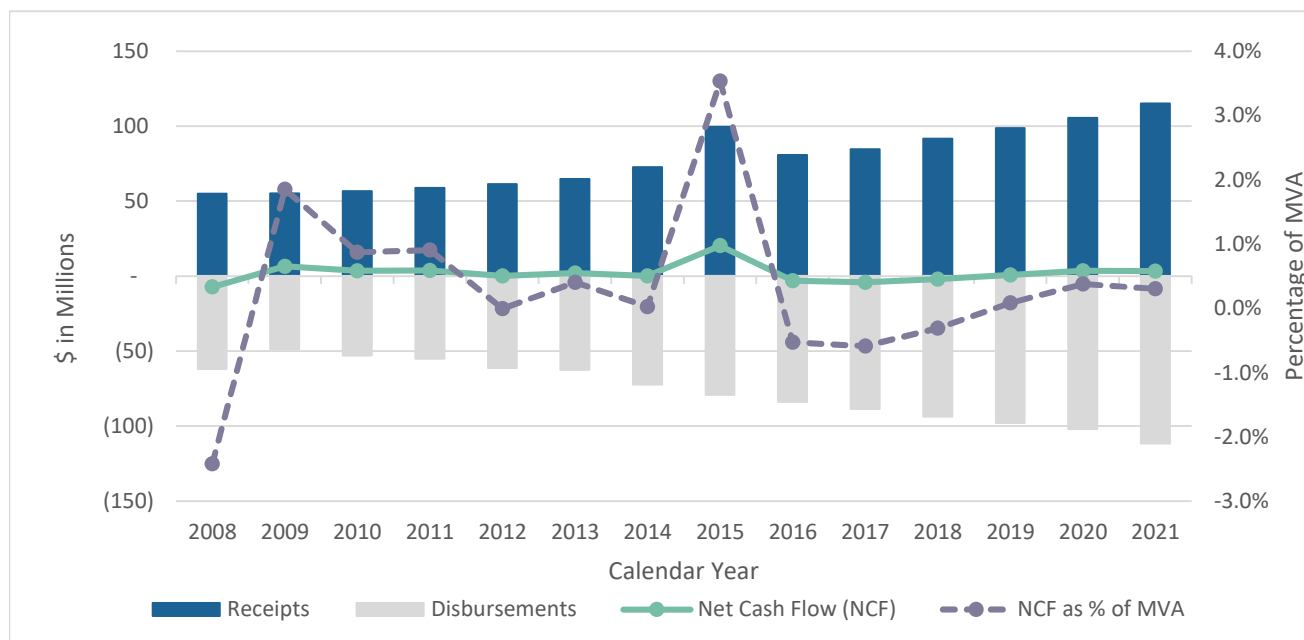
Duration

Duration is another measure that is used to describe how the present value of a cash flow series changes when small changes are made to the underlying interest rates. The duration of the Worcester Regional Retirement System is 11, and this represents an approximate percentage change in the Actuarial Accrued Liability for each 1% change to the investment return rate.

Net Cash Flow (NCF)

Net cash flow (NCF) during a year is the difference between contributions, both employer and employee, paid into the System and benefit payments and expenses paid from the System. If the level of benefit payments plus expenses is greater than contributions, then the System has negative NCF. Mature plans generally have a negative NCF as the number of retirees grows. When a System has negative NCF, then additional cash from existing assets are needed to pay the pension benefits.

Historical NCF since 2008 is shown in the next graph. Blue bars indicate contributions, from employees and employers, and grey bars show benefit payments and administrative expenses. The NCF is represented by the green line. The dashed purple line (which corresponds to the right-hand axis) provides the NCF as a percentage of the Market Value of Assets. As of December 31, 2021, the NCF was positive \$3.3 million, which represents 0.3% of the Market Value of Assets. The NCF falls within the range of -2.4% to 3.5% of total assets over the 14-year period.



SECTION 5 - SUMMARY OF PLAN PROVISIONS

Administration	There are 104 contributory retirement systems for public employees in Massachusetts. Each system is governed by a retirement board and all boards, although operating independently, are governed by Chapter 32 of the Massachusetts General Laws and other applicable statutes. This law in general provides uniform benefits, uniform contribution requirements and a uniform accounting and funds structure for all systems.	
Participation	Participation is mandatory for all full-time employees. Eligibility with respect to part-time, provisional, temporary, seasonal or intermittent employment is governed by regulations promulgated by the local retirement board, and approved by PERAC. Membership is optional for certain elected officials.	
Membership Groups	There are four membership groups in the Retirement System:	
	Group 1	General employees, including clerical, administrative, technical and all other employees not otherwise classified.
	Group 2	Certain specified hazardous duty positions.
	Group 3	State police officers and inspectors.
	Group 4	Local police officers, firefighters and other specified hazardous positions.
	For members in more than one group, participation will be proportional.	
Member Contributions	Member contributions vary depending on the most recent date of membership:	
	Prior to 1975	5% of Salary
	1975 – 1983	7% of Salary
	1984 – June 30, 1996	8% of Salary
	July 1, 1996 – present	9% of Salary
	1979 – present	An additional 2% of Salary in excess of \$30,000.
	Group 1 members hired on or after April 2, 2012	6% of Salary with 30 or more years of creditable service.
Rate of Interest	Interest on regular deductions made after January 1, 1984 is a rate established by PERAC in consultation with the Commissioner of Banks. The rate is obtained from the average rates paid on individual savings accounts by a representative sample of at least ten financial institutions.	

SECTION 5 - SUMMARY OF PLAN PROVISIONS

Retirement Age

The mandatory retirement age for some Group 2 and Group 4 members is age 65. Most Group 2 and Group 4 members may remain in service after reaching age 65. Group 4 members who are employed in certain public safety positions are required to retire at age 65. There is no mandatory retirement age for members in Group 1.

Salary

Gross regular compensation. This does not include bonuses, overtime, severance pay, unused sick leave credit or other similar compensation. For employees who became members after January 1, 2011, regular compensation is limited to 64% of the federal limit found in 26 U.S.C. §401(a)(17). For 2022, the limit is 64% of \$305,000, or \$195,200.

Average Salary

Membership before April 2, 2012 ♦ Average annual rate of regular compensation received during the three consecutive years that produce the highest average, or, if greater, during the last three years (whether or not consecutive) preceding retirement.

Membership on or after April 2, 2012 ♦ Average annual rate of regular compensation received during the five consecutive years that produce the highest average, or, if greater, during the last five years (whether or not consecutive) preceding retirement.

Creditable Service

The period during which a member contributes to the retirement system plus certain periods of military service and “purchased” service.

Benefit Rate

The benefit rate varies with the member's retirement age, Group, membership date and years of creditable service at retirement. Each year a member retires prior to the age at which the 2.5% maximum benefit rate applies, a reduction is applied to each year of age under the maximum age. The maximum age and reduction for each Group and membership date is as follows:

	Group 1	Group 2	Group 4
2.5% for Membership before April 2, 2012:			
Maximum age:	65	60	55
Reduction:	0.1%	0.1%	0.1%
2.5% for Membership on or after April 2, 2012 (less than 30 years of service):			
Maximum age:	67	62	57
Reduction:	0.15%	0.15%	0.15%
2.5% for Membership on or after April 2, 2012 (30+ years of service):			
Maximum age:	67	62	57
Reduction:	0.125%	0.125%	0.125%

SECTION 5 - SUMMARY OF PLAN PROVISIONS

Superannuation Retirement

Eligibility if membership before April 2, 2012	<ul style="list-style-type: none"> ♦ completion of 20 years of Creditable Service, or ♦ attainment of age 55 if hired prior to 1978, or ♦ attainment of age 55 with 10 years of Creditable Service, if hired after 1978.
Eligibility if membership on or after April 2, 2012	<ul style="list-style-type: none"> ♦ attainment of age 60 with 10 years of Creditable Service if classified in Group 1 ♦ attainment of age 55 with 10 years of Creditable Service if classified in Group 2 ♦ attainment of age 55 if classified in Group 4
Benefit Amount	Product of the member's Benefit Rate, Average Salary and Creditable Service.
Maximum Benefit	80% of the member's Average Salary.
Veteran's Benefit	Additional benefit of \$15 per year of Creditable Service, up to a maximum of \$300.

Deferred Vested

Eligibility	<ul style="list-style-type: none"> ♦ completion of ten or more years of Creditable Service. ♦ elected officials hired prior to 1978, completion of six years of Creditable Service.
Benefit Amount	Accrued benefit payable commencing at age 55, or the completion of 20 years of Creditable Service, or may be deferred until later at the participant's option.

Withdrawal of Contributions

- Contributions may be withdrawn upon termination of employment.
- ♦ Members hired on or after January 1, 1984 who terminate with less than ten years of Creditable Service receive contributions plus interest on the Annuity Savings Account at an annual rate of 3%.
 - ♦ All other withdrawals receive contributions plus 100% of the regular interest that has accrued to the Annuity Savings Account.

SECTION 5 - SUMMARY OF PLAN PROVISIONS

Ordinary Disability Retirement	Eligibility	Non-job related disability after completion of ten years of Creditable Service.
	Benefit Amount for Group 1 membership before April 2, 2012 or Group 2 or Group 4	Superannuation benefit determined if the member is age 55, up to a maximum of 80% of Average Salary over three years. If the member is a veteran, 50% of final rate of salary (final year) plus an annuity based on the accumulated member contributions plus credited interest, up to a maximum of 80% of Average Salary over five years.
	Benefit Amount for Group 1 membership on or after April 2, 2012	Superannuation benefit determined if the member is age 60, up to a maximum of 80% of Average Salary over three years. If the member is a veteran, 50% of final rate of salary (final year) plus an annuity based on the accumulated member contributions plus credited interest, up to a maximum of 80% of Average Salary over five years.
Accidental Disability Retirement	Eligibility	Disabled as a result of an accident in the performance of duties. There is no minimum age or service requirement.
	Benefit Amount	72% of Salary plus an annuity based on accumulated member contributions plus credited interest.
	Maximum Benefit	100% of Salary if hired before January 1, 1988, otherwise 75% of Salary.
	Veteran's Benefit	Additional allowance of \$15 per year of Creditable Service, up to a maximum of \$300.
	Supplemental Dependent Allowance	Additional allowance of \$1010.28 per year for each child until age 18 (or age 22 if a full-time student).
Non-Occupational Death	Eligibility	For members with at least two years of creditable service who die while in active service, but not due to occupational injury.
	Benefit Amount	Benefit as if Option C had been elected. Minimum benefit of \$250 per month for surviving spouse, \$120 per month for first child and \$90 per month for each additional child.

SECTION 5 - SUMMARY OF PLAN PROVISIONS

Accidental Death	Eligibility	For members who die as a result of an occupational injury.
	Benefit Amount	72% of Salary plus an annuity based on accumulated member contributions plus credited interest.
	Maximum Benefit	100% of Salary if hired before January 1, 1988, otherwise 75% of Salary.
	Veteran's Benefit	Additional allowance of \$15 per year of creditable service, up to a maximum of \$300.
	Supplemental Dependent Allowance	Additional allowance of \$1010.28 per year for each child until age 18 (or age 22 if a full-time student).
Cost-of-Living Adjustment (COLA)	In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a Cost-of-Living Adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees and beneficiaries who have been receiving benefit payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is \$16,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the Commonwealth of Massachusetts and are not the liability of the Retirement System.	
Optional Forms of Payment	A member may elect to receive his or her retirement allowance, payable in monthly installments, in one of three forms of payment:	
	<ul style="list-style-type: none"> ◆ Option A – Total annual allowance commencing at retirement and terminating at member's death. ◆ Option B – A reduced annual allowance commencing at retirement with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member. ◆ Option C – A reduced annual allowance commencing at retirement with 66⅔% of benefit continued to designated beneficiary upon death of member. For members who retired on or after January 12, 1988, if the beneficiary pre-deceases the retiree, the benefit payable increases based on the factor used to determine the Option C benefit at retirement. For members who retired prior to January 12, 1988, if the System has accepted Section 288 of Chapter 194 of the Acts of 1998 and the beneficiary pre-deceases the retiree, the benefit payable increases based on the factor used to determine the Option C benefit at retirement. 	

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Valuation Date	January 1, 2022
Investment Return	<p>7.25% per year. Previously, 7.65% per year.</p> <p>The investment return assumption is a long-term assumption based on capital market expectations by asset class, historical returns and professional judgment. We considered analysis prepared by PRIM's investment advisor using a building block approach and using the target asset allocation, expected returns by asset class and risk analysis to determine a long-term expected average annual rate of return.</p>
Annuity Savings Fund Interest Rate	2.00% per year
Amortization Method	<p><i>Unfunded Actuarial Accrued Liability (UAL):</i></p> <p>Increasing dollar amount at 4% to reduce the Unfunded Actuarial Accrued Liability to zero on or before June 30, 2036.</p> <p><i>Early Retirement Incentive Program (ERI) for 2002:</i></p> <p>Increasing dollar amount at 4.5% to reduce the Unfunded Actuarial Accrued Liability attributable to the 2002 ERI to zero on or before June 30, 2028.</p> <p><i>Early Retirement Incentive Programs (ERI) for 2003:</i></p> <p>Increasing dollar amount at 4.5% to reduce the Unfunded Actuarial Accrued Liability attributable to the 2003 ERI to zero on or before June 30, 2028.</p> <p><i>Early Retirement Incentive Programs (ERI) for 2010:</i></p> <p>Level dollar amount to reduce the Unfunded Actuarial Accrued Liability attributable to the 2010 ERI to zero on or before June 30, 2022.</p>

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Salary Scale

The assumed annual rates for salary increases including longevity are illustrated by the following rates:

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

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

Cost-of-Living Allowance

Cost-of-Living Allowances (COLA) are assumed to be 3% of the pension amount, capped at \$480 per year.

Inflation

2.4% per year, based on current economic data, analyses from economists and other experts, and professional judgment.

Payroll Growth

3.25% per year, based on historical data, current and recent market expectations and professional judgment.

Mortality Rates

RP-2014 Blue Collar Mortality Table with full generational mortality improvement using Scale MP-2020. For disabled members, RP-2014 Blue Collar Mortality Table set forward one year with full generational mortality improvement using Scale MP-2020.

General Employees: 55% of deaths are job-related.

Police and Fire: 90% of deaths are job-related.

PERAC completed a local system retiree mortality study in 2019 and selected the RP-2014 Blue Collar Mortality Table with full generational mortality improvement using Scale MP-2018 and subsequently updated the mortality improvement scale to MP-2020 in 2022. The underlying tables with generational mortality improvement selected reasonably reflect the mortality experience of the System as of the valuation date based on historical and current demographic data as well as professional judgement.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Turnover Rates

Illustrative turnover rates are shown below:

Creditable Service	Groups 1 and 2	Group 4
0	0.1500	0.0150
10	0.0540	0.0150
20	0.0200	0.0000
30	0.0000	0.0000

Disability Rates

Illustrative disability rates are shown below:

Attained Age	Groups 1 and 2	Group 4
20	0.0001	0.0010
30	0.0003	0.0030
40	0.0010	0.0030
50	0.0019	0.0125
60	0.0028	0.0085

General Employees: 55% of disabilities are accidental and 45% are ordinary.

Police and Fire: 90% of disabilities are accidental and 10% are ordinary.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Retirement Rates

Illustrative retirement rates are shown below:

Attained Age	Groups 1 and 2		Group 4
	Male	Female	Male & Female
50	0.0100	0.0150	0.0200
51	0.0100	0.0150	0.0200
52	0.0100	0.0200	0.0200
53	0.0100	0.0250	0.0500
54	0.0200	0.0250	0.0750
55	0.0200	0.0550	0.1500
56	0.0250	0.0650	0.1000
57	0.0250	0.0650	0.1000
58	0.0500	0.0650	0.1000
59	0.0650	0.0650	0.1500
60	0.1200	0.0500	0.2000
61	0.2000	0.1300	0.2000
62	0.3000	0.1500	0.2500
63	0.2500	0.1250	0.2500
64	0.2200	0.1800	0.3000
65	0.4000	0.1500	1.0000
66	0.2500	0.2000	1.0000
67	0.2500	0.2000	1.0000
68	0.3000	0.2500	1.0000
69	0.3000	0.2000	1.0000
70	1.0000	1.0000	1.0000

The turnover, disability and retirement rates are based on PERAC's most recent experience analysis of local retirement systems which reviewed age, gender and job group. The assumptions reflect this analysis as well as professional judgment.

Actuarial Cost Method

Individual Entry Age Normal.

Actuarial Asset Method

The Actuarial Value of Assets is the market value of assets as of the valuation date reduced by the sum of:

- a) 80% of gains and losses of the prior year,
- b) 60% of gains and losses of the second prior year,
- c) 40% of gains and losses of the third prior year, and
- d) 20% of gains and losses of the fourth prior year.

Investment gains and losses are determined by the excess or deficiency of the expected return over the actual return on the market value. The actuarial valuation of assets is further constrained to be not less than 80% or more than 120% of market value.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Census Data	Census data as of the valuation date were submitted by the Retirement Board.
Asset Data	Asset information is reported annually to the Public Employee Retirement Administration Commission by the Worcester Regional Retirement Board.
Dependents	80% of all members will be survived by a spouse. Age assumption for spouses is that males are assumed to be three years older than females.
Net Section 3(8)(c) Transfers	Reimbursements paid to and received from other retirement systems for that portion of a retiree's pension that is based on service earned in another retirement system. Net 3(8)(c) transfers are assumed to be \$4,500,000 for FY2024 through FY2026 and \$3,200,000 per year thereafter.
Administrative Expenses	<p>The anticipated administrative expenses for the fiscal year. For Fiscal Year 2024, the administrative expenses were assumed to be \$1,400,000 and are anticipated to increase 3.25% per year. Previously, \$1,200,000.</p> <p>The administrative expense assumption is based on information relating to the System's administrative expenses provided by the Retirement Board.</p>

SECTION 7 - PLAN MEMBER INFORMATION

Exhibit 7.1 - Summary of Census Data as of January 1, 2022

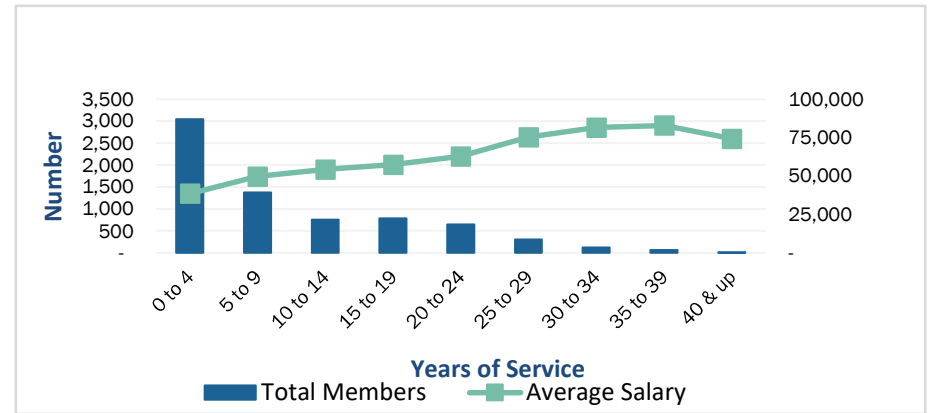
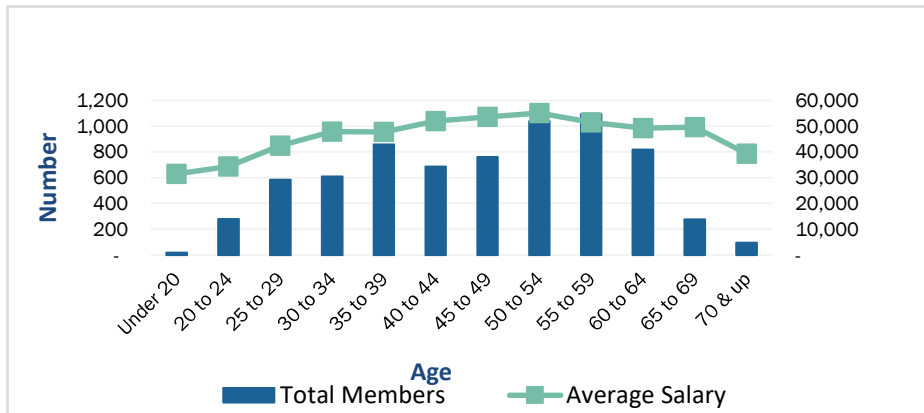
Census data as of December 31, 2021 was provided to us by the Retirement Board. We performed edits on the data to ensure that it is reasonable and complete and made certain assumptions regarding any missing or invalid data so that results are not materially affected. Presented on the following pages are summaries of the demographic profile of active members (Exhibit 7.2) and retired plan members and beneficiaries and disabled plan members (Exhibit 7.3). Below, we present a comparison of the census data from the current and prior valuations:

Valuation Date	January 1, 2022	January 1, 2020	% Change
Census Data			
Active Members	7,121	7,024	1.4%
Average Age	47.0	47.3	(0.7%)
Average Service	9.6	9.9	(2.6%)
Valuation Salary	\$352,756,822	\$331,209,833	6.5%
Average Salary	\$49,538	\$47,154	5.1%
Retired Members and Beneficiaries	3,838	3,524	8.9%
Average Age	73.0	73.2	(0.3%)
Total Annual Retirement Allowance	\$91,096,821	\$77,525,219	17.5%
Average Annual Retirement Allowance	\$23,735	\$21,999	7.9%
State Reimbursed COLAs	\$196,576	\$262,882	(25.2%)
Total System-Funded Retirement Allowance	\$90,900,245	\$77,262,337	17.7%
Disabled Members	274	278	(1.4%)
Average Age	64.2	63.8	0.6%
Total Annual Retirement Allowance	\$10,059,176	\$9,589,804	4.9%
Average Annual Retirement Allowance	\$36,712	\$34,496	6.4%
State Reimbursed COLAs	\$47,740	\$57,372	(16.8%)
Total System-Funded Retirement Allowance	\$10,011,436	\$9,532,432	5.0%
Inactive Members	2,714	2,247	20.8%
Annuity Savings Fund	\$26,264,607	\$26,500,968	(0.9%)

SECTION 7 - PLAN MEMBER INFORMATION

Exhibit 7.2 - Active Members by Age and Years of Service as of January 1, 2022

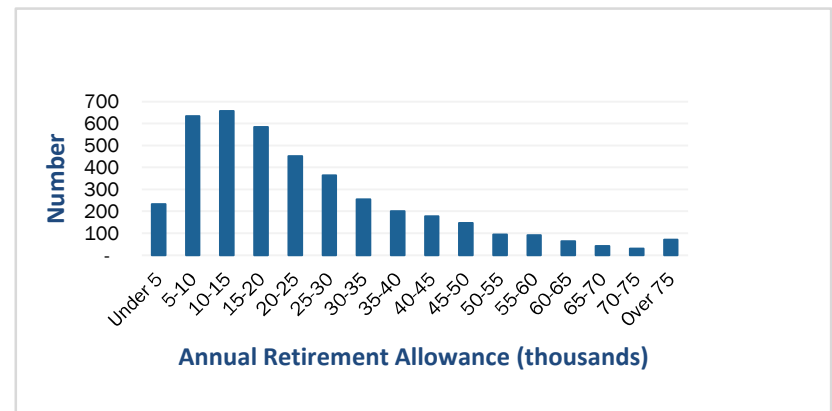
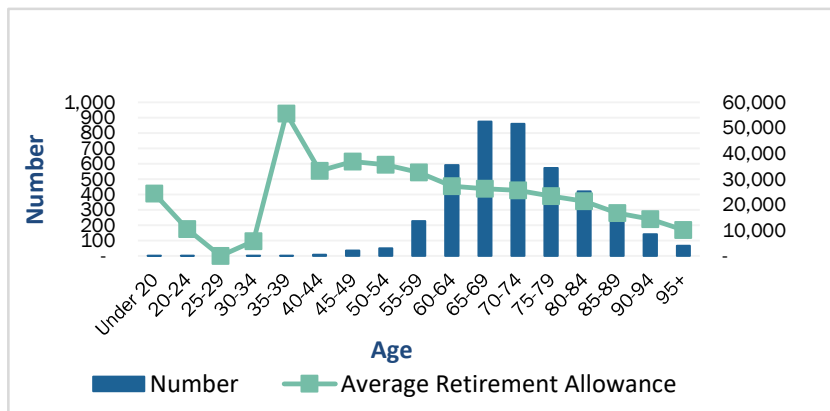
Attained Age	Years of Service										Total	Total Salary	Average Salary
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up				
Under 20	19	-	-	-	-	-	-	-	-	19	598,123	31,480	
20 to 24	277	2	-	-	-	-	-	-	-	279	9,574,500	34,317	
25 to 29	488	97	-	-	-	-	-	-	-	585	24,770,618	42,343	
30 to 34	382	194	33	-	-	-	-	-	-	609	29,110,514	47,801	
35 to 39	567	142	92	54	2	1	-	-	-	858	40,952,833	47,731	
40 to 44	320	172	69	85	38	3	-	-	-	687	35,658,078	51,904	
45 to 49	282	174	84	82	105	33	2	-	-	762	40,850,948	53,610	
50 to 54	273	232	147	134	129	87	32	4	-	1,038	57,216,161	55,122	
55 to 59	246	194	171	187	142	71	51	31	1	1,094	56,281,559	51,446	
60 to 64	128	111	111	179	157	79	27	18	7	817	40,227,798	49,238	
65 to 69	44	47	39	51	53	25	12	5	1	277	13,741,002	49,607	
70 & up	16	10	13	14	21	10	2	5	5	96	3,774,689	39,320	
Total	3,042	1,375	759	786	647	309	126	63	14	7,121	352,756,822	49,538	
Average Salary	38,653	49,731	54,343	57,320	62,894	75,307	81,492	82,934	74,220				
Average Age:							47.0	Average Service:		9.6			



SECTION 7 - PLAN MEMBER INFORMATION

Exhibit 7.3 - Annual Retirement Allowances as of January 1, 2022

Attained Age	Service Retirements		Disability Retirements		Beneficiaries	
	Number	Annual Retirement Allowance	Number	Annual Retirement Allowance	Number	Annual Retirement Allowance
Under 20	0	0	0	0	1	24,340
20-24	0	0	0	0	1	10,424
25-29	0	0	0	0	0	0
30-34	0	0	0	0	1	5,643
35-39	0	0	1	55,574	0	0
40-44	0	0	6	210,131	1	22,515
45-49	5	138,908	23	1,045,496	6	65,635
50-54	17	659,284	21	831,825	11	254,172
55-59	167	5,342,998	45	1,841,927	15	214,359
60-64	506	13,689,614	50	1,823,044	34	557,845
65-69	776	20,000,632	51	1,849,668	48	1,033,538
70-74	769	19,913,822	34	1,102,550	56	981,961
75-79	506	11,917,510	24	794,099	43	670,159
80-84	354	7,722,671	12	331,348	54	881,505
85-89	220	3,807,990	6	152,578	41	511,005
90-94	112	1,698,110	1	20,936	28	307,077
95+	53	557,544	0	0	13	107,560
Total	3,485	85,449,083	274	10,059,176	353	5,647,738
Average Age	72.8		64.2		75.1	
Average Retirement Allowance		24,519		36,712		15,999



SECTION 8 - GLOSSARY OF TERMS

Actuarial Accrued Liability – That portion of the Actuarial Present Value of pension plan benefits which is not provided by future Normal Costs or employee contributions. It is the portion of the Actuarial Present Value attributable to service rendered as of the Valuation Date.

Actuarial Assumptions – Assumptions, based upon past experience or standard tables, used to predict the occurrence of future events affecting the commencement, amount and duration of pension benefits, such as: changes in compensation, mortality, withdrawal, disablement and retirement; rates of investment earnings and asset appreciation or depreciation; and any other relevant items.

Actuarial Cost Method (or Funding Method) – A procedure for allocating the Actuarial Present Value of all past and future pension plan benefits to the current year (Normal Cost) and the past (Actuarial Accrued Liability).

Actuarial Gain or Loss (or Experience Gain or Loss) – A measure of the difference between actual experience and that expected based upon the set of Actuarial Assumptions, during the period between the valuation date and the most recent immediately preceding valuation date.

Actuarial Present Value – The dollar value on the valuation date of all benefits expected to be paid to current members based upon the Actuarial Assumptions and the terms of the Plan.

Amortization Payment – That portion of the pension plan appropriation which represents payments made to pay interest on and the reduction of the Unfunded Accrued Liability.

Annual Statement – The statement submitted by the local retirement board to PERAC each year that describes the asset holdings and Fund balances as of December 31 and the transactions during the calendar year that affected the financial condition of the retirement system.

Annuity Reserve Fund – The fund into which total accumulated Member Contributions, including interest, is transferred at the time a member retires, and from which annuity payments are made.

Annuity Savings Fund – The fund in which Member Contributions plus interest credited are held for active members and for former members who have not withdrawn their contributions and are not yet receiving a benefit (inactive members).

Assets – The total value of the investments held by the Plan trust that are for the payment of promised benefits. Employer appropriations and Member Contributions, as well as investment earnings, are added to the Plan trust. Benefit payments and other disbursements are withdrawn from the Plan trust. For valuation purposes, assets are usually measured at market value.

Cost of Benefits – The estimated payment from the pension system for benefits for the fiscal year.

Expense Fund – The fund into which the appropriation for administrative expenses is paid and from which all such expenses are paid.

SECTION 8 - GLOSSARY OF TERMS

Funded Ratio – The Actuarial Value of Assets expressed as a percentage of the Actuarial Accrued Liability.

Funding Schedule – The schedule based upon the most recently approved actuarial valuation which sets forth the amount which would be appropriated to the pension system in accordance with Section 22D and Section 22F of M.G.L. Chapter 32.

GASB – Governmental Accounting Standards Board.

Normal Cost – Total Normal Cost is that portion of the Actuarial Present Value of pension plan benefits which is expected to accrue in the current fiscal year. The Employee Normal Cost is the amount of the expected Member Contributions for the current fiscal year. The Employer Normal Cost is the difference between the Total Normal Cost and the Employee Normal Cost.

Pension Fund – The fund into which appropriation amounts as determined by PERAC are paid and from which pension benefits are paid.

Pension Reserve Fund – The fund which shall be credited with all amounts set aside by a system for the purpose of establishing a reserve to meet future pension liabilities. These amounts would include excess interest earnings.

Present Value of Future Benefits – The actuarial present value of the cost to finance benefits payable in the future, discounted to reflect the expected effects of the time value of money and the probabilities of payment.

Special Fund for Military Service Credit – The fund which is credited with amounts paid by the retirement board equal to the amount which would have been contributed by a member during a military leave of absence as if the member had remained in active service of the retirement board. In the event of retirement or a non-job related death, such amount is transferred to the Annuity Reserve Fund. In the event of termination prior to retirement or death, such amount shall be transferred to the Pension Fund.

Total Pension Liability – The portion of the Actuarial Present Value attributable to past service in accordance with the Entry Age cost method as stipulated by GASB Statement Number 67 (GASB 67).

Unfunded Actuarial Accrued Liability – The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.

SECTION 9 - MEMBER UNIT FY2024 APPROPRIATION

Unit	Unit Name	Normal Cost	UAL	2002 ERI	2003 ERI	2010 ERI	FY2024 Appropriation	FY2023 Appropriation	Increase over FY 2023	Payment on 7/1/2023
010	Ashburnham	425,345	791,359	37,677	-	-	1,254,381	1,153,447	8.75%	1,232,811
020	Ashburnham-Westminster Regional	372,116	618,227	-	-	-	990,343	884,646	11.95%	973,314
025	Athol	566,518	1,590,145	-	-	-	2,156,663	2,031,070	6.18%	2,119,578
026	Athol Housing Authority	20,961	40,480	-	-	-	61,441	49,635	23.79%	60,384
027	Athol-Royalston Regional School District	248,929	584,757	-	-	-	833,686	754,959	10.43%	819,350
030	Auburn	1,494,326	3,091,205	207,536	32,199	-	4,825,266	4,358,630	10.71%	4,742,293
040	Auburn Housing Authority	29,429	56,259	-	-	-	85,688	85,236	0.53%	84,215
050	Auburn Water District	13,366	122,717	6,176	-	-	142,259	133,516	6.55%	139,813
060	Barre	224,205	311,724	6,796	2,718	-	545,443	454,844	19.92%	536,064
070	Barre Housing Authority	1,479	28,572	-	-	-	30,051	33,684	-10.79%	29,534
080	Berlin	224,101	451,904	-	-	-	676,005	616,812	9.60%	664,381
090	Berlin-Boylston Regional	212,347	198,040	-	-	-	410,387	352,879	16.30%	403,330
100	Blackstone	382,916	823,915	-	-	-	1,206,831	1,033,929	16.72%	1,186,079
105	Blackstone Housing Authority	-	16,750	-	-	-	16,750	21,232	-21.11%	16,462
110	Blackstone-Millville Regional	209,002	513,753	-	-	-	722,755	683,717	5.71%	710,327
120	Bolton	262,283	533,132	20,385	-	-	815,800	671,229	21.54%	801,772
130	Boylston	361,925	523,326	15,443	-	-	900,694	785,062	14.73%	885,206
135	Boylston Water District	5,117	14,247	-	-	-	19,364	16,669	16.17%	19,031
140	Brookfield	160,276	273,007	10,295	-	-	443,578	406,568	9.10%	435,950
150	Charlton	722,159	1,451,600	52,709	-	-	2,226,468	1,924,571	15.69%	2,188,183
160	Cherry Valley-Rochdale Water	4,920	67,735	-	-	-	72,655	74,612	-2.62%	71,406
170	Douglas	579,801	989,116	14,822	14,217	-	1,597,956	1,421,785	12.39%	1,570,478
180	Dudley	351,585	890,792	157,505	9,409	-	1,409,291	1,219,794	15.54%	1,385,058
190	Dudley Housing Authority	3,568	20,275	-	-	-	23,843	24,975	-4.53%	23,433
200	Dudley-Charlton Regional	443,121	1,003,943	48,382	21,118	-	1,516,564	1,376,949	10.14%	1,490,486
210	East Brookfield	115,217	143,994	-	-	-	259,211	206,898	25.28%	254,754
220	Grafton	896,448	1,920,177	47,559	20,490	-	2,884,674	2,626,538	9.83%	2,835,071
230	Grafton Housing Authority	8,543	54,424	-	-	-	62,967	61,868	1.78%	61,884
240	Hardwick	92,300	172,437	15,649	-	-	280,386	244,434	14.71%	275,565
250	Harvard	429,589	964,928	-	-	-	1,394,517	1,264,298	10.30%	1,370,538
260	Hillcrest Water District	935	11,849	-	-	-	12,784	11,551	10.67%	12,564

SECTION 9 - MEMBER UNIT FY2024 APPROPRIATION

Unit	Unit Name	Normal Cost	UAL	2002 ERI	2003 ERI	2010 ERI	FY2024 Appropriation	FY2023 Appropriation	Increase over FY 2023	Payment on 7/1/2023
270	Holden	935,790	2,277,196	78,031	-	-	3,291,017	3,027,359	8.71%	3,234,426
280	Holden Housing Authority	-	24,640	-	-	-	24,640	26,411	-6.71%	24,216
290	Hopedale	485,435	920,262	-	-	-	1,405,697	1,340,927	4.83%	1,381,525
300	Hopedale Housing Authority	-	2,143	-	-	-	2,143	3,821	-43.92%	2,106
310	Hubbardston	191,477	209,159	12,353	5,227	-	418,216	357,858	16.87%	411,025
320	Lancaster	248,272	638,022	-	-	-	886,294	853,464	3.85%	871,054
325	Lancaster Housing Authority	7,156	11,087	-	-	-	18,243	17,221	5.93%	17,929
327	Lancaster Sewer	2,872	660	-	-	-	3,532	2,944	19.97%	3,471
330	Leicester	471,294	1,319,492	61,971	2,510	-	1,855,267	1,748,998	6.08%	1,823,365
340	Leicester Housing Authority	24,546	46,742	-	-	-	71,288	65,967	8.07%	70,062
350	Leicester Water District	9,386	54,797	-	-	-	64,183	59,578	7.73%	63,079
360	Lunenburg	628,713	1,322,813	-	-	-	1,951,526	1,720,272	13.44%	1,917,969
370	Lunenburg Housing Authority	2,177	4,088	-	-	-	6,265	2,560	144.73%	6,157
380	Lunenburg Water District	5,982	79,898	-	-	-	85,880	75,899	13.15%	84,403
390	Mendon	358,245	657,802	9,882	26,552	-	1,052,481	926,755	13.57%	1,034,383
400	Mendon-Upton Regional	352,784	760,285	8,236	9,197	-	1,130,502	1,032,362	9.51%	1,111,063
410	Millbury	633,950	1,837,306	168,209	-	-	2,639,465	2,473,776	6.70%	2,594,078
420	Millbury Housing Authority	22,239	93,145	-	7,529	-	122,913	127,765	-3.80%	120,799
430	Millville	110,177	103,755	-	-	-	213,932	229,896	-6.94%	210,253
440	Narragansett Regional	225,507	426,225	29,030	-	-	680,762	629,075	8.22%	669,056
450	Nashoba Regional	535,439	962,711	-	-	-	1,498,150	1,354,115	10.64%	1,472,389
455	Nashoba Valley Dispatch	22,175	56,575	-	-	-	78,750	62,111	26.79%	77,396
460	New Braintree	21,797	47,928	-	-	-	69,725	73,160	-4.70%	68,526
470	Northboro	857,263	2,102,845	-	-	-	2,960,108	2,864,538	3.34%	2,909,208
480	Northboro Housing Authority	27,782	72,424	-	-	-	100,206	89,557	11.89%	98,483
490	Northboro-Southboro Regional	257,613	414,113	-	-	-	671,726	577,592	16.30%	660,175
500	North Brookfield	279,678	518,178	-	16,935	-	814,791	738,917	10.27%	800,780
510	North Brookfield Housing Authority	5,464	22,015	-	-	-	27,479	24,646	11.49%	27,006
530	Oakham	32,899	58,051	-	-	-	90,950	86,909	4.65%	89,386
540	Oxford	927,038	1,939,303	160,797	18,189	-	3,045,327	2,768,762	9.99%	2,992,961
550	Oxford Housing Authority	28,942	72,565	-	-	-	101,507	94,854	7.01%	99,762

SECTION 9 - MEMBER UNIT FY2024 APPROPRIATION

Unit	Unit Name	Normal Cost	UAL	2002 ERI	2003 ERI	2010 ERI	FY2024 Appropriation	FY2023 Appropriation	Increase over FY 2023	Payment on 7/1/2023
555	Oxford-Rochdale Sewer District	3,919	16,248	-	-	-	20,167	47,488	-57.53%	19,820
560	Paxton	409,875	683,459	-	-	-	1,093,334	1,018,049	7.40%	1,074,534
570	Petersham	55,550	154,974	-	2,718	-	213,242	208,382	2.33%	209,575
580	Phillipston	62,257	104,565	-	-	-	166,822	167,112	-0.17%	163,953
590	Princeton	186,368	416,806	9,882	-	-	613,056	533,054	15.01%	602,514
600	Quabbin Regional	387,307	1,024,073	62,588	9,197	-	1,483,165	1,358,209	9.20%	1,457,661
610	Quaboag Regional	182,084	334,643	36,234	-	-	552,961	478,325	15.60%	543,453
620	Royalston	19,587	52,990	-	-	-	72,577	74,266	-2.27%	71,329
630	Rutland	435,410	624,208	7,414	-	-	1,067,032	865,956	23.22%	1,048,684
640	Southboro	932,236	1,925,781	-	-	-	2,858,017	2,605,449	9.69%	2,808,872
650	Southboro Housing	7,683	15,387	12,970	-	-	36,040	33,135	8.77%	35,420
660	Spencer	416,707	931,759	-	-	-	1,348,466	1,224,772	10.10%	1,325,279
670	Spencer-East Brookfield Regional	246,279	522,089	28,000	4,806	-	801,174	797,112	0.51%	787,397
680	Spencer Housing Authority	18,026	58,078	-	-	-	76,104	68,053	11.83%	74,795
690	Sterling	427,079	1,011,210	-	16,516	-	1,454,805	1,404,782	3.56%	1,429,789
700	Sterling Housing Authority	5,290	7,609	-	-	-	12,899	12,489	3.28%	12,677
710	Sturbridge	769,159	1,237,234	-	75,272	-	2,081,665	1,859,324	11.96%	2,045,870
720	Sutton	590,567	1,289,276	-	-	-	1,879,843	1,593,192	17.99%	1,847,518
730	Tantasqua Regional	362,670	655,100	-	-	-	1,017,770	917,249	10.96%	1,000,269
740	Templeton	324,016	795,918	25,324	-	-	1,145,258	1,084,623	5.59%	1,125,565
750	Templeton Housing Authority	12,806	26,908	25,116	-	-	64,830	59,185	9.54%	63,715
760	Upton	273,759	738,113	-	-	-	1,011,872	856,773	18.10%	994,472
770	Uxbridge	899,897	1,821,904	87,295	-	-	2,809,096	2,463,206	14.04%	2,760,792
780	Uxbridge Housing Authority	18,773	61,620	-	-	-	80,393	77,195	4.14%	79,011
790	Wachusett Regional	969,770	1,756,885	66,913	-	-	2,793,568	2,618,357	6.69%	2,745,531
800	Warren	192,940	324,129	62,177	-	-	579,246	508,798	13.85%	569,286
810	Warren Water District	10,518	17,609	-	-	-	28,127	24,711	13.82%	27,643
820	Westboro	1,833,846	4,435,644	-	41,815	-	6,311,305	5,687,613	10.97%	6,202,778
825	Westboro Housing Authority	18,655	30,056	5,968	-	-	54,679	61,447	-11.01%	53,739
830	West Boylston	595,852	1,160,334	70,828	-	-	1,827,014	1,687,824	8.25%	1,795,598
835	West Boylston Housing Authority	8,253	12,992	-	-	-	21,245	20,162	5.37%	20,880

SECTION 9 - MEMBER UNIT FY2024 APPROPRIATION

Unit	Unit Name	Normal Cost	UAL	2002 ERI	2003 ERI	2010 ERI	FY2024 Appropriation	FY2023 Appropriation	Increase over FY 2023	Payment on 7/1/2023
840	West Boylston Water District	18,827	78,695	-	-	-	97,522	86,956	12.15%	95,845
850	West Brookfield	154,433	246,252	-	-	-	400,685	374,623	6.96%	393,795
860	Westminster	335,165	994,147	-	5,855	-	1,335,167	1,172,145	13.91%	1,312,208
870	Winchendon	604,932	1,461,807	71,031	-	-	2,137,770	2,090,814	2.25%	2,101,010
880	Winchendon Housing Authority	41,249	119,607	5,558	-	-	166,414	157,217	5.85%	163,552
Total		28,406,663	60,479,123	1,746,741	342,469	-	90,974,996	82,742,153	9.95%	89,410,634