DANVERS CONTRIBUTORY RETIREMENT SYSTEM

ACTUARIAL VALUATION
as of
January 1, 2024

KMS Actuaries, LLC
52 Hunt Road
Kingston, NH 03848

July, 2024

KMS
ACTUARIES
LLC

KMS

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LLC

July 31, 2024

Danvers Contributory Retirement Board
Town Hall
1 Sylvan Street
Danvers, MA 01923

Dear Board Members:

We are pleased to present the enclosed report providing the results of our actuarial valuation of the Danvers Contributory Retirement System as of January 1, 2024. 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, 2024. 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 Danvers Contributory 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 7.00%, 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.

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. The potential range of future measurements was not assessed as it was outside the scope of the project.

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 Danvers Contributory Retirement Board and may only be provided to other parties in its entirety, unless expressly authorized by KMS Actuaries. Further, it is intended to provide information to comply with the stated purpose of the report. It may not be appropriate for other purposes.

KMS Actuaries is completely independent of the Danvers Contributory Retirement System and any of its officers or key personnel. None of the actuaries signing this report or anyone closely associated with them has a relationship with the Danvers Contributory Retirement System, other than as consulting actuary for this assignment, that would impair our independence.

The undersigned credentialed actuaries agree that the analysis, assumptions and results are overall reasonable. They 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,

Linda L. Bournival, FSA
Member, American Academy of Actuaries
(603) 792-9494

Amanda J. Makarevich, FSA
Member, American Academy of Actuaries
(603) 792-9494

David M. Mirabito, FSA
Member, American Academy of Actuaries
(978) 766-5532

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SECTION 1 - EXECUTIVE SUMMARY

Background

We have completed the Actuarial Valuation of the Danvers Contributory Retirement System as of January 1, 2024. 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 Danvers Contributory Retirement Board. Information for the prior valuation completed as of January 1, 2022 was obtained from the valuation report prepared by KMS Actuaries, LLC.

Primary Purpose

This report was prepared for the Retirement Board for the purposes described below:

- Measure and disclose the financial condition of the System as of the valuation date,
- Indicate trends, both historical and prospective, in the financial progress of the System,
- Identify, assess and disclose material risks of the System and
- Develop System appropriations.

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, 2023, the assets as of December 31, 2023 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, 2023 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 Danvers Contributory Retirement Board. The market value of assets decreased from $160,834,634 as of December 31, 2021 to $152,848,305 as of December 31, 2023. During the plan years ended 2022 and 2023, the market value rates of return were -15.68% and 16.62%, respectively.

The actuarial value of assets increased from $147,050,037 as of January 1, 2022 to $159,090,324 as of January 1, 2024. During the plan years ended 2022 and 2023, the rates of return on the actuarial value of assets were 4.23% and 6.72%, respectively.

Changes Since the Last Valuation

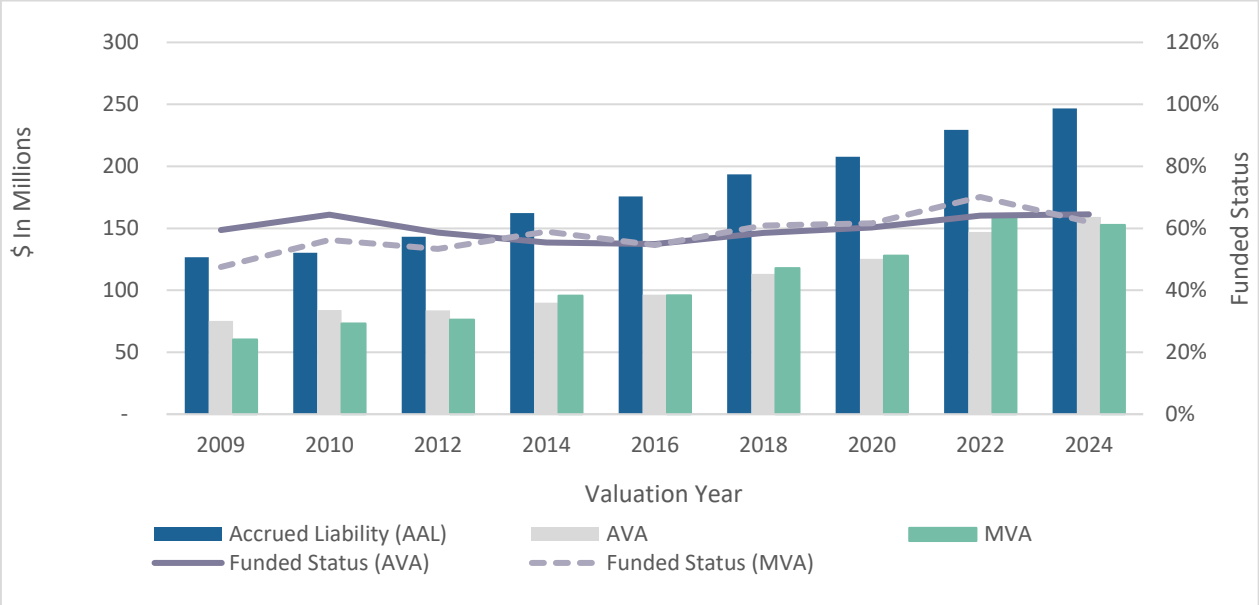
During the two years since the last valuation, the total unfunded actuarial accrued liability of the System was expected to decrease from $82,367,734 as of January 1, 2022 to $74,810,226 as of January 1, 2024, for a total decrease of $7,557,508. The actual unfunded actuarial accrued liability, before any assumption or plan changes, was $84,377,711, resulting in an actuarial loss of $9,567,485. The actuarial loss was primarily due to an asset loss of approximately $5,134,000 and a demographic experience loss of approximately $4,434,000. The details of the gain and loss analysis are provided in Section 2, Actuarial Experience.

Change in Funded Status

The System's funded status, which is the Actuarial Value of Assets divided by the Actuarial Liabilities, increased from 64.1% as of January 1, 2022 to 64.5% as of January 1, 2024.

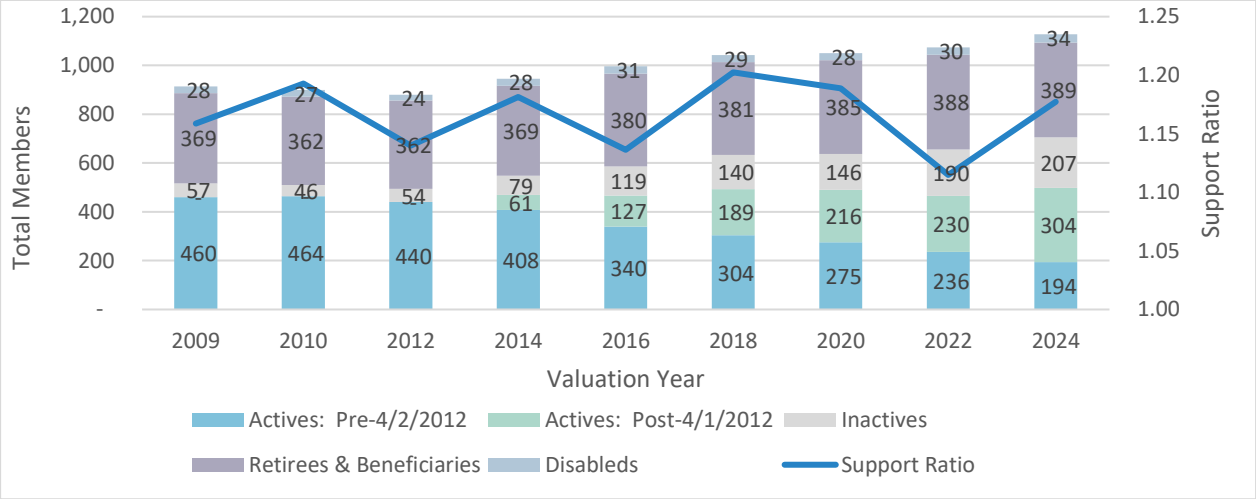
Historical Trends

Below are the accrued liabilities, asset values (actuarial and market) and funded status for each of the last 9 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.



Historical Trends, continued

Below are the membership counts for each of the last 9 valuations. The blue line reflects the support ratio, which is the number of active members divided by the number of retirees.



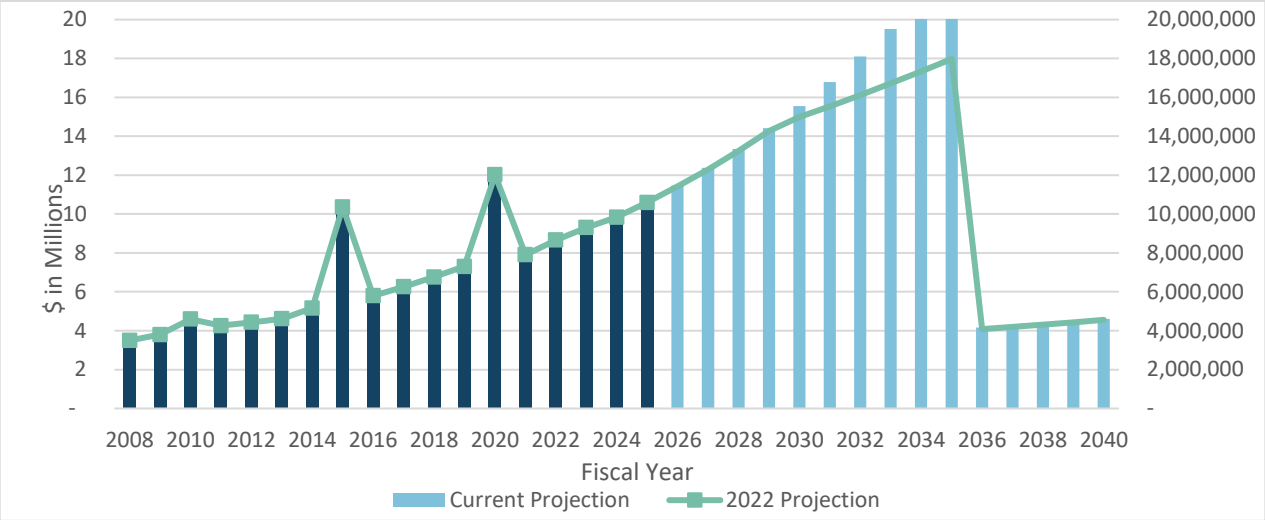
Appropriations

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 annual payments of the appropriation made July 1. The appropriation calculated as of the January 1, 2024 valuation is $12,399,319, and is made up of a normal cost payment of $2,474,529, net 3(8)(c) transfers of $580,042, and an amortization payment of $9,344,748. The amortization method is an increasing amortization of the unfunded actuarial accrued liability at 4% over 11 years and is expected to fully pay the unfunded actuarial accrued liability by the year 2035. The development of the appropriation as of January 1, 2024 is presented in Section 3, Annual Appropriations.

For fiscal year 2025, we show the actual appropriation developed under the previous funding schedule and reported on the PERAC "Required Fiscal Year 2025 Appropriation" letter dated November 21, 2023 of $10,599,083. For fiscal year 2026, we developed an annual appropriation of $11,474,922, which is made up of a normal cost of $2,614,296, net 3(8)(c) transfers of $600,000 and payment toward the unfunded actuarial accrued liability of $8,260,626. The Town's unfunded actuarial accrued liability is expected to be fully paid by 2035 and Danvers Electric's unfunded actuarial accrued liability was fully paid in 2022. The Board adopted a schedule that limits the Town's annual increase in appropriation to 8% for each year. The current funding schedule is shown in Section 3, Exhibit 3.1.

Appropriations, continued

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).



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

The investment return rate assumption decreased from 7.125% to 7.00%. All other Actuarial Assumptions and Methods are the same as those used in the prior valuation. Changing this assumption resulted in a net increase in the unfunded actuarial accrued liability of $3,176,494 and an increase in the employer normal cost of $150,630. The Actuarial Assumptions and Methods utilized in this valuation are detailed in Section 6, Actuarial Assumptions and Methods.

Census Data

As of January 1, 2024, there are 498 active members who may be eligible for benefits in the future, 389 retirees and beneficiaries, 207 inactives and 34 disabled retirees. Summaries of the active, retired and disabled employees are included in Section 7, Plan Member Information. We have examined the data for reasonableness and consistency in accordance with ASOP 23.

5% Local COLA Option

On November 16, 2022, Governor Baker signed Chapter 269 of the Acts of 2022 into law. This act provides the local retirement systems with the option to increase the Cost of Living Adjustment ("COLA") for Fiscal Year 2023 to up to 5 percent on the base amount specified pursuant to G.L. c. 32, § 103. The approval of the increase must occur prior to July 1, 2023 and will take effect as of July 1, 2022.

The additional COLA was approved at the Town meeting on January 25, 2023, therefore the increased benefits are included in the measurement of the Actuarial Accrued Liability reported by the Plan at January 1, 2024. The impact of the additional COLA was an increase in the Actuarial Accrued Liability of $778,546.

SECTION 1 - EXECUTIVE SUMMARY

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

Valuation Date	January 1, 2024	January 1, 2022	% Change
Census Data			
Active Members	498	466	6.9%
Valuation Salary	$34,751,691	$30,929,905	12.4%
Average Salary	$69,783	$66,373	5.1%
Retired Members and Beneficiaries	389	388	0.3%
Total Annual Retirement Allowance	$12,870,795	$12,343,386	4.3%
Average Annual Retirement Allowance	$33,087	$31,813	4.0%
Disabled Members	34	30	13.3%
Total Annual Retirement Allowance	$1,676,413	$1,325,249	26.5%
Average Annual Retirement Allowance	$49,306	$44,175	11.6%
Inactive Members	207	190	8.9%
Annuity Savings Fund	$2,532,101	$2,290,040	10.6%
Funded Status			
Actuarial Accrued Liability (AAL)	$246,644,529	$229,417,771	7.5%
Market Value of Assets (MVA)	$152,848,305	$160,834,634	(5.0%)
Unfunded Accrued Liability on MVA	$93,796,224	$68,583,137	36.8%
Funded Status on MVA	62.0%	70.1%	(11.6%)
Actuarial Value of Assets (AVA)	$159,090,324	$147,050,037	8.2%
Unfunded Accrued Liability on AVA	$87,554,205	$82,367,734	6.3%
Funded Status on AVA	64.5%	64.1%	0.6%
Appropriations			
Fiscal Year 2024	N/A	$9,841,375	N/A
Fiscal Year 2025	$10,599,083	$10,599,083	0.0%
Fiscal Year 2026	$11,474,922	$11,416,621	0.5%
Fiscal Year 2027	$12,378,100	$12,298,754	0.6%

Market Value of Assets

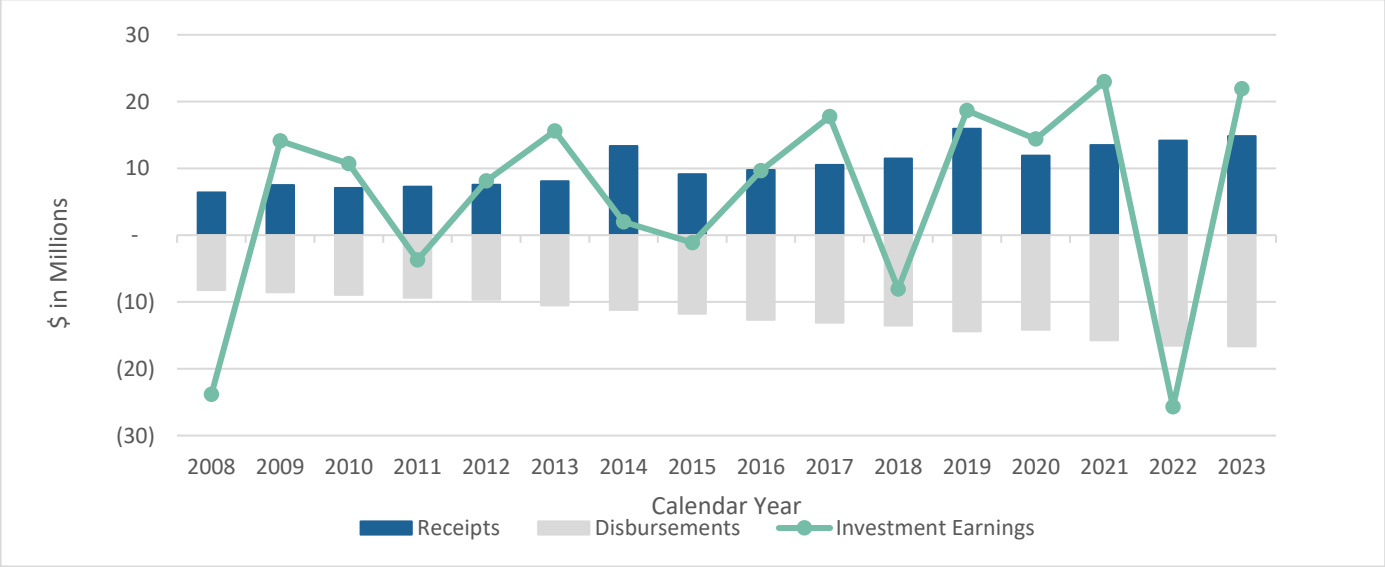
Asset information is reported annually to the Public Employee Retirement Administration Commission by the Danvers Contributory Retirement Board. The Market Value of Assets for the three most recent calendar years are as follows:

Calendar Year	2023	2022	2021
Trust Fund Composition at Year-End			
Cash	$1,980,544	$2,008,015	$4,023,437
Short-Term Investments	0	0	0
Fixed Income Securities	0	0	0
Equities	21,495,047	22,964,300	30,060,337
Pooled Short Term Funds	0	0	0
Pooled Domestic Equity Funds	39,232,915	22,124,375	28,733,085
Pooled International Equity Funds	12,788,303	14,013,100	25,806,359
Pooled Global Equity Funds	0	0	0
Pooled Domestic Fixed Income Funds	28,322,516	26,252,918	31,963,051
Pooled International Fixed Income Funds	0	0	0
Pooled Global Fixed Income Funds	0	0	0
Pooled Alternative Investments	28,846,229	24,567,121	21,392,543
Pooled Real Estate Funds	9,743,507	11,515,947	9,020,789
Pooled Domestic Balanced Funds	0	0	0
Pooled International Balanced Funds	0	0	0
Hedge Funds	10,315,546	9,340,184	9,533,330
PRIT Cash	0	0	0
PRIT Fund	0	0	0
Interest Due & Accrued	12,997	8,117	0
Prepaid Expenses	0	0	0
Accounts Receivable	374,602	204,035	455,108
Land	0	0	0
Buildings	0	0	0
Accumulated Depreciation - Buildings	0	0	0
Accounts Payable	(263,901)	(238,396)	(153,405)
Total Market Value of Assets	**$152,848,305**	**$132,759,716**	**$160,834,634**

Market Value of Assets

Calendar Year	2023	2022	2021
Funds			
Annuity Savings Fund	$34,455,913	$33,574,828	$32,973,755
Annuity Reserve Fund	6,877,286	7,036,695	7,292,921
Special Military Service Fund	13,736	18,607	18,589
Pension Fund	9,679,823	9,467,439	9,567,798
Expense Fund	30,978	0	0
Pension Reserve Fund	101,790,569	82,662,147	110,981,571
Total Market Value of Assets	**$152,848,305**	**$132,759,716**	**$160,834,634**
Asset Activity			
Market Value as of Beginning of Year	$132,759,716	$160,834,634	$140,122,603
Contributions and Receipts	14,824,890	14,149,275	13,470,787
Benefit Payments and Expenses	(16,654,194)	(16,522,205)	(15,714,481)
Investment Return	21,917,893	(25,701,988)	22,955,725
Total Market Value of Assets	**$152,848,305**	**$132,759,716**	**$160,834,634**
Rate of Return	16.62%	-15.68%	17.40%

Below are the receipts and disbursements during the last 16 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.



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 15% 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, 2024	January 1, 2023	January 1, 2022
1. Expected Market Value of Assets			
a. Market Value of Assets as of prior January 1	$132,759,716	$160,834,634	$140,122,603
b. Prior Year Contributions and Receipts	14,824,890	14,149,275	13,470,787
c. Prior Year Benefit Payments and Expenses	(16,654,194)	(16,522,205)	(15,714,481)
d. Expected Investment Return Rate	7.125%	7.125%	7.50%
e. Expected Investment Return	9,393,961	11,374,932	10,425,057
f. Expected Market Value of Assets	$140,324,373	$169,836,636	$148,303,966
2. Prior Year Gain/(Loss)			
a. Market Value of Assets as of January 1	$152,848,305	$132,759,716	$160,834,634
b. Expected Market Value of Assets	140,324,373	169,836,636	148,303,966
c. Prior Year Gain /(Loss)	$12,523,932	($37,076,920)	$12,530,668

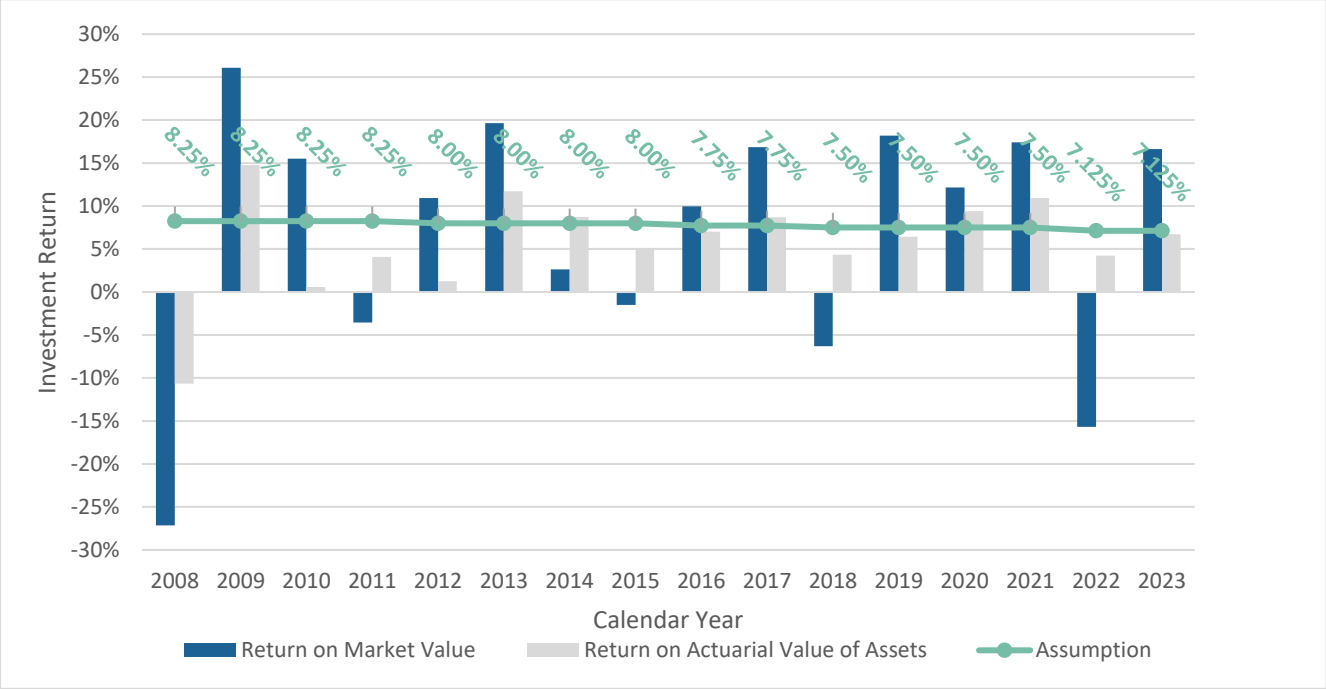
3. Phase-In of Asset Gains and Losses

	Calendar Year	Gain / (Loss)	Unrecognized Gain / (Loss)	Unrecognized Gain / (Loss)	Unrecognized Gain / (Loss)
a.	2023	$12,523,932	$10,019,146	$0	$0
b.	2022	(37,076,920)	(22,246,152)	(29,661,536)	0
c.	2021	12,530,668	5,012,267	7,518,401	10,024,534
d.	2020	4,863,602	972,720	1,945,441	2,918,161
e.	2019	10,530,412	0	2,106,082	4,212,165
f.	2018	(16,851,315)	0	0	(3,370,263)
g.	Total Deferred Gains/(Losses)		($6,242,019)	($18,091,612)	$13,784,597

Actuarial Value of Assets

Valuation Date	January 1, 2024	January 1, 2023	January 1, 2022
4. Actuarial Value of Assets			
a. Market Value of Assets	$152,848,305	$132,759,716	$160,834,634
b. Deferred Gains/(Losses)	(6,242,019)	(18,091,612)	13,784,597
c. Market Value of Assets Less Deferred Gains/(Losses)	$159,090,324	$150,851,328	$147,050,037
d. 85% of Market Value of Assets	129,921,059	112,845,759	136,709,439
e. 115% of Market Value of Assets	175,775,551	152,673,673	184,959,829
f. Actuarial Value of Assets, c., but not less than d. and not greater than e.	$159,090,324	$150,851,328	$147,050,037
g. Ratio of Actuarial Value of Assets to Market Value of Assets	104.08%	113.6%	91.4%
5. Rate of Return on Actuarial Value of Assets for Prior Calendar Year	6.72%	4.23%	10.95%

Below are the investment returns during the last 16 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.



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, 2024	January 1, 2022
Actives	$154,085,850	$140,729,981
Retired Members and Beneficiaries	126,821,343	118,919,875
Disabled Members	19,970,674	15,419,763
Inactive Members	2,532,101	2,290,040
Total Present Value of Future Benefits	**$303,409,968**	**$277,359,659**

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, 2024	January 1, 2022
Actives	$97,320,411	$92,788,093
Retired Members and Beneficiaries	126,821,343	118,919,875
Disabled Members	19,970,674	15,419,763
Inactive Members	2,532,101	2,290,040
Total Actuarial Accrued Liability	**$246,644,529**	**$229,417,771**

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, 2024	January 1, 2022
Unfunded Actuarial Accrued Liability		
a. Actuarial Accrued Liability	$246,644,529	$229,417,771
b. Actuarial Value of Assets	159,090,324	147,050,037
c. Unfunded Actuarial Accrued Liability (a. - b.)	$87,554,205	$82,367,734
d. Funded Status (b. divided by a.)	64.5%	64.1%

SECTION 2 - PRINCIPAL VALUATION RESULTS

Actuarial Liabilities

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, 2024	January 1, 2022
Total Normal Cost	$5,824,664	$5,166,088
As of Percentage of Salary	16.8%	16.7%
Employee Normal Cost	$3,350,135	$2,949,301
As of Percentage of Salary	9.6%	9.5%
Administrative Expenses	$0	$0
As a Percentage of Salary	0.0%	0.0%
Net Employer Normal Cost	$2,474,529	$2,216,787
As a Percentage of Salary	7.1%	7.2%

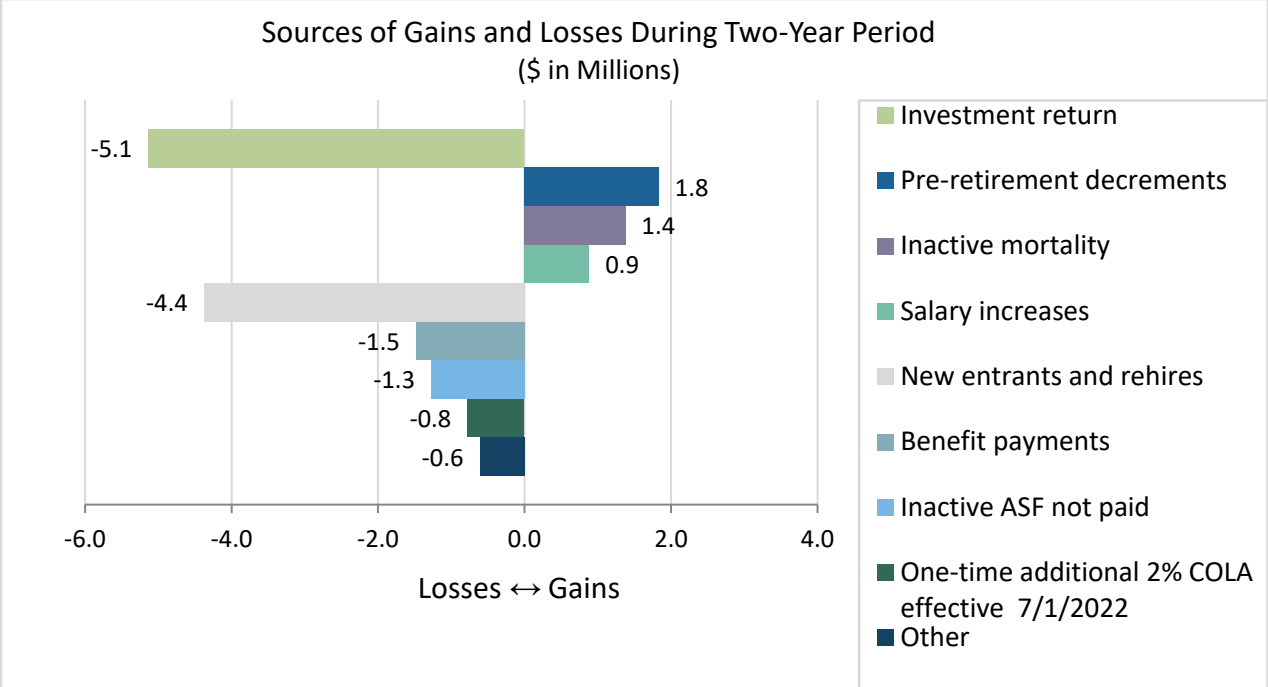
Actuarial Experience

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 decrease by $7,557,508. Below is the development of the Actuarial Loss for the current 2-year period:

Calendar Year Ending		December 31, 2023	December 31, 2022
Expected Unfunded Actuarial Accrued Liability			
1.	Unfunded Actuarial Accrued Liability, Beginning of Year	$79,117,264	$82,367,734
2.	Normal Cost, Beginning of Year	5,049,133	5,166,088
3.	Total Contributions	14,824,890	14,149,275
4.	Interest (full year on 1. and 2., one-half year on 3.)	5,468,719	5,732,717
5.	Expected Unfunded Actuarial Accrued Liability	$74,810,226	$79,117,264
6.	Unfunded Actuarial Accrued Liability (before changes)	84,377,711	
7.	(Gain)/Loss (6. - 5.)	$9,567,485	
Asset Gain/(Loss)			
1.	Actuarial Value of Assets, Beginning of Year	$150,851,328	$147,050,037
2.	Contributions and Receipts	14,824,890	14,149,275
3.	Benefit Payments and Expenses	(16,654,194)	(16,522,205)
4.	Assumed Rate of Return (prior valuation)	7.125%	7.125%
5.	Expected Return	10,682,988	10,392,780
6.	Actuarial Value of Assets, End of Year	$159,090,324	$150,851,328
7.	Actual Return	10,068,300	6,174,221
8.	Actual Rate of Return	6.72%	4.23%
9.	Asset Gain/(Loss) (7. - 5.)	(614,688)	(4,218,559)
10.	Total Asset Gain/(Loss), 2-Year Period	($5,133,819)	

Actuarial Experience

Below are the various sources of gains and losses over the 2-year period. The asset loss during the period was $5,133,819, and the total demographic loss during the period was $4,433,666, which totals to an overall loss of $9,567,485.



Unfunded Actuarial Accrued Liability

1.	Changes due to:	
	a. Asset Loss	$5,133,819
	b. Demographic Experience Loss	4,433,666
	c. Total Loss Prior to Changes	9,567,485
	d. Plan Change	-
	e. Assumption Change - Reduce Investment Return to 7%	3,176,494
	f. Total Increase (including changes)	12,743,979
2.	Unfunded Actuarial Accrued Liability, End of Year	$87,554,205

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 annual payments made July 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, 2024	January 1, 2022
1.	Unfunded Actuarial Accrued Liability - Danvers Electric		
	Fully Funded Year	2022	2022
	Investment Return Rate	7.000%	7.125%
	Balance as of Valuation Date	($1,974,595)	($1,486,791)
	Amortization Amount (capped at $0)	$0	$0
	Increasing Rate	4.00%	4.00%
	Remaining Payment Period from Valuation Date	0	0
2.	Unfunded Actuarial Accrued Liability - All Others		
	Fully Funded Year	2035	2035
	Balance as of Valuation Date	$89,528,800	$83,854,525
	Amortization Amount	$9,344,748	$7,657,145
	Increasing Rate	4.00%	4.00%
	Remaining Payment Period from Valuation Date	11	13
3.	Total Amortization Payments	$9,344,748	$7,657,145
4.	Normal Cost	$2,474,529	$2,216,787
5.	Net 3(8)(c) Transfers	$580,042	$579,703
6.	Total Appropriation as of January 1	$12,399,319	$10,453,635
7.	**Adjusted for Annual Payments as of July 1**	**$12,825,955**	**$10,819,639**

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

Exhibit 3.1 - 30-Year Forecast of Annual Appropriations

Fiscal Year Ending	Danvers Electric						All Others							
	Employer Normal Cost	Net 3(8)(c) Transfers	Amortization Payment of UAL	Total Employer Cost	Increase Over Prior Year	Unfunded Actuarial Accrued Liability	Employer Normal Cost	Net 3(8)(c) Transfers	Amortization Payment of UAL	Total Employer Cost	Increase Over Prior Year	Unfunded Actuarial Accrued Liability	Total Appropriation	Increase Over Prior Year
2025	$521,393	$71,464	$0	$592,857		($1,974,595)	$2,014,578	$528,536	$7,463,112	$10,006,226		$89,528,800	$10,599,083	
2026	596,735	71,464	-	668,199	12.71%	-	2,017,561	528,536	8,260,626	10,806,723	8.00%	88,075,914	11,474,922	8.26%
2027	635,375	71,464	-	706,839	5.78%	-	2,059,055	528,536	9,083,670	11,671,261	8.00%	85,696,370	12,378,100	7.87%
2028	676,836	71,464	-	748,300	5.87%	-	2,099,573	528,536	9,976,853	12,604,962	8.00%	82,298,895	13,353,262	7.88%
2029	736,035	71,464	-	807,499	7.91%	-	2,152,908	528,536	10,931,915	13,613,359	8.00%	77,739,680	14,420,858	8.00%
2030	782,064	71,464	-	853,528	5.70%	-	2,185,944	528,536	11,987,947	14,702,427	8.00%	71,873,397	15,555,955	7.87%
2031	831,005	71,464	-	902,469	5.73%	-	2,233,584	528,536	13,116,502	15,878,622	8.00%	64,504,106	16,781,091	7.88%
2032	878,215	71,464	-	949,679	5.23%	-	2,285,878	528,536	14,334,497	17,148,911	8.00%	55,451,578	18,098,590	7.85%
2033	926,646	71,464	-	998,110	5.10%	-	2,324,357	528,536	15,667,931	18,520,824	8.00%	44,505,470	19,518,934	7.85%
2034	974,920	71,464	-	1,046,384	4.84%	-	2,396,751	528,536	16,478,358	19,403,645	4.77%	31,413,819	20,450,029	4.77%
2035	1,020,194	71,464	-	1,091,658	4.33%	-	2,423,314	528,536	17,137,493	20,089,343	3.53%	16,567,440	21,181,001	3.57%
2036	1,073,686	71,464	-	1,145,150	4.90%	-	2,490,299	528,536	-	3,018,835	-84.97%	-	4,163,985	-80.34%
2037	1,132,353	71,464	-	1,203,817	5.12%	-	2,537,966	528,536	-	3,066,502	1.58%	-	4,270,319	2.55%
2038	1,188,514	71,464	-	1,259,978	4.67%	-	2,601,375	528,536	-	3,129,911	2.07%	-	4,389,889	2.80%
2039	1,251,347	71,464	-	1,322,811	4.99%	-	2,633,491	528,536	-	3,162,027	1.03%	-	4,484,838	2.16%
2040	1,318,097	71,464	-	1,389,561	5.05%	-	2,699,013	528,536	-	3,227,549	2.07%	-	4,617,110	2.95%
2041	1,386,759	71,464	-	1,458,223	4.94%	-	2,770,533	528,536	-	3,299,069	2.22%	-	4,757,292	3.04%
2042	1,449,841	71,464	-	1,521,305	4.33%	-	2,823,530	528,536	-	3,352,066	1.61%	-	4,873,371	2.44%
2043	1,519,795	71,464	-	1,591,259	4.60%	-	2,879,210	528,536	-	3,407,746	1.66%	-	4,999,005	2.58%
2044	1,592,331	71,464	-	1,663,795	4.56%	-	2,962,632	528,536	-	3,491,168	2.45%	-	5,154,963	3.12%
2045	1,667,290	71,464	-	1,738,754	4.51%	-	3,041,760	528,536	-	3,570,296	2.27%	-	5,309,050	2.99%
2046	1,749,980	71,464	-	1,821,444	4.76%	-	3,128,677	528,536	-	3,657,213	2.43%	-	5,478,657	3.19%

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
2024	$152,848,305	$17,917,521	$2,872,622	$10,266,478	$10,992,005	$159,061,889
2025	159,061,889	15,902,744	3,026,394	11,113,184	11,567,507	168,866,230
2026	168,866,230	16,409,189	3,148,027	11,986,319	12,305,719	179,897,106
2027	179,897,106	16,998,979	3,275,862	12,929,044	13,132,177	192,235,210
2028	192,235,210	17,726,420	3,396,733	13,961,128	14,051,090	205,917,740
2029	205,917,740	18,310,512	3,542,831	15,058,467	15,075,465	221,283,992
2030	221,283,992	18,900,897	3,680,598	16,242,851	16,222,989	238,529,532
2031	238,529,532	19,513,787	3,819,839	17,516,525	17,507,630	257,859,740
2032	257,859,740	20,021,161	3,978,606	18,889,624	18,950,217	279,657,026
2033	279,657,026	20,586,540	4,110,952	19,789,748	20,528,512	303,499,698
2034	303,499,698	21,020,844	4,294,182	20,496,406	22,244,590	329,514,032
2035	329,514,032	21,966,782	4,445,124	4,045,435	22,891,484	338,929,293
2036	338,929,293	22,955,287	4,621,751	4,148,231	23,535,514	348,279,502
2037	348,279,502	23,988,275	4,790,399	4,263,823	24,173,771	357,519,221
2038	357,519,221	25,067,747	4,996,771	4,355,615	24,803,641	366,607,500
2039	366,607,500	26,195,796	5,178,565	4,483,488	25,422,016	375,495,773
2040	375,495,773	27,374,607	5,362,529	4,619,006	26,025,300	384,128,001
2041	384,128,001	28,606,464	5,572,623	4,731,224	26,609,003	392,434,387
2042	392,434,387	29,893,755	5,788,619	4,852,679	27,169,017	400,350,947
2043	400,350,947	31,238,974	5,986,563	5,003,449	27,700,503	407,802,488
2044	407,802,488	32,644,728	6,197,714	5,152,410	28,198,117	414,706,001
2045	414,706,001	34,113,741	6,410,683	5,316,375	28,656,333	420,975,651
2046	420,975,651	35,648,859	6,640,205	5,469,047	29,068,233	426,504,277
2047	426,504,277	37,253,058	6,878,167	5,635,128	29,427,373	431,191,887
2048	431,191,887	38,929,446	7,130,464	5,791,258	29,725,422	434,909,585
2049	434,909,585	40,681,271	7,387,082	5,960,258	29,954,140	437,529,794
2050	437,529,794	42,511,928	7,665,328	6,117,998	30,104,001	438,905,192
2051	438,905,192	44,424,965	7,947,721	6,286,338	30,164,874	438,879,160
2052	438,879,160	46,424,088	8,214,949	6,484,946	30,125,691	437,280,658
2053	437,280,658	48,513,172	8,509,046	6,672,703	29,974,408	433,923,643

Forecast Notes

Exhibit 3.1:

- The Total Normal Cost is assumed to increase 3.25% per year and the Employee Normal Cost is assumed to increase at a rate that reflects a total payroll increase of 3.25% per year and incorporates new entrants sufficient to maintain constant active membership.

- 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 the UAL for the Town is an increasing payment at 4% paid over 11 years through 2035.

- There is no remaining Amortization Payment of the UAL for Danvers Electric since the UAL was fully funded in 2022.

- Net 3(8)(c) transfers are a level dollar amount based on the net transfers expected to be paid by the Danvers Contributory Retirement Board during the current year offset by the amount received during the same period.

- 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 annual payments made on July 1.

- For fiscal year 2025, we show the actual appropriation developed under the previous funding schedule of $10,599,083. For fiscal years 2026 and later, the Board has selected a funding schedule that fully amortizes the Town's UAL by 2035, with annual employer costs limited to increases of 8% over the prior year.

- The funding schedule adopted by the Board results in amortization payments for every year up to and including the full funded date that are greater than the interest computed on the outstanding UAL from the prior year. This amortization method fully amortizes the UAL within a reasonable time period and reduces the UAL by a reasonable amount within a sufficiently short period.

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 Danvers Contributory 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 Danvers Contributory 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, 2023 (the measurement date), presents information to assist the Danvers Contributory 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, 2024.

Normal Cost - Employees	$3,350,135	9.6% of payroll
Normal Cost - Employers	$2,474,529	7.1% of payroll
Actuarial Liability - Active Members	$97,320,411	39% of total AAL
Actuarial Liability - Retired and Inactive Members	149,324,118	61% of total AAL
Total Actuarial Liability (AAL)	$246,644,529	
System Assets	$159,090,324	
Unfunded Actuarial Accrued Liability	$87,554,205	
Funded Status	64.5%	

Principal actuarial assumptions used in the valuation:

Investment Return	7.00%
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

4.3 - Risk Measures

The Danvers Contributory 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.
- **Benefit Change Risk** - the potential for the provisions of the System to be changed such that the benefits and liabilities are changed materially.
- **Assumption Change Risk** - the potential for the environment to change such that future valuation assumptions are adjusted to be different than the current assumptions.

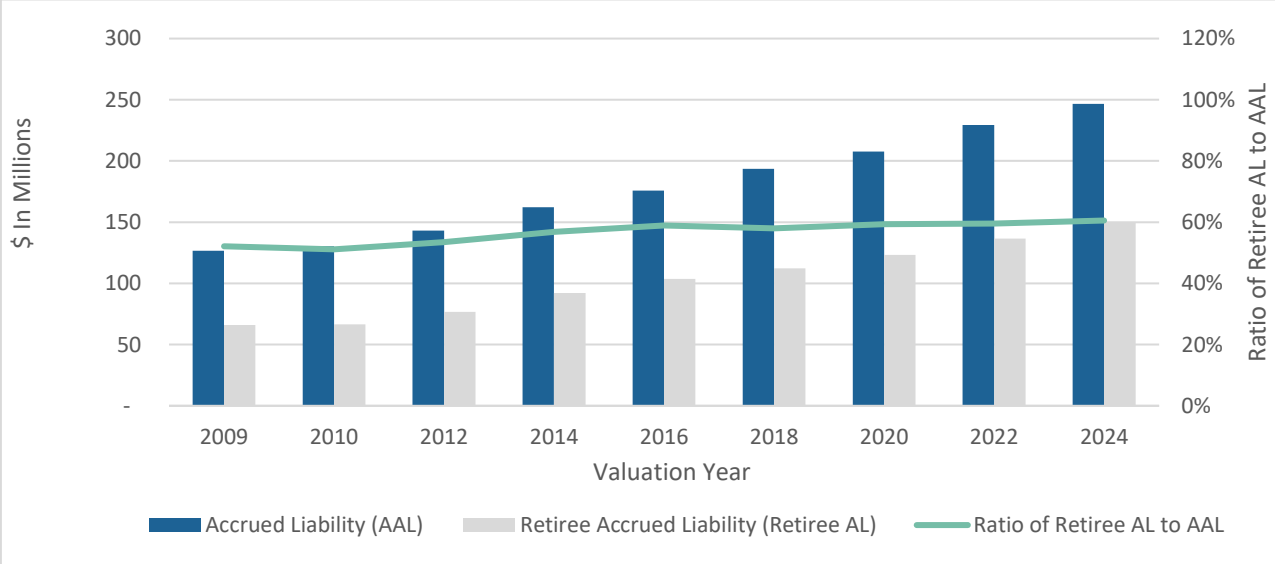
We have provided several risk measures in this section that we believe are most significant for the plan. However, we believe that a more rigorous assessment of risk would be beneficial to the Board to understand the risks identified above, such as:

- 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.

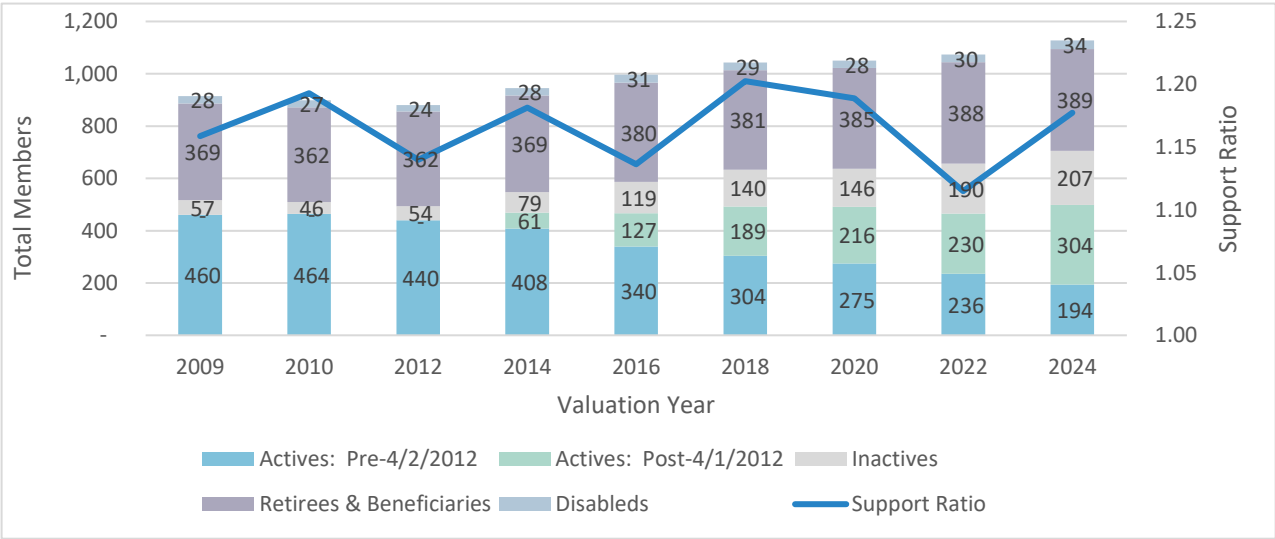
4.3 - Risk Measures

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 liabiity. 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 Danvers Contributory Retirement System, this ratio has remained fairly steady 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.



4.3 - Risk Measures

Volatility Indices

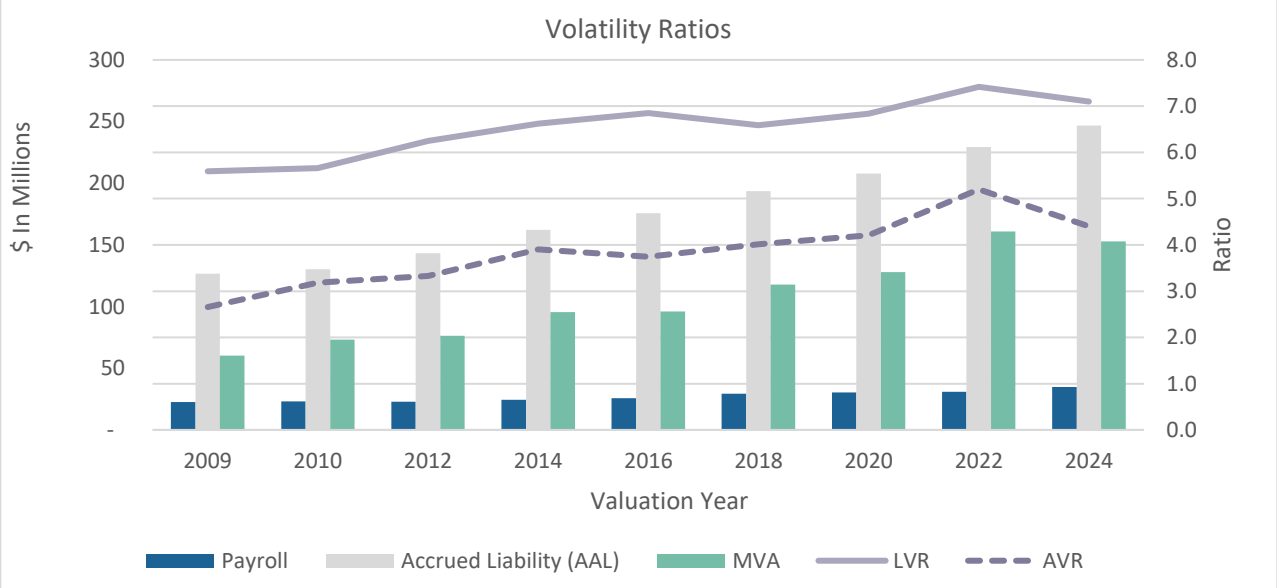
Volatility indices are measures of the relative sensitivity of employer contributions to changes in assets or liabilities. Below we present two such indices - the Asset Volatility Ratio (AVR) and the Liability Volatility Ratio (LVR):

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)

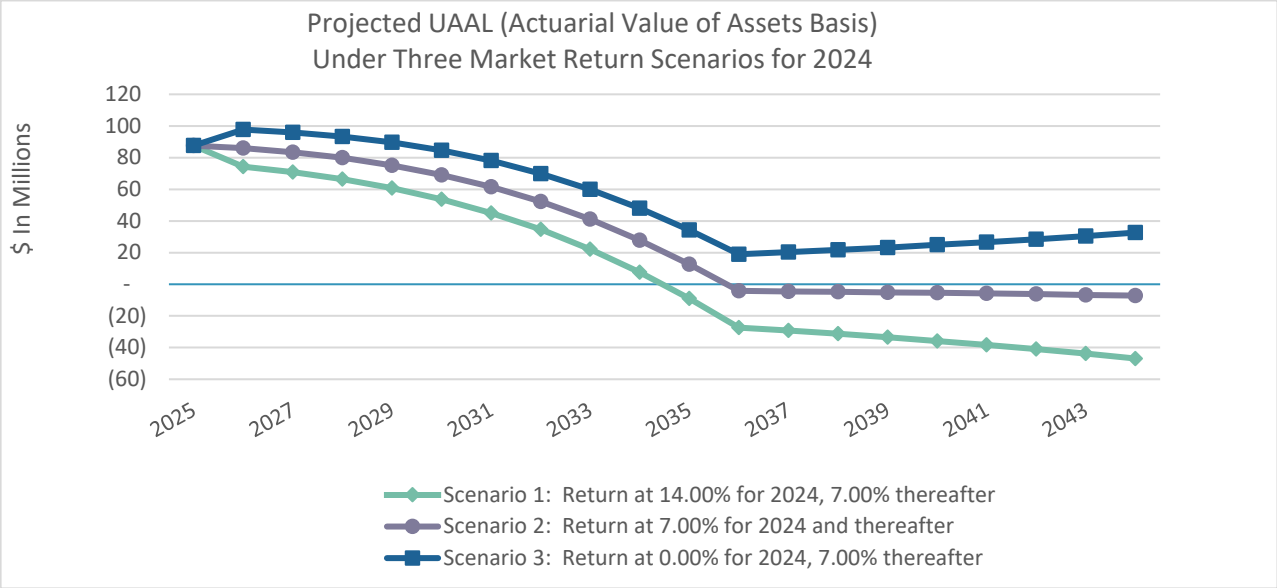
The Liability Volatility Ratio (LVR) is the ratio of the Actuarial Accrued Liability (AAL) to Payroll. Systems with a higher LVR experience more volatile employer contributions (as a percentage of payroll) due to the investment return assumption and changes in liability. This ratio indicates a longer-term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



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%, 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%) or 1-percentage point higher (8%) than the assumed investment return rate:

	1% Decrease (6.00%)	Current Investment Return Rate (7.00%)	1% Increase (8.00%)
Actuarial Accrued Liability	$274,659,370	$246,644,529	$222,992,570
% Change	11%		-10%
Actuarial Value of Assets	$159,090,324	$159,090,324	$159,090,324
Unfunded Actuarial Accrued Liability	115,569,046	87,554,205	63,902,246
% Change	32%	N/A	-27%
Funded Status	57.9%	64.5%	71.3%

4.3 - Risk Measures

Low-Default Risk Obligation Measure (LDROM)

The retirement plan invests in a diversified portfolio of stocks, bonds, real estate, and other assets with the objective of maximizing investment returns at a reasonable level of risk. The potential for investment returns to be different than expected is a key risk for the plan. Reducing the plan's investment risk by investing solely in bonds, however, would also likely reduce the plan's investment returns thereby increasing the amount of contributions needed over the long term. The Low-Default Risk Obligation Measure (LDROM) represents what the funding liability would be if the plan invested its assets solely in a portfolio of high-quality bonds whose cash flows approximately match future benefit payments. Consequently, the difference between the plan's Actuarial Accrued Liability and the LDROM can be thought of as representing the expected taxpayer savings from investing in the plan's diversified portfolio compared to investing only in high quality bonds.

The following presents the LDROM and Funded Status calculated using the LDROM investment return rate of 4.76%:

LDROM	$316,109,043
Actuarial Value of Assets	$159,090,324
Funded Status	50.33%

The LDROM investment return rate is based on the FTSE Pension Liability Index published as of December 31, 2023. The index represents the single discount rate that would produce the same present value as calculated by discounting a standardized set of liabilities using the Pension Discount Curve, which is a set of yields on hypothetical AA zero coupon bonds whose maturities range from 6 months up to 30 years.

The actuarial valuation reports the funded status and develops appropriations based on the expected return of the plan's investment portfolio. If instead, the plan switched to investing exclusively in high quality bonds, the LDROM illustrates that reported funded status would be lower (which also implies that the Actuarially Determined Contributions would be higher), perhaps significantly. Unnecessarily high appropriation requirements in the near term may not be affordable and could imperil plan sustainability and benefit security.

4.3 - Risk Measures

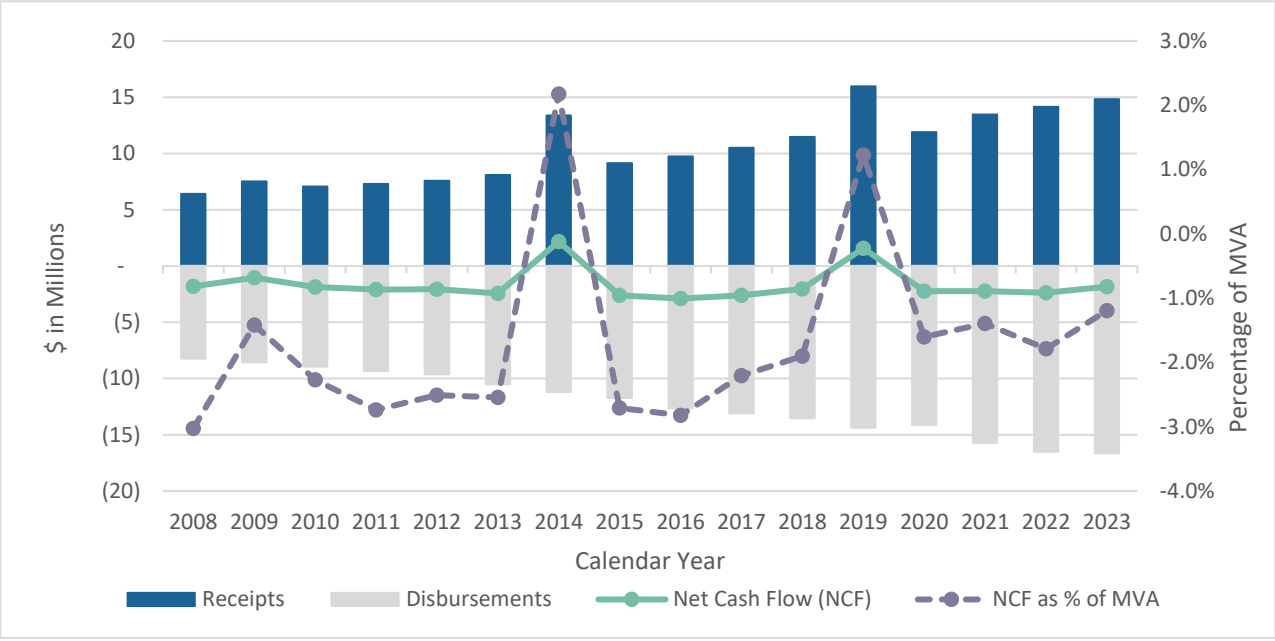
Duration

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 Danvers Contributory Retirement System is 10, 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, 2023, the NCF was - $1.8 million, which represents -1.2% of the Market Value of Assets. The NCF falls within the range of -3% to 2.2% of total assets over the 16-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.

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 2024, the limit is 64% of $345,000, or $220,800.

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%

Superannuation Retirement	Eligibility if membership before April 2, 2012	♦ 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	♦ 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	♦ 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.

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 $1,092.60 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.

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 $1,092.60 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 $13,000. 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:

- 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, 2024

Investment Return Rate

7.00% per year. Previously, 7.125% per year.

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.

Low-Default Risk Obligation Measure (LDROM) Investment Return Rate

4.76% per year.

The LDROM investment return rate is based on the FTSE Pension Liability Index published as of December 31, 2023. The index represents the single discount rate that would produce the same present value as calculated by discounting a standardized set of liabilities using the Pension Discount Curve, which is a set of yields on hypothetical AA zero coupon bonds whose maturities range from 6 months up to 30 years.

Annuity Savings Fund Interest Rate

2.00% per year

Output Smoothing Method

Total Town appropriation increases are limited to 8% per year.

Amortization Method

Unfunded Actuarial Accrued Liability (UAL):

The Amortization Payment of the UAL for the Town is an increasing payment at 4% paid over 11 years through 2035.

Town annual appropriations are limited to increases of 8% over the prior year.

There is no remaining Amortization Payment of the UAL for Danvers Electric since the UAL was fully funded in 2022.

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%

Salary Scale, continued

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 $390 per year.

Inflation

2.5% 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-2018. For disabled members, RP-2014 Blue Collar Mortality Table set forward one year with full generational mortality improvement using Scale MP-2018.

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.

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.

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 85% or more than 115% of market value.

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 Danvers Contributory 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 $600,000 per year.

Administrative Expenses

We have not assumed any administrative expenses in the valuation because the Town reimburses the System annually for administrative expenses.

Use of ProVal®

KMS Actuaries has used ProVal® to develop the liabilities, normal costs and projected benefit payments in this report. We have a lease agreement with WinTech, the developer of ProVal®, and have relied on their system to perform these calculations. The actuaries signing this report and the KMS staff members who were involved in preparing it have a clear understanding of ProVal® and have used it only for its intended purpose. We have reviewed the output produced by ProVal® for reasonableness and we are not aware of any material inconsistencies, limitations or known weaknesses that would affect this report.

SECTION 7 - PLAN MEMBER INFORMATION

Exhibit 7.1 - Summary of Census Data as of January 1, 2024

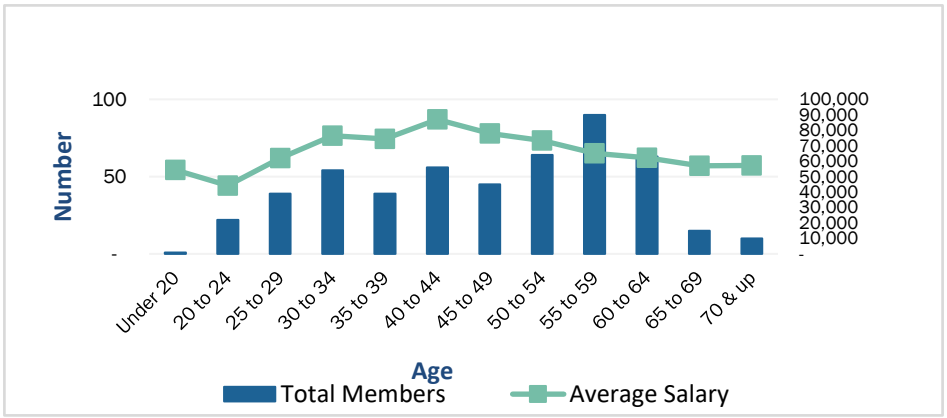
Census data as of December 31, 2023 was provided to us by the Retirement Board. We performed edits on the data to ensure that it is reasonable and complete and made certain assumptions regarding any missing or invalid data so that results are not materially affected. Presented on the following pages 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, 2024	January 1, 2022	% Change
Census Data			
Active Members	498	466	6.9%
Average Age	47.3	47.7	(0.9%)
Average Service	11.4	12.5	(8.7%)
Valuation Salary	$34,751,691	$30,929,905	12.4%
Average Salary	$69,783	$66,373	5.1%
Retired Members and Beneficiaries	389	388	0.3%
Average Age	75.7	76.0	(0.4%)
Total Annual Retirement Allowance	$12,870,795	$12,343,386	4.3%
Average Annual Retirement Allowance	$33,087	$31,813	4.0%
State Reimbursed COLAs	$36,529	$49,253	(25.8%)
Total System-Funded Retirement Allowance	$12,834,266	$12,294,133	4.4%
Disabled Members	34	30	13.3%
Average Age	65.8	66.1	(0.4%)
Total Annual Retirement Allowance	$1,676,413	$1,325,249	26.5%
Average Annual Retirement Allowance	$49,306	$44,175	11.6%
State Reimbursed COLAs	$7,580	$7,580	0.0%
Total System-Funded Retirement Allowance	$1,668,833	$1,317,669	26.7%
Inactive Members	207	190	8.9%
Annuity Savings Fund	$2,532,101	$2,290,040	10.6%

Exhibit 7.2 - Active Members by Age and Years of Service as of January 1, 2024

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	1	-	-	-	-	-	-	-	-	1	54,353	54,353
20 to 24	22	-	-	-	-	-	-	-	-	22	973,152	44,234
25 to 29	34	5	-	-	-	-	-	-	-	39	2,414,690	61,915
30 to 34	28	20	6	-	-	-	-	-	-	54	4,129,600	76,474
35 to 39	13	10	14	2	-	-	-	-	-	39	2,897,376	74,292
40 to 44	14	18	8	15	1	-	-	-	-	56	4,869,504	86,955
45 to 49	10	6	5	7	9	8	-	-	-	45	3,509,609	77,991
50 to 54	17	13	2	9	6	15	2	-	-	64	4,699,304	73,427
55 to 59	20	20	7	11	14	9	6	2	1	90	5,859,902	65,110
60 to 64	10	10	6	14	12	5	4	2	-	63	3,917,827	62,188
65 to 69	-	2	-	4	6	1	1	1	-	15	854,535	56,969
70 & up	4	-	-	2	1	-	1	1	1	10	571,840	57,184
Total	173	104	48	64	49	38	14	6	2	498	34,751,691	69,783
Average Salary	49,482	71,413	81,414	78,024	78,431	99,634	106,611	97,958	76,700			

Average Age: 47.3 **Average Service:** 11.4



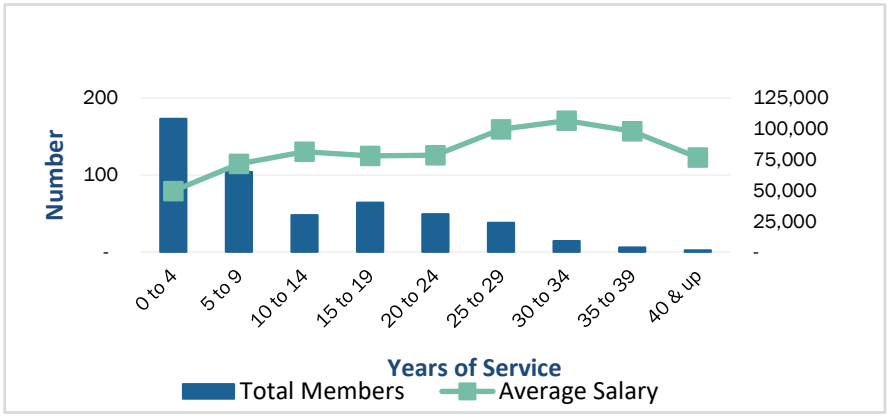
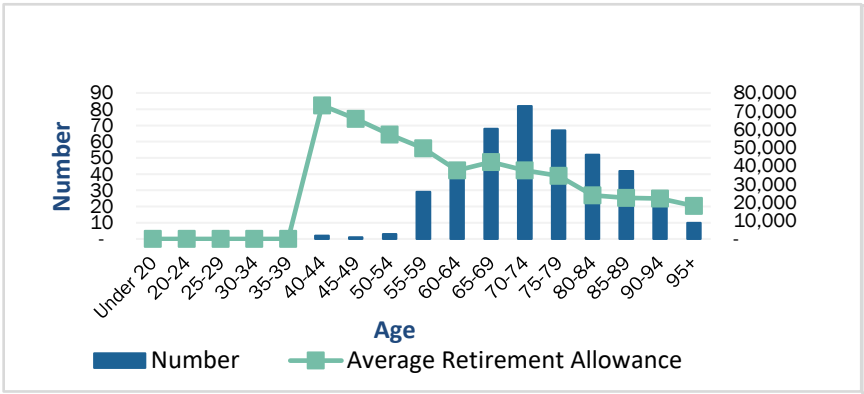
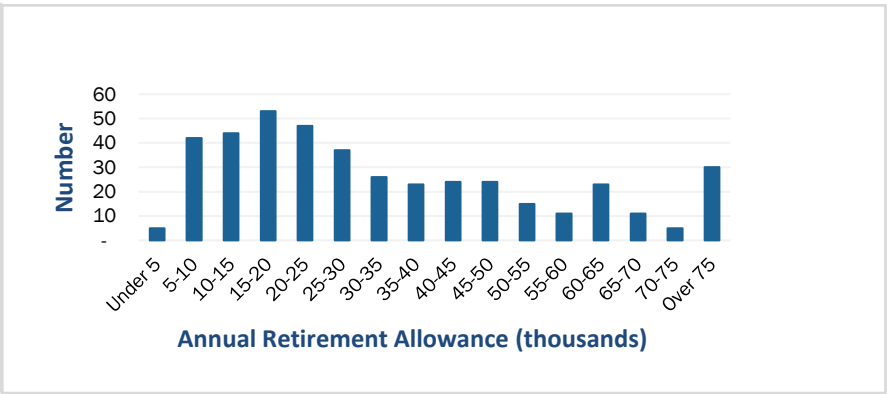


Exhibit 7.3 - Annual Retirement Allowances as of January 1, 2024

Attained Age	Service Retirements			Disability Retirements			Beneficiaries		
	Number	Annual Retirement Allowance	Average Retirement Allowance	Number	Annual Retirement Allowance	Average Retirement Allowance	Number	Annual Retirement Allowance	Average Retirement Allowance
Under 20	0	0	0	0	0	-	0	0	-
20-24	0	0	0	0	0	-	0	0	-
25-29	0	0	0	0	0	-	0	0	-
30-34	0	0	0	0	0	-	0	0	-
35-39	0	0	0	0	0	-	0	0	-
40-44	0	0	0	2	146,383	73,192	0	0	-
45-49	0	0	0	1	65,863	65,863	0	0	-
50-54	0	0	0	2	123,471	61,736	1	48,059	48,059
55-59	18	851,015	47,279	8	426,724	53,341	3	161,523	53,841
60-64	29	1,080,769	37,268	5	247,725	49,545	4	101,442	25,361
65-69	63	2,619,119	41,573	2	136,078	68,039	3	114,403	38,134
70-74	70	2,676,142	38,231	6	256,100	42,683	6	156,407	26,068
75-79	58	1,960,110	33,795	6	206,360	34,393	3	153,016	51,005
80-84	42	1,005,937	23,951	0	0	-	10	242,136	24,214
85-89	35	798,873	22,825	1	42,541	42,541	6	103,737	17,290
90-94	22	489,634	22,256	1	25,168	25,168	6	126,384	21,064
95+	9	166,470	18,497	0	0	-	1	15,619	15,619
Total	**346**	**11,648,069**	**33,665**	**34**	**1,676,413**	**49,306**	**43**	**1,222,726**	**28,435**
Average Age	**75.3**			**65.8**			**78.3**		





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.

Actuarial Standard of Practice – Standards set by the Actuarial Standards Board for appropriate actuarial practice in the United States. These Standards describe the procedures an actuary should follow when performing actuarial services and identify what the actuary should disclose when communicating the results of those services.

Actuarial Valuation – The measurement of relevant pension obligations and, when applicable, the determination of periodic costs or actuarially determined contributions.

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.

SECTION 8 - GLOSSARY OF TERMS

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

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.

LDROM – Low-Default Risk Obligation Measure.

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.

Output Smoothing Method – A method to reduce volatility of the results of a contribution allocation procedure. Output smoothing methods include 1) phasing in the impact of assumption changes on contributions, 2) blending a prior valuation with a subsequent valuation to determine contributions, or 3) placing a corridor around changes in the dollar amount, contribution rate, or percentage change in contributions from year to year.

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 - RESULTS BY DEPARTMENT

Department	Town	Housing Authority	School Lunch	Hospital	Electric	School	Water	Sewer	Total
Active Members	254	9	16	0	45	153	19	2	498
Average Age	46.3	56.1	53.0	0.0	47.7	47.6	46.6	55.1	47.3
Average Service	13.5	15.8	6.8	0.0	12.2	7.3	16.8	7.4	11.4
Salary	21,501,455	784,724	514,475	0	4,750,879	5,547,235	1,480,734	172,191	34,751,691
Retired Members and Survivors	196	7	18	36	36	82	13	1	389
Annual Pensions	8,551,139	201,622	315,529	531,874	1,507,800	1,253,922	499,560	9,350	12,870,795
Average Age	74.2	78.5	77.6	87.0	74.4	74.1	75.4	75.6	75.7
Disabled Members	29	0	0	0	2	0	2	1	34
Annual Pensions	1,381,725	0	0	0	166,812	0	83,742	44,133	1,676,413
Average Age	66.5	0.0	0.0	0.0	51.9	0.0	70.9	63.5	65.8
Inactive Members	35	0	2	0	2	162	5	1	207
Annuity Savings Fund	1,220,516	0	831	0	292,506	864,341	127,139	26,768	2,532,101
Actuarial Accrued Liability - January 1, 2024									
Active Employees	64,632,379	2,938,948	795,053	0	13,566,846	10,175,684	4,961,383	250,118	97,320,411
Retired Members and Survivors	85,766,529	1,778,011	2,976,443	3,131,409	15,196,744	13,144,591	4,740,871	86,745	126,821,343
Disabled Members	16,135,618	0	0	0	2,287,125	0	991,550	556,381	19,970,674
Inactive Members	1,220,516	0	831	0	292,506	864,341	127,139	26,768	2,532,101
Total	167,755,042	4,716,959	3,772,327	3,131,409	31,343,221	24,184,616	10,820,943	920,012	246,644,529
Actuarial Value of Plan Assets - January 1, 2024									
Actuarial Value of Assets	97,997,419	2,755,505	2,203,679	1,829,274	18,309,761	14,127,921	6,321,267	537,443	144,082,269
Danvers Electric Additional Assets	0	0	0	0	15,008,055	0	0	0	15,008,055
Total Actuarial Value of Assets	97,997,419	2,755,505	2,203,679	1,829,274	33,317,816	14,127,921	6,321,267	537,443	159,090,324
Unfunded Actuarial Accrued Liability (UAAL)	69,757,623	1,961,454	1,568,648	1,302,135	(1,974,595)	10,056,695	4,499,676	382,569	87,554,205

SECTION 9 - RESULTS BY DEPARTMENT

Department	Town	Housing Authority	School Lunch	Hospital	Electric	School	Water	Sewer	Total
Normal Cost - January 1, 2024									
Total Normal Cost	3,603,472	119,542	84,148	0	1,004,476	825,607	158,878	28,541	5,824,664
Administrative Expenses	0	0	0	0	0	0	0	0	0
Total Normal Cost	3,603,472	119,542	84,148	0	1,004,476	825,607	158,878	28,541	5,824,664
Employee Normal Cost	2,087,425	78,228	46,323	0	477,513	507,643	135,852	17,151	3,350,135
Employer Normal Cost	1,516,047	41,314	37,825	0	526,963	317,964	23,026	11,390	2,474,529
Net 3(8)(c) payments	402,662	7,026	11,761	12,374	69,087	51,940	22,651	2,541	580,042
Total 2026 Appropriation									
Normal cost	1,570,533	42,799	39,184	0	596,735	329,392	23,854	11,799	2,614,296
Net 3(8)(c) payments	416,517	7,268	12,166	12,800	71,464	53,727	23,430	2,628	600,000
Amortization of UAL	6,436,383	180,979	144,736	120,145	0	927,909	415,175	35,299	8,260,626
Fiscal 2026	8,423,433	231,046	196,086	132,945	668,199	1,311,028	462,459	49,726	11,474,922
Total 2027 Appropriation									
Normal cost	1,602,834	43,679	39,990	0	635,375	336,166	24,344	12,042	2,694,430
Net 3(8)(c) payments	416,517	7,268	12,166	12,800	71,464	53,727	23,430	2,628	600,000
Amortization of UAL	7,077,669	199,011	159,156	132,116	0	1,020,361	456,541	38,816	9,083,670
Fiscal 2027	9,097,020	249,958	211,312	144,916	706,839	1,410,254	504,315	53,486	12,378,100