January 1, 2024

Actuarial Valuation Report

Northbridge Retirement System

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September 12, 2024

Northbridge Retirement Board
Town Hall
7 Main Street
Whitinsville, MA 01588

To the Northbridge Retirement Board:

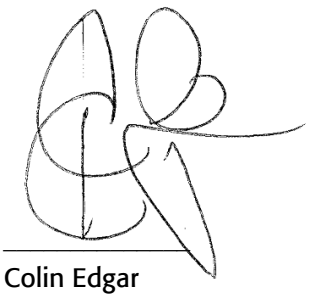
Stone Consulting, Inc. has performed a January 1, 2024 actuarial valuation of the Northbridge Retirement System. This valuation and report were prepared using generally accepted actuarial principles and practices. To the best of our knowledge, this report is complete and accurate, and the assumptions used represent our best estimate of anticipated experience of the system except where noted in the text.

Stone Consulting, Inc. is completely independent of the Town of Northbridge and the Northbridge Retirement System. This includes any of its officers and key personnel. Neither we or anyone else closely associated with us has any relationship with the Town of Northbridge or the Northbridge Retirement System that would impair our independence, other than this or related assignments.

We are pleased to present the results of this valuation. If the Retirement Board has any questions on the content of this report, we would be glad to respond. Please note that this report is meant to be used in its entirety. Use of excerpts of this report may result in inaccurate or misleading understanding of the results. The use of these results may not be appropriate for all circumstances.

Colin Edgar is a consultant for Stone Consulting, Inc., a member of the American Academy of Actuaries, and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,
STONE CONSULTING, INC.
Actuaries for the Plan



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Member, American Academy of Actuaries

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Report Summary

This report presents the results of the actuarial valuation of the Northbridge Retirement System as of January 1, 2024. The valuation was performed at the request of the Retirement Board for the purpose of determining the contribution requirements for Fiscal Year 2026 and beyond.

Summary of Results and Experience
▪ Experience and Funding Schedule The contribution is equal to the projected FY2026 contribution from the prior valuation, with the contributions increasing by 2.00% in subsequent years. The funding schedule is nine years long, finishing in FY2034. This compares to ending years of FY2035 and FY2031 in the 2020 and 2022 valuations, respectively. The funding ratio based on Actuarial Value of Assets increased from 84% to 85%.
▪ Assumptions/methodology: A one-time 5% COLA increase was granted for FY2023, which increased the accrued liability by $229 thousand. All other assumptions are consistent with the prior valuation. Assumptions and valuation methodology are discussed in Appendix A, on page 19.

Contribution requirements are based on the financial condition of the system as of December 31, 2023, as well as actuarial liability results, which are based on:

- The benefit provisions of M.G.L. Chapter 32 and related statutes;
- The demographics of members in the system (i.e., active and inactive participants, retirees and beneficiaries as of January 1, 2024);
- Economic assumptions regarding salary increases and investment earnings; and
- Other actuarial assumptions (e.g., withdrawals, retirement, death, etc.)

Format of the Report

- The funding schedule is shown on page 3, followed by an explanation of the actuarial results, funding schedule components, and a history of the funding schedules used by the Retirement System.
- Full actuarial valuation results are shown on page 18, with prior results included for comparison. The Northbridge Retirement Board conducted their previous actuarial valuation effective January 1, 2022.

Development of Funding Schedule

The funding contribution consists of three parts:

- Net Normal Cost: this is the amount of liability generated by active employees earning another year of service, and includes administrative expense.
- Amortization: this is the amount of the Unfunded Liability that will be paid off by this contribution.
- Net 3(8)(c) Payments: these are benefit payments made to other systems for service earned as a member of the Northbridge Retirement System, net of those payments which the Northbridge Retirement System received from other systems.

The appropriation for Fiscal 2026 is as follows:

Net Employer Normal Cost for Fiscal 2026 (including admin. expenses)	$	799,090
Net 3(8)(c) Payments		150,647
Amortization		1,270,092
Timing Adjustment*		0
Total Appropriation required for Fiscal 2026	$	2,219,829

* Contributions are assumed to be made at the beginning of the fiscal year.

NOTE: for all tables in this report, totals may not sum due to rounding.

- The schedule's length is nine (9) years which is an increase of three years compared to the 6 years remaining from the 8-year schedule from the January 1, 2022 valuation. This follows a four-year reduction of length in 2022. The maximum funding schedule length allowed by Section 22F of Chapter 32 of the Massachusetts General Laws is fifteen years to Fiscal 2040.
- Northbridge's funding schedule was developed by applying 2.00% contribution increases each year. In the final year, the contribution decreases by 6.61%.

The schedule is shown on the following page.

NORTHBRIDGE RETIREMENT SYSTEM

FUNDING SCHEDULE

Fiscal Year	Normal Cost	Unfunded Liability	Funding Amortization of UAAL	Net 3(8)(c) Payments	Schedule Contribution**	% Change
2026	799,090	9,068,950	1,270,092	150,647	2,219,829	2.00%
2027	829,056	8,344,779	1,284,523	150,647	2,264,226	2.00%
2028	860,145	7,554,474	1,298,717	150,647	2,309,510	2.00%
2029	892,401	6,693,659	1,312,652	150,647	2,355,700	2.00%
2030	925,866	5,757,678	1,326,301	150,647	2,402,814	2.00%
2031	960,586	4,741,573	1,339,638	150,647	2,450,871	2.00%
2032	996,608	3,640,071	1,352,633	150,647	2,499,888	2.00%
2033	1,033,981	2,447,558	1,365,258	150,647	2,549,886	2.00%
2034	1,072,755	1,158,062	1,158,062	150,647	2,381,464	-6.61%
2035	1,112,983	-	-	150,647	1,263,631	-46.94%

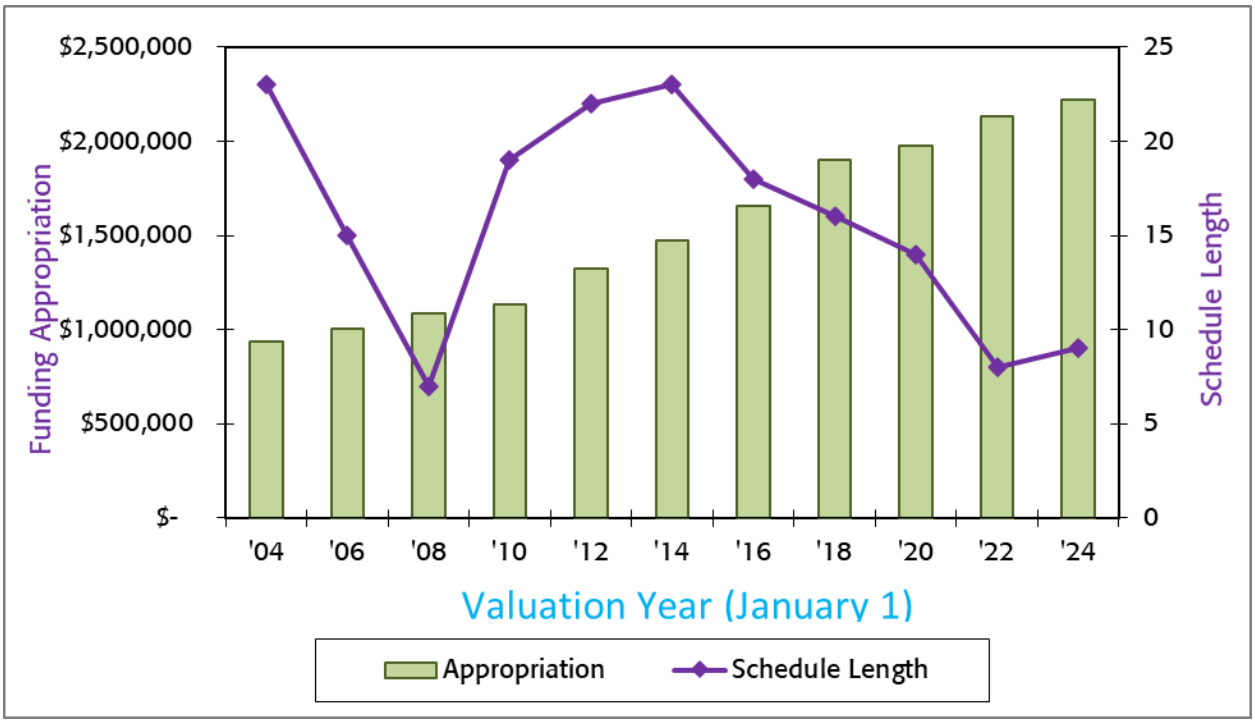
Amortization of Unfunded Liability as of July 1, 2025

Year	Type	Original Amort. Amount	Percentage Increasing	Original # of Years	Current Amort. Amount	Years Remaining
2026	Fresh Start	N/A	N/A	9	N/A	9

* Contribution is set to increase by 2% annually. The contribution in the final year (FY2034) decreases by 6.61%.

History of Funding Effort

Below is a history of the length of funding schedule used by the Northbridge Retirement System, and the amount of the initial contribution for each funding schedule.

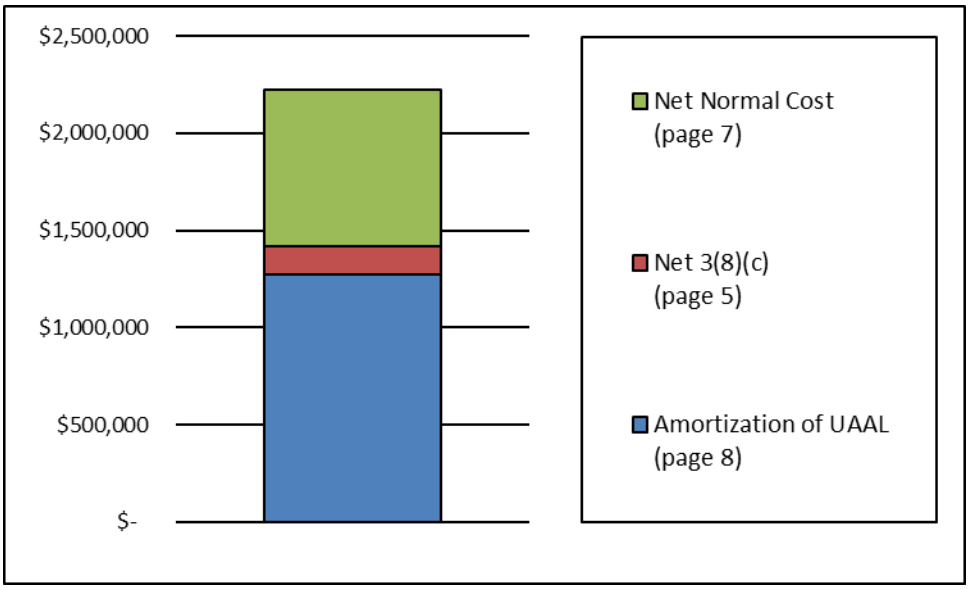


The funding objective of the system is to reduce the unfunded actuarial accrued liability over time to $0. The annual employer contribution pattern is intended to be systematic and over a reasonable time period. This objective is being met.

The following pages discuss the components that make up the contribution, and how they are calculated from the actuarial results.

Components of Funding Appropriation

Components of the funding contribution are compared below, and discussed on the following pages.



Net 3(8)(c) Payments

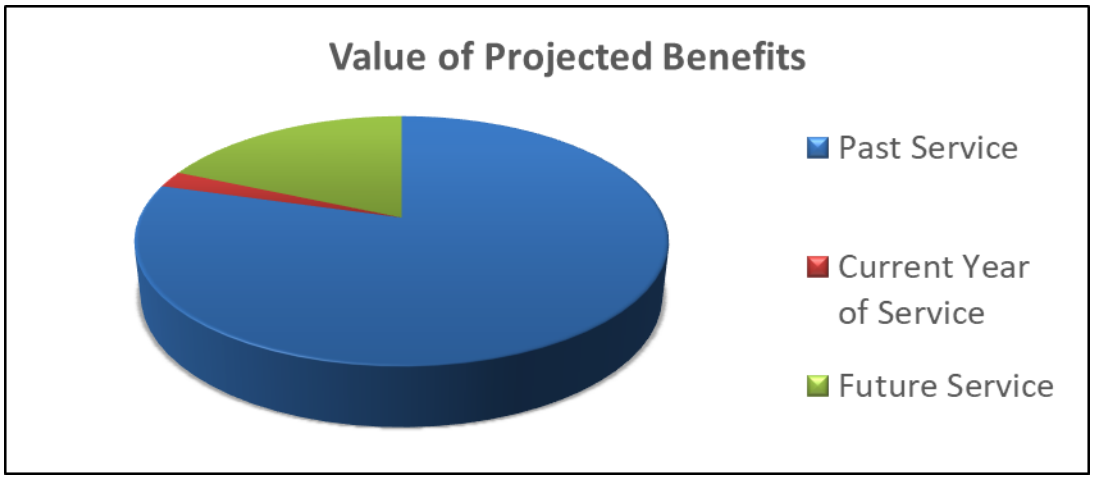
- 3(8)(c) payments are benefits which the Northbridge Retirement System pays to or receives from other retirement boards for service that a retiree had with a different retirement system.
- The net amount is equal to what Northbridge pays out, less what Northbridge receives from other systems, based on the most recent PERAC annual statement:

3(8)(c) payments made to other systems	$	257,476
3(8)(c) payments received from other systems		(106,829)
Net payments in funding schedule	$	150,647

- For the funding schedule, the amount of net payments is assumed to remain level in future years.

Development of Actuarial Results

Actuarial liabilities are calculated based on benefits that members are projected to receive in the future. The value of projected benefits is divided between past service, future service, and the current year of service.



The actuarial funding method (in this case, entry age normal), assigns values to each of these periods of service.

- Past service: The Actuarial Accrued Liability (AAL), is the portion of the benefit value that is associated with past service; this can be thought of as the "price" of benefits already earned by members of the system.

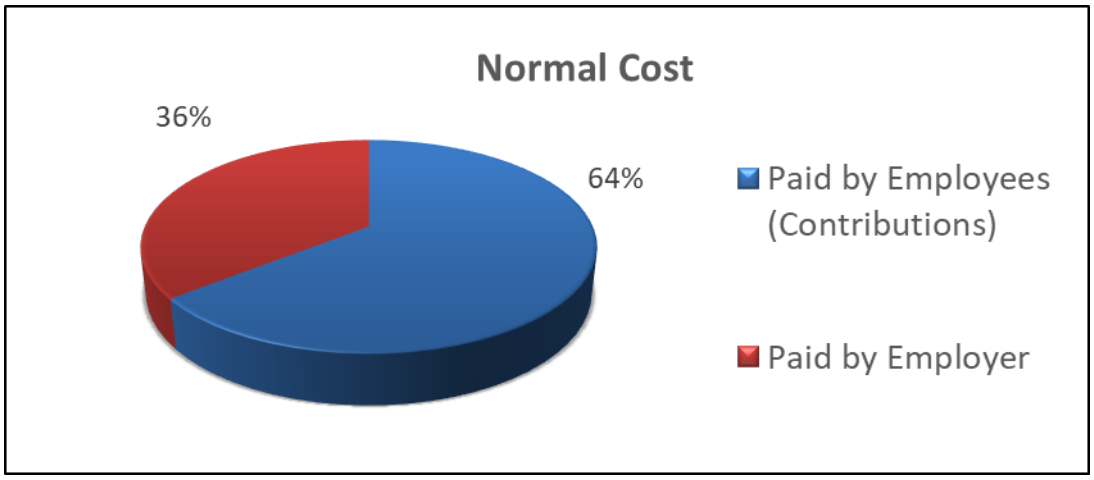
- Current year: The "price" of benefits being earned during the current year is referred to as the Normal Cost (NC). This includes only the actives, as neither inactives nor retirees are earning any additional service.

- Future service: The amount for future service is not included in the liability, as those years of service have not yet been earned.

For retirees, the "past service" amount accounts for the entire value of their benefits; they have completed their careers, and will earn no more service during the current year or any future years.

Net Normal Cost

The entire Normal Cost is not borne by the System; a significant portion is paid by employee contributions. The portion of the Normal Cost not covered by employee contributions is the amount that must be paid through funding appropriations; this is the Net Normal Cost.



The Net Normal Cost as seen in the funding schedule is calculated by adjusting for timing, and adding in the administrative expense. The calculation is shown below, and compared to the covered payroll:

	January 1, 2024	% of Payroll*
Gross Normal Cost (GNC)	$ 1,680,641	14.6%
Employees Contribution	1,081,184	9.4%
Net Normal Cost (NNC)	$ 599,457	5.2%
Adjustment to beginning of Fiscal Year 2026**	34,034	
Administrative Expense	165,600	1.4%
Adjusted Net Normal Cost With Admin. Expense	$ 799,090	

* Payroll paid in 2023 for employees as of January 1, 2024 is $11,486,722. Payroll for new hires in 2023 was annualized.

** The NNC is adjusted from January 1, 2024 to Fiscal 2026 by rolling it forward with a salary increase factor of 3.75%.

Unfunded Liability

The Unfunded Actuarial Accrued Liability (UAAL) is the portion of the AAL that is not covered by the value of the plan assets.

This is adjusted from the date of the valuation to the date of the contribution (July 1, 2025) to produce the Unfunded Liability seen in Fiscal Year 2026 in the funding schedule.

The liability results were as follows:

	January 1, 2024
Actuarial Accrued Liability	
a. Active Members	$ 28,889,316
b. Inactive Members	1,296,361
c. Retired Members and Beneficiaries	33,339,971
d. Total	$ 63,525,648
Unfunded Actuarial Accrued Liability	
a. Actuarial Accrued Liability	$ 63,525,648
b. Less Actuarial Value of Assets	54,270,863
c. Unfunded Actuarial Accrued Liability	$ 9,254,785
d. Adjustment to FY2026	(185,835)
e. Unfunded Actuarial Accrued Liability as of FY2026	$ 9,068,950

In developing the funding schedule, we used a "fresh start" approach in which the UAAL (not counting Early Retirement Incentives) is amortized from scratch instead of maintaining the existing amortization amount and separately amortizing gains and losses. This can result in a schedule in which the changes in contribution amounts from year to year are more consistent.

The UAAL and funding ratio are measures of the plan's funded status, which reflect the plan's position as of January 1, 2024. We believe these measures, by themselves, are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. However, we believe these measures, in conjunction with the plan's funding schedule and unrecognized gains/losses, are appropriate for assessing the amount of future contributions.

Active Liability by Decrement

An active member can incur liabilities for the Retirement System in one of four ways:

- They can retire (if eligible),
- They can become disabled and collect a disability benefit,
- They can die, or
- They can terminate service and withdraw their ASF balance or receive a deferred retirement benefit

Active members have a portion of their liability associated with each of these four outcomes. The Accrued Liability for active members is divided as follows:

Active Actuarial Accrued Liability	
Superannuation Retirement	$ 26,469,623
Death	632,540
Disability	1,480,219
Withdrawal	306,934
TOTAL	$ 28,889,316

Demographic Results

Actives	
a. Number	249
b. Annual Compensation	$11,486,722
c. Average Annual Compensation	$46,131
d. Average Attained Age	43.7
e. Average Past Service	8.1
Retired, Disabled and Beneficiaries	
a. Number	122
b. Total Benefits (excluding State COLA)	$3,216,531
c. Average Benefits	$26,365
d. Average Age	73.6
Inactives	
a. Number	158

- Total compensation changed by 15.7% over the prior valuation
  - Average annual compensation changed by 1.3%
  - Salary loss of $1.2 million compared to projected experience

History of Demographic Statistics

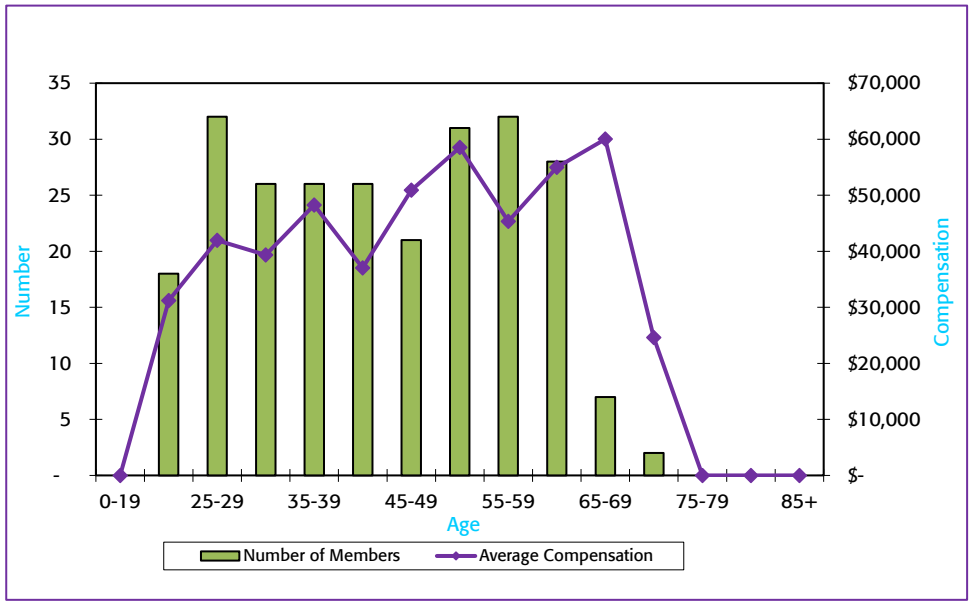
Valuation Year	Actives	Average Age	Average Past Service	Average Ann'l Pay
2024	249	43.7	8.1	$46,131
2022	218	44.7	9.5	$45,530
2020	210	46.6	10.5	$44,327
2018	206	46.6	10.2	$42,484
2016	210	46.6	10.0	$40,503
2014	204	47.1	9.9	$40,304
2012	184	46.8	10.3	$39,667
2010	182	46.7	9.5	$38,926
2008	177	45.6	9.0	$38,602
2006	186	45.4	8.9	$35,334
2004	168	46.0	9.0	$34,206
2002	189	44.7	7.7	$30,896
2000	161	45.2	8.7	$28,278

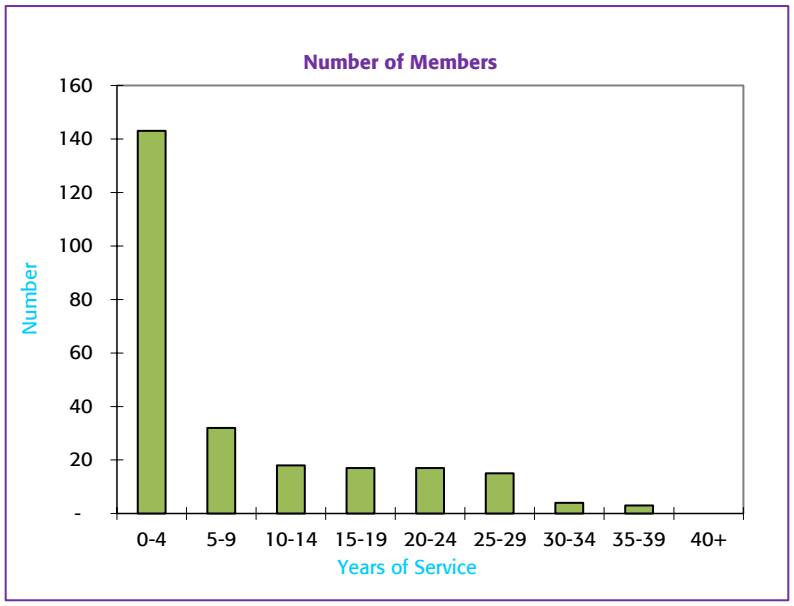
- Employee age has levelled off in recent years, following years of increases, while service has continued to increase. Average annual compensation has grown by 63.1% (2.1% annually) over the past twenty-four years.

Distribution of Plan Members as of January 1, 2024

ACTIVE MEMBERS

AGE	0 4 Years	5 9 Years	10 14 Years	15 19 Years	20 24 Years	25 29 Years	30 34 Years	35 39 Years	40 + Years	Total	Total Compensation	Average Compensation
0-19	-	-	-	-	-	-	-	-	-	-	$ -	$ -
20-24	18	-	-	-	-	-	-	-	-	18	$ 561,350	$ 31,186
25-29	27	5	-	-	-	-	-	-	-	32	$ 1,342,067	$ 41,940
30-34	22	4	-	-	-	-	-	-	-	26	$ 1,022,516	$ 39,328
35-39	14	8	4	-	-	-	-	-	-	26	$ 1,254,405	$ 48,246
40-44	17	4	1	2	2	-	-	-	-	26	$ 963,083	$ 37,042
45-49	14	2	-	-	5	-	-	-	-	21	$ 1,068,717	$ 50,891
50-54	14	2	5	5	1	3	1	-	-	31	$ 1,814,300	$ 58,526
55-59	10	5	2	5	4	5	-	1	-	32	$ 1,451,515	$ 45,360
60-64	5	2	3	4	5	5	2	2	-	28	$ 1,539,438	$ 54,980
65-69	1	-	2	1	-	2	1	-	-	7	$ 420,080	$ 60,011
70-74	1	-	1	-	-	-	-	-	-	2	$ 49,252	$ 24,626
75-79	-	-	-	-	-	-	-	-	-	-	$ -	$ -
80-84	-	-	-	-	-	-	-	-	-	-	$ -	$ -
85+	-	-	-	-	-	-	-	-	-	-	$ -	$ -
TOTAL	143	32	18	17	17	15	4	3	-	249	$ 11,486,722	$ 46,131





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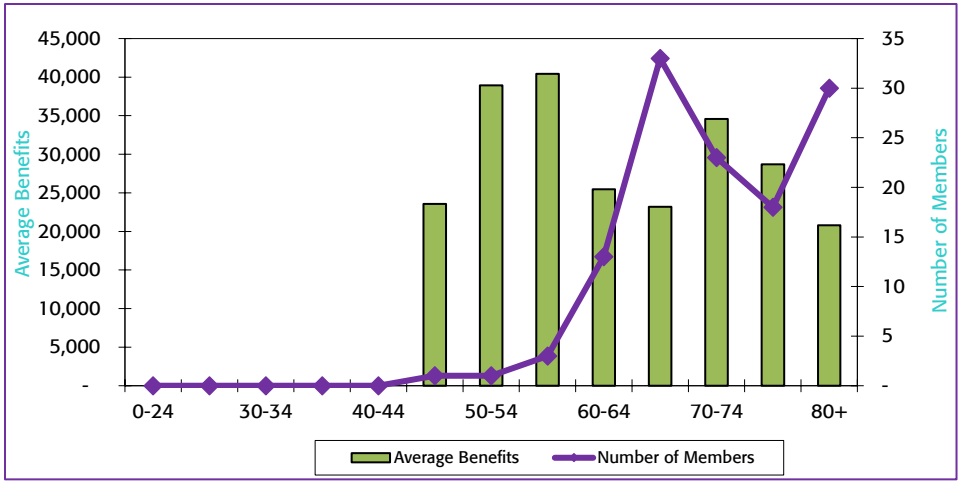
Distribution of Plan Members as of January 1, 2024

RETIRED MEMBERS

Retired Members and Beneficiaries			
Age	Number	Average Benefit	Total Benefit
0-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	-	-	-
45-49	1	23,571	23,571
50-54	-	-	-
55-59	2	35,732	71,463
60-64	11	27,352	300,871
65-69	31	21,997	681,909
70-74	20	34,416	688,317
75-79	18	28,709	516,759
80+	29	20,668	599,384
TOTAL	**112**	**$ 25,735**	**$ 2,882,274**

Disabled Members			
Age	Number	Average Benefit	Total Benefit
0-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	-	-	-
45-49	-	-	-
50-54	1	38,931	38,931
55-59	1	49,795	49,795
60-64	2	15,171	30,343
65-69	2	41,651	83,301
70-74	3	35,763	107,290
75-79	-	-	-
80+	1	24,596	24,596
TOTAL	**10**	**$ 33,426**	**$ 334,256**

Total			
Age	Number	Average Benefit	Total Benefit
0-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	-	-	-
45-49	1	23,571	23,571
50-54	1	38,931	38,931
55-59	3	40,419	121,258
60-64	13	25,478	331,214
65-69	33	23,188	765,210
70-74	23	34,592	795,608
75-79	18	28,709	516,759
80+	30	20,799	623,981
TOTAL	**122**	**$ 26,365**	**$ 3,216,531**



Benefits shown are net of State reimbursed COLA.

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Assets

Cash	$	60,785.97
PRIT Cash		983.35
PRIT FUND		52,043,161.49
Accounts Receivable		53,669.19
Market Value of Assets	$	52,158,600.00

- The asset allocation is approximately 20% fixed income, cash, receivables and payables and 80% equities, alternative investments, hedge funds and similar types of investments.

- Annual return in calendar 2021-2023: -0.8% vs. a 7.00% assumption.
  - $8,000,866 net actuarial asset loss in Calendar Years 2022 through 2023

Actuarial Value of Assets

For its Actuarial Value of Assets (AVA), Northbridge uses a four-year asset smoothing method which recognizes gains and losses over a four-year period. For example, for a gain in 2018, 25% would be recognized in 2019, another 25% in 2020, another 25% in 2021, and the final 25% in 2022.

The results of asset smoothing have a limit applied to them in the form of a 10% corridor: the Actuarial Value of Assets is not permitted to exceed 110% of the Market Value of Assets or fall below 90% of the Market Value.

The AVA is $54.3 million, $2.1 million higher than the MVA. The calculation of the smoothed asset value is shown on the following page.

Four-Year Asset Smoothing

1. Market value of assets including receivable/payable as of 01/01/2024 $ 52,158,600

2. Phase-in of asset gains and losses

	Plan Year)	Original Amount (2)	Percent Unrecognized (3)	Amount Unrecognized (2) x (3)
a.	2023	$1,895,675	75%	$1,421,756
b.		($9,896,541)	50%	($4,948,271)
c.	2021	$5,657,007	25%	$1,414,252
d.		$2,015,663	0%	$0
e.	2019	$3,036,861	0%	$0
f.	Total	$2,708,665		($2,112,263)

3. Valuation assets without corridor as of 01/01/2024 $ 54,270,863
   (1. - 2.f.)

4. Corridor Check
   a. 90% of Market Value $ 46,942,740
   b. 110% of Market Value $ 57,374,460

5. Valuation assets with corridor as of 01/01/2024 $ 54,270,863
   (3. within Corridor)

6. Calculation of return on valuation assets

   a. Valuation assets as of 01/01/2022 $ 48,788,262

   b. ER contribs + EE contribs - Ben Pymts - Expenses $ (1,142,687)

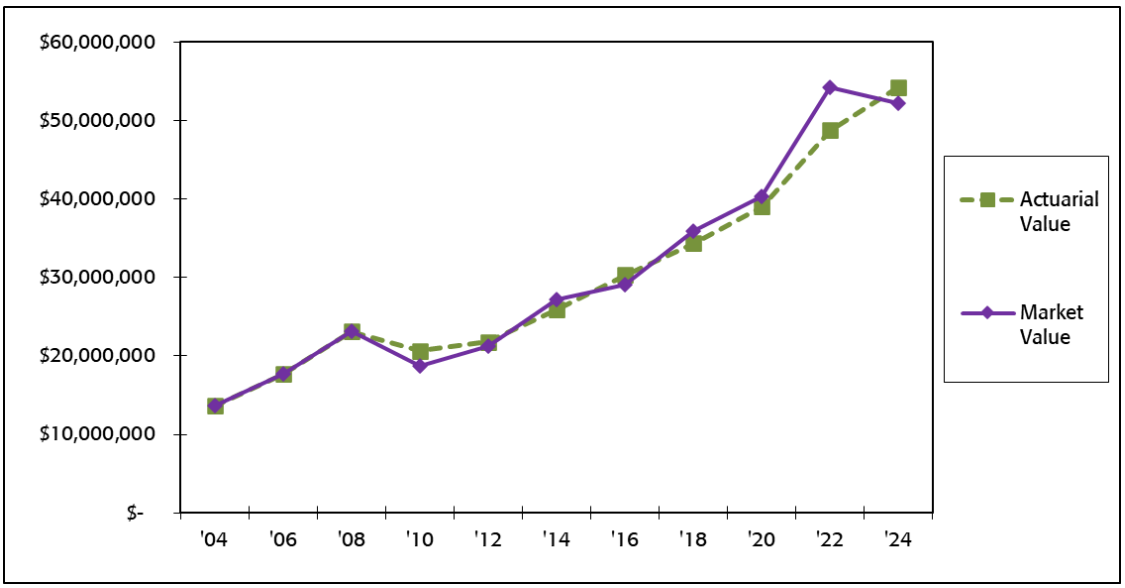
   c. Actual return on valuation assets $ 6,625,288
      5. - (6.a. + 6.b.)

   d. Weighted value of valuation assets $ 48,216,918

   e. Return on valuation assets 13.74%
      (6.c. / 6.d.)

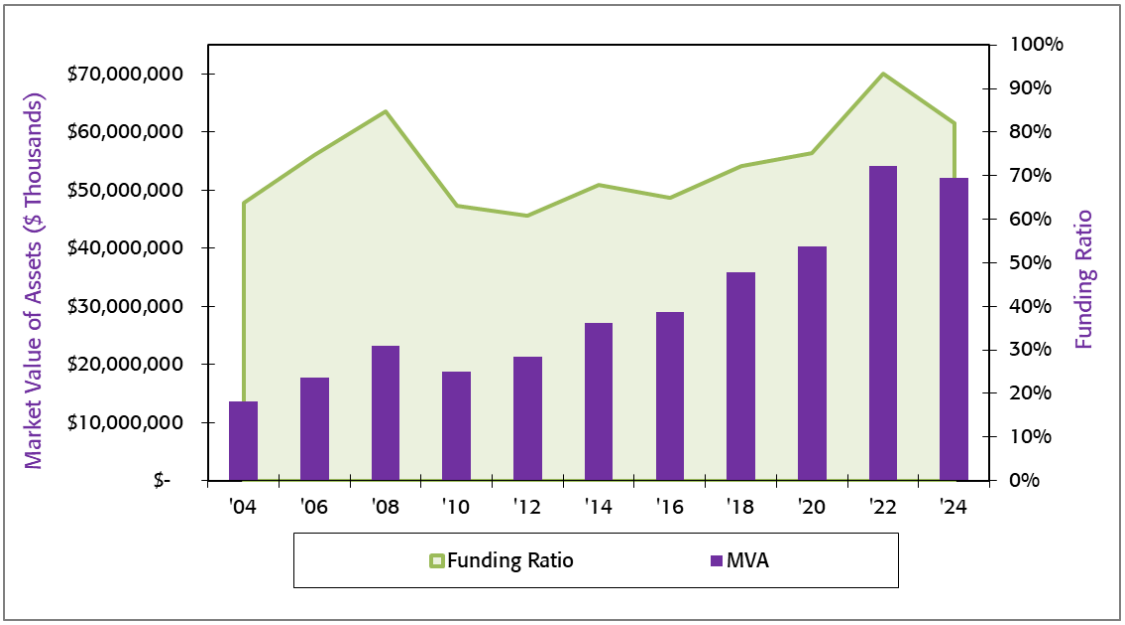
   f. Annualized return on assets 6.65%

The benefit of using an asset smoothing method is that it results in a more stable measure of the financial condition of the Plan. This is illustrated by the chart below, which displays a history of the Actuarial Value and Market Value of Assets over the past eleven valuations.



Funding Ratio

The following displays the history of the funding ratio for the past eleven valuations, based on Market Value of Assets. The Market Value for each year is shown to accompany the funding ratio. We show the market value of assets as that is the amount of assets actually available to pay for benefits.



Funding ratio as of 1/1/2024:

- 82.1% using Market Value of Assets
- 85.4% using Actuarial Value of Assets

Risk

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as:

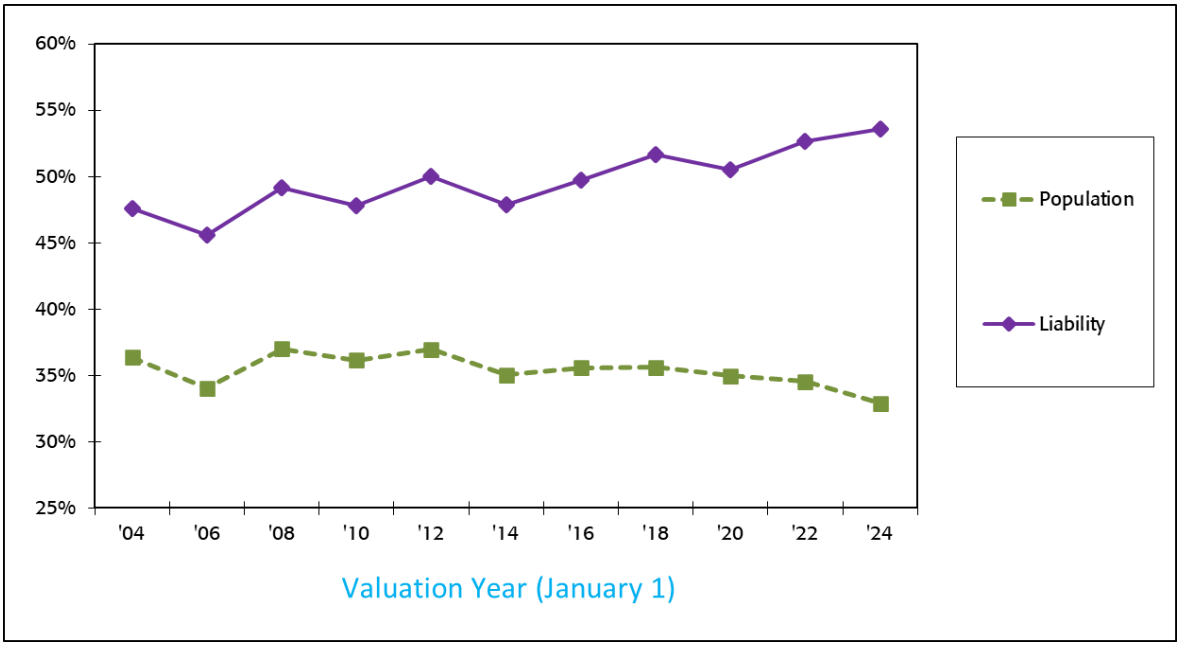
- Plan experience differing from that anticipated by the economic or demographic assumptions,
- Changes in economic or demographic assumptions,
- Increases or decreases expected as part of natural operation of the methodology used for these measurements such as additional contribution requirements based on the plan's funded status,
- Changes in plan provisions or applicable law.

As part of the valuation, we have not performed an analysis of the potential range of future measurements. GASB Statement 67 and 68 reports for the Northbridge Retirement System contain alternate results to measure the impact of increases or decreases in the discount rate.

Maturity

One important concern is the maturity of the system. Systems with a greater portion of their liability stemming from current retirees whose benefits already being paid are likely to experience greater impact from short-term asset experience, as high payouts in the near future leave less of the current assets will be available to benefit from investment returns further in the future.

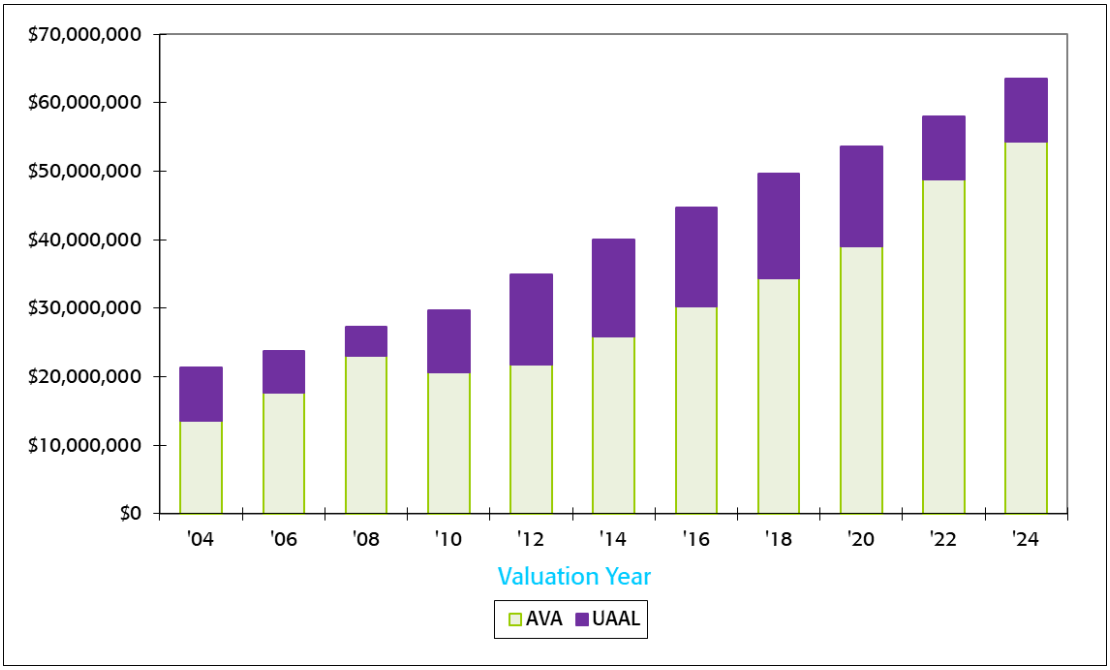
Below is a history of the retiree's percentage of the covered population and liability. The retiree share of the population has decreased slightly over the past eleven valuations, while the retiree share of the liability has increased.



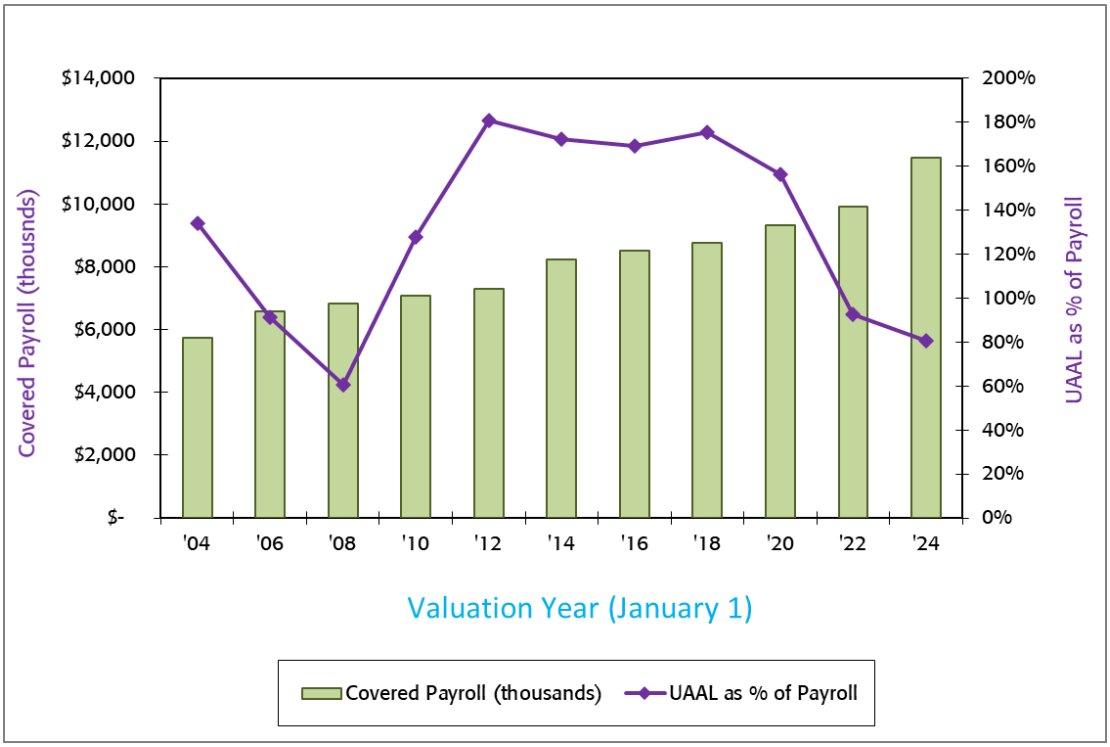
Historical Experience

The following charts display Northbridge's history of Actuarial Assets and Unfunded Liability; the second chart compares the unfunded liability to covered payroll.

History of Assets and Unfunded Liability



History of Unfunded Liability and Covered Payroll



Comparative Results

	January 1, 2024	January 1, 2022	Percentage Change
Funding			
Contribution for Fiscal 2026	$2,219,829	$2,219,829	0.0%
Members			
▪ Actives			
a. Number	249	218	14.2%
b. Annual Compensation	$11,486,722	$9,925,597	15.7%
c. Average Annual Compensation	$46,131	$45,530	1.3%
d. Average Attained Age	43.7	44.7	-2.2%
e. Average Past Service	8.1	9.5	-15.0%
▪ Retired, Disabled and Beneficiaries			
a. Number	122	115	6.1%
b. Total Benefits*	$3,216,531	$2,851,443	12.8%
c. Average Benefits*	$26,365	$24,795	6.3%
d. Average Age	73.6	73.1	0.7%
▪ Inactives			
a. Number	158	125	26.4%
Normal Cost			
a. Total Normal Cost as of January 1, 2024	$1,680,641	$1,461,256	15.0%
b. Less Expected Members' Contributions	1,081,184	930,153	16.2%
c. Normal Cost to be funded by the Municipality	$599,457	$531,103	12.9%
d. Adjustment to July 1, 2025	34,034	30,153	12.9%
e. Administrative Expense Assumption	165,600	152,384	8.7%
f. Normal Cost Adjusted to July 1, 2025	$799,090	$713,640	12.0%
Actuarial Accrued Liability			
a. Active Members	$28,889,316	$26,760,015	8.0%
b. Inactive Members	1,296,361	1,414,814	-8.4%
c. Retired Members and Beneficiaries	33,339,971	29,798,606	11.9%
d. Total	$63,525,648	$57,973,435	9.6%
Unfunded Actuarial Accrued Liability			
a. Actuarial Accrued Liability	$63,525,648	$57,973,435	9.6%
b. Less Actuarial Value of Assets	54,270,863	48,788,262	11.2%
c. Unfunded Actuarial Accrued Liability	$9,254,785	$9,185,173	0.8%
d. Adjustment to FY2026	(185,835)	(192,753)	
e. Unfunded Actuarial Accrued Liability as of FY2026	$9,068,950	$8,992,420	

* Excluding State reimbursed COLA

APPENDICES

Appendix A – Actuarial Methods and Assumptions

All assumptions and methodologies were either set by statute or selected by the Northbridge Retirement Board in conjunction with guidance provided by Stone Consulting, Inc.

Stone Consulting, Inc. was furnished member and financial data by the Northbridge Retirement System's administrative staff. Although examined under broad parameters for reasonableness, the data was not audited by the actuary. With the assistance of the staff of the Northbridge Retirement Board, we were able to develop a database sufficient for valuation purposes.

ASSUMPTION AND METHODOLOGY CHANGES SINCE PRIOR VALUATION

- COLA Increase Percentage: 5% one-time increase for FY23, compared to a customary rate of 3%
  - This increased the liability by $229 thousand
- All other assumptions and methods were maintained from the prior valuation

ACTUARIAL METHODS

Actuarial Cost Method

The Entry Age Normal Actuarial Cost Method has been used in this valuation. Under this method, the normal cost is the amount calculated as the level percentage of compensation necessary to fully fund the prospective benefits from each member's entry age to retirement age.

The actuarial accrued liability represents the theoretical accumulation of all prior years' normal costs for the plan members as if the program had always been in effect. The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over plan assets. The use of the Entry Age Normal actuarial funding method is consistent with the requirements of Chapter 32 of the Massachusetts General Laws.

Asset Valuation Method

Market Value of Assets, adjusted for payables and receivables, adjusted to phase in investment gains compared to the expected market value and losses evenly over four years (shown on page 14). The asset valuation method adjusts the results to no less than 90% and no more than 110% of the market value of assets adjusted for payables and receivables.

Fiscal Year Adjustment

The actuarial results are adjusted by the valuation interest rate and salary scale to the beginning of Fiscal Year 2026. The unfunded actuarial accrued liability is rolled forward with normal cost and further adjusted by anticipated contributions and interest.

Actuarial Methods and Assumptions (Continued)

ACTUARIAL ASSUMPTIONS

Valuation Date

January 1, 2024.

Investment Return

7.00% per year net of investment expenses. The investment return assumption is a long-term assumption and is based on capital market expectations by asset class, historical returns, and professional judgement. Prior valuation used a discount rate of 7.00%.

Regular Interest Rate Credited to Annuity Savings Account

2% per year.

Cost-of-Living Increases

A 3% COLA on the first $14,000 of a member's retirement allowance is assumed to be granted every year. A one-time increase of 5% was granted for FY2023.

Salary Increases

Select and Ultimate. Salary increases by employment group and years of service:

- Group 1 and 2: 6.25% for years 1-7; 3.75% all other years
- Police: 12.25% in year 1, 13.75% in year 2, 5.25% for year 3, 4.75% for years 10, 15, and 20; 3.75% all other years
- Fire: 7.25% in years 1-4, 6.75% in year 10, 4.75% in years 15 and 20; 3.75% all other years

This is consistent with the prior valuation.

Step increases are assumed to be part of the salary increase assumption. The total payroll is assumed to increase at 3.75% per year. The salary increase assumption reflects prior experience including PERAC's 2002 local experience study, current expectations, and professional judgement.

Actuarial Methods and Assumptions (Continued)

Credited Service

All service is assumed to be due to employment with the municipality.

Family Composition

Members assumed married with 2 dependent children – one male and one female both age 15; age difference between member and spouse assumed to be 3 years (the male being the older).

Administrative Expenses

Estimated budgeted amount of $165,600 for the Fiscal Year 2026 is added to the Normal Cost. The administrative expense does not include investment manager and custodial fees. These fees are considered part of the discount rate assumption that is net of fees.

Net 3(8)(c)

Net 3(8)(c) payments are assumed to be the same level as the past calendar year for all future years.

Contribution Timing

Contributions are assumed to be made at the beginning of the fiscal year.

In-Service Disability and Death

Both Disability and In-Service Death are assumed to be 33% ordinary and 67% accidental for Group 1 and 2, and 10% ordinary and 90% accidental for Group 4.

Withdrawal Prior to Retirement

The rates shown at the following sample ages illustrate the withdrawal assumption. Withdrawal rates are set to zero if the retirement rate at that age is nonzero.

Rate of Withdrawal

Service	Group 1 and 2	Group 4
0	15%	1.5%
1	12%	1.5%
2	10%	1.5%
3	9%	1.5%
4	8%	1.5%
5	7.6%	1.5%
10	5.4%	1.5%
15	3.3%	0.0%
20	2.0%	0.0%
25	1.0%	0.0%
30+	0.0%	0.0%

Disability Prior to Retirement

The rates shown at the following sample ages illustrate the assumption regarding the incidence of disability:

Rate of Disability

Age	Group 1 and 2	Group 4
20	0.01%	0.10%
25	0.02%	0.20%
30	0.03%	0.30%
35	0.06%	0.30%
40	0.10%	0.30%
45	0.15%	1.00%
50	0.19%	1.25%
55	0.24%	1.20%
60	0.28%	0.85%

Actuarial Methods and Assumptions (Continued)

Rates of Retirement

The rates shown at the following ages illustrate the assumption regarding the incidence of retirement, once the member has achieved 10 years of service:

				Hired after 4/1/2012		
Age	Group 1& 2 Male	Group 1 & 2 Female	Group 4	Group 1& 2 Male	Group 1 & 2 Female	Group 4
50	1%	1.5%	2%	0%	0%	0%
51	1%	1.5%	2%	0%	0%	0%
52	1%	2.0%	2%	0%	0%	0%
53	1%	2.5%	2%	0%	0%	0%
54	2%	2.5%	7.5%	0%	0%	0%
55	2%	5.5%	15%	0%	0%	10%
56	2.5%	6.5%	10%	0%	0%	7%
57	2.5%	6.5%	10%	0%	0%	20%
58	5%	6.5%	10%	0%	0%	10%
59	6.5%	6.5%	15%	0%	0%	15%
60	12%	5%	20%	25%	30%	20%
61	20%	13%	20%	20%	13%	20%
62	30%	15%	25%	30%	15%	25%
63	25%	12.5%	25%	25%	12.5%	25%
64	22%	18%	30%	22%	18%	30%
65	40%	15%	100%	40%	15%	100%
66	25%	20%	N/A	25%	20%	N/A
67	25%	20%	N/A	25%	20%	N/A
68	30%	25%	N/A	30%	25%	N/A
69	30%	20%	N/A	30%	20%	N/A
70	100%	100%	N/A	100%	100%	N/A

Mortality

RP-2014 table adjusted to 2006 and projected generationally with MP-2021 (sex-distinct). During employment the healthy employee mortality table is used. Post-employment the healthy annuitant table is used. This is consistent with the prior valuation.

Mortality for disabled retirees follows the same table as non-disabled retirees, set forward 2 years. Death is assumed to be due to the same cause as the disability 40% of the time.

Appendix B – Summary of Principal Provisions

1. PARTICIPANT

Participation is mandatory for all full-time employees whose employment commences before age 65. There are three classes of members in the retirement system:

- Group 1: general employees
- Group 2: employees in specified hazardous occupations (e.g., electricians)
- Group 4: police and firefighters

2. MEMBER CONTRIBUTIONS

Member contributions vary depending upon date hired as follows:

Date of Hire	Member Contribution Rate
Prior to 1975	5% of Pay
1975 – 1983	7% of Pay
1984 – June 30, 1996	8% of Pay
After June 30, 1996	9% of Pay

Members hired after 1978 contribute an additional 2% of pay over $30,000.

3. PAY

a. Pay

Gross regular compensation excluding bonuses, overtime, severance pay, unused sick pay, and other similar compensation.

b. Average Pay

The average of pay during the three consecutive years that produce the highest average or, if greater, during the last three years (whether or not consecutive) preceding retirement. For members hired after April 1, 2012, five-year averages will be used.

4. CREDITED SERVICE

Period during which an employee contributes to the retirement system plus certain periods of military service and "purchased" service.

Summary of Principal Provisions (Continued)

5. SERVICE RETIREMENT

a. Eligibility

Hired prior to April 2, 2012:

- Attainment of age 55 and completion of ten years of credited service,
- or at any age with completion of 20 years of service.
- If hired prior to 1978 or a member of Group 4, the completion of ten years of service is not required.

Hired after April 1, 2012:

- Group 1 – Age 60 and Completion of 10 years of credited service;
- Group 2 – Age 55 and completion of 10 years of service;
- Group 4 – Age 55.

b. Retirement Allowance

Determined as the product of the member's benefit percentage, average pay and credited service, where the benefit percentage is shown below (maximum allowance of 80% of average pay):

Benefit Percentage	Group 1	Group 2	Group 4
2.5%	65+	60+	55+
2.4	64	59	54
2.3	63	58	53
2.2	62	57	52
2.1	61	56	51
2.0	60	55	50
1.9	59	N/A	49
1.8	58	N/A	48
1.7	57	N/A	47
1.6	56	N/A	46
1.5	55	N/A	45
	Hired after April 1, 2012*		
2.5%	67+	62+	57+
2.35	66	61	56
2.20	65	60	55
2.05	64	59	54
1.90	63	58	53
1.75	62	57	52
1.60	61	56	51
1.45	60	55	50

*Reduction is .125% for each year early instead of .15% per year for employees with over 30 years of service.

In addition, veterans receive an additional $15 per year for each year of credited service up to 20 years

Summary of Principal Provisions (Continued)

6. DEFERRED VESTED RETIREMENT

a. Eligibility

Completion of 10 years of credited service (for elected and appointed members, 6 years in the event of involuntary termination).

b. Retirement Allowance

Determined in the same manner as "Service Retirement" section above with the member eligible to start collecting a benefit at age 55, (or age 57 for post-April 1, 2012 hires) or defer until later at his or her discretion. If a member chooses, his or her contributions with interest may be withdrawn. The amount of interest he or she will receive depends on length of service and whether or not the termination of employment was voluntary.

7. ORDINARY DISABILITY RETIREMENT

a. Eligibility

Non-job related disability after completion of 10 years of credited service.

b. Retirement Allowance

Determined in the same manner as "Service Retirement" section and calculated as if the member had attained age 55 (or age 60 for group 1 hired after April 1, 2012), if younger. Veterans receive 50% of pay (during final year) plus an annuity based on accumulated member contributions with interest.

8. ACCIDENTAL DISABILITY RETIREMENT

a. Eligibility

Disabled as a result of an accident in the performance of duties. No age or service requirement.

b. Retirement Allowance

72% of pay plus an annuity based on accumulated member contributions with interest. Also, a dependent's allowance per year for each child. Total allowance not to exceed 100% of pay (75% for members hired after 1987).

Summary of Principal Provisions (Continued)

9. NON-OCCUPATIONAL DEATH

a. Eligibility

Dies while in active service, but not due to occupational injury. 2 years of service.

b. Retirement Allowance

Benefit as if Option C had been elected (see below) and member had attained age 55 (or age 57 for those hired after April 1, 2012) if younger.

Minimum monthly benefits provided as follows:

- spouse - $500,
- first child - $120,
- each additional child - $90

10. OCCUPATIONAL DEATH

a. Eligibility

Dies as a result of an occupational injury.

b. Benefit Amount

72% of pay plus refund of annuity savings fund balance. In the case of an accidental disability retiree who dies of the same cause, the beneficiary receives 72% of the last 12 months salary or the current pension amount, whichever is greater.

11. COST-OF-LIVING INCREASES

An increase of up to 3% applied to the first $14,000 of annual benefit, with a 5% increase for FY2023. Funded by the Employer from Fiscal Year 1999. Percentage increase is voted on each year by the Retirement Board. Cost-of-living increases granted during Fiscal Year 1982 through Fiscal 1998 are reimbursed by the Commonwealth.

12. OPTIONAL FORMS OF PAYMENT

- Option A: Allowance payable monthly for the life of the member.
- Option B: Allowance payable monthly for the life of the member with a guarantee of remaining member contributions with interest.
- Option C: Allowance payable monthly for the life of the member with 66-2/3% continuing to the member's beneficiary upon the member's death. If the beneficiary predeceases the member, the allowance amount "pops up" to the non-reduced amount.

Appendix C – Glossary of Terms

- **Actuarial Accrued Liability**
  The portion of the Present Value of Benefits that is attributable to past service.

- **Actuarial Value of Assets**
  The value of assets based on the asset valuation method shown in the Actuarial Methods and Assumptions section of this report.

- **Actuarial Assumptions**
  Estimates are made as to the occurrence of certain events that determine the level of benefits to be paid and how long they will be provided. The more important actuarial assumptions include the investment return on assets, salary increases and the rates of turnover, disability, retirement and mortality.

- **Actuarial Cost Method**
  The procedure that is used to allocate the present value of benefits between the liability that is attributable to past service (Actuarial Accrued Liability) and that attributable to future service.

- **Funding Ratio**
  The percentage of the accrued liability that is covered by the Actuarial Value of Assets.

- **GASB**
  Government Accounting Standards Board (issues guidance for disclosure of retirement system liabilities).

- **Normal Cost**
  The portion of the Present Value of Benefits that is attributable to benefits to be earned in the coming year.

- **PERAC**
  Public Employee Retirement Administration Commission, a division of the State government which has regulatory authority over the administration of the retirement system.

- **Present Value of Benefits**
  Represents the dollar value today of all benefits expected to be earned by current members if all actuarial assumptions are exactly realized.

- **PRIT**
  Pension Reserves Investment Trust Fund is the state controlled and administered fund for the investment of assets for members of the retirement system.

- **Unfunded Actuarial Accrued Liability**
  That portion of the Actuarial Accrued Liability not covered by System Assets.

PERAC Information Disclosure

The most recent actuarial valuation of the System was prepared by Stone Consulting, Inc. as of January 1, 2024

The normal cost for employees on that date was:	$1,081,184	9.4% of payroll
The normal cost for the employer was:	$599,457	5.2% of payroll

The actuarial liability for active members was:	$28,889,316
The actuarial liability for retired members was (includes inactives):	$34,636,332
Total actuarial accrued liability:	$63,525,648
System assets as of that date ($52,158,600.00 Market Value):	$54,270,863
Unfunded actuarial accrued liability:	$9,254,785

The ratio of system's assets to total actuarial liability was:	85%

As of that date the total covered employee payroll was:	$11,486,722

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	7.00% per annum
Rate of Salary Increase:	Select and ultimate (3.75% ultimate rate)

SCHEDULE OF FUNDING PROGRESS (Dollars in $000's)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b a)/c)
1/1/2024	$54,271	$63,526	$9,255	85%	$11,487	81%
1/1/2022	$48,788	$57,973	$9,185	84%	$9,926	93%
1/1/2020	$39,023	$53,586	$14,562	73%	$9,309	156%
1/1/2018	$34,350	$49,721	$15,371	69%	$8,752	176%
1/1/2016	$30,344	$44,742	$14,398	68%	$8,506	169%

ASOP 4 Disclosures

LDROM

In compliance with ASOP 4 Section 3.11, we have calculated a Low Default Risk Obligation Measure (LDROM) for projected benefits. These benefits were discounted using the FTSE Pension Liability Index, which includes yields from hypothetical AA zero coupon bonds with maturities from 6 months to 30 years. This calculation yielded a single equivalent discount rate of 4.81%.

Based on this discount rate, the LDROM of the Entry Age Actuarial Accrued Liability is $80,921,086. All other assumptions and methods used in calculating the LDROM are consistent with those applied in this valuation.

Based on the assumptions and methods used, the LDROM reflects the liability that would have to be funded if the Trust were invested entirely in assets corresponding to the FTSE Index. The difference between the two measures reflects the anticipated value of taking on investment risk by investing in securities which have historically experienced both greater returns and greater volatility than the assets represented by the FTSE rates. The use of a higher discount rate for pension funding to reflect higher projected returns results in a reduction in the required funding levels for the Plan, but this being realized is contingent on future asset performance; lower than expected returns will result in increased required contributions, while higher than expected returns could produce surpluses that reduce future contribution requirements.

RADC

In accordance with ASOP 4 Section 3.21, pension obligation valuations must include a "reasonable" Actuarially Determined Contribution (ADC). An ADC is deemed reasonable if it either funds accrued liabilities within an acceptable time frame or annually reduces the unfunded liability by a reasonable amount.

The funding schedule in this valuation meets these criteria by aiming to accumulate assets adequate to make benefit payments when due. The funding contribution for FY2026 aligns with these standards and qualifies as a reasonable Actuarially Determined Contribution.