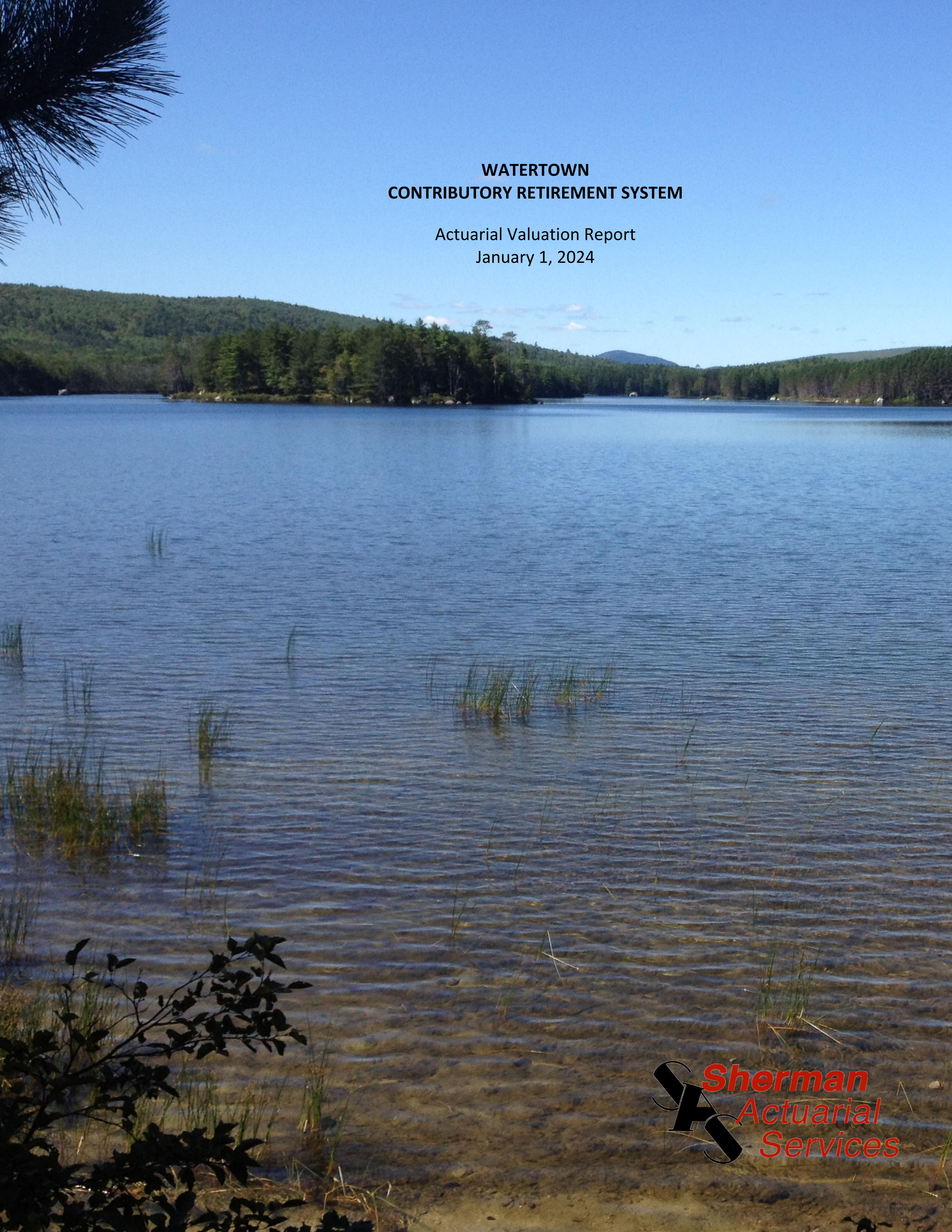
WATERTOWN
CONTRIBUTORY RETIREMENT SYSTEM

Actuarial Valuation Report
January 1, 2024



Sherman Actuarial Services

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Report Summary:

Highlights	**January 1, 2023**	**January 1, 2024**
Contributions		
Funding Schedule FY 2025	$1,150,000	$1,150,000
Funding Schedule FY 2026	531,274	1,150,000
Funded Ratios		
GAS No. 25	101.3%	100.2%
Participants		
Actives	551	570
Retirees and Beneficiaries	372	367
Vested	0	0
Inactives	217	233
Disabled	58	58
Total	1,198	1,228
Payroll		
Payroll of Active Members	$39,782,569	$42,931,763
Average Payroll	72,201	75,319
Normal Cost		
Employer	422,370	413,397
Employee	3,634,065	3,961,976
Administrative Expenses	340,000	420,000
Total	4,396,435	4,795,373
Actuarial Accrued Liabilities		
Actives	103,901,990	103,654,372
Retirees, Beneficiaries, Disabilities and Inactives	157,362,686	167,541,602
Total	261,264,676	271,195,974
Actuarial Value of Assets	264,785,388	271,847,716
Unfunded Actuarial Accrued Liabilities	($3,520,712)	($651,742)

Introduction

The purpose of this report is to present the findings of an actuarial valuation as of January 1, 2024, of Watertown Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2024.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the Watertown Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2024.

The valuation and forecast do not account for:

- Any subsequent changes in the law
- Chapter 32 of the M.G.L., Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The cost of these benefits has been assumed by the State under Proposition Two and One-Half.

Actuarial Experience

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as both payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

During the last year, the total surplus (Assets exceeding Actuarial Accrued Liabiilty) became a surplus of $651,742. The decrease in surplus from $3,520,712 is the result of net unfavorable actuarial experience during the preceding year. The sources of (Gain) and Loss are as follows:

Asset	(260,269)
Salary Increase	2,197,348
New Participants	1,624,116
Active – Retirement	(1,876,850)
Active – Termination	(1,358,865)
Active – Mortality	(38,951)
Active – Disability	(518,413)
Inactive - Mortality	(155,970)
Inactive - Data Adjustments	6,833,322
Other, including data, contribution interest, etc	(25,629)
Benefit Payments	(960,816)
Total (Gain) / Loss	5,459,023

Actuarial Costs and Liabilities:

Normal Costs

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

Table I

	January 1, 2023	January 1, 2024
Superannuation	$2,508,232	$2,650,545
Termination	903,825	1,040,513
Death	118,724	129,685
Disability	525,654	554,630
Administrative Expenses	340,000	420,000
Total Normal Cost	4,396,435	4,795,373
% of Pay	11.1%	11.2%
Employee Contributions	3,634,065	3,961,976
% of Pay	9.1%	9.2%
Employer Normal Cost	$762,370	$833,397
% of Pay	1.9%	1.9%

Present Value of Actuarial Accrued Liabilities

The actuarial accrued liabilities (AAL) represents today's value of all benefits based on the past service of the actives and inactives. The AAL can be compared to the assets to determine the funded status of the Plan. The value of these earned benefits is shown in Table II below.

Table II

	January 1, 2023	January 1, 2024
Actives		
Superannuations	$94,079,238	$93,135,732
Termination	3,806,720	4,261,821
Death	1,537,136	1,555,135
Disability	4,478,896	4,701,684
Retirees and Inactives		
Retirees and Beneficiaries	122,550,806	131,932,294
Vested	0	0
Terminated (Refund)	3,370,714	3,984,827
Disabled	31,441,166	31,624,481
Total	$261,264,676	$271,195,974

Present Value of Future Benefits

The present value of future benefits represents today's value of all benefits earned by the inactive participants as well as all benefits earned and expected to be earned in the coming years by the active participants. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The value of the total expected benefits is shown in Table III.

Table III

	January 1, 2023	January 1, 2024
Actives		
Superannuation	$111,569,978	$111,556,830
Termination	7,430,694	8,439,874
Death	2,363,112	2,443,378
Disability	8,395,410	8,853,127
Retirees and Inactives		
Retirees and Beneficiaries	122,550,806	131,932,294
Vested	0	0
Terminated (Refund)	3,370,714	3,984,827
Disabled	31,441,166	31,624,481
Total	$287,121,880	$298,834,811

Funded Status and Appropriations:

Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

Table IV

	January 1, 2023	January 1, 2024
Cash equivalents	$1,595,859	$1,788,252
Short term investments	0	0
Fixed income securities	38,428,521	45,228,240
Equities	64,416,614	73,129,993
International	57,305,513	74,768,095
Real Estate	24,889,456	23,063,855
Venture Capital	0	0
Other	53,925,616	40,037,213
Accounts receivable	220,383	47,604
Accounts payable	(73,850)	(55,589)
Accrued income	5,877	13,294
Total Market Value	$240,713,989	$258,020,957
Total Actuarial Value	$264,785,388	$271,847,716

Actuarial Value of Assets

The actuarial value of assets is determined by projecting the market value of assets as of the beginning of the prior plan year with the assumed rate of return during that year (7.65%) and accounting for deposits and disbursements with interest at the assumed rate of return. An adjustment is then applied to recognize the difference between the actual investment return and expected return over a five year period. This preliminary actuarial value is not allowed to differ from the market value of assets by more than 10%. The calculation of the actuarial value of assets as of January 1, 2024 is presented in Table V.

Table V

		January 1, 2024
(1)	Market value at January 1, 2023	$240,713,989
(2)	2023 Contributions	$6,445,474
(3)	2023 Payments	($19,412,642)
(4)	Net interest adjustment at 7.65% on (1), (2), and (3) to December 31, 202	$18,504,202
(5)	Expected market value on January 1, 2024 (1) + (2) + (3) + (4)	$246,251,023
(6)	Actual market value on January 1, 2024	$258,020,957
(7)	2023 (Gain) / Loss	($11,769,934)
(8)	80% of 2023 (Gain) / Loss	($9,415,947)
(9)	2022 (Gain) / Loss	$55,590,492
(10)	60% of 2022 (Gain) / Loss	$33,354,295
(11)	2021 (Gain) / Loss	($20,018,816)
(12)	40% of 2021 (Gain) / Loss	($8,007,526)
(13)	2020 (Gain) / Loss	($10,520,312)
(14)	20% of 2020 (Gain) / Loss	($2,104,062)
(15)	Actuarial value on January 1, 2024, (6) + (8) + (10) + (12) + (14) but not less than 90% nor greater than 110% of (6)	$271,847,716
(16)	Ratio of actuarial value to market value	105.36%
(17)	Market Value Return for 2022	16.0%
(18)	Actuarial Value Return for 2022	11.5%
(19)	Market Value Return for 2023	-12.0%
(20)	Actuarial Value Return for 2023	6.3%

Unfunded Actuarial Accrued Liabilities

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL, and the UAAL will be eliminated. Thereafter, annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table VI.

Table VI

	January 1, 2023	January 1, 2024
Actuarial Accrued Liability	$261,264,676	$271,195,974
Actuarial Assets	264,785,388	271,847,716
Unfunded Actuarial Accrued Liability	($3,520,712)	($651,742)
Funded Status	101.3%	100.2%

Appropriations

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2028, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the unfunded actuarial accrued liability by June 30, 2027
- Interest adjustment for payments deposited at the beginning of the fiscal year.

The pension appropriation can not be less than $0 and is shown in Table VII.

Table VII

	January 1, 2023	January 1, 2024
Normal cost	$762,370	$833,397
Amortization payment of the accrued liability	(269,057)	(224,783)
Amortization payment of Housing Authority liability	0	0
Total cost	$493,313	$608,614
% of Pay	1.2%	1.4%
Fiscal 2025 cost	$1,150,000	$1,150,000
Fiscal 2026 cost	$531,274	$1,150,000

Appropriation Forecast

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 4.0% per year. The employee contribution rate is expected to increase to 10.5% by 2036 as members contributing base percentages 5%, 7%, and 8% are replaced by new members, whose base contribution is 9%. Payments are assumed to be made at the beginning of the year.

The employer total is designed to increase the funded ratio until reaching 105%. It is then designed to maintain a funded ratio of 105%. The total cost represents less than 3% of payroll. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

Appropriation Forecast

Fiscal Year Ending	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Unfunded Accrued Liability	Funded Ratio %**
2025	$3,961,976	$864,687	$285,313	$1,150,000	2.7	($651,742)	100.2
2026	$4,167,763	$850,191	$299,809	$1,150,000	2.6	($1,017,825)	100.4
2027	$4,383,673	$833,151	$316,849	$1,150,000	2.5	($1,427,882)	100.5
2028	$4,610,188	$813,388	$336,612	$1,150,000	2.4	($1,888,029)	100.7
2029	$4,847,811	$790,710	$359,290	$1,150,000	2.3	($2,394,826)	100.8
2030	$5,097,067	$764,917	$385,083	$1,150,000	2.2	($2,964,806)	101.0
2031	$5,358,507	$735,796	$414,204	$1,150,000	2.1	($3,606,156)	101.2
2032	$5,632,706	$703,121	$446,879	$1,150,000	2.0	($4,327,917)	101.4
2033	$5,920,268	$666,655	$483,345	$1,150,000	2.0	($5,140,068)	101.7
2034	$6,221,823	$626,146	$523,854	$1,150,000	1.9	($6,053,604)	101.9
2035	$6,538,030	$581,330	$568,670	$1,150,000	1.8	($7,080,634)	102.2
2036	$6,869,578	$531,927	$618,073	$1,150,000	1.7	($8,234,475)	102.5
2037	$7,217,189	$477,642	$672,358	$1,150,000	1.7	($9,529,768)	102.9
2038	$7,505,877	$496,747	$653,253	$1,150,000	1.6	($10,982,589)	103.2
2039	$7,806,112	$516,617	$633,383	$1,150,000	1.5	($12,525,984)	103.6
2040	$8,118,356	$537,282	$612,718	$1,150,000	1.5	($14,166,059)	104.0
2041	$8,443,091	$558,773	$591,227	$1,150,000	1.4	($15,909,353)	104.4
2042	$8,780,814	$581,124	$568,876	$1,150,000	1.4	($17,762,874)	104.7
2043	$9,132,047	$604,369	$0	$604,369	0.7	($19,734,129)	105.1
2044	$9,497,329	$628,544	$0	$628,544	0.7	($21,243,790)	105.3
2045	$9,877,222	$653,686	$0	$653,686	0.7	($22,868,940)	105.5
2046	$10,272,311	$679,833	$0	$679,833	0.7	($24,618,414)	105.7
2047	$10,683,203	$707,026	$0	$707,026	0.7	($26,501,723)	105.9
2048	$11,110,531	$735,307	$0	$735,307	0.7	($28,529,105)	106.0
2049	$11,554,953	$764,720	$0	$764,720	0.7	($30,711,581)	106.2
2050	$12,017,151	$795,308	$0	$795,308	0.7	($33,061,017)	106.3
2051	$12,497,837	$827,121	$0	$827,121	0.7	($35,590,185)	106.4
2052	$12,997,750	$860,206	$0	$860,206	0.7	($38,312,834)	106.5
2053	$13,517,660	$894,614	$0	$894,614	0.7	($41,243,766)	106.6
2054	$14,058,367	$930,398	$0	$930,398	0.7	($44,398,914)	106.7
2055	$14,620,701	$967,614	$0	$967,614	0.7	($47,795,431)	106.8
2056	$15,205,529	$1,006,319	$0	$1,006,319	0.7	($51,451,781)	106.9

** Beginning of Fiscal Year

EXHIBITS

2

Exhibit 1 - Age/Service Distribution with Salary as of January 1, 2024

Attained Age	Average Salary <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
20-24	21	0	0	0	0	0	0	0	0	21
	47,597	0	0	0	0	0	0	0	0	47,597
25-29	53	7	0	0	0	0	0	0	0	60
	61,954	86,513	0	0	0	0	0	0	0	64,820
30-34	44	30	2	0	0	0	0	0	0	76
	62,086	81,807	113,495	0	0	0	0	0	0	71,223
35-39	22	26	16	4	0	0	0	0	0	68
	58,371	87,048	95,499	113,688	0	0	0	0	0	81,326
40-44	14	14	4	13	3	0	0	0	0	48
	37,042	82,982	97,202	109,211	118,477	0	0	0	0	80,090
45-49	13	11	3	8	16	5	0	0	0	56
	49,471	59,173	84,337	90,610	104,531	123,609	0	0	0	81,472
50-54	22	7	6	9	15	10	4	0	0	73
	50,677	50,314	65,958	68,564	106,536	133,506	126,844	0	0	81,101
55-59	12	14	4	11	8	6	2	1	0	58
	59,347	58,632	64,222	62,710	78,128	127,945	113,451	101,307	0	72,424
60-64	12	7	8	12	14	11	7	5	0	76
	57,791	48,361	54,062	71,201	53,444	84,038	93,256	100,002	0	67,689
65-69	4	5	2	2	3	4	4	0	1	25
	64,978	60,799	64,126	68,715	38,956	53,885	56,685	0	39,078	57,113
70+	1	2	2	0	1	0	2	1	0	9
	0	0	52,688	0	68,136	0	71,257	66,133	0	60,912
Total Employees	218	123	47	59	60	36	19	7	1	570
Average Salary	56,152	72,774	79,054	83,019	86,403	107,243	92,438	95,350	39,078	72,772

Exhibit 2 - Retiree Distribution as of January 1, 2024

	Number of Employees			Total Payments		
Attained Age	Female	Male	Total	Female	Male	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	0	0	0	0	0
45-49	0	0	0	0	0	0
50-54	0	1	1	0	53,313	53,313
55-59	5	3	8	330,797	257,693	588,490
60-64	12	23	35	329,741	1,497,787	1,827,528
65-69	36	40	76	1,203,843	2,243,938	3,447,781
70-74	33	38	71	792,120	1,841,683	2,633,803
75-79	47	36	83	1,408,996	1,620,392	3,029,388
80-84	24	17	41	505,075	677,148	1,182,222
85-89	16	10	26	384,384	340,683	725,067
90-94	14	4	18	330,461	175,463	505,924
95+	9	0	9	242,796	0	242,796
Total	196	172	368	5,528,215	8,708,100	14,236,314
Average (Age/Payment)	76.77	72.84	74.93	28,205	50,628	38,686
Frequency Percent	53.3	46.7	100	38.8	61.2	100

Exhibit 3 - Disabled Retiree Distribution as of January 1, 2024

	Number of Employees			Total Payments		
Attained Age	Female	Male	Total	Female	Male	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	1	1	0	59,250	59,250
45-49	3	2	5	152,116	134,092	286,208
50-54	0	0	0	0	0	0
55-59	1	8	9	22,121	405,290	427,411
60-64	1	3	4	60,866	235,506	296,372
65-69	0	15	15	0	987,561	987,561
70-74	2	3	5	54,911	101,289	156,200
75-79	0	10	10	0	444,465	444,465
80-84	0	6	6	0	214,314	214,314
85-89	1	1	2	30,164	30,246	60,411
90-94	0	1	1	0	38,612	38,612
95-99	0	0	0	0	0	0
Total	8	50	58	320,179	2,650,625	2,970,804
Average (Age/Payment)	61.23	69.25	68.14	40,022	53,013	51,221
Frequency Percent	13.8	86.2	100	10.8	89.2	100

EXHIBIT 4 - CASHFLOW FORECAST:

The following is a 30 year forecast of benefit payments net of state reimbursable COLA payments, Contribution Income and Investment Returns.

Plan Year Ending	Benefit Payments	Employee Contributions	Employer Contributions	Investment Returns	Net change in plan assets
2024	$22,995,462	$3,961,976	$1,150,000	$19,847,319	$1,963,833
2025	19,700,059	4,167,763	1,150,000	20,119,864	5,737,568
2026	20,356,045	4,383,673	1,150,000	20,532,909	5,710,537
2027	21,090,342	4,610,188	1,150,000	20,930,907	5,600,753
2028	21,742,554	4,847,811	1,150,000	21,333,596	5,588,853
2029	22,335,630	5,097,067	1,150,000	21,737,792	5,649,229
2030	22,879,763	5,358,507	1,150,000	22,148,659	5,777,404
2031	23,411,936	5,632,706	1,150,000	22,570,015	5,940,786
2032	23,861,322	5,920,268	1,150,000	23,007,233	6,216,179
2033	24,236,299	6,221,823	1,150,000	23,468,589	6,604,113
2034	24,558,235	6,538,030	1,150,000	23,961,911	7,091,706
2035	24,784,043	6,869,578	1,150,000	24,496,466	7,732,000
2036	24,931,782	7,217,189	1,150,000	25,083,282	8,518,689
2037	25,085,044	7,505,877	1,150,000	25,721,594	9,292,427
2038	25,155,992	7,806,112	1,150,000	26,421,881	10,222,001
2039	25,163,565	8,118,356	1,150,000	27,195,343	11,300,134
2040	25,113,286	8,443,091	1,150,000	28,053,126	12,532,932
2041	25,015,382	8,780,814	1,150,000	29,006,663	13,922,095
2042	24,798,755	9,132,047	604,369	30,028,832	14,966,492
2043	24,530,542	9,497,329	628,544	31,176,053	16,771,384
2044	24,225,320	9,877,222	653,686	32,462,426	18,768,014
2045	23,900,908	10,272,311	679,833	33,901,939	20,953,174
2046	23,554,573	10,683,203	707,026	35,509,102	23,344,758
2047	23,194,455	11,110,531	735,307	37,299,389	25,950,772
2048	22,826,118	11,554,953	764,720	39,288,979	28,782,534
2049	22,459,468	12,017,151	795,308	41,494,758	31,847,749
2050	22,123,286	12,497,837	827,121	43,933,487	35,135,159
2051	21,725,525	12,997,750	860,206	46,625,606	38,758,037
2052	21,338,462	13,517,660	894,614	49,594,047	42,667,858
2053	21,975,468	14,058,367	930,398	52,822,697	45,835,995

amounts in thousands

EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2024, and does not take into account any subsequent changes.

1. Administration

Each of the 104 contributory retirement systems for public employees of the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts General Laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

2. Participation

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporary, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

(i) Group 1: Most general employees in State and local government

(ii) Group 2: Certain specified hazardous duty positions

(iii) Group 3: State police officers and inspectors

(iv) Group 4: Local police officers, firefighters, and designated employees of the municipal light department.

For members in more than one group, participation will be proportional.

Chapter 176 of the Acts of 2011 created different plan provisions within these groups for those hired on or after April 2, 2012.

3. Salary

Salary is defined as gross regular compensation. Salary does not include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

4. Member Contributions

Member contributions vary depending upon date hired as follows:

Date of Hire	Member Contribution Rate
Prior to 1975	5.0% of Salary
1975 to 1983	7.0% of Salary
1984 to 1996	8.0% of Salary
1996 and Later plus	9.0% of Salary
1979 and Later	2.0% of Salary in excess of $30,000

For Group 1 employees who become members on or after April 2, 2012, the Contribution Rate shall be 6% after the completion of 30 years of service.

5. Average Salary

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.). For employees who become members on or after April 2, 2012, the averaging period shall be five years.

6. Creditable Service

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

7. Service Retirement

a. Eligibility:

For an employee to be eligible for service retirement (also referred to as superannuation), one of the following conditions must be met:

(i) completion of 20 years of service

(ii) for an employee hired prior to January 1, 1978, attainment of age 55 as an active member

(iii) for an employee hired on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service

(iv) for a Group 1 employee hired on or after April 2, 2012, attainment of age 60 and completion of ten years of service

b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table for those hired prior to April 2, 2012:

Age at Retirement	Percentage of Average Salary Group 1	Group 2	Group 4
65 or Over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

For those hired after April 1, 2012 who retire with less than 30 years of service, the following rates are applied:

Age at	Percentage of Average Salary		
Retirement	Group 1	Group 2	Group 4
67 or Over	.0250	.0250	.0250
66	.0235	.0250	.0250
65	.0220	.0250	.0250
64	.0205	.0250	.0250
63	.0190	.0250	.0250
62	.0175	.0250	.0250
61	.0160	.0235	.0250
60	.0145	.0220	.0250
59		.0205	.0250
58		.0190	.0250
57		.0175	.0250
56		.0160	.0235
55		.0145	.0220
54			.0205
53			.0190
52			.0175
51			.0160
50			.0145

For those hired after April 1, 2012 who retire with at least 30 years of service, the following rates are applied:

Age at Retirement	Percentage of Average Salary Group 1	Group 2	Group 4
67 or Over	.02500	.02500	.02500
66	.02375	.02500	.02500
65	.02250	.02500	.02500
64	.02125	.02500	.02500
63	.02000	.02500	.02500
62	.01875	.02500	.02500
61	.01750	.02375	.02500
60	.01625	.02250	.02500
59		.02125	.02500
58		.02000	.02500
57		.01875	.02500
56		.01750	.02375
55		.01625	.02250
54			.02125
53			.02000
52			.01875
51			.01750
50			.01625

8. Deferred Vested Retirement

a. Eligibility:

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after six years.

b. Benefit Amount:

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

c. Refund of Contributions:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

9. Accidental Disability

a. Eligibility:

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

b. Benefit Amount:

The accidental disability amount is 72% of annual salary plus $450 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

10. Ordinary Disability

a. Eligibility:

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55 or age 60 if hired on or after April 2, 2012).

b. Benefit Amount:

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55 (age 60 if hired on or after April 2, 2012). If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55 (age 60 if hired on or after April 2, 2012), he will receive not less than the superannuation allowance to which he is entitled.

11. Survivor Benefits

a. Occupational Death:

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

b. Non-Occupational Death:

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of $250 per month to the surviving spouse, plus $120 for the first child, plus $90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of $250 per month plus $120 for the first child and $90 for each additional child.

c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

12. Cost-of-Living Increases

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 benefits 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 $14,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

13. Postretirement Death Benefits

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

(i) Option A – Life annuity

(ii) Option B – Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member

(iii) Option C – Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

EXHIBIT 6 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

1. **Member Data**

   The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

2. **Valuation Date**

   January 1, 2024.

3. **Actuarial Cost Method**

   The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

4. **Rate of Investment Return**

   It is assumed that the assets of the fund will accumulate at a compound annual rate of 7.65% per annum, net of investment expenses.

5. **Salary Scale**

   It is assumed that salaries including longevity will increase at a rate of 3.5% per year.

6. **Cost-of-Living Increases**

   Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and $14,000 per year.

7. **Value of Investments**

   Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC). The actuarial value of assets is determined using a five-year smoothing of asset returns greater than or less than the assumed rate of return, with a 10% corridor.

8. Annual Rate of Withdrawal Prior to Retirement

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

Service	General Employees	Police and Fire Employees
0	0.2080	0.1500
5	0.1020	0.1000
10	0.0650	0.0600
15	0.0417	0.0600
20	0.0400	0.0000
30	0.0000	0.0000

9. Annual Rate of Mortality

It is assumed that mortality for is represented by the various SOA Pub-2010 Public Retirement Plans Mortality Tables specific to the Group, Pre-retirement versus Post, Disabled and Beneficiaries, with Scale MP-2018 improvements until 2025.

10. Service Retirement

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages for those hired prior to April 2, 2012:

Age	Male General Employees	Female General Employees	Male and Female Police and Fire Employees
50	0.0360	0.1019	0.0382
51	0.0405	0.0714	0.0351
52	0.0437	0.0562	0.0436
53	0.0366	0.0448	0.0527
54	0.0451	0.0488	0.0999
55	0.0477	0.0469	0.1110
56	0.0574	0.0518	0.1413
57	0.0632	0.0509	0.1292
58	0.0765	0.0552	0.1499
59	0.0917	0.0645	0.1679
60	0.1057	0.0774	0.1871
61	0.1224	0.1038	0.2073
62	0.1473	0.1168	0.2176
63	0.1777	0.1440	0.3338
64	0.2136	0.1708	0.5664
65	0.2615	0.1939	1.00000
66	0.2682	0.1959	1.00000
67	0.2500	0.2000	1.00000
68	0.2500	0.2000	1.00000
69	0.2500	0.2000	1.00000
70 to 76	0.2500	0.2500	1.00000
77 to 79	0.3500	0.2500	1.00000
80	1.0000	1.0000	1.00000

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages for those hired on or after April 2, 2012:

Age	Male General Employees	Female General Employees	Male and Female Police and Fire Employees
50	0.0000	0.0000	0.0191
51	0.0000	0.0000	0.0176
52	0.0000	0.0000	0.0436
53	0.0000	0.0000	0.0211
54	0.0000	0.0000	0.0266
55	0.0000	0.0000	0.0370
56	0.0000	0.0000	0.1060
57	0.0000	0.0000	0.1938
58	0.0000	0.0000	0.1499
59	0.0000	0.0000	0.1119
60	0.0477	0.0469	0.0936
61	0.0574	0.0518	0.1555
62	0.0632	0.0509	0.1741
63	0.0765	0.0552	0.2670
64	0.0917	0.0645	0.4720
65	0.1057	0.0774	0.2500
66	0.1224	0.1038	0.3000
67	0.1473	0.1168	1.0000
68	0.1777	0.1440	1.0000
69	0.2136	0.1708	1.0000
70	0.2615	0.1939	1.0000
70 to 76	0.2682	0.1959	1.0000
77 to 79	0.2500	0.2000	1.0000

12. Annual Rate of Disability Prior to Retirement

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

Attained Age	General Employees	Police and Fire Employees
20	0.000100	0.000500
30	0.000152	0.000967
40	0.000663	0.002500
50	0.001271	0.007634

In addition, it is assumed for the general employees that 20% of all disabilities are ordinary (80% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

13. Family Composition

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

14. Administrative Expenses

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for fiscal year 2024 is $420,000 and is anticipated to increase at 4% per year.

EXHIBIT 7 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

1. Actuarial Accrued Liability

That portion of the Actuarial Present Value of projected plan benefits that is not provided for by future employer Normal Costs or employee contributions.

2. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

3. Actuarial Cost Method

A procedure for allocating the Actuarial Present Value of projected pension plan benefits between Normal Cost and Actuarial Accrued Liability.

4. Actuarial Present Value

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

5. Forecast

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

6. Normal Cost

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

7. Unfundeded Actuarial Accrued Liability

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

8. Actuarial Valuation Method

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

9. Vested Liability

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

CERTIFICATION:

This report fairly represents the actuarial position of the Town of Watertown Retirement System contributing as of January 1, 2024, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. The economic assumptions were selected by the Retirement Board. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost are reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

The funded status measure is appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. The funded status measure is appropriate for assessing the need for or the amount of future contributions. The funded status measure would be different if the measure reflected the market value of assets rather than the actuarial value of assets.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: 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 the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such future measurements.

The report was prepared under the supervision of Daniel Sherman, an Associate of the Society of Actuaries and a Member of the American Academy of Actuaries, who takes responsibility for the overall appropriateness of the analysis, assumptions and results. Daniel Sherman is deemed to meet the General Qualification Standard and the basic education and experience requirement in the pension area. Based on over thirty years of performing valuations of similar complexity, Mr. Sherman is qualified by experience. Daniel Sherman has met the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sherman Actuarial Services, LLC

Daniel W. Sherman

Daniel W. Sherman, ASA, MAAA
October, 2024

BREAKOUTS

Breakouts

	Total	All Others	Housing
(1) Participants			
(a) Actives	570	552	18
(b) Retirees	367	355	12
(c) Inactives	233	227	6
(d) Disabled Retirees	58	57	1
(e) Total	1228	1191	37
(2) Payroll of Active Participants	$42,931,763	$41,441,574	$1,490,189
(3) Normal Cost			
(a) Total Normal Cost	4,795,373	4,608,694	186,679
(b) Expected Employee Contributions	3,961,976	3,825,100	136,876
(c) Administrative Expenses	420,000	403,650	16,350
(d) Net Employer Normal Cost (a) - (b)	833,397	783,594	49,803
(4) Actuarial Accrued Liability	271,195,974	265,002,779	6,193,195
(5) Assets*	271,847,716	265,639,638	6,208,079
(6) Unfunded Actuarial Accrued Liability (4) - (5)	(651,742)	(636,859)	(14,884)
(7) Amortizations*	(224,783)	(219,650)	(5,133)
(8) Total Required Employer Contributions (3d) + (7)	608,614	563,944	44,670
(9) Fiscal 2025 Cost	$1,150,000	$1,085,415	$64,585
(10) Fiscal 2026 Cost	$1,150,000	$1,065,594	$84,406
(11) Fiscal 2027 Cost	$1,150,000	$1,065,594	$84,406
(12) Fiscal 2028 Cost	$1,150,000	$1,065,594	$84,406
(13) Fiscal 2029 Cost	$1,150,000	$1,065,594	$84,406
(14) Fiscal 2030 Cost	$1,150,000	$1,065,594	$84,406
Percentage of Total Cost	100.0%	92.7%	7.3%

* Allocation is based on the ratio of the Unfunded Actuarial Accrued Liability