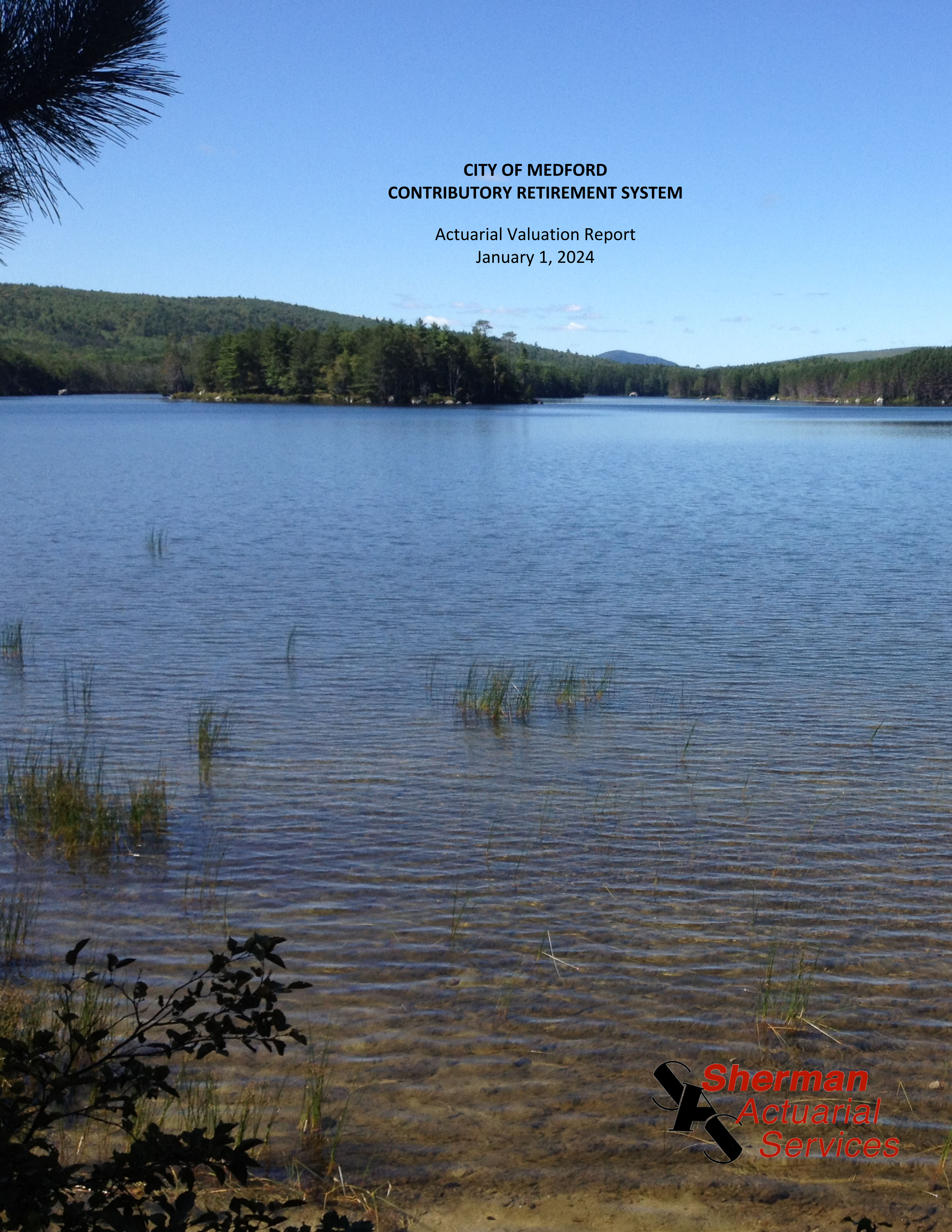
CITY OF MEDFORD
CONTRIBUTORY RETIREMENT SYSTEM

Actuarial Valuation Report
January 1, 2024



Sherman Actuarial Services

TABLE OF CONTENTS

Report Summary:

Highlights	January 1, 2022	January 1, 2024
Contributions		
Funding Schedule FY 2025	$17,164,770	$17,164,770
Funding Schedule FY 2026	18,193,019	17,732,115
Funded Ratios		
GAS No. 25	66.2%	69.7%
Participants		
Actives	742	719
Retirees and Beneficiaries	502	512
Inactives	266	346
Disabled	118	119
Total	1,628	1,696
Payroll		
Payroll of Active Members	$47,592,905	$49,204,494
Average Payroll	64,141	68,435
Normal Cost		
Employer	$2,392,363	$2,303,825
Employee	4,308,081	4,521,598
Administrative Expenses	425,000	495,000
Total	$7,125,444	$7,320,423
Actuarial Accrued Liabilities		
Actives	$127,219,098	$119,443,817
Retirees, Beneficiaries, Disabilities and Inactives	220,951,233	242,406,238
Total	$348,170,331	$361,850,055
Actuarial Value of Assets	$230,597,138	$252,261,644
Unfunded Actuarial Accrued Liabilities	$117,573,193	$109,588,411

Introduction

This report presents the findings of an actuarial valuation as of January 1, 2024, the Medford 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 Medford 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 two years, based on the 2022 actuarial assumptions and plan provisions, the total unfunded actuarial accrued liability decreased by 8.9% to $107,146,036. The decrease is the result of contributions to the trust, offset by net unfavorable actuarial experience during the preceding years. The sources of actuarial (gains) and losses are as follows:

Assets	2,133,552
Salary Increases	(1,509,355)
New Participants	3,056,633
Retirements	(4,666,493)
Terminations	(4,952,973)
Death while active	293,459
Disabled while active	862,229
Inactive Mortality	600,363
Inactive Data Changes	5,161,040
Benefit Payments	2,132,252
Other	5,791
Total (Gain) / Loss	3,116,498

The plan provisions were modified during the two-year period. The base COLA amount was increased from $16,000 to $18,000. This change increased the Normal Cost and the Actuarial Accrued Liability by $41,262 and $2,442,375, respectively.

https://shermanactuary-my.sharepoint.com/personal/dan_shermanactuary_com/Documents/Recovered Data/Medford/Val24/[Medford24_Val 18k.xlsm]Output

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, 2022	January 1, 2024
Superannuation	$4,556,728	$4,596,817
Termination	976,173	1,012,745
Death	203,581	215,460
Disability	963,962	1,000,401
Administrative Expenses	$425,000	$495,000
Total Normal Cost	$7,125,444	$7,320,423
% of Pay	15.0%	14.9%
Employee Contributions	$4,308,081	$4,521,598
% of Pay	9.1%	9.2%
Employer Normal Cost	$2,817,363	$2,798,825
% of Pay	5.9%	5.7%

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, 2022	January 1, 2024
Actives		
Superannuations	$123,220,181	$115,120,081
Termination	(2,710,713)	(2,569,876)
Death	2,037,608	2,078,063
Disability	4,672,022	4,815,549
Retirees and Inactives		
Retirees and Beneficiaries	$160,457,049	$174,600,192
Terminated (Refund)	2,496,987	4,332,072
Disabled	57,997,197	63,473,974
Total	$348,170,331	$361,850,055

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, 2022	January 1, 2024
Actives		
Superannuation	$159,766,173	$153,419,218
Termination	5,313,521	5,968,879
Death	3,738,730	3,935,371
Disability	13,527,473	14,414,994
Retirees and Inactives		
Retirees and Beneficiaries	$160,457,049	$174,600,192
Terminated (Refund)	2,496,987	4,332,072
Disabled	57,997,197	63,473,974
Total	$403,297,130	$420,144,700

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, 2022	January 1, 2024
Cash equivalents	$1,944,473	$1,311,698
Short term investments	2,484,541	0
Fixed income securities	66,107,738	49,999,809
Equities	75,080,971	73,141,898
International	44,342,405	46,109,149
Real Estate	24,804,795	25,283,179
Venture Capital	0	0
Other	45,297,638	49,125,651
Accounts receivable	120,692	253,242
Accounts payable	(135,639)	(53,001)
Accrued income	134,952	167,409
Total Market Value	$260,182,566	$245,339,034
Total Actuarial Value	$230,597,138	$252,261,644

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 (7.25%) 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 15%. 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	$230,597,138
(2)	2023 Contributions	$22,219,317
(3)	2023 Payments	($28,383,330)
(4)	Net interest adjustment at 7.25% on (1), (2), and (3) to December 31, 2023	$16,494,847
(5)	Expected market value on January 1, 2024	$240,927,972
	(1) + (2) + (3) + (4)	
(6)	Actual market value on January 1, 2024	$245,339,034
(7)	2023 (Gain) / Loss	($4,411,062)
(8)	80% of 2023 (Gain) / Loss	($3,528,850)
(9)	2022 (Gain) / Loss	$42,782,573
(10)	60% of 2022 (Gain) / Loss	$25,669,544
(11)	2021 (Gain) / Loss	($43,943,700)
(12)	40% of 2021 (Gain) / Loss	($17,577,480)
(13)	2020 (Gain) / Loss	$11,796,981
(14)	20% of 2020 (Gain) / Loss	$2,359,396
(15)	Actuarial value on January 1, 2024, (6) + (8) + (10) + (12) + (14)	$252,261,644
	but not less than 85% nor greater than 115% of (6)	$252,261,644
(16)	Ratio of actuarial value to market value	102.82%
(17)	Actuarial Value Return for 2022	5.95%
(18)	Actuarial Value Return for 2023	10.27%
(19)	Market Value Return for 2022	1.49%
(20)	Market Value Return for 2023	28.85%

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, 2022	January 1, 2024
Actuarial Accrued Liability	$348,170,331	$361,850,055
Actuarial Assets	230,597,138	252,261,644
Unfunded Actuarial Accrued Liability	$117,573,193	$109,588,411
Funded Status	66.2%	69.7%

Appropriations

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Sections 22D and 22F of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2040, 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, 2033
  $ 109,573,166 over 9 years with 4.0% increasing payments
- Level amortization of the 2002 Early Retirement Incentive by June 30, 2026
  $ 15,244 over 2 years
- Interest adjustment for payments deposited on July 1st.

The pension appropriation is shown in Table VII. The Board approved a limit of 8% on annual increases.

Table VII

	January 1, 2022	January 1, 2024
Normal cost	$2,817,363	$2,798,825
Amortization payment of the unfunded accrued liability	11,873,087	13,726,116
Amortization payment of 2002 ERI liability	7,889	7,889
Amortization payment of 2010 ERI liability	0	0
Amortization payment of Funding Holiday and ERI	542,335	0
Total cost	$15,240,674	$16,532,830
% of Pay	32.0%	33.6%
Fiscal 2025 cost	$15,150,592	$17,164,770
Fiscal 2026 cost	$16,199,535	$17,732,115

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 3.5% per year. The employee contribution rate is expected to increase to 10.5% by 2037 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 cost is expected to increase during the next 9 years until the unfunded liabilities are substantially paid off, at which time only the normal cost will remain. The total cost represents about 35% of payroll until the time the unfunded liabilities are fully paid off, leaving only a normal cost of about 4.5% thereafter. The decrease in the employer Normal Cost as a percentage of payroll is a result of the increase in member deductions.

https://shermanactuary-my.sharepoint.com/personal/dan_shermanactuary_com/Documents/Recovered Data/Medford/Val24/[Medford24_Val 18k.xlsm]Approp. Results

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	$4,521,598	$2,898,507	$14,266,263	$17,164,770	34.9	$109,545,300	69.7
2026	$4,731,196	$2,946,785	$14,785,330	$17,732,115	34.8	$102,757,614	72.0
2027	$4,949,927	$2,994,891	$15,368,247	$18,363,138	34.8	$94,895,857	74.7
2028	$5,178,173	$3,042,754	$15,982,977	$19,025,731	34.9	$85,860,454	77.5
2029	$5,416,332	$3,090,300	$16,622,296	$19,712,596	34.9	$75,533,370	80.6
2030	$5,664,820	$3,137,446	$17,287,188	$20,424,634	35.0	$63,795,495	83.9
2031	$5,924,067	$3,184,107	$17,978,675	$21,162,782	35.0	$50,518,061	87.5
2032	$6,194,521	$3,230,190	$18,697,822	$21,928,012	35.0	$35,561,909	91.4
2033	$6,476,651	$3,275,599	$19,445,735	$22,721,334	35.1	$18,776,688	95.5
2034	$6,770,941	$3,320,230	$0	$3,320,230	5.0	$0	100.0
2035	$7,077,898	$3,363,972	$0	$3,363,972	4.8	$0	100.0
2036	$7,398,047	$3,406,709	$0	$3,406,709	4.7	$0	100.0
2037	$7,731,936	$3,448,316	$0	$3,448,316	4.6	$0	100.0
2038	$8,080,135	$3,488,663	$0	$3,488,663	4.5	$0	100.0
2039	$8,362,940	$3,610,766	$0	$3,610,766	4.5	$0	100.0
2040	$8,655,643	$3,737,143	$0	$3,737,143	4.5	$0	100.0
2041	$8,958,590	$3,867,943	$0	$3,867,943	4.5	$0	100.0
2042	$9,272,141	$4,003,321	$0	$4,003,321	4.5	$0	100.0
2043	$9,596,666	$4,143,437	$0	$4,143,437	4.5	$0	100.0
2044	$9,932,549	$4,288,458	$0	$4,288,458	4.5	$0	100.0
2045	$10,280,188	$4,438,554	$0	$4,438,554	4.5	$0	100.0
2046	$10,639,995	$4,593,903	$0	$4,593,903	4.5	$0	100.0
2047	$11,012,395	$4,754,690	$0	$4,754,690	4.5	$0	100.0
2048	$11,397,828	$4,921,104	$0	$4,921,104	4.5	$0	100.0
2049	$11,796,752	$5,093,343	$0	$5,093,343	4.5	$0	100.0
2050	$12,209,639	$5,271,610	$0	$5,271,610	4.5	$0	100.0
2051	$12,636,976	$5,456,116	$0	$5,456,116	4.5	$0	100.0
2052	$13,079,270	$5,647,080	$0	$5,647,080	4.5	$0	100.0
2053	$13,537,045	$5,844,728	$0	$5,844,728	4.5	$0	100.0
2054	$14,010,841	$6,049,293	$0	$6,049,293	4.5	$0	100.0
2055	$14,501,221	$6,261,019	$0	$6,261,019	4.5	$0	100.0
2056	$15,008,763	$6,480,154	$0	$6,480,154	4.5	$0	100.0

** 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	3	0	0	0	0	0	0	0	0	3
	31,835	0	0	0	0	0	0	0	0	31,835
20-24	32	0	0	0	0	0	0	0	0	32
	37,660	0	0	0	0	0	0	0	0	37,660
25-29	47	5	0	0	0	0	0	0	0	52
	57,807	77,150	0	0	0	0	0	0	0	59,667
30-34	34	30	5	0	0	0	0	0	0	69
	61,205	88,287	61,342	0	0	0	0	0	0	72,990
35-39	25	28	21	10	0	0	0	0	0	84
	54,555	82,798	91,146	86,871	0	0	0	0	0	76,964
40-44	30	9	11	16	3	0	0	0	0	69
	45,633	72,838	86,214	110,896	136,663	0	0	0	0	74,742
45-49	27	15	4	13	10	1	0	0	0	70
	43,039	63,964	62,395	94,756	96,315	62,173	0	0	0	66,118
50-54	20	22	14	3	9	18	3	0	0	89
	52,346	57,758	70,345	69,338	83,711	97,046	134,444	0	0	72,068
55-59	19	18	7	16	14	18	3	6	0	101
	50,258	61,014	72,246	66,460	86,905	110,084	138,167	110,963	0	78,225
60-64	18	11	8	14	12	7	5	7	3	85
	44,724	48,790	57,138	70,655	56,165	101,998	89,862	129,345	120,268	69,312
65-69	7	7	7	10	6	4	3	1	0	45
	44,348	56,135	43,184	54,666	48,444	54,734	109,044	83,140	0	53,640
70+	6	3	0	1	1	0	3	4	2	20
	23,570	19,467	0	28,179	28,692	0	61,753	52,646	83,085	44,723
Total Employees	268	148	77	83	55	48	17	18	5	719
Average Salary	49,448	69,761	73,619	80,846	78,846	98,405	104,678	103,607	105,394	68,435

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	1	0	1	10,762	0	10,762
35-39	1	0	1	13861.07	0	13,861
40-44	1	0	1	23,817	0	23,817
45-49	0	0	0	0	0	0
50-54	1	0	1	916	0	916
55-59	13	3	16	375,331	164,709	540,039
60-64	27	16	43	729,458	906,520	1,635,977
65-69	45	52	97	1,199,570	3,164,627	4,364,198
70-74	51	53	104	1,362,658	3,105,427	4,468,085
75-79	62	39	101	1,514,305	1,728,467	3,242,773
80-84	35	24	59	862,037	924,637	1,786,673
85-89	34	14	48	909,508	510,730	1,420,238
90-94	21	4	25	472,955	116,471	589,426
95+	10	5	15	156,707	204,044	360,751
Total	302	210	512	7,631,884	10,825,631	18,457,515
Average (Age/Payment)	75.95	74.11	75.20	25,271	51,551	36,050
Frequency Percent	59.0	41.0	100.0	41.3	58.7	100.0

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	0	0	0	0	0
45-49	1	0	1	72,267	0	72,267
50-54	0	3	3	0	164,821	164,821
55-59	0	8	8	0	284,225	284,225
60-64	4	14	18	177,164	786,600	963,764
65-69	4	22	26	95,804	1,387,670	1,483,474
70-74	3	19	22	105,301	974,902	1,080,203
75-79	2	21	23	76,332	1,202,047	1,278,379
80-84	2	10	12	51,390	377,646	429,036
85-89	2	4	6	51,376	170,785	222,161
90-94	0	0	0	0	0	0
95-99	0	0	0	0	0	0
Total	18	101	119	629,634	5,348,697	5,978,331
Average (Age/Payment)	70.77	71.30	71.22	34,980	52,957	50,238
Frequency Percent	15.1	84.9	100.0	10.5	89.5	100.0

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	$27,287,877	$4,521,598	$17,164,770	$17,683,835	$12,082,325
2025	25,718,727	4,731,196	17,732,115	18,676,920	15,421,505
2026	26,759,590	4,949,927	18,363,138	19,776,999	16,330,475
2027	27,536,585	5,178,173	19,025,731	20,953,518	17,620,837
2028	28,277,148	5,416,332	19,712,596	22,225,771	19,077,551
2029	28,955,551	5,664,820	20,424,634	23,606,774	20,740,677
2030	29,626,380	5,924,067	21,162,782	25,109,586	22,570,055
2031	30,228,601	6,194,521	21,928,012	26,748,477	24,642,410
2032	30,633,825	6,476,651	22,721,334	28,545,677	27,109,837
2033	31,055,565	6,770,941	3,320,230	29,802,314	8,837,920
2034	32,142,510	7,077,898	3,363,972	30,402,839	8,702,199
2035	33,267,497	7,398,047	3,406,709	30,992,203	8,529,462
2036	34,431,860	7,731,936	3,448,316	31,567,681	8,316,074
2037	35,636,975	8,080,135	3,488,663	32,126,280	8,058,103
2038	36,884,269	8,362,940	3,610,766	32,661,861	7,751,298
2039	38,175,218	8,655,643	3,737,143	33,173,497	7,391,064
2040	39,511,351	8,958,590	3,867,943	33,657,254	6,972,436
2041	40,894,248	9,272,141	4,003,321	34,108,837	6,490,051
2042	42,325,547	9,596,666	4,143,437	34,523,561	5,938,117
2043	43,806,941	9,932,549	4,288,458	34,896,315	5,310,381
2044	45,340,184	10,280,188	4,438,554	35,221,538	4,600,096
2045	46,927,091	10,639,995	4,593,903	35,493,173	3,799,980
2046	48,569,539	11,012,395	4,754,690	35,704,633	2,902,179
2047	50,269,473	11,397,828	4,921,104	35,848,762	1,898,221
2048	52,028,904	11,796,752	5,093,343	35,917,783	778,974
2049	53,849,916	12,209,639	5,271,610	35,903,259	(465,408)
2050	55,734,663	12,636,976	5,456,116	35,796,032	(1,845,539)
2051	57,685,376	13,079,270	5,647,080	35,586,174	(3,372,852)
2052	59,704,364	13,537,045	5,844,728	35,262,923	(5,059,668)
2053	61,264,845	14,010,841	6,049,293	34,833,470	(6,371,241)

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. <u>Administration</u>

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. <u>Participation</u>

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) <u>Group 1</u>: Most general employees in State and local government

(ii) <u>Group 2</u>: Certain specified hazardous duty positions

(iii) <u>Group 3</u>: State police officers and inspectors

(iv) <u>Group 4</u>: 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. <u>Service Retirement</u>

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, if hired before April 2, 2012

(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	Percentage of Average Salary		
Retirement	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 with interest.

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 $500 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 $500 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 $18,000. 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 7.25% per annum.

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 $18,000 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.

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-2019 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
80	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 $495,000 and is anticipated to increase at 3.5% 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 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 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. Unfunded Actuarial Accrued Liability

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

8. 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 Medford Retirement System contributing as of January 1, 2024, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. 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

July, 2024