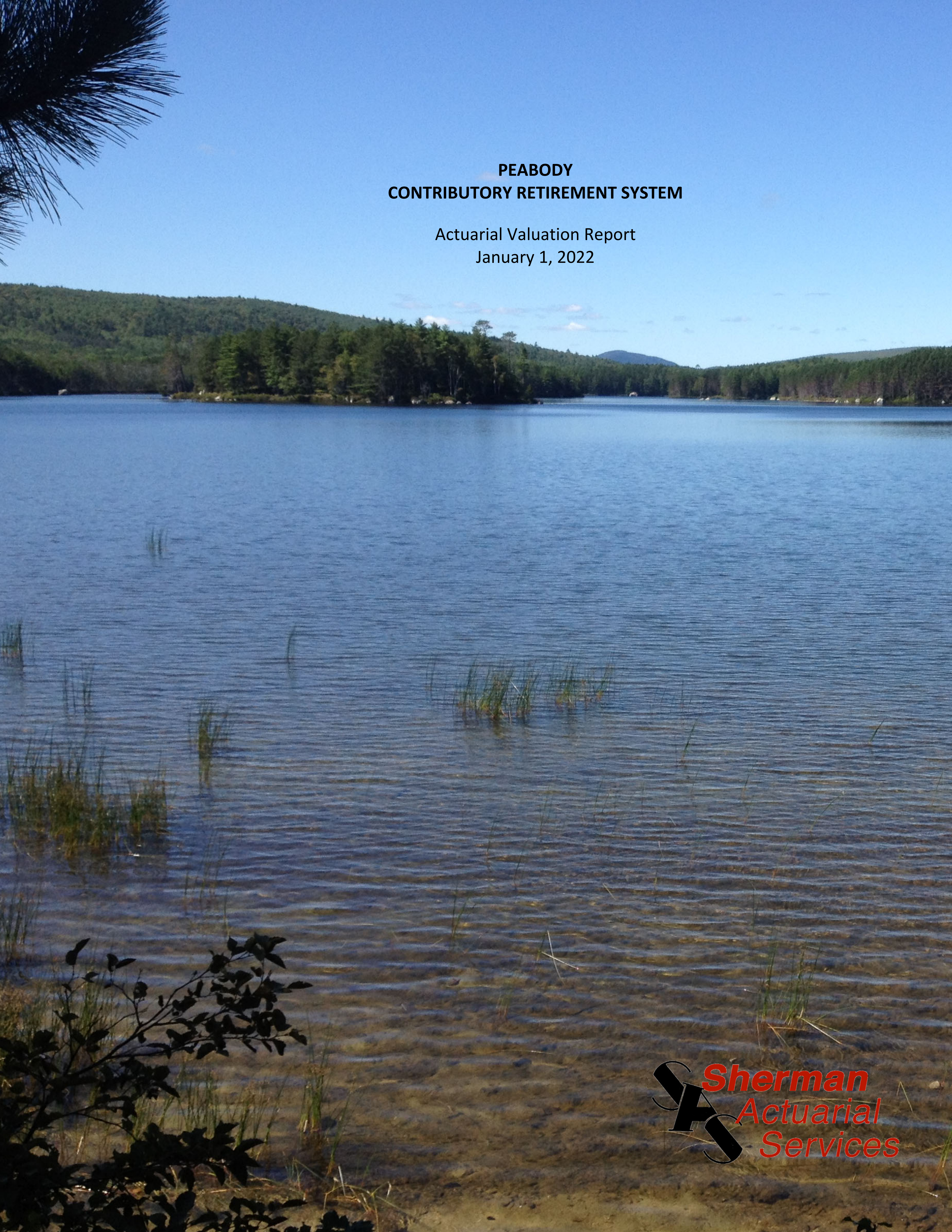
PEABODY
CONTRIBUTORY RETIREMENT SYSTEM

Actuarial Valuation Report
January 1, 2022



Sherman Actuarial Services

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Report Summary:

Highlights	**January 1, 2020**	**January 1, 2022**
Contributions		
Funding Schedule FY 2023	$15,362,735	$15,362,735
Funding Schedule FY 2024	16,591,753	16,112,660
Funded Ratios		
GAS No. 25	49.3%	56.9%
Participants		
Actives	846	835
Retirees and Beneficiaries	711	708
Inactives	121	129
Disabled	61	56
Total	1,739	1,728
Payroll		
Payroll of Active Members	$50,322,230	$50,386,720
Average Payroll	59,483	60,343
Normal Cost		
Employer	$1,172,279	$1,116,273
Employee	4,479,767	4,530,681
Administrative Expenses	240,000	240,000
Total	$5,892,046	$5,886,954
Actuarial Accrued Liabilities		
Actives	$142,995,333	$137,461,074
Retirees, Beneficiaries, Disabilities and Inactives	191,230,575	204,048,303
Total	$334,225,908	$341,509,377
Actuarial Value of Assets	164,889,315	194,457,401
Unfunded Actuarial Accrued Liabilities	$169,336,593	$147,051,976

Introduction

This report presents the findings of an actuarial valuation as of January 1, 2022, of Peabody Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2022.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the Peabody 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, 2022.

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, based on the 2020 actuarial assumptions and plan provisions, the total unfunded actuarial accrued liability decreased by 13.2% to $147,051,976. The decrease is the result of net favorable actuarial experience during the preceding years. The sources of actuarial (gains) and losses are as follows:

Assets	(10,665,622)
Retirements	(8,062,357)
Terminations	540,099
Death while active	82,632
Disabled while active	(1,128,002)
Salary	(4,057,283)
New Participants	679,305
Inactive Mortality	(2,275,792)
Inactive Status Changes	2,807,871
Benefit Payments	1,494,598
Other	509,377
Total (Gain) / Loss	(20,075,174)

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, 2020	January 1, 2022
Superannuation	$3,317,125	$3,261,095
Termination	1,447,944	1,516,158
Death	197,233	197,806
Disability	689,744	671,895
Administrative Expenses	$240,000	$240,000
Total Normal Cost	$5,892,046	$5,886,954
% of Pay	11.7%	11.7%
Employee Contributions	$4,479,767	$4,530,681
% of Pay	8.9%	9.0%
Employer Normal Cost	$1,412,279	$1,356,273
% of Pay	2.8%	2.7%

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, 2020	January 1, 2022
Actives		
Superannuations	$139,343,878	$133,915,010
Termination	(3,269,024)	(3,205,029)
Death	1,977,562	1,965,106
Disability	4,942,917	4,785,987
Retirees and Inactives		
Retirees and Beneficiaries	$169,844,125	$183,202,915
Terminated (Refund)	1,396,198	1,919,329
Disabled	19,990,252	18,926,059
Total	$334,225,908	$341,509,377

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, 2020	January 1, 2022
Actives		
Superannuation	$160,012,928	$154,056,311
Termination	6,951,895	7,458,742
Death	3,223,965	3,210,302
Disability	9,405,308	9,171,549
Retirees and Inactives		
Retirees and Beneficiaries	$169,844,125	$183,202,915
Terminated (Refund)	1,396,198	1,919,329
Disabled	19,990,252	18,926,059
Total	$370,824,671	$377,945,207

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, 2020	January 1, 2022
Cash equivalents	$846,634	$881,119
Fixed income securities	0	0
Equities	0	0
International	0	0
Real Estate	0	0
Other	0	0
PRIT Fund	164,151,396	210,139,497
Accounts receivable	4,602,881	5,483,251
Accounts payable	0	(180)
Accrued income	0	0
Total Market Value	$169,600,911	$216,503,687
Total Actuarial Value	$164,889,315	$194,457,401

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 (7.75%) 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 four year period. This preliminary actuarial value is not allowed to differ from the market value of assets by more than 20%. The calculation of the actuarial value of assets as of January 1, 2022 is presented in Table V.

Table V

		January 1, 2022
(1)	Market value at January 1, 2021	$185,001,917
(2)	2021 Contributions	$18,883,547
(3)	2021 Payments	($23,530,137)
(4)	Net interest adjustment at 7.75% on (1), (2), and (3) to December 31, 2021	$14,157,593
(5)	Expected market value on January 1, 2022 (1) + (2) + (3) + (4)	$194,512,920
(6)	Actual market value on January 1, 2022	$216,503,687
(7)	2021 (Gain) / Loss	($21,990,767)
(8)	80% of 2021 (Gain) / Loss	($17,592,613)
(9)	2020 (Gain) / Loss	($4,801,751)
(10)	60% of 2020 (Gain) / Loss	($2,881,051)
(11)	2019 (Gain) / Loss	($11,631,970)
(12)	40% of 2019 (Gain) / Loss	($4,652,788)
(13)	2018 (Gain) / Loss	$15,400,831
(14)	20% of 2018 (Gain) / Loss	$3,080,166
(15)	Actuarial value on January 1, 2022, (6) + (8) + (10) + (12) + (14) but not less than 80% nor greater than 120% of (6)	$194,457,401
(16)	Ratio of actuarial value to market value	89.82%
(17)	Actuarial Value Return for 2020	9.48%
(18)	Actuarial Value Return for 2021	12.04%
(19)	Market Value Return for 2020	10.60%
(20)	Market Value Return for 2021	19.79%

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, 2020	January 1, 2022
Actuarial Accrued Liability	$334,225,908	$341,509,377
Actuarial Assets	164,889,315	194,457,401
Unfunded Actuarial Accrued Liability	$169,336,593	$147,051,976
Funded Status	49.3%	56.9%

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, 2036
  $ 146,042,871 over 14 years with 4.0% increasing payments
- Increasing amortization of the Early Retirement Incentive by June 30, 2028
  $ 1,009,105 over 6 years with 2.5% increasing payments
- Interest adjustment for payments contributed quarterly over fiscal year.

The Board voted to adopt a funding schedule that increases 8% per year until it matches the description above. The pension appropriation is shown in Table VII.

Table VII

	January 1, 2020	January 1, 2022
Normal cost	$1,412,279	$1,356,273
Amortization payment of the accrued liability	13,540,667	12,999,581
Amortization payment of ERI liability	149,256	189,863
Total cost	$15,102,202	$14,545,717
% of Pay	30.0%	28.9%
Fiscal 2023 cost	$15,362,735	$15,362,735
Fiscal 2024 cost	$16,591,753	$16,112,660

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 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 13 years until the unfunded liabilities are substantially paid off, at which time only the normal cost will remain. The total cost represents about 30% of payroll until the time the unfunded liabilities are fully paid off, leaving only a normal cost of about 1% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

EXHIBITS

Exhibit 1 - Age/Service Distribution with Salary as of January 1, 2022

Attained Age	Average Salary <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	2	0	0	0	0	0	0	0	0	2
	50,436	0	0	0	0	0	0	0	0	50,436
20-24	16	0	0	0	0	0	0	0	0	16
	51,746	0	0	0	0	0	0	0	0	51,746
25-29	34	5	0	0	0	0	0	0	0	39
	50,779	68,157	0	0	0	0	0	0	0	53,007
30-34	24	28	5	0	0	0	0	0	0	57
	54,500	65,252	74,080	0	0	0	0	0	0	61,499
35-39	26	24	16	5	0	0	0	0	0	71
	46,728	63,890	81,478	87,180	0	0	0	0	0	63,209
40-44	23	14	10	23	8	0	0	0	0	78
	51,279	47,896	70,876	75,122	71,854	0	0	0	0	62,325
45-49	16	26	9	9	17	9	0	0	0	86
	30,756	47,489	69,605	73,864	81,355	95,428	0	0	0	61,162
50-54	33	21	12	12	24	26	6	0	0	134
	42,025	34,212	67,826	59,110	72,089	88,166	94,043	0	0	61,308
55-59	27	34	15	22	17	18	22	7	0	162
	48,928	41,844	40,978	45,130	65,489	84,020	101,324	84,829	0	60,493
60-64	14	21	17	28	13	13	11	5	1	123
	43,374	38,438	47,133	52,290	56,386	77,917	80,726	101,211	64,017	55,966
65-69	6	7	4	16	2	6	1	2	0	44
	49,787	41,826	53,025	44,863	38,754	55,553	60,078	56,703	0	47,857
70+	2	3	3	6	2	1	3	2	1	23
	11,005	26,473	30,449	29,829	22,840	28,329	18,818	20,702	86,713	34,951
Total Employees	223	183	91	121	83	73	43	16	2	835
Average Salary	47,020	48,782	60,907	56,955	68,163	82,714	88,323	78,417	75,365	58,586

Exhibit 2 - Retiree Distribution as of January 1, 2022

	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	1	2	74,642	25,380	100,022
50-54	0	3	3	0	80,346	80,346
55-59	14	19	33	224,391	899,306	1,123,696
60-64	28	43	71	472,619	2,185,229	2,657,848
65-69	61	63	124	1,180,868	2,705,176	3,886,043
70-74	63	72	135	1,210,523	2,888,280	4,098,803
75-79	72	51	123	1,496,977	2,016,756	3,513,734
80-84	67	31	98	1,080,156	876,085	1,956,242
85-89	38	26	64	632,883	850,813	1,483,696
90-94	31	9	40	552,333	242,549	794,882
95+	12	3	15	153,079	29,710	182,789
Total	387	321	708	7,078,470	12,799,631	19,878,102
Average (Age/Payment)	76.96	72.79	75.05	18,291	39,874	28,076
Frequency Percent	54.7	45.3	100	35.6	64.4	100

https://shermanactuary-my.sharepoint.com/personal/dan_shermanactuary_com/Documents/Recovered Data/Peabody/Pension 2022/Report/[DIS1.xls]Disabled

Exhibit 3 - Disabled Retiree Distribution as of January 1, 2022

	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	64,267	0	64,267
50-54	0	2	2	0	109,396	109,396
55-59	1	2	3	12,007	90,950	102,957
60-64	1	6	7	12,596	286,226	298,822
65-69	2	8	10	44,601	304,034	348,635
70-74	2	5	7	48,859	207,014	255,874
75-79	2	9	11	45,907	301,773	347,680
80-84	2	9	11	39,860	266,049	305,908
85-89	0	2	2	0	98,058	98,058
90-94	1	1	2	16,793	23,578	40,371
95-99	0	0	0	0	0	0
Total	12	44	56	284,890	1,687,077	1,971,967
Average (Age/Payment)	71.67	72.79	72.55	23,741	38,343	35,214
Frequency Percent	21.4	78.6	100	14.4	85.6	100

EXHIBIT 4 - CASH FLOW 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
2022	$3,736,413	$4,530,681	$15,362,735	$15,301,339	$31,458,343
2023	5,231,542	4,784,194	16,091,972	17,554,373	33,198,997
2024	6,783,957	5,051,349	16,685,021	20,082,535	35,034,947
2025	8,311,275	5,332,860	17,299,288	22,754,707	37,075,581
2026	9,720,274	5,629,477	17,935,500	25,590,339	39,435,042
2027	11,164,786	5,941,992	18,594,402	28,608,333	41,979,941
2028	12,523,342	6,271,233	19,082,679	31,825,862	44,656,432
2029	25,181,761	6,618,073	19,784,450	34,823,880	36,044,641
2030	25,916,361	6,983,429	20,511,177	37,608,905	39,187,150
2031	26,832,599	7,368,266	21,263,703	40,631,615	42,430,984
2032	27,672,273	7,773,596	22,042,897	43,909,735	46,053,954
2033	28,313,676	8,200,486	22,849,654	47,477,334	50,213,798
2034	28,922,967	8,650,054	23,684,898	51,369,761	54,781,745
2035	29,422,463	9,123,478	24,549,577	55,621,664	59,872,255
2036	29,819,646	9,621,993	1,366,437	60,040,681	41,209,464
2037	30,107,262	10,146,899	1,329,828	63,242,254	44,611,720
2038	30,309,376	10,699,563	1,287,156	66,711,879	48,389,222
2039	30,444,953	11,181,043	1,345,078	70,471,224	52,552,392
2040	30,440,324	11,684,190	1,405,607	74,559,191	57,208,664
2041	30,365,691	12,209,979	1,468,859	79,011,356	62,324,504
2042	30,215,744	12,759,428	1,534,958	83,863,567	67,942,209
2043	29,966,174	13,333,602	1,604,031	89,155,674	74,127,134
2044	29,640,103	13,933,614	1,676,212	94,930,793	80,900,515
2045	29,195,223	14,560,627	1,751,642	101,236,169	88,353,215
2046	28,669,979	15,215,855	1,830,466	108,123,026	96,499,367
2047	28,062,594	15,900,568	1,912,837	115,645,211	105,396,022
2048	27,365,459	16,616,094	1,998,914	123,861,218	115,110,767
2049	38,928,513	17,363,818	2,088,866	132,364,857	112,889,028
2050	36,296,032	18,145,190	2,182,865	141,237,128	125,269,150
2051	37,514,259	18,961,724	2,281,093	150,923,475	134,652,033

EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2022, 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, 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 Retirement	Percentage of Average Salary 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 $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 $15,000. 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, 2022.

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 7.75% per annum.

5. **Salary Scale**

   It is assumed that salaries including longevity will increase at a rate of 3.0% 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 $15,000 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 $240,000 and is anticipated to increase at 4.5% 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 Peabody Retirement System contributing as of January 1, 2022, 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

June, 2022

BREAKOUTS

Breakouts

	Total	City	Light	Housing Authority	Water	Sewer	Hospital	Brooksby Farm	Skating Rink	Golf Course
(1) Payroll of Active Participants	$50,386,720	$40,841,606	$5,733,195	$1,215,822	$1,542,939	$163,065	$0	$247,230	$298,480	$344,384
Pecentage of Total Payroll	100.00%	81.06%	11.38%	2.41%	3.06%	0.32%	0.00%	0.49%	0.59%	0.68%
(2) Actuarial Accrued Liability	$341,509,377	$271,368,305	$43,654,869	$9,454,079	$6,641,069	$1,762,071	$5,381,436	$907,555	$1,091,183	$1,248,811
(3) Assets	$194,457,401	$154,518,672	$24,857,333	$5,383,207	$3,781,463	$1,003,333	$3,064,221	$516,767	$621,326	$711,080
(4) Unfunded Actuarial Accrued Liability	$147,051,976	$116,849,633	$18,797,536	$4,070,872	$2,859,606	$758,738	$2,317,215	$390,788	$469,857	$537,731
(5) Total Employer Contributions										
(a) ERI	$156,812	$92,558	$35,786	$9,506	$6,014	$12,948	$0	$0	$0	$0
(b) Remaining Amortizations	14,131,490	11,229,083	1,806,417	391,205	274,804	72,914	222,681	37,554	45,153	51,675
(c) Employer Normal Cost	1,116,273	944,267	121,314	(15,430)	38,767	7,138	-	1,001	10,637	8,577
(d) Administrative Expenses	240,000	194,537	27,307	5,791	7,349	778	0	1,178	1,421	1,639
(e) Total Appropriation	$15,644,575	$12,460,445	$1,990,824	$391,072	$326,934	$93,778	$222,681	$39,733	$57,211	$61,891
Percent of Total Appropriation	100.00%	79.65%	12.73%	2.50%	2.09%	0.60%	1.42%	0.25%	0.37%	0.40%
(6) Fiscal 2023 Appropriation	$15,362,735	$12,172,894	$2,040,632	$359,334	$303,568	$73,787	$284,380	$22,998	$49,345	$55,797
Percent of Total Appropriation	100.00%	78.64%	13.18%	2.20%	2.25%	0.62%	2.45%	0.12%	0.24%	0.30%
(7) Fiscal 2024 Appropriation	$16,091,972	$12,816,789	$2,047,752	$402,251	$336,290	$96,455	$229,053	$40,874	$58,848	$63,660
Percent of Total Appropriation	100.00%	79.65%	12.73%	2.50%	2.09%	0.60%	1.42%	0.25%	0.37%	0.40%
(8) Fiscal 2025 Appropriation	$16,685,021	$13,289,135	$2,123,219	$417,075	$348,684	$100,010	$237,495	$42,380	$61,017	$66,006
Percent of Total Appropriation	100.00%	79.65%	12.73%	2.50%	2.09%	0.60%	1.42%	0.25%	0.37%	0.40%