

**CITY OF SOMERVILLE  
CONTRIBUTORY RETIREMENT SYSTEM**

Actuarial Valuation Report

January 1, 2008

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## Report Summary:

<u>Highlights</u>	<u>January 1, 2007</u>	<u>January 1, 2008</u>
<u>Contributions</u>		
Funding Schedule FY 2009	\$12,485,661	\$12,485,661
Funding Schedule FY 2010	12,896,325	11,046,043
<u>Funded Ratios</u>		
GAS No. 25	62.9%	65.5%
<u>Participants</u>		
Actives	1,019	1,145
Retirees and Beneficiaries	745	739
Vested	0	0
Inactives	325	271
Disabled	<u>127</u>	<u>123</u>
Total	2,216	2,278
<u>Payroll</u>		
Payroll of Active Members	\$48,837,222	\$54,546,918
Average Payroll	47,927	47,639
<u>Normal Cost</u>		
Employer	2,346,030	2,367,398
Employee	4,015,896	4,531,284
Administrative Expenses	<u>370,000</u>	<u>400,000</u>
Total	6,731,926	7,298,682
<u>Actuarial Accrued Liabilities</u>		
Actives	117,421,713	139,000,113
Retirees, Beneficiaries, Disabilities and Inactives	<u>149,032,309</u>	<u>141,399,786</u>
Total	266,454,022	280,399,899
<u>Actuarial Value of Assets</u>	<u>167,527,653</u>	<u>183,769,256</u>
<u>Unfunded Actuarial Accrued Liabilities</u>	\$98,926,369	\$96,630,643

## **Introduction**

This report presents the findings of an actuarial valuation as of January 1, 2008, of Somerville Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2008.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the City of Somerville 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, 2008.

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 preceding year, the total unfunded actuarial accrued liability decreased by 0.1% to \$98,590,760. The decrease was less than expected due to net unfavorable actuarial experience during the preceding year. The actuarial (gains) and losses by sources are shown in the following table:

Investment	(1,611,839)
Salary	5,756,168
Retiree Mortality	(2,612,755)
Active Decrements (Retirement)	(1,803,416)
Active Decrements (Termination)	442,316
Active Decrements (Mortality)	292,410
Active Decrements (Disability)	(770,896)
New Participants	6,926,430
Other (Data corrections, Service Buybacks, etc.)	<u>(5,816,502)</u>
Total (gain)/loss	801,915

The Board adopted a change in the assumed salary increases to 4% per year. The change lowered the unfunded actuarial accrued liability by \$1,158,202 to \$96,630,643, and the Normal Cost by \$108,465 to \$7,298,682.

## 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**

	<u>January 1, 2007</u>	<u>January 1, 2008</u>
Superannuation	\$4,375,032	\$4,811,810
Termination	671,698	638,014
Death	314,715	343,066
Disability	1,000,481	1,105,792
Administrative Expenses	<u>370,000</u>	<u>400,000</u>
Total Normal Cost	6,731,926	7,298,682
% of Pay	13.8%	13.4%
Employee Contributions	4,015,896	4,531,284
% of Pay	8.2%	8.3%
Employer Normal Cost	\$2,716,030	\$2,767,398
% of Pay	5.6%	5.1%

**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 inactive. 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**

	<u>January 1, 2007</u>	<u>January 1, 2008</u>
Actives		
Superannuations	\$103,981,479	\$123,867,161
Termination	2,004,712	2,147,657
Death	3,640,361	4,233,343
Disability	7,795,161	8,751,952
Retirees and Inactives		
Retirees and Beneficiaries	115,015,435	111,129,880
Terminated (Refund)	5,299,316	2,609,975
Disabled	<u>28,717,558</u>	<u>27,659,931</u>
Total	\$266,454,022	\$280,399,899

## 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**

	<u>January 1, 2007</u>	<u>January 1, 2008</u>
Actives		
Superannuation	\$142,552,340	\$161,349,874
Termination	4,864,225	4,755,439
Death	6,210,281	6,841,386
Disability	16,698,344	17,917,016
Retirees and Inactives		
Retirees and Beneficiaries	115,015,435	111,129,880
Terminated (Refund)	5,299,316	2,609,975
Disabled	<u>28,717,558</u>	<u>27,659,931</u>
Total	\$319,357,499	\$332,263,501

## 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**

	<u>January 1, 2007</u>	<u>January 1, 2008</u>
Cash equivalents	\$9,025,005	\$6,408,376
Short term investments	0	0
Fixed income securities	47,889,918	51,580,497
Equities	86,112,115	92,267,292
International	10,791,515	12,519,416
Real Estate	18,182,206	20,836,898
Venture Capital	0	0
Other	904,186	737,536
Accounts receivable	347,243	5,917,531
Accounts payable	(77,832)	(128,598)
Accrued income	<u>103,077</u>	<u>96,637</u>
Total Market Value	\$173,277,432	\$190,235,584
Total Actuarial Value	\$167,527,653	\$183,769,256

**Actuarial Value of Assets**

The actuarial value of assets is determined by projecting the actuarial value of assets as of the beginning of the prior plan year with the assumed rate of return during that year (8.25%) 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 20%. The calculation of the actuarial value of assets as of January 1, 2008 is presented in Table V.

**Table V**

	<u>January 1, 2008</u>
(1) Market value at January 1, 2007	\$173,277,432
(2) 2007 Contributions	\$17,868,338
(3) 2007 Benefit Payments	(\$20,248,303)
(4) Net interest adjustment at 8.25% on (1), (2), and (3) to December 31, 2007	\$14,197,215
(5) Expected market value on January 1, 2008 (1) + (2) + (3) + (4)	\$185,094,682
(6) Actual market value on January 1, 2008	\$190,235,584
(7) 2007 (Gain) / Loss	(\$5,140,902)
(8) 80% of 2007 (Gain) / Loss	(\$4,112,721)
(9) 2006 (Gain) / Loss	(\$4,241,308)
(10) 60% of 2006 (Gain) / Loss	(\$2,544,785)
(11) 2005 (Gain) / Loss	\$3,984,147
(12) 40% of 2005 (Gain) / Loss	\$1,593,659
(13) 2004 (Gain) / Loss	(\$7,012,405)
(14) 20% of 2004 (Gain) / Loss	(\$1,402,481)
(15) Actuarial value on January 1, 2008, (6) + (8) + (10) + (12) + (14)	\$183,769,256
(16) but not less than 80% nor greater than 120% of (6)	\$183,769,256
Ratio of actuarial value to market value	96.60%

## 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**

	<u>January 1, 2007</u>	<u>January 1, 2008</u>
Actuarial Accrued Liability	\$266,454,022	\$280,399,899
Actuarial Assets	<u>167,527,653</u>	<u>183,769,256</u>
Unfunded Actuarial Accrued Liability	\$98,926,369	\$96,630,643
Funded Status	62.9%	65.5%
Market Value of Assets	173,277,432	190,235,584
Funded Status for Chapter 68 of the 2007 MGL*	65.0%	67.8%

\* (Greater of Actuarial and Market Value, divided by Actuarial Accrued Liability)

## 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, 2026  
\$ 89,131,066 over 18 years with 4.25% increasing payments
- Level amortization of the 2002 Early Retirement Incentive by June 30, 2019  
\$ 4,582,071 over 11 years
- Increasing amortization of the 2003 Early Retirement Incentive by June 30, 2020  
\$ 2,917,506 over 12 years
- Interest adjustment for payments deposited at the beginning of the fiscal year.

The pension appropriation is shown in Table VII.

**Table VII**

	<u>January 1, 2007</u>	<u>January 1, 2008</u>
Normal cost	\$2,716,030	\$2,767,398
Amortization payment of the accrued liability	7,914,083	6,691,029
Amortization payment of 2002 ERI liability	600,135	600,135
Amortization payment of 2003 ERI liability	<u>362,280</u>	<u>362,280</u>
Total cost	\$11,592,528	\$10,420,842
% of Pay	23.7%	19.1%
Fiscal 2009 cost	\$12,485,661	\$12,485,661
Fiscal 2010 cost	\$12,896,325	\$11,046,043

## **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 4.5% per year. The employee contribution rate is expected to increase to 10.5% by 2028 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 18 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total cost represents 19.5% of payroll, decreasing to 16.2% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of about 3.0% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

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**Appropriation Forecast**

<u>Fiscal</u> <u>Year</u> <u>Ending</u>	<u>Payroll*</u>	<u>Employee</u> <u>Contribution</u>	<u>Employer</u> <u>Normal Cost</u> <u>with Interest</u>	<u>Amortization</u> <u>Payments</u> <u>with Interest</u>	<u>Employer</u> <u>Total Cost</u> <u>with Interest</u>	<u>Employer</u> <u>Total Cost</u> <u>% of Payroll</u>	<u>Funded</u> <u>Ratio %**</u>
2009	\$54,546,918	\$4,531,284	\$2,879,291	\$9,606,370	\$12,485,661	22.9	66.1
2010	\$56,728,795	\$4,778,008	\$2,926,342	\$8,119,701	\$11,046,043	19.5	69.6
2011	\$58,997,947	\$5,037,221	\$2,972,551	\$8,422,232	\$11,394,783	19.3	72.7
2012	\$61,357,864	\$5,309,525	\$3,017,774	\$8,737,621	\$11,755,395	19.2	75.6
2013	\$63,812,179	\$5,595,555	\$3,061,859	\$9,066,413	\$12,128,272	19.0	78.3
2014	\$66,364,666	\$5,895,971	\$3,104,642	\$9,409,179	\$12,513,821	18.9	80.7
2015	\$69,019,253	\$6,211,468	\$3,145,949	\$9,766,513	\$12,912,462	18.7	83.0
2016	\$71,780,023	\$6,542,771	\$3,185,593	\$10,139,033	\$13,324,626	18.6	85.0
2017	\$74,651,224	\$6,890,640	\$3,223,375	\$10,527,386	\$13,750,761	18.4	87.0
2018	\$77,637,273	\$7,255,870	\$3,259,083	\$10,932,243	\$14,191,326	18.3	88.8
2019	\$80,742,764	\$7,639,293	\$3,292,490	\$11,354,307	\$14,646,797	18.1	90.5
2020	\$83,972,474	\$8,041,781	\$3,323,355	\$11,169,909	\$14,493,264	17.3	92.0
2021	\$87,331,373	\$8,464,245	\$3,351,421	\$11,251,683	\$14,603,104	16.7	93.4
2022	\$90,824,628	\$8,907,639	\$3,376,415	\$11,729,879	\$15,106,294	16.6	94.7
2023	\$94,457,613	\$9,372,962	\$3,398,046	\$12,228,399	\$15,626,445	16.5	95.9
2024	\$98,235,918	\$9,861,259	\$3,416,006	\$12,748,106	\$16,164,112	16.5	97.0
2025	\$102,165,354	\$10,373,622	\$3,429,965	\$13,289,901	\$16,719,866	16.4	98.1
2026	\$106,251,969	\$10,911,197	\$3,439,576	\$13,854,722	\$17,294,298	16.3	99.1
2027	\$110,502,047	\$11,475,180	\$3,444,467	\$0	\$3,444,467	3.1	100.0
2028	\$114,922,129	\$12,066,824	\$3,444,247	\$0	\$3,444,247	3.0	100.0
2029	\$119,519,014	\$12,549,497	\$3,582,016	\$0	\$3,582,016	3.0	100.0
2030	\$124,299,775	\$13,051,476	\$3,725,297	\$0	\$3,725,297	3.0	100.0
2031	\$129,271,766	\$13,573,535	\$3,874,309	\$0	\$3,874,309	3.0	100.0
2032	\$134,442,637	\$14,116,477	\$4,029,281	\$0	\$4,029,281	3.0	100.0
2033	\$139,820,342	\$14,681,136	\$4,190,453	\$0	\$4,190,453	3.0	100.0
2034	\$145,413,156	\$15,268,381	\$4,358,071	\$0	\$4,358,071	3.0	100.0
2035	\$151,229,682	\$15,879,117	\$4,532,394	\$0	\$4,532,394	3.0	100.0
2036	\$157,278,869	\$16,514,281	\$4,713,689	\$0	\$4,713,689	3.0	100.0
2037	\$163,570,024	\$17,174,853	\$4,902,237	\$0	\$4,902,237	3.0	100.0
2038	\$170,112,825	\$17,861,847	\$5,098,326	\$0	\$5,098,326	3.0	100.0
2039	\$176,917,338	\$18,576,320	\$5,302,259	\$0	\$5,302,259	3.0	100.0
2040	\$183,994,032	\$19,319,373	\$5,514,350	\$0	\$5,514,350	3.0	100.0

\* Calendar basis

\*\* Beginning of Fiscal Year

**GASB Statements No. 25 and No. 27**

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GASB Statement No. 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to \$0. The required disclosure information is shown in Table VIII.

**Table VIII**

	<u>January 1, 2007</u>	<u>January 1, 2008</u>
(1) Actuarial Accrued Liability	\$266,454,022	\$280,399,899
(2) Actuarial Value of Assets	<u>167,527,653</u>	<u>183,769,256</u>
(3) Unfunded Actuarial Accrued Liability	98,926,369	96,630,643
(4) Funded Ratio (2)/(1)	62.9%	65.5%
(5) Covered Payroll	\$48,837,222	\$54,546,918
(6) UAAL as a percentage of payroll: (3)/(5)	202.6%	177.2%
(7) Annual Required Contribution (ARC)	\$11,399,440	\$12,485,661
(8) Net Pension Obligation	\$0	\$0

**PERAC Annual Statement**  
**APPENDIX PAGE 3**  
**ACTUARIAL VALUATION AND ASSUMPTIONS**

The most recent actuarial valuation of the System was prepared by Buck Consultants as of January 1, 2008.

The normal cost for employees on that date was:	\$4,531,284	8.3% of pay
The normal cost for the employer was:	2,367,398	4.3% of pay
The actuarial liability for active members was:		\$139,000,113
The actuarial liability for retired and inactive members was:		141,399,786
Total actuarial accrued liability:		280,399,899
System assets as of that date:		183,769,256
Unfunded actuarial accrued liability:		\$96,630,643

The ratio of system's assets to total actuarial liability was 65.5%

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

Investment Return:	8.25%
Rate of Salary Increase:	4.25%

**SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Actuarial Value of Assets  (a)	Actuarial Accrued Liability  (b)	Unfunded Actuarial Accrued Liability  (b-a)	Funded Ratio  (a/b)	Covered Payroll  (c)	UAAL as a percent of Covered Payroll  (b-a)/c
01/01/08	\$183,769,256	\$280,399,899	\$96,630,643	65.5%	\$54,546,918	177.2%
01/01/04	145,850,905	246,797,910	100,947,005	59.1%	43,875,838	230.1%
01/01/01	134,378,449	204,557,523	70,179,074	65.7%	44,779,084	156.7%
01/01/98	103,343,920	168,736,337	65,392,417	61.2%	38,969,295	167.8%
01/01/95	67,754,043	127,119,756	59,365,713	53.3%	31,711,990	187.2%
01/01/92	58,351,419	115,469,624	57,118,205	50.5%	28,547,090	200.1%
01/01/87	36,135,000	91,470,000	55,335,000	39.5%	22,342,000	247.7%

Attach Copy of Current Approved Funding Schedule

**EXHIBITS**

Age/Service Distribution with Salary as of January 1, 2008

Attained Age	Average Salary	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
20-24		22	28	0	0	0	0	0	0	0	0
		32,857	20,463	0	0	0	0	0	0	0	0
25-29		39	62	6	0	0	0	0	0	0	0
		34,172	24,260	34,294	0	0	0	0	0	0	0
30-34		37	46	27	1	1	0	0	0	0	0
		43,352	33,430	60,423	55,277	75,221	0	0	0	0	0
35-39		30	35	37	18	3	0	0	0	0	0
		38,625	34,827	56,245	64,677	45,473	0	0	0	0	0
40-44		47	52	40	34	20	7	0	0	0	0
		40,610	31,676	50,840	58,952	56,509	58,107	0	0	0	0
45-49		37	32	46	35	37	40	4	0	0	0
		32,444	30,687	36,451	49,806	62,692	73,032	80,542	0	0	0
50-54		32	29	36	42	22	39	21	9	0	0
		32,254	29,241	34,362	38,928	44,527	65,496	82,561	67,196	0	0
55-59		20	21	25	32	18	22	16	27	10	0
		27,344	27,560	37,532	41,648	41,783	46,499	57,692	84,688	67,711	0
60-64		9	9	15	13	15	11	5	22	7	1
		37,303	32,912	28,365	31,431	42,362	43,295	62,549	80,155	86,573	43,958
65-69		4	2	10	7	8	5	6	0	1	1
		26,640	3,896	22,806	38,250	35,964	40,096	48,944	0	71,792	69,528
70+		1	10	5	5	0	0	4	0	2	1
		51,377	23,312	32,161	15,793	0	0	42,741	0	46,638	44,006
Total Employees		278	326	247	187	124	124	56	58	20	3
Average Salary		35,972	28,917	42,989	46,471	50,938	61,146	67,078	80,254	72,409	52,497

Retiree Distribution as of January 1, 2008

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	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	4	5	34,740	42,025	76,766
50-54	9	7	16	201,117	65,279	266,396
55-59	34	17	51	1,147,604	166,477	1,314,080
60-64	38	48	86	1,527,232	682,983	2,210,215
65-69	60	56	116	1,817,065	704,973	2,522,038
70-74	37	60	97	953,454	913,542	1,866,996
75-79	52	76	128	1,194,405	977,453	2,171,859
80-84	60	71	131	1,000,534	541,821	1,542,355
85-89	17	63	80	211,390	569,408	780,799
90-94	7	20	27	78,861	152,307	231,168
95-99	0	7	7	0	23,806	23,806
<b>Total</b>	<b>315</b>	<b>429</b>	<b>744</b>	<b>8,166,404</b>	<b>4,840,074</b>	<b>13,006,478</b>
<b>Average (Age/Payment)</b>	<b>71.9</b>	<b>75.6</b>	<b>74</b>	<b>25,925</b>	<b>11,282</b>	<b>17,482</b>
<b>Frequency Percent</b>	<b>42.3</b>	<b>57.7</b>	<b>100</b>	<b>62.8</b>	<b>37.2</b>	<b>100</b>

Disabled Retiree Distribution as of January 1, 2008

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	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	1	0	1	30,646	0	30,646
40-44	4	0	4	116,209	0	116,209
45-49	1	0	1	24,240	0	24,240
50-54	11	2	13	264,446	55,328	319,775
55-59	17	1	18	436,593	53,354	489,947
60-64	19	1	20	556,920	10,049	566,968
65-69	20	0	20	581,024	0	581,024
70-74	18	0	18	398,356	0	398,356
75-79	12	0	12	241,133	0	241,133
80-84	12	0	12	236,429	0	236,429
85-89	3	0	3	60,996	0	60,996
90-94	1	0	1	12,328	0	12,328
95-99	0	1	1	0	11,739	11,739
Total	119	5	124	2,959,321	130,470	3,089,791
Average (Age/Payment)	66.8	446.3	82.1	24,868	26,094	24,918
Frequency Percent	96	4	100	95.8	4.2	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
2008	\$0	\$4,531,284	\$12,485,661	\$14,032,281	\$31,049,227
2009	0	4,778,008	11,046,043	18,242,748	34,066,800
2010	0	5,037,221	11,394,783	21,070,483	37,502,487
2011	0	5,309,525	11,755,395	24,182,491	41,247,411
2012	0	5,595,555	12,128,272	27,604,324	45,328,151
2013	0	5,895,971	12,513,821	31,363,726	49,773,518
2014	0	6,211,468	12,912,462	35,490,821	54,614,751
2015	0	6,542,771	13,324,626	40,018,314	59,885,712
2016	0	6,890,640	13,750,761	44,981,703	65,623,104
2017	0	7,255,870	14,191,326	50,419,518	71,866,714
2018	0	7,639,293	14,646,797	56,373,571	78,659,661
2019	0	8,041,781	14,493,264	62,863,991	85,399,036
2020	0	8,464,245	14,603,104	69,921,666	92,989,015
2021	0	8,907,639	15,106,294	77,622,062	101,635,995
2022	0	9,372,962	15,626,445	86,037,203	111,036,611
2023	0	9,861,259	16,164,112	95,229,327	121,254,698
2024	0	10,373,622	16,719,866	105,265,943	132,359,431
2025	0	10,911,197	17,294,298	116,220,267	144,425,762
2026	0	11,475,180	3,444,467	127,599,585	142,519,232
2027	0	12,066,824	3,444,247	139,371,136	154,882,207
2028	0	12,549,497	3,582,016	152,157,819	168,289,332
2029	0	13,051,476	3,725,297	166,050,945	182,827,718
2030	0	13,573,535	3,874,309	181,143,858	198,591,702
2031	0	14,116,477	4,029,281	197,537,685	215,683,443
2032	0	14,681,136	4,190,453	215,341,981	234,213,570
2033	0	15,268,381	4,358,071	234,675,429	254,301,881
2034	0	15,879,117	4,532,394	255,666,595	276,078,106
2035	0	16,514,281	4,713,689	278,454,752	299,682,722
2036	0	17,174,853	4,902,237	303,190,757	325,267,847
2037	0	17,861,847	5,098,326	330,038,023	352,998,196

amounts in thousands

## **EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:**

This summary is prepared in accordance with Chapter 32 as of January 1, 2008, and does not take into account any subsequent changes.

### **1. Administration**

Each of the 107 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.

### 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:

<b><u>Date of Hire</u></b>	<b><u>Member Contribution Rate</u></b>
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

### 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.)

### 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

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:

<u>Age at Retirement</u>	<u>Percentage of Average Salary</u>		
	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
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

## **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).

**b. Benefit Amount:**

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55. 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, 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 \$12,000. 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, 2008.

### **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 8.25% per annum.

### **5. Salary Scale**

It is assumed that salaries including longevity will increase at 4.00% 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 \$12,000 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:

<u>Service</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
0	0.1500	0.0150
10	0.0540	0.0150
20	0.0200	0.0000
30	0.0000	0.0000

**9. Annual Rate of Mortality**

It is assumed that both pre-retirement and post retirement mortality are represented by the RP-2000 Mortality Table for males and females. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward two years for all disabled members.

**10. Service Retirement**

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages:

<u>Age</u>	<u>Male General Employees</u>	<u>Female General Employees</u>	<u>Male and Female Police and Fire Employees</u>
50	0.0100	0.0150	0.02000
51	0.0100	0.0150	0.02000
52	0.0100	0.0200	0.02000
53	0.0100	0.0250	0.05000
54	0.0200	0.0250	0.07500
55	0.0200	0.0550	0.15000
56	0.0250	0.0650	0.10000
57	0.0250	0.0650	0.10000
58	0.0500	0.0650	0.10000
59	0.0650	0.0650	0.15000
60	0.1200	0.0500	0.20000
61	0.2000	0.1300	0.20000
62	0.3000	0.1500	0.25000
63	0.2500	0.1250	0.25000
64	0.2200	0.1800	0.30000
65	0.4000	0.1500	1.00000
66	0.2500	0.2000	1.00000
67	0.2500	0.2000	1.00000
68	0.3000	0.2500	1.00000
69	0.3000	0.2000	1.00000
70	1.0000	1.0000	1.00000

### 11. **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:

<b><u>Attained Age</u></b>	<b><u>General Employees</u></b>	<b><u>Police and Fire Employees</u></b>
20	0.0001	0.0001
30	0.0003	0.0003
40	0.0010	0.0030
50	0.0019	0.0125

In addition, it is assumed for the general employees that 40% of all disabilities are ordinary (60% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

### 12. **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.

### 13. **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 2008 is \$400,000 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 City of Somerville Retirement System contributing as of January 1, 2008, 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.

Buck Consultants, LLC

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Daniel W. Sherman, ASA, MAAA  
Enrolled Actuary No. 08-4086

May, 2009