

**CITY OF NEWTON  
CONTRIBUTORY RETIREMENT SYSTEM**

Actuarial Valuation Report

January 1, 2011

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**Report Summary:**

<b><u>Highlights</u></b>	<b><u>January 1, 2010</u></b>	<b><u>January 1, 2011</u></b>
<b><u>Contributions</u></b>		
Funding Schedule FY 2012	\$16,252,351	\$16,252,351
Funding Schedule FY 2013	16,795,277	16,343,094
<b><u>Funded Ratios</u></b>		
GAS No. 25	55.0%	55.0%
<b><u>Participants</u></b>		
Actives	1,759	1,669
Retirees and Beneficiaries	1,146	1,156
Inactives	533	574
Disabled	<u>153</u>	<u>156</u>
Total	3,591	3,555
<b><u>Payroll</u></b>		
Payroll of Active Members	\$83,843,673	\$81,378,076
Average Payroll	47,666	48,759
<b><u>Normal Cost</u></b>		
Employer	3,185,247	2,808,571
Employee	<u>6,958,246</u>	<u>6,817,450</u>
Total	10,143,493	9,626,021
<b><u>Actuarial Accrued Liabilities</u></b>		
Actives	204,215,255	194,942,250
Retirees, Beneficiaries, Disabilities and Inactives	<u>257,888,433</u>	<u>278,141,563</u>
Total	462,103,688	473,083,813
<b><u>Actuarial Value of Assets</u></b>	<b><u>254,035,335</u></b>	<b><u>260,156,459</u></b>
<b><u>Unfunded Actuarial Accrued Liabilities</u></b>	<b>\$208,068,353</b>	<b>\$212,927,354</b>

## **Introduction**

This report presents the findings of an actuarial valuation as of January 1, 2011, of Newton Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2011.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the City of Newton 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, 2011.

The valuation and forecast do not account for:

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

## Actuarial Experience

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

During the last year, the total unfunded actuarial accrued liability increased by 2.3% to \$212,927,354. The increase was larger than expected as a result of net unfavorable actuarial experience during the preceding year, primarily less than expected growth in the actuarial value of assets. Despite a return of 11.89% on market value of assets, the continuing recognition of significant investment losses in prior years limited the return on the actuarial value of assets to 5.53%. The sources of the (gain)/loss are as follows:

Investment	5,900,743
Salary Increases	(5,697,316)
New Participants and Rehires	2,527,511
Active - Retirements	(1,145,213)
Active - Terminations	(674,815)
Active - Mortality	990
Active - Disabilities	(17,485)
Inactive - Mortality and data adjustments	1,006,142
Contribution Gain	(922,490)
Other	(1,449,284)
Total (gain)/loss	<u>(471,217)</u>

A number of changes in actuarial assumptions were also adopted for the 2011 actuarial valuation. Changes were made to better reflect anticipated experience in the investment return, mortality table, and salary scale. The overall effects were an increase in the unfunded actuarial accrued liability of \$2,123,422 and a decrease in the employer normal cost of \$344,073.

## 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, 2010</u>	<u>January 1, 2011</u>
Superannuation	\$6,883,221	\$6,415,808
Termination	1,414,153	1,427,148
Death	443,524	384,503
Disability	1,402,595	1,398,562
Total Normal Cost	10,143,493	9,626,021
% of Pay	12.1%	11.8%
Employee Contributions	6,958,246	6,817,450
% of Pay	8.3%	8.4%
Employer Normal Cost	\$3,185,247	\$2,808,571
% of Pay	3.8%	3.5%

**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, 2010</u>	<u>January 1, 2011</u>
Actives		
Superannuations	\$191,963,211	\$183,635,970
Termination	(3,455,713)	(3,125,789)
Death	4,657,219	3,945,883
Disability	11,050,538	10,486,186
Retirees and Inactives		
Retirees and Beneficiaries	203,245,596	220,936,112
Vested	0	0
Terminated (Refund)	3,301,061	4,541,588
Disabled	<u>51,341,776</u>	<u>52,663,863</u>
Total	\$462,103,688	\$473,083,813

**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, 2010</u>	<u>January 1, 2011</u>
Actives		
Superannuation	\$252,664,835	\$233,830,949
Termination	8,634,202	8,273,357
Death	8,448,480	6,947,879
Disability	25,171,695	23,121,667
Retirees and Inactives		
Retirees and Beneficiaries	203,245,596	220,936,112
Terminated (Refund)	3,301,061	4,541,588
Disabled	<u>51,341,776</u>	<u>52,663,863</u>
Total	\$552,807,645	\$550,315,415

## 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, 2010</u>	<u>January 1, 2011</u>
Cash equivalents	\$3,077,464	\$5,899,140
Real Estate	11,275,898	10,547,663
PRIT Core Fund	208,553,834	224,928,149
Accounts receivable	372,491	260,782
Accounts payable	(11,723)	(7,603)
Accrued income	<u>0</u>	<u>0</u>
Total Market Value	\$223,267,964	\$241,628,132
Total Actuarial Value	\$254,035,335	\$260,156,459

**Actuarial Value of Assets**

For actuarial purposes, the assets are valued using a method which reflects the market value of assets though gradual recognition of any unrealized appreciation or depreciation in assets beyond the 8% return. The following table shows the development of valuation assets:

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(1) Assets for valuation purposes, January 1, 2010	\$254,035,335
(2) Cash flow during year without regard to investment income and expenses	
(a) Benefit payouts and refunds	(\$31,419,632)
(b) City contributions	\$14,877,830
(c) Member contributions	\$7,661,211
(d) Net transfers and reimbursements	<u>\$1,163,674</u>
(e) Net cash flow	(\$7,716,917)
(3) Expected investment income and expenses	\$20,014,150
(4) Preliminary Asset Value (1 + 2 + 3)	\$266,332,568
(5) Market value, January 1, 2011	\$241,628,132
(6) Preliminary asset value	<u>\$266,332,568</u>
(7) Unrecognized appreciation (5 - 6)	(\$24,704,436)
(8) Adjustment (7 x 25%)	(\$6,176,109)
(9) Adjusted asset value (4 + 8)	\$260,156,459
(10) Assets for valuation purposes, January 1, 2011 (adjusted asset value limited to 120% of market value of assets)	\$260,156,459
(11) Ratio of actuarial value to market value	107.7%
(12) The investment rate of return for year ending, January 1, 2011 (based on the adjusted asset value)	5.53%

**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, 2010</u>	<u>January 1, 2011</u>
Actuarial Accrued Liability	\$462,103,688	\$473,083,813
Actuarial Assets	<u>254,035,335</u>	<u>260,156,459</u>
Unfunded Actuarial Accrued Liability	\$208,068,353	\$212,927,354
Funded Status	55.0%	55.0%

**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, 2040, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the prior unfunded actuarial accrued liability by June 30, 2038  
     \$ 212,927,354 over 27 years with 3.75% increasing payments
- Interest adjusted for payments deposited annually each August 1.

The pension appropriation is shown in Table VII.

**Table VII**

	<u>January 1, 2010</u>	<u>January 1, 2011</u>
Normal cost	\$3,185,247	\$2,808,571
Amortization payment of the prior accrued liability	<u>11,811,967</u>	<u>12,352,532</u>
Total cost	\$14,997,214	\$15,161,103
% of Pay	17.9%	18.6%
Fiscal 2012 cost	\$16,252,351	\$16,252,351
Fiscal 2013 cost	\$16,795,277	\$16,343,094

## **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 2035 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 27 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total FYE12 cost represents 20.0% of payroll, decreasing to 14.5% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of 1.4% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

**Appropriation Forecast**

<u>Fiscal Year</u>	<u>Employee Payroll*</u>	<u>Employee Contribution</u>	<u>Employer Normal Cost with Interest</u>	<u>Amortization Payments with Interest</u>	<u>Employer Total Cost with Interest</u>	<u>Employer Total Cost % of Payroll</u>	<u>Funded Ratio %**</u>
2012	\$81,378,076	\$6,817,450	\$2,933,563	\$13,318,788	\$16,252,351	20.0	55.1
2013	\$85,040,089	\$7,202,712	\$2,983,604	\$13,359,490	\$16,343,094	19.2	55.2
2014	\$88,866,893	\$7,608,843	\$3,032,208	\$13,860,470	\$16,892,678	19.0	55.7
2015	\$92,865,904	\$8,036,940	\$3,079,144	\$14,380,238	\$17,459,382	18.8	56.3
2016	\$97,044,869	\$8,488,158	\$3,124,165	\$14,919,497	\$18,043,662	18.6	56.9
2017	\$101,411,888	\$8,963,710	\$3,167,002	\$15,478,978	\$18,645,980	18.4	57.5
2018	\$105,975,423	\$9,464,874	\$3,207,368	\$16,059,440	\$19,266,808	18.2	58.3
2019	\$110,744,317	\$9,992,991	\$3,244,954	\$16,661,669	\$19,906,623	18.0	59.1
2020	\$115,727,812	\$10,549,472	\$3,279,427	\$17,286,481	\$20,565,908	17.8	60.0
2021	\$120,935,563	\$11,135,801	\$3,310,432	\$17,934,724	\$21,245,156	17.6	61.0
2022	\$126,377,664	\$11,753,536	\$3,337,587	\$18,607,277	\$21,944,864	17.4	62.1
2023	\$132,064,658	\$12,404,318	\$3,360,482	\$19,305,049	\$22,665,531	17.2	63.4
2024	\$138,007,568	\$13,089,869	\$3,378,679	\$20,028,989	\$23,407,668	17.0	64.8
2025	\$144,217,909	\$13,812,001	\$3,391,709	\$20,780,076	\$24,171,785	16.8	66.3
2026	\$150,707,715	\$14,572,618	\$3,399,069	\$21,559,329	\$24,958,398	16.6	68.0
2027	\$157,489,562	\$15,373,721	\$3,400,224	\$22,367,803	\$25,768,027	16.4	69.8
2028	\$164,576,592	\$16,217,414	\$3,394,600	\$23,206,596	\$26,601,196	16.2	71.8
2029	\$171,982,539	\$17,105,908	\$3,381,583	\$24,076,843	\$27,458,426	16.0	74.0
2030	\$179,721,753	\$18,041,525	\$3,360,522	\$24,979,725	\$28,340,247	15.8	76.2
2031	\$187,809,232	\$19,026,709	\$3,330,717	\$25,916,465	\$29,247,182	15.6	78.6
2032	\$196,260,647	\$20,064,025	\$3,291,425	\$26,888,332	\$30,179,757	15.4	81.1
2033	\$205,092,376	\$21,156,171	\$3,241,852	\$27,896,645	\$31,138,497	15.2	83.7
2034	\$214,321,533	\$22,305,980	\$3,181,151	\$28,942,769	\$32,123,920	15.0	86.4
2035	\$223,966,002	\$23,516,430	\$3,108,424	\$30,028,123	\$33,136,547	14.8	89.1
2036	\$234,044,472	\$24,574,670	\$3,248,303	\$31,154,177	\$34,402,480	14.7	91.8
2037	\$244,576,474	\$25,680,530	\$3,394,476	\$32,322,459	\$35,716,935	14.6	94.5
2038	\$255,582,415	\$26,836,154	\$3,547,228	\$33,534,551	\$37,081,779	14.5	97.3
2039	\$267,083,624	\$28,043,780	\$3,706,853	\$0	\$3,706,853	1.4	100.0
2040	\$279,102,387	\$29,305,751	\$3,873,661	\$0	\$3,873,661	1.4	100.0
2041	\$291,661,994	\$30,624,509	\$4,047,976	\$0	\$4,047,976	1.4	100.0
2042	\$304,786,784	\$32,002,612	\$4,230,135	\$0	\$4,230,135	1.4	100.0
2043	\$318,502,189	\$33,442,730	\$4,420,491	\$0	\$4,420,491	1.4	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, 2010</u>	<u>January 1, 2011</u>
(1) Actuarial Accrued Liability	\$462,103,688	\$473,083,813
(2) Actuarial Value of Assets	<u>254,035,335</u>	<u>260,156,459</u>
(3) Unfunded Actuarial Accrued Liability	208,068,353	212,927,354
(4) Funded Ratio (2)/(1)	55.0%	55.0%
(5) Covered Payroll	\$83,843,673	\$81,378,076
(6) UAAL as a percentage of payroll: (3)/(5)	248.2%	261.7%
(7) Annual Required Contribution (ARC)	\$15,029,827	\$16,252,351
(8) Net Pension Obligation	\$0	<b>\$0</b>

**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, 2011.

The normal cost for employees on that date was:	\$6,817,450	8.4% of pay
The normal cost for the employer was:	2,808,571	3.5% of pay

The actuarial liability for active members was:	\$194,942,250
The actuarial liability for retired and inactive members was:	278,141,563
Total actuarial accrued liability:	473,083,813
System assets as of that date:	260,156,459
Unfunded actuarial accrued liability:	\$212,927,354

The ratio of system's assets to total actuarial liability was 55.0%

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

Investment Return:	7.75%
Ultimate Rate of Salary Increase:for Groups 1 & 4	4.75% and 5.25%

**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
01/01/11	\$260,156,459	\$473,083,813	\$212,927,354	55.0%	\$81,378,076	261.7%
01/01/10	254,035,335	462,103,688	208,068,353	55.0%	83,843,673	248.2%
01/01/09	252,116,922	443,009,607	190,892,685	56.9%	82,013,624	232.8%
01/01/08	281,114,591	419,000,697	137,886,106	67.1%	79,205,738	174.1%
01/01/07	265,700,539	402,257,645	136,557,106	66.1%	74,197,265	184.0%
01/01/06	253,420,995	382,732,277	129,311,282	66.2%	71,278,135	181.4%
01/01/05	244,266,000	361,080,000	116,814,000	67.6%	69,702,000	168.0%
01/01/04	233,888,000	350,688,000	116,800,000	66.7%	68,327,000	171.0%
01/01/03	227,126,000	338,172,000	111,046,000	67.2%	64,636,000	172.0%
01/01/02	228,239,000	306,123,000	77,884,000	74.6%	61,438,000	127.0%
01/01/01	219,102,000	268,660,000	49,558,000	81.6%	60,769,000	82.0%

Attach Copy of Current Approved Funding Schedule

**EXHIBITS**

Age/Service Distribution with Salary as of January 1, 2011

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		110	0	0	0	0	0	0	0	0	110
		24,839	0	0	0	0	0	0	0	0	24,839
25-29		190	36	0	0	0	0	0	0	0	226
		33,331	49,383	0	0	0	0	0	0	0	35,888
30-34		98	68	15	0	0	0	0	0	0	181
		37,167	54,186	61,868	0	0	0	0	0	0	45,608
35-39		33	51	29	5	0	0	0	0	0	118
		40,906	56,974	60,468	75,235	0	0	0	0	0	54,113
40-44		31	31	37	18	6	1	0	0	0	124
		37,138	58,507	61,696	63,545	51,843	46,135	0	0	0	54,425
45-49		42	38	31	23	45	12	1	0	0	192
		44,247	43,413	56,674	70,079	63,393	70,552	63,893	0	0	55,416
50-54		46	37	37	15	35	49	9	0	0	228
		38,542	44,437	51,766	54,566	61,959	68,110	73,631	0	0	54,033
55-59		30	49	34	18	29	21	38	16	4	239
		40,830	43,578	51,420	51,494	57,585	66,148	73,582	60,780	67,155	54,944
60-64		14	20	33	25	17	18	13	23	10	173
		44,663	45,411	46,924	50,382	54,541	65,233	59,242	73,449	57,029	54,755
65-69		2	10	8	5	19	7	4	0	1	56
		42,464	48,921	42,586	38,186	45,594	41,062	44,717	0	54,882	44,522
70+		0	0	5	2	3	2	3	1	6	22
		0	0	48,490	37,205	42,122	50,372	49,083	91,170	51,078	49,494
Total Employees		596	340	229	111	154	110	68	40	21	1,669
Average Salary		34,858	50,025	54,657	57,676	57,936	65,288	67,926	68,824	57,155	48,760

Retiree Distribution as of January 1, 2011

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	2	1	3	20,371	6,425	26,796
40-44	0	1	1	0	4,880	4,880
45-49	1	2	3	19,682	31,502	51,184
50-54	4	4	8	109,803	69,833	179,637
55-59	27	21	48	828,337	288,373	1,116,710
60-64	98	50	148	3,896,195	974,328	4,870,522
65-69	102	90	192	3,626,198	1,691,235	5,317,433
70-74	82	90	172	2,648,486	1,415,371	4,063,857
75-79	71	89	160	1,940,713	1,539,853	3,480,567
80-84	85	102	187	2,013,389	1,417,921	3,431,309
85-89	43	101	144	851,388	1,193,519	2,044,907
90-94	16	53	69	252,753	536,274	789,027
95-99	1	20	21	9,000	199,422	208,422
Total	532	624	1,156	16,216,315	9,368,936	25,585,252
Average (Age/Payment)	72.9	77.4	75.3	30,482	15,014	22,133
Frequency Percent	46.0%	54.0%	100.0%	63.4%	36.6%	100.0%

Disabled Retiree Distribution as of January 1, 2011

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	3	0	3	133,501	0	133,501
45-49	6	2	8	213,821	80,278	294,099
50-54	10	4	14	357,355	59,499	416,854
55-59	12	3	15	428,839	107,497	536,337
60-64	34	3	37	1,376,225	70,574	1,446,798
65-69	26	0	26	885,813	0	885,813
70-74	19	1	20	725,967	23,242	749,209
75-79	15	4	19	373,230	89,217	462,448
80-84	10	0	10	244,040	0	244,040
85-89	3	0	3	51,006	0	51,006
90-94	1	0	1	17,631	0	17,631
95-99	0	0	0	0	0	0
<b>Total</b>	<b>139</b>	<b>17</b>	<b>156</b>	<b>4,807,428</b>	<b>430,308</b>	<b>5,237,736</b>
<b>Average (Age/Payment)</b>	<b>66.4</b>	<b>61.6</b>	<b>65.9</b>	<b>34,586</b>	<b>25,312</b>	<b>33,575</b>
<b>Frequency Percent</b>	<b>89.1%</b>	<b>10.9%</b>	<b>100.0%</b>	<b>91.8%</b>	<b>8.2%</b>	<b>100.0%</b>

**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
2011	\$37,396,222	\$6,817,450	\$16,252,351	\$19,384,431	\$5,058,009
2012	34,480,442	7,202,712	16,343,094	20,348,484	9,413,848
2013	35,877,416	7,608,843	16,892,678	21,073,726	9,697,831
2014	37,166,637	8,036,940	17,459,382	21,827,315	10,157,000
2015	38,477,546	8,488,158	18,043,662	22,618,010	10,672,284
2016	39,702,166	8,963,710	18,645,980	23,454,375	11,361,899
2017	40,843,394	9,464,874	19,266,808	24,349,923	12,238,211
2018	41,923,921	9,992,991	19,906,623	25,318,381	13,294,074
2019	42,911,975	10,549,472	20,565,908	26,374,997	14,578,402
2020	43,853,537	11,135,801	21,245,156	27,535,857	16,063,278
2021	44,640,738	11,753,536	21,944,864	28,820,743	17,878,404
2022	45,349,056	12,404,318	22,665,531	30,252,522	19,973,315
2023	45,877,127	13,089,869	23,407,668	31,856,881	22,477,291
2024	46,338,106	13,812,001	24,171,785	33,661,376	25,307,056
2025	46,733,295	14,572,618	24,958,398	35,691,372	28,489,092
2026	47,034,099	15,373,721	25,768,027	37,975,425	32,083,075
2027	47,302,646	16,217,414	26,601,196	40,543,281	36,059,245
2028	47,433,281	17,105,908	27,458,426	43,428,764	40,559,818
2029	47,559,843	18,041,525	28,340,247	46,667,621	45,489,550
2030	47,540,755	19,026,709	29,247,182	50,298,704	51,031,840
2031	47,370,160	20,064,025	30,179,757	54,369,922	57,243,544
2032	47,218,697	21,156,171	31,138,497	58,926,891	64,002,862
2033	46,958,329	22,305,980	32,123,920	64,017,159	71,488,730
2034	46,613,904	23,516,430	33,136,547	69,696,332	79,735,405
2035	46,234,327	24,574,670	34,402,480	76,012,162	88,754,985
2036	45,840,429	25,680,530	35,716,935	83,032,774	98,589,810
2037	45,291,132	26,836,154	37,081,779	90,826,938	109,453,739
2038	44,674,409	28,043,780	3,706,853	98,375,393	85,451,617
2039	44,065,822	29,305,751	3,873,661	105,124,108	94,237,698
2040	45,544,831	30,624,509	4,047,976	112,478,998	101,606,652

amounts in thousands

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

This summary is prepared in accordance with Chapter 32 as of January 1, 2011, and does not take into account any subsequent changes.

### **1. Administration**

Each of the 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 with interest at 3% per annum.

**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 \$729.84 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, 2011.

### **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. The previous actuarial valuation assumed 8%.

### **5. Salary Scale**

It is assumed that salaries including longevity will increase at of 2.0% per year in 2012, 2.5% per year in 2013, and 3.0% per year in 2014. Starting in 2015 the annual increases will be 3.5% per year. The previous actuarial valuation assumed significantly higher rates of annual increases.

### **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). Actuarial assets equal preliminary asset value plus 25% of the difference between market value and preliminary asset value. Preliminary asset value is the previous years' actuarial asset amount increased by net cash flow and expected investment income. The result must be within 20% of market value.

**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 projected 10 years with Scale AA for males and females. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward three years for all disabled members. The assumption for the previous actuarial valuation did not include the 10 years of projected improvement.

**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>
45	0.0000	0.0000	0.01000
46	0.0000	0.0000	0.01000
47	0.0000	0.0000	0.01000
48	0.0000	0.0000	0.01000
49	0.0000	0.0000	0.01000
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:

<u>Attained Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
20	0.0001	0.0010
30	0.0003	0.0030
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

No provision is made for anticipated administrative expenses.

## **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.

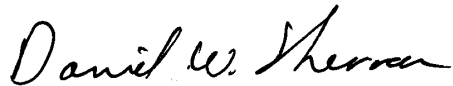
**9. Vested Liability**

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 Newton Retirement System contributing as of January 1, 2011, 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. 11-04086

June 2011

## **BREAKOUTS**

## Breakouts

<b>Code</b>	<b>Department</b>	<b>Participants</b>	<b>Payroll</b>	<b>Normal Cost</b>	<b>Amortization of Unfunded Liability</b>	<b>FYE 2013 Appropriation</b>
001	M.I.S.	7	\$ 560,804	\$ 6,757	\$ 79,714	\$ 86,471
002	Personnel	7	523,250	6,467	95,975	102,442
003	Human Services	7	473,280	3,809	83,631	87,440
005	Jackson Homestead	4	190,965	6,305	12,844	19,149
006	Executive	7	539,242	18,510	81,847	100,357
007	Comptroller	5	367,119	17,034	109,073	126,107
008	Retirement	2	178,421	(1,535)	29,895	28,360
009	Assessing	13	960,719	18,292	172,391	190,683
010	Purchasing	6	319,632	13,499	71,488	84,987
011	Treasury	11	565,188	19,773	88,539	108,312
012	Law	10	842,180	13,943	142,196	156,139
013	City Clerk	6	324,311	8,467	29,615	38,082
014	Clerk of the Board	4	241,712	6,320	52,494	58,814
015	Board of Aldermen (Group 1)	19	185,250	16,010	26,494	42,504
015	Board of Aldermen (Group 2 & 4)	0	-	-	1,060	1,060
016	Building (Group 1)	19	1,198,745	37,778	279,420	317,198
016	Building (Group 2 & 4)	4	218,710	18,231	13,232	31,463
017	Elections	4	238,764	1,813	96,486	98,299
018	Planning	13	744,310	12,862	101,341	114,203
018F	Community Development	7	453,348	4,256	114,526	118,782
018P	Community Preservation	1	79,935	5,980	1,447	7,427
019	Fire (Group 1)	0	-	-	14,588	14,588
019	Fire (Group 2 & 4)	180	11,787,161	774,217	2,401,945	3,176,162
019A	Fire - Civilian Personnel	7	404,704	13,466	75,040	88,506
19S	Fire (Retired under "Stack" Bill)	0	-	-	139,158	139,158
020	Police (Group 2 & 4)	138	10,211,675	607,374	2,237,546	2,844,920
020	Police (Group 1)	0	-	-	24,703	24,703
022	Other	1	65,953	3,107	9,584	12,691

## Breakouts

<b>Code</b>	<b>Department</b>	<b>Participants</b>	<b>Payroll</b>	<b>Normal Cost</b>	<b>Amortization of Unfunded Liability</b>	<b>FYE 2013 Appropriation</b>
020A	Police - Civilian Personnel (Group 1)	35	\$ 1,887,271	\$ 7,252	\$ 157,382	\$ 164,634
021	Police School Traffic Supervisors	14	471,534	20,311	151,398	171,709
023	Inspectional Services (Group 1)	10	672,620	20,562	122,427	142,989
023	Inspectional Services (Group 2 & 4)	2	137,044	9,006	30,164	39,170
025	Health	38	2,058,809	85,292	285,146	370,438
026	Veterans	2	140,125	9,553	44,001	53,554
027	Library	57	2,728,255	87,209	497,640	584,849
028	School Custodian	83	4,209,679	111,750	806,018	917,768
029	School Cafeteria	10	302,307	17,551	104,939	122,490
030	School Teacher Aides (Group 1)	577	16,898,126	386,871	772,453	1,159,324
030	School Teacher Aides (Group 2 & 4)	0	-	-	184	184
031	School Clerical	112	6,556,398	254,132	1,107,539	1,361,671
031A	School Committee	0	-	-	2,719	2,719
032	Recreation	32	1,914,031	30,128	516,740	546,868
033	Engineering	14	1,053,229	24,592	198,670	223,262
034	Public Works	108	5,763,452	192,846	1,315,932	1,508,778
034A	Storm Water Management	6	319,438	4,341	37,470	41,811
034B	Man Highway Crew	6	254,211	4,833	2,803	7,636
035	Water/Sewer	11	595,474	17,518	92,312	109,830
035S	Sewer Personnel (Group 1)	25	1,309,912	13,748	183,934	197,682
035S	Sewer Personnel (Group 2 & 4)	0	-	-	277	277
035W	Water Personnel	26	1,268,619	30,932	187,982	218,914
036	Newton Housing Authority	19	1,162,164	22,442	155,088	177,530
<b>TOTAL</b>		<b>1,669</b>	<b>\$ 81,378,076</b>	<b>\$ 2,983,604</b>	<b>\$ 13,359,490</b>	<b>\$ 16,343,094</b>