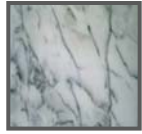


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# Northampton Retirement System



## Actuarial Valuation January 1, 2010



STONE  
CONSULTING, INC.

October 15, 2010

Northampton Retirement Board  
City Hall, Room 3  
Northampton, MA 01060

Dear Northampton Retirement Board:

Stone Consulting, Inc. has performed a January 1, 2010 actuarial valuation of the Northampton Retirement System. This valuation and report was prepared using generally accepted actuarial principles and practices and meets the parameters set by the Governmental Accounting Standards Board Statement (GASB) No. 25. To the best of our knowledge, this report is complete and accurate, and the assumptions used represent our best estimate of anticipated experience of the system.

As part of performing the valuation, Stone Consulting, Inc. was furnished member data by the Northampton Retirement System's administrative staff. Although examined for general reasonableness, the data was not audited by the actuary. In addition, the administrative staff furnished financial statements that were not audited by the actuary or by the plan's auditors.

The funding objective of the plan is to fully fund the system while attempting to maintain a stable contribution amount for the upcoming fiscal year that is consistent with prior funding schedules or if employer finances allow it, to increase the contribution amount. This funding objective is being met.

We anticipate over time the contribution amount to stay relatively level as a percentage of payroll. The contribution rate is determined by adding the normal cost plus an amortization of the unfunded actuarial accrued liability. The normal cost is expected to remain at a level percentage of payroll. The number of years of the amortization and/or the rate of increase of the amortization is adjusted to maintain a stable contribution level for the upcoming fiscal year. The length of the funding schedule contained in this actuarial valuation report is seventeen years (fully funded by 2028) and the amortization increase is 3.61% amortization. The amortization increase cannot exceed 4.50%

annually. The maximum length of the amortization is until Fiscal 2030. These limits are contained in Chapter 32 of the Massachusetts General Laws. Recent legislation added Section 22F to Chapter 32 which changed this limit to 4.00% and Fiscal 2040 respectively.

The contribution amount for Fiscal Year 2012 is \$4,379,720 that is \$36,085 more than the anticipated contribution amount from the prior funding schedule. PERAC and GASB guidelines indicate that actuarial valuations should be conducted at least every other year. The Northampton Retirement Board conducted their previous actuarial valuation effective January 1, 2008. This satisfies these guidelines.

We are pleased to present the results of this valuation. If the Retirement Board has any questions on the content of this report, we would be glad to respond. Please note that this report is meant to be used in its entirety. Use of excerpts of this report may result in inaccurate or misleading understanding of the results.

Respectfully submitted,

*STONE CONSULTING, INC.*

Actuaries for the Plan

Lawrence B. Stone

Member, American Academy of Actuaries





# NORTHAMPTON RETIREMENT SYSTEM

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## TABLE OF CONTENTS

	<i>PAGE</i>
Certification Letter	
Introduction.....	2
January 1, 2010 Valuation Summary.....	2
January 1, 2010 Actuarial Valuation Results.....	5
Demographic Information.....	7
Distribution of Plan Members.....	9
Valuation Methodology .....	11
Normal Cost .....	11
Actuarial Accrued Liability and Funded Status.....	12
Development of Funding Schedule.....	14
Funding Schedule .....	15
Assumptions and Methodology Summary .....	16
Assets .....	18
Calculation of Valuation Assets .....	19
Disclosure Information Under GASB Statement No. 25.....	20
PERAC Information Disclosure .....	21
Actuarial Methods and Assumptions.....	22
Summary of Principal Provisions .....	26
Glossary of Terms.....	30
Acknowledgement of Qualification.....	31





# NORTHAMPTON RETIREMENT SYSTEM

## INTRODUCTION

This report presents the results of the actuarial valuation of the Northampton Retirement System. The valuation was performed at the request of the Retirement Board as of January 1, 2010 for the purpose of determining the contribution requirements for Fiscal Year 2012 and beyond. The contribution requirements are based on:

- The financial condition of the system as of December 31, 2009
- The benefit provisions of M.G.L. Chapter 32 and related statutes;
- The demographics of members in the system (i.e., active and inactive participants, retirees and beneficiaries as of January 1, 2010);
- Economic assumptions regarding salary increases and investment earnings; and
- Other actuarial assumptions (i.e., withdrawals, retirement, death, etc.)

## JANUARY 1, 2010 VALUATION SUMMARY

	January 1, 2010	January 1, 2008	Change
<b>Contribution Fiscal 2012</b>	\$4,379,720	\$4,343,635	\$36,085
<b>Funding Schedule Length</b>	17 years	17 years	0 years
<b>Amortization Increase</b>	3.61%	3.61%	0.00%
<b>Funding Ratio</b>	65%	66%	-1%
<b>Interest Rate Assumption</b>	7.75%	7.75%	0.00%
<b>Salary Increase Rate Assumption</b>	7%* first 8 years of employment, 4%* thereafter (Approximately 4.50%)	7% first 8 years of employment, 4% thereafter (Approximately 4.50%)	0.00% 3% less for 2010 and 2011, and 2% less for 2012

\*each percentage lowed by 3% for 2010 and 2011 and 2% for 2012





## NORTHAMPTON RETIREMENT SYSTEM

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- The Fiscal Year 2012 contribution is \$36,085 more than the planned 2012 contribution. The System experienced a \$16.6 million net investment loss over the expected market value return during calendar years 2008 and 2009. Stone Consulting, with agreement from the Retirement Board, values assets using an asset smoothing technique. In this approach, asset gains and losses are recognized over a four- year period. The purpose of this approach is to avoid wide swings in asset value from one year to the next. This valuation recognizes \$3.2 million in cumulative actuarial asset gains that were previously unrecognized in the 2008 valuation plus \$(9,666,724) net losses from the 2008 and 2009 calendar years.

The System experienced a 2.8% annual return on the actuarial value of assets versus our assumption of a 7.75% return. The market value of assets experienced an annual rate of return of (4.1%). System's asset portfolio, effective December 31, 2009 was approximately 52% equities and 48% fixed income and short-term investments. The interest rate assumption was maintained at 7.75% to reflect anticipated market performance.

- We have modified the salary increase rate for the next 3 years by decreasing the expected increases by 3% for 2 years and 2% for the third year. For example, an employee in their first year of service would be expected to receive an increase of 4% (7% minus 3%) instead of 7% in the next year. This change decreased the accrued liability by \$2.5 million. Total compensation changed by 3.7% over the prior valuation; however average annual compensation (compensation divided by number of active members) changed by 7.8%, 3.8% per year. This assumption is based on expected future experience.
- The funding level of the Northampton Retirement System is 65% compared to 66% for the January 1, 2008 actuarial valuation. Chapter 68 requires a minimum funding ratio of 65% along with additional criteria in order to avoid being labeled an “under performing system”. If you are considered an “under performing system” the system assets are required to be transferred to PRIT. The funding level is estimated to be in the third quartile of Massachusetts' Contributory Retirement Systems.





## NORTHAMPTON RETIREMENT SYSTEM

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The schedule length is seventeen (17) years. The maximum period permitted under Chapter 32 of the Massachusetts General Laws is 19 years (2030). The amortization percentage stayed the same as the prior valuation, while maintaining a FY2012 contribution level consistent with the prior valuation. The maximum amortization permitted under Chapter 32 is 4.5%.

- Non-economic assumptions were changed from the January 1, 2008 actuarial valuation. The mortality assumption is based on the RP2000 Table projected 10 years with Scale AA and the retirement age was extended to 70 for Groups 1 and 2. These changes increased the accrued liability by \$400,000.





# NORTHAMPTON RETIREMENT SYSTEM

## JANUARY 1, 2010 ACTUARIAL VALUATION RESULTS

	January 1, 2010	January 1, 2008	Percentage Change
<b>Funding</b>			
• Contribution for Fiscal 2012	\$4,379,720		
• Contribution for Fiscal 2012 based on current schedule		\$4,343,635	1%
<b>Members *</b>			
• <i>Actives</i>			
a. Number	602	626	-3.8%
b. Annual Compensation	\$22,555,669	\$21,753,698	3.7%
c. Average Annual Compensation	\$37,468	\$34,750	7.8%
d. Average Attained Age	47.0	45.9	2.4%
e. Average Past Service	11.4	10.7	6.5%
• <i>Retired, Disabled and Beneficiaries</i>			
a. Number	342	331	3.3%
b. Total Benefits*	\$6,301,221	5,697,143	10.6%
c. Average Benefits*	\$ 18,425	\$17,212	7.0%
c. Average Age	70.3	69.6	1.0%
• <i>Inactives</i>			
a. Number	168	141	19.1%
<b>Normal Cost</b>			
a. Total Normal Cost as of January 1, 2010	\$2,734,816	\$2,744,360	-0.3%
b. Less Expected Members' Contributions	<u>1,928,274</u>	<u>1,867,145</u>	3.3%
c. Normal Cost to be funded by the Municipality	\$806,542	\$877,215	-8.1%
d. Adjustment to July 1, 2011	55,050	59,873	-8.1%
e. Administrative Expense Assumption	<u>153,274</u>	<u>219,029</u>	-30.0%
f. Normal Cost Adjusted to July 1, 2011	\$1,014,866	\$1,156,117	-12.2%

\*Excluding State reimbursed COLA





## NORTHAMPTON RETIREMENT SYSTEM

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### SUMMARY OF JANUARY 1, 2010 VALUATION (Continued)

	January 1, 2010	January 1, 2008	Percentage Change
<b>Actuarial Accrued Liability as of January 1, 2010</b>			
a. Active Members	\$52,230,978	\$51,298,467	1.8%
b. Inactive Members	1,752,694	876,041	100.1%
c. Retired Members and Beneficiaries	<u>62,653,639</u>	<u>56,671,051</u>	10.6%
d. Total	\$116,637,311	\$108,845,559	7.2%
<b>Unfunded Actuarial Accrued Liability</b>			
a. Actuarial Accrued Liability as of January 1, 2010	\$116,637,311	\$108,845,559	7.2%
b. Less Actuarial Value of Assets as of January 1, 2010	<u>76,045,491</u>	<u>71,799,314</u>	5.9%
c. Unfunded Actuarial Accrued Liability as of January 1, 2010	\$40,591,820	\$37,046,245	9.6%
d. Adjustment to July 1, 2011	<u>\$ 1,829,560</u>	<u>\$1,977,348</u>	
e. Unfunded Actuarial Accrued Liability as of July 1, 2011	\$42,421,380	\$39,023,593	





# NORTHAMPTON RETIREMENT SYSTEM

## DEMOGRAPHIC INFORMATION

<b>Members</b>	<b>January 1, 2010</b>	<b>Percentage Change</b>
• <b>Actives</b>		
a. Number	602	-3.8%
b. Annual Compensation	\$22,555,669	3.7%
c. Average Annual Compensation	\$37,468	7.8%
d. Average Attained Age	47.0	2.4%
e. Average Past Service	11.4	6.5%
• <b>Retired, Disabled and Beneficiaries</b>		
a. Number	342	3.3%
b. Total Annual Retirement Allowance excluding State-reimbursed COLA	\$6,301,221	10.6%
• <b>Inactives</b>		
a. Number	168	19.1%

- The data was supplied by the Northampton Retirement Board. The data was checked under broad parameters for reasonableness. With the assistance of the staff of the Northampton Retirement Board, we were able to develop a database sufficient for valuation purposes.
- Payroll changed by 3.7% over the course of the past year. Average annual compensation changed by 7.8% over the same time period (3.8% per year).
- The salary increase assumption includes general wage adjustments, step increases, and promotional increases.





## NORTHAMPTON RETIREMENT SYSTEM

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### *HISTORY OF ACTIVE PARTICIPANTS*

<b>Valuation Year</b>	<b>Number</b>	<b>Average Age</b>	<b>Average Past Service</b>	<b>Average Ann'l Compensation</b>
2010	602	47.0	11.4	\$37,468
2008	626	45.9	10.7	\$34,750
2007	603	46.0	10.8	\$33,724
2005	578	45.3	10.4	\$31,350
2003	615	45.8	10.6	\$29,635
2000	580	45.4	10.6	\$27,298
1998	544	45.5	10.3	\$25,784

- Employee age has increased by 1.5 years and service has increased by 1.1 years over the course of the past twelve years. Average annual compensation has grown by 45.3% (3.2% annually) over the same time period.

The charts on the following pages summarize demographic information regarding active and retiree members.



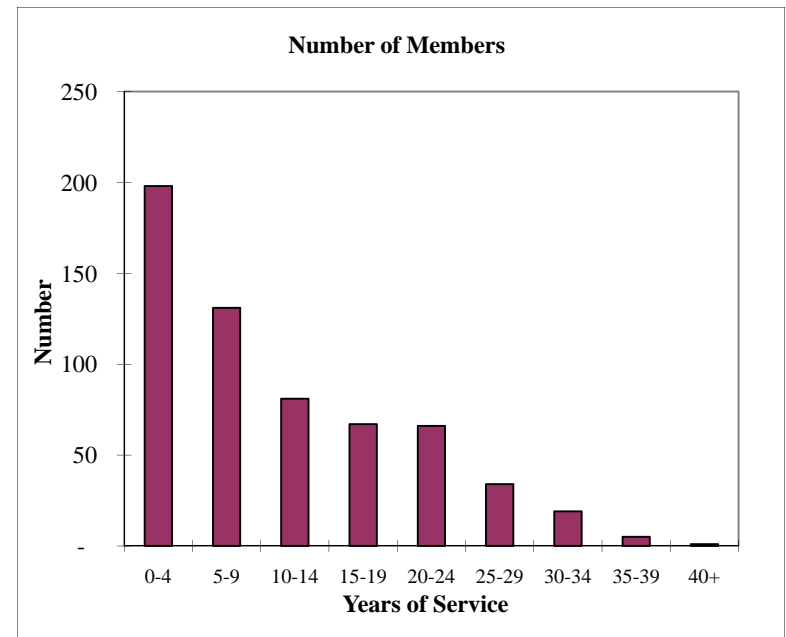
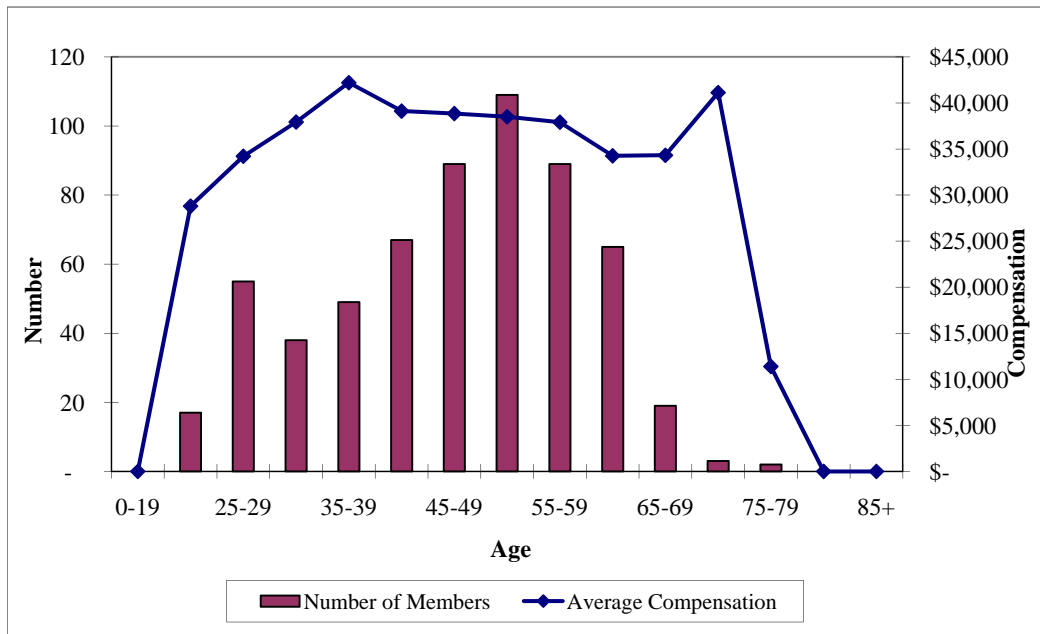


## NORTHAMPTON CONTRIBUTORY RETIREMENT SYSTEM

### Distribution of Plan Members as of January 1, 2010

#### Active Members

AGE	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 + Years	Total	Total Compensation	Average Compensation
0-19	-	-	-	-	-	-	-	-	-	-	\$ -	\$ -
20-24	17	-	-	-	-	-	-	-	-	17	489,631	28,802
25-29	47	8	-	-	-	-	-	-	-	55	1,881,966	34,218
30-34	18	14	5	1	-	-	-	-	-	38	1,441,509	37,934
35-39	13	17	12	7	-	-	-	-	-	49	2,067,896	42,202
40-44	22	11	14	13	7	-	-	-	-	67	2,621,220	39,123
45-49	28	22	8	11	14	5	1	-	-	89	3,457,379	38,847
50-54	26	24	18	7	16	14	4	-	-	109	4,196,974	38,504
55-59	14	16	9	14	19	7	7	3	-	89	3,373,896	37,909
60-64	11	11	10	12	7	7	5	1	1	65	2,226,906	34,260
65-69	1	8	3	2	3	1	1	-	-	19	652,138	34,323
70-74	-	-	2	-	-	-	-	1	-	3	123,375	41,125
75-79	1	-	-	-	-	-	1	-	-	2	22,779	11,390
80-84	-	-	-	-	-	-	-	-	-	-	-	-
85+	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>198</b>	<b>131</b>	<b>81</b>	<b>67</b>	<b>66</b>	<b>34</b>	<b>19</b>	<b>5</b>	<b>1</b>	<b>602</b>	<b>\$ 22,555,669</b>	<b>\$ 37,468</b>



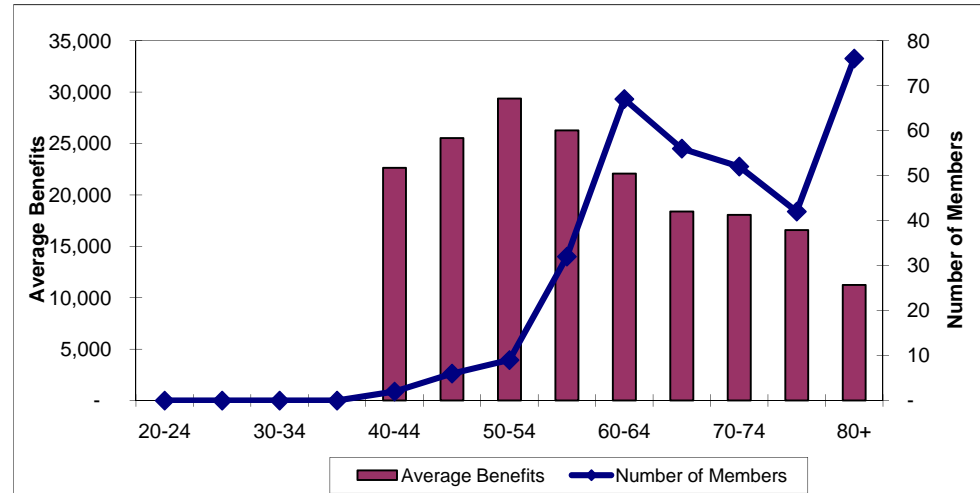


**NORTHAMPTON CONTRIBUTORY RETIREMENT SYSTEM**  
**Distribution of Plan Members as of January 1, 2010**  
**Retired Members**

<u>Disabled Member</u>			
Age	Number	Average Benefit	Total Benefit
20-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	1	33,869	33,869
45-49	4	30,607	122,430
50-54	4	34,954	139,817
55-59	6	31,001	186,007
60-64	8	27,601	220,809
65-69	7	20,551	143,855
70-74	4	22,563	90,251
75-79	-	-	-
80+	2	14,744	29,488
<b>TOTAL</b>	<b>36</b>	<b>\$ 26,848</b>	<b>\$ 966,525</b>

<u>Retired Members and Beneficiaries</u>			
Age	Number	Average Benefit	Total Benefit
20-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	1	11,394	11,394
45-49	2	15,370	30,741
50-54	5	24,905	124,523
55-59	26	25,172	654,467
60-64	59	21,321	1,257,963
65-69	49	18,078	885,827
70-74	48	17,680	848,623
75-79	42	16,578	696,261
80+	74	11,147	824,898
<b>TOTAL</b>	<b>306</b>	<b>\$ 17,434</b>	<b>\$ 5,334,696</b>

<u>Total</u>			
Age	Number	Average Benefit	Total Benefit
20-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	-	-	-
40-44	2	22,632	45,263
45-49	6	25,528	153,170
50-54	9	29,371	264,340
55-59	32	26,265	840,473
60-64	67	22,071	1,478,772
65-69	56	18,387	1,029,682
70-74	52	18,055	938,874
75-79	42	16,578	696,261
80+	76	11,242	854,386
<b>TOTAL</b>	<b>342</b>	<b>\$ 18,425</b>	<b>\$ 6,301,221</b>



Benefits shown are net of State reimbursed COLA.



# NORTHAMPTON RETIREMENT SYSTEM

## VALUATION METHODOLOGY

Stone Consulting, Inc. used the Entry Age Normal actuarial funding method in this actuarial valuation. The use of the Entry Age Normal actuarial funding method is consistent with the requirements of Chapter 32 of the Massachusetts General Laws.

### NORMAL COST

		<b>January 1, 2010</b>	<b>% of Payroll*</b>
Gross Normal Cost (GNC)	\$	2,734,816	12.1%
Employees Contribution		<u>1,928,274</u>	<u>8.5%</u>
Net Normal Cost (NNC)	\$	806,542	3.6%
Adjusted to Beginning of Fiscal Year 2012	\$	55,050	
Administrative Expense	\$	<u>153,274</u>	0.7%
Adjusted Net Normal Cost With Admin. Expense	\$	1,014,866	

\*Payroll paid in 2009 for employees as of January 1, 2010 is \$22,555,669. Payroll for new hires in 2009 was annualized.

- The gross normal cost (GNC) is the “price” of benefits accruing in the current year if the assumptions underlying the normal cost were realized.
- An individual normal cost represents that part of the cost of a member’s future benefits that 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 GNC to determine employer normal cost, or net normal cost (NNC).
- Administrative expenses added to the NNC. The administrative expense does not include investment manager and custodial fees. These fees are considered part of the interest rate assumption that is net of fees.





## NORTHAMPTON RETIREMENT SYSTEM

### ACTUARIAL ACCRUED LIABILITY AND FUNDED STATUS

		<b>January 1, 2010</b>	<b>Percentage Change</b>
<b>Active Actuarial Accrued Liability</b>		\$ 52,230,978	1.8%
Superannuation	\$ 43,933,699		
Death	\$ 1,436,602		
Disability	\$ 5,101,098		
Termination	\$ 1,759,579		
<b>Retiree, Inactive, Survivor and Beneficiary Actuarial Accrued Liability</b>		<u>64,406,333</u>	11.9%
Retirees and Beneficiaries	\$ 51,264,248		
Disabled	\$ 11,389,391		
Inactive	\$ 1,752,694		
<b>Total Actuarial Accrued Liability (AAL)</b>		\$ <u>116,637,311</u>	7.2%
<b>Actuarial Value of Assets (AVA)</b>		\$ <u>76,045,491</u>	5.9%
<b>Unfunded Actuarial Accrued Liability</b>		\$ 40,591,820	9.6%
<b>Funded Ratio (AVA / AAL)</b>			
2010 (7.75% interest rate):	65%		
2008 (7.75% interest rate):	66%		

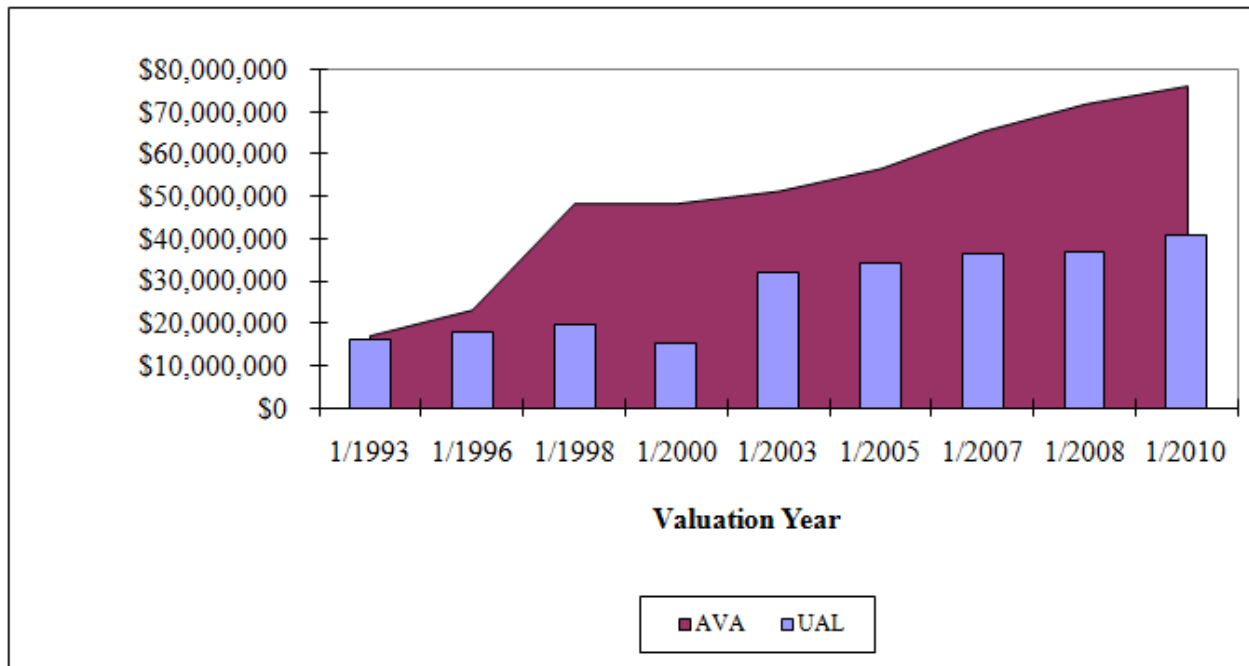
- Actuarial Accrued Liability (AAL) is the “price” of benefits attributable to benefits earned in past years, or in other words, represents today’s value of all benefits earned by active and inactive members.
- The total AAL is \$116,637,311. This along with an actuarial value of assets of \$76,045,491 produces a funded status of 65%. This compares to a funded status of 66% for the 2008 valuation.

The chart on the following page is a history of the unfunded actuarial accrued liability (UAL) and the valuation assets (AVA) over the course of the past nine actuarial valuations.



# NORTHAMPTON RETIREMENT SYSTEM

## HISTORY OF ACTUARIAL VALUATION OF ASSETS (AVA) AND UNFUNDED ACTUARIAL ACCRUED LIABILITY (UAL)





## NORTHAMPTON RETIREMENT SYSTEM

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### DEVELOPMENT OF FUNDING SCHEDULE

Net Employer Normal Cost for Fiscal 2012	\$	1,014,866
Amortization	\$	3,337,695
Adjustment to August 1st		<u>27,159</u>
Total Appropriation required for Fiscal 2012	\$	4,379,720

- The funding schedule is composed of the normal cost, and the amortization of the actuarial accrued unfunded liability and is adjusted by the administrative expense assumption. The contribution is assumed to be made on August 1st of the Fiscal Year.
- The contribution amount for Fiscal 2012 is \$4,379,720. The funding schedule is presented on page 15. The schedule's length is seventeen (17) years (for the fresh start base) which is the same length as the January 1, 2008 valuation schedule's length. The maximum funding schedule length allowed by Chapter 32 of the Massachusetts General Laws is twenty-nine years to 2040.
- In developing the funding schedule, we used a fresh start approach in which the unfunded actuarial accrued liability (except for the liability associated with past early retirement incentives) is reamortized instead of maintaining the existing amortization amount and separately amortizing the actuarial gain or loss. The use of a fresh-start approach results in a funding schedule in which the changes in contribution amounts from year to year are more consistent. The amortization percentage stayed the same as the prior valuation, 3.61%. The maximum amortization increase allowed under Chapter 32 is 4.50% unless the schedule uses Section 22F in which case it is 4.00%.





## NORTHAMPTON RETIREMENT SYSTEM FUNDING SCHEDULE

Fiscal Year	Normal Cost	Unfunded Liability	Funding Amortization of UAL	Schedule Contribution	Adjusted for August 1 Payments
2012	1,014,866	42,421,380	3,337,695	4,352,561	4,379,720
2013	1,060,535	42,112,671	3,460,184	4,520,719	4,548,927
2014	1,108,259	41,648,054	3,587,186	4,695,445	4,724,743
2015	1,158,131	41,010,585	3,718,866	4,876,997	4,907,428
2016	1,210,247	40,181,828	3,855,398	5,065,644	5,097,252
2017	1,264,708	39,141,728	3,996,961	5,261,669	5,294,500
2018	1,321,620	37,868,486	4,143,742	5,465,362	5,499,464
2019	1,381,092	36,338,412	4,295,934	5,677,027	5,712,450
2020	1,443,242	34,525,769	4,453,738	5,896,979	5,933,774
2021	1,508,187	32,402,614	4,617,360	6,125,547	6,163,769
2022	1,576,056	29,938,612	4,787,017	6,363,073	6,402,776
2023	1,646,978	27,100,843	4,962,932	6,609,911	6,651,154
2024	1,721,092	23,853,599	5,145,338	6,866,430	6,909,274
2025	1,798,542	20,158,152	5,334,474	7,133,015	7,177,523
2026	1,879,476	15,972,513	5,530,591	7,410,067	7,456,303
2027	1,964,052	11,251,172	5,733,946	7,697,999	7,746,032
2028	2,052,435	5,944,810	5,944,810	7,997,245	8,047,145
2029	2,144,794	-	-	2,144,794	2,158,177
2030	2,241,310	-	-	2,241,310	2,255,295

### Amortization of Unfunded Liability as of July 1, 2011

Year	Type	Original Amort. Amount	Percentage Increasing	Original # of Years	Current Amort. Amount	Years Remaining
2005	ERI-Housing	7,992	4.50%	24	10,876	17
2006	ERI-City	164,100	4.50%	23	213,701	17
2012	Fresh Start	3,113,118	3.61%	17	3,113,118	17

Notes on Amortization of Unfunded Liability

**Year** is the year the amortization base was established.

**Type** is the reason for the creation of the base. Examples are Gain/(Loss) or Fresh Start.

**Original Amortization Amount** is the annual amortization amount when the base was established.

**Percentage Increasing** is the percentage that the Original Amortization Amount increases per year.

**Original # of Years** is the number of years over which the base is being amortized.

**Current Amortization Amount** is the amortization payment amount for this year.

**Years Remaining** is the number of years left to amortize the base.



# NORTHAMPTON RETIREMENT SYSTEM

## ASSUMPTIONS AND METHODOLOGY SUMMARY

The principal actuarial assumptions used in this valuation are the same as the assumptions used in the previous valuation, except where noted, and are summarized in the following table:

<u>Assumption</u>	<u>January 1, 2010 Valuation</u>
Interest Rate	7.75% (same as prior valuation)
Salary Increase	Assumed 7% increases during the first eight years of employment and 4% thereafter. (same as prior valuation) except for next 3 years, reduced by 3% (2 years), 2% (3 <sup>rd</sup> year)
COLA	3% of \$12,000
COLA Frequency	Granted every year
Mortality	RP-2000 table projected 10 years with Scale AA. For members retired under an Accidental Disability (job-related), 40% of deaths are assumed to be from the same cause as the disability. Disabled mortality RP-2000 table projected 10 years with Scale AA, ages set forward 2 years. (Prior valuation used RP2000 without projection.)
Overall Disability	<u>Groups 1 and 2</u> 45% ordinary disability 55% accidental disability  <u>Group 4</u> 10% ordinary disability 90% accidental disability
Retirement Rates	<u>Groups 1 and 2</u> Ages 55 – 70 (previously 65) <u>Group 4</u> Ages 50 – 65





## NORTHAMPTON RETIREMENT SYSTEM

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Administrative Expense      \$153,274 budget estimated for FY 2012  
provided by Northampton Retirement  
Board.





## NORTHAMPTON RETIREMENT SYSTEM

### ASSETS

a.	Cash	\$	(115,165.07)
b.	Fixed Income		31,045,332.98
c.	Equities		36,322,869.69
d.	Pooled Alternative Investments		98,981.43
e.	PRIT Absolute		2,684,886.08
<hr/>			
f.	Sub-Total:	\$	70,036,905.11
g.	Interest Due and Accrued		286,593.03
h.	Accounts Receivable		12,485.87
i.	Accounts Payable		(26,435.47)
<hr/>			
j.	Sub-Total:	\$	272,643.43
<hr/>			
k.	Market Value of Assets [(f) + (j)]	\$	70,309,548.54

- We were furnished with the System's annual report by the Board. The market value of assets as of December 31, 2009 (adjusted for interest due and accrued, payables and receivables) is \$70,309,548.54.
- The asset allocation as of December 31, 2009 is approximately 48% fixed income, cash, receivables, payables and short-term investments and 52% equities.
- Historically, 10 to 11% has been the expected long-term rate of return for equities, and 6 to 7% has been the expected long-term rate of return for fixed income securities. Many economists and investment professionals are projecting lower returns of 6.25 to 9.00% for equities and 3.65 to 6.00% for fixed income securities. In light of these projections, as well as historical investment returns, the 7.75% interest rate assumption is within the reasonable assumption range. We encourage close monitoring for changes in investment performance against expectations.





# NORTHAMPTON RETIREMENT SYSTEM

## CALCULATION OF VALUATION ASSETS as of January 1, 2010 4-Year Phase-In of Asset Gains and Losses

1.	Market value of assets including receivable/payable as of January 1, 2010				\$70,309,549
2.	Phase-in of asset gains and losses				
		<b>Plan</b>	<b>Original</b>	<b>Percent</b>	<b>Amount</b>
		<b>Year</b>	<b>Amount</b>	<b>Unrecognized</b>	<b>Unrecognized</b>
		(1)	(2)	(3)	(2) x (3)
a.	2009		\$5,415,781	75%	\$4,061,836
b.	2008		(\$22,041,338)	50%	(\$11,020,669)
c.	2007		\$4,891,563	25%	\$1,222,891
d.	Total				<u>(\$5,735,942)</u>
3.	Valuation assets without corridor as of January 1, 2010 (1. - 2.d.)				\$76,045,491
4.	Corridor Check				
a.	90% of Market Value				\$63,278,594
b.	110% of Market Value				\$77,340,503
5.	Valuation assets with corridor as of January 1, 2010				\$76,045,491
6.	Calculation of return on valuation assets				
a.	Valuation assets as of January 1, 2008				\$71,799,314
b.	ER contribs + EE contribs - Ben Pymts - Expenses				210,911
c.	Actual return on valuation assets 5. - (6.a. + 6.b.)				\$4,035,266
d.	Weighted value of valuation assets				\$71,487,348
e.	Return on valuation assets 6.c. / 6.d.				5.6%
f.	Annualized return on assets				2.8%





# NORTHAMPTON RETIREMENT SYSTEM

## DISCLOSURE INFORMATION UNDER GASB STATEMENT 25

### *Schedules of Funding Progress*

(Dollars In Thousands)

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets</b>	<b>Actuarial Accrued Liability</b>	<b>Unfunded AAL (UAAL)</b>	<b>Funded Ratio</b>	<b>Covered Payroll</b>	<b>UAAL as a % of Covered Payroll</b>
	<b>A</b>	<b>B</b>	<b>B-A</b>	<b>A/B</b>	<b>C</b>	<b>(B-A)/C</b>
1/1/2010	\$76,045	\$116,637	\$40,592	65%	\$22,556	180%
1/1/2008	\$71,799	\$108,846	\$37,046	66%	\$21,754	170%
1/1/2007	\$65,385	\$101,978	\$36,593	64%	\$20,336	180%
1/1/2005	\$56,569	\$90,828	\$34,258	62%	\$18,120	161%
1/1/2003	\$51,244	\$83,720	\$32,026	62%	\$18,226	176%

### *Notes to Schedules*

Additional information as of the latest actuarial valuation follows:

Valuation date 1/1/2010

Actuarial cost method Entry Age Normal

Amortization method Approximate level percent of payroll  
Closed

Remaining amortization period 17 years

Asset valuation method Market value adjusted by accounts payable and receivables adjusted to phase in over 4 years investment gains or losses above or below the expected rate of investment return. The actuarial value of assets must be no less than 90% of the adjusted market value nor more than 110% of the adjusted market value. Market value of assets is \$70,309,549.

Actuarial assumptions:

Investment Rate of Return 7.75% per year  
Projected Salary Increases 4.50% per year





# NORTHAMPTON RETIREMENT SYSTEM

## PERAC INFORMATION DISCLOSURE

The most recent actuarial valuation of the System was prepared by Stone Consulting, Inc. as of January 1, 2010  
 The normal cost for employees on that date was: \$1,928,274 8.5% of payroll  
 The normal cost for the employer was: \$806,542 3.6% of payroll

The actuarial liability for active members was: \$52,230,978  
 The actuarial liability for retired members was (includes inactives): \$64,406,333  
 Total actuarial accrued liability: \$116,637,311  
 System assets as of that date: 76,045,491  
 Unfunded actuarial accrued liability: \$40,591,820

The ratio of system's assets to total actuarial liability was: 65%

As of that date the total covered employee payroll was: \$22,555,669

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

Investment Return: 7.75% per annum  
 Rate of Salary Increase: 4.50% per annum on average (7% for first yrs. of svc., 4% thereafter, less 3% for 2010 & 2011, 2% for 2012)

### SCHEDULE OF FUNDING PROGRESS (Dollars in \$000's)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
1/1/2010	\$76,045	\$116,637	\$40,592	65%	\$22,556	180%
1/1/2008	\$71,799	\$108,846	\$37,046	66%	\$21,754	170%
1/1/2007	\$65,385	\$101,978	\$36,593	64%	\$20,336	180%
1/1/2005	\$56,569	\$90,828	\$34,258	62%	\$18,120	161%
1/1/2003	\$51,244	\$83,720	\$32,026	62%	\$18,226	176%



## NORTHAMPTON RETIREMENT SYSTEM

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### ACTUARIAL METHODS AND ASSUMPTIONS

#### Actuarial Methods

- 1. Actuarial Cost Method**

The Entry Age Normal Actuarial Cost Method has been used in this valuation. Under this method, the normal cost is the amount calculated as the level percentage of compensation necessary to fully fund the prospective benefits from each member's entry age to retirement age.

The actuarial accrued liability represents the theoretical accumulation of all prior years' normal costs for the plan members as if the program had always been in effect. The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over plan assets.
- 2. Asset Valuation Method**

Market value of assets (adjusted by payables and receivables) adjusted to phase in investment gains or losses above or below the expected rate of investment return over a four-year rolling period. The phase-in is 25% for year one, 50% for year two, 75% for year three and 100% for year four. The actuarial value of assets may be no less than 90%, or more than 110% of the market value of assets plus payables and receivables.
- 3. Fiscal Year Adjustment**

The actuarial results are adjusted by the valuation interest rate and salary scale to the beginning of Fiscal Year 2012. The unfunded actuarial accrued liability is rolled forward with normal cost and further adjusted by anticipated contributions and interest.

#### Actuarial Assumptions

- 1. Investment Return**

7.75% per year net of investment expenses. (Same as the prior valuation)
- 2. Salary Increases**

Assumed 7% increases during the first eight years of employment and 4% per year thereafter. (Same as the prior valuation) except for 2010 & 2011 years reduced by 3% and 2012 reduced by 2%.



# NORTHAMPTON RETIREMENT SYSTEM

## ACTUARIAL METHODS AND ASSUMPTIONS (Continued)

### 3. Withdrawal Prior to Retirement

The rates shown at the following sample ages illustrate the withdrawal assumption. Withdrawal rates are set to zero if the retirement rate at that age is nonzero.

<i>Age</i>	<b>Rate of Withdrawal</b>	
	<i>Group 1 and 2</i>	<i>Group 4</i>
20	37.51%	3.15%
25	28.23%	2.85%
30	17.35%	2.48%
35	10.07%	1.88%
40	7.21%	0.84%
45	5.68%	0.06%
50	4.57%	0.00%
55	0.00%	0.00%

### 4. Disability Prior to Retirement

The rates shown at the following sample ages illustrate the assumption regarding the incidence of disability:

<i>Age</i>	<b>Rate of Disability</b>	
	<i>Group 1 and 2</i>	<i>Group 4</i>
20	0.03%	0.10%
25	0.04%	0.12%
30	0.06%	0.18%
35	0.08%	0.26%
40	0.12%	0.38%
45	0.18%	0.58%
50	0.31%	0.98%
55	0.50%	1.60%
60	0.61%	1.97%

Disability is assumed to be 45% ordinary and 55% accidental for Group 1 and 2 and 10% ordinary and 90% accidental for Group 4.





# NORTHAMPTON RETIREMENT SYSTEM

## ACTUARIAL METHODS AND ASSUMPTIONS (Continued)

### 5. Rates of Retirement

The rates shown at the following ages illustrate the assumption regarding the incidence of retirement, once the member has achieved 10 years of service:

Age	Rates of Retirement	
	Group 1 and 2	Group 4
50	N/A	2%
51	N/A	2%
52	N/A	2%
53	N/A	2%
54	N/A	2%
55	10%	5%
56	3%	5%
57	3%	5%
58	3%	5%
59	5%	5%
60	5%	10%
61	5%	10%
62	10%	20%
63	10%	20%
64	10%	20%
65	50%	100%
66	35%	N/A
67	35%	N/A
68	35%	N/A
69	35%	N/A
70	100%	100%

### 6. Mortality

The RP-2000 mortality table for healthy annuitants (sex-distinct) projected 10 years with Scale AA (Prior valuation used no projection).

### 7. Disabled Life Mortality

The RP-2000 mortality table for healthy annuitants (sex-distinct) projected 10 years with Scale AA, set-forward by 2 years. Death is assumed to be due to the same cause as the disability 40% of the time.  
*(Prior valuation used RP-2000 mortality table without projection.)*



## NORTHAMPTON RETIREMENT SYSTEM

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### ACTUARIAL METHODS AND ASSUMPTIONS (Continued)

- |  |   |
|--|---|
| 8. Regular Interest Rate Credited to Annuity Savings Account | 2% per year.  |
| 9. Family Composition  | Members assumed married with 2 dependent children – one male and one female both age 15; age difference between member and spouse assumed to be 3 years (the male being the older). |
| 10. Cost-of-Living Increases                                 | A 3% COLA on the first \$12,000 of a member's retirement allowance is assumed to be granted every year.   |
| 11. Administrative Expenses                                  | Estimated budgeted amount of \$153,274 for the Fiscal Year 2012 excluding investment management fees and custodial fee is added to the Normal Cost.                                 |
| 12. Step Increases   | Step increases are assumed to be part of the salary increase assumption.  |
| 13. Credited Service   | All service is assumed to be due to employment with the municipality.   |
| 14. Contribution Timing                                      | Contributions are assumed to be made on August 1 <sup>st</sup> of each year.  |
| 15. Valuation Date   | January 1, 2010.  |



# NORTHAMPTON RETIREMENT SYSTEM

## SUMMARY OF PRINCIPAL PROVISIONS

1. Participant Participation is mandatory for all full-time employees whose employment commences before age 65. There are three classes of members in the retirement system:

*Group 1:* general employees

*Group 2:* employees in specified hazardous occupations (e.g., electricians)

*Group 4:* police and firefighters

2. Member Contributions Member contributions vary depending upon date hired as follows:

<b>Date of Hire</b>	<b>Member Contribution Rate</b>
Prior to 1975	5% of Pay
1975 – 1983	7% of Pay
1984 – June 30, 1996	8% of Pay
After June 30, 1996	9% of Pay

Members hired after 1978 contribute an additional 2% of pay over \$30,000.

3. Pay  
a. Pay Gross regular compensation excluding bonuses, overtime, severance pay, unused sick pay, and other similar compensation.

b. Average Pay The average of pay during the 3 consecutive years that produce the highest average or, if greater, during the last three years (whether or not consecutive) preceding retirement.

4. Credited Service Period during which an employee contributes to the retirement system plus certain periods of military service and “purchased” service.



# NORTHAMPTON RETIREMENT SYSTEM

## SUMMARY OF PRINCIPAL PROVISIONS (Continued)

### 5. Service Retirement

- a. Eligibility Completion of 20 years of credited service or attainment of age 55 and completion of 10 years of credited service. If hired prior to 1978 or a member of group 4, attainment of age 55.
- b. Retirement Allowance Determined as the product of the member's benefit percentage, average pay and credited service, where the benefit percentage is shown below (maximum allowance of 80% of average pay):

<b>Benefit Percentage</b>	<b>Group 1</b>	<b>Group 2</b>	<b>Group 4</b>
2.5%	65+	60+	55+
2.4	64	59	54
2.3	63	58	53
2.2	62	57	52
2.1	61	56	51
2.0	60	55	50
1.9	59	N/A	49
1.8	58	N/A	48
1.7	57	N/A	47
1.6	56	N/A	46
1.5	55	N/A	45

In addition, veterans receive an additional \$15 per year for each year of credited service up to 20 years.

### 6. Deferred Vested Retirement

- a. Eligibility Completion of 10 years of credited service (for elected and appointed members, 6 years in the event of involuntary termination).



## NORTHAMPTON RETIREMENT SYSTEM

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### SUMMARY OF PRINCIPAL PROVISIONS (Continued)

6. Deferred Vested Retirement (*continued*)
- b. Retirement Allowance                      Determined in the same manner as 5b. with the benefit payable at age 55, unless deferred until later at the member's option.
- Member contributions with interest may be withdrawn after separation from service. If contributions are withdrawn, eligibility for retirement benefits is forfeited. Members hired before 1984 receive full interest on contributions that are withdrawn; otherwise, one half the credited interest is provided for members who withdraw after 5 but before 10 years of credited service and no interest is provided for withdrawals before 5 years of credited service.
7. Ordinary Disability Retirement
- a. Eligibility                                      Non-job related disability after completion of 10 years of credited service.
- b. Retirement Allowance                      Determined in the same manner as 5b. with the benefit payable immediately. Veterans receive 50% of pay (during final year) plus an annuity based on accumulated member contributions with interest.
8. Accidental Disability Retirement
- a. Eligibility                                      Disabled as a result of an accident in the performance of duties. No age or service requirement.
- b. Retirement Allowance                      72% of pay plus an annuity based on accumulated member contributions with interest. Also, a dependent's allowance per year for each child. Total allowance not to exceed 100% of pay (75% for members hired after 1987).





## NORTHAMPTON RETIREMENT SYSTEM

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### SUMMARY OF PRINCIPAL PROVISIONS (Continued)

9. Non-Occupational Death
- a. Eligibility Dies while in active service, but not due to occupational injury. 2 years of service.
  - b. Retirement Allowance Benefit as if Option C had been elected (see below). Minimum monthly benefits provided as follows: spouse - \$250, first child - \$120, each additional child - \$90.
10. Occupational Death
- a. Eligibility Dies as a result of an occupational injury.
  - b. Benefit Amount Same as 8b.
11. Cost-of-Living Increases
- An increase of up to 3% applied to the first \$12,000 of annual benefit. Funded by the Municipality from Fiscal Year 1999. Percentage increase is voted on each year by the Retirement Board. Cost-of-living increases granted during Fiscal Year 1982 through Fiscal 1998 are reimbursed by the Commonwealth.
12. Optional Forms of Payment
- a. Option A Allowance payable monthly for the life of the member.
  - b. Option B Allowance payable monthly for the life of the member with a guarantee of remaining member contributions with interest.
  - c. Option C Allowance payable monthly for the life of the member with 66-2/3% continuing to the member's beneficiary upon the member's death. If the beneficiary predeceases the member, the allowance amount "pops up" to the non-reduced amount.





## NORTHAMPTON RETIREMENT SYSTEM

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### GLOSSARY OF TERMS

1. Present Value of Benefits Represents the dollar value today of all benefits expected to be earned by current members if all actuarial assumptions are exactly realized.
2. Actuarial Cost Method The procedure that is used to allocate the present value of benefits between the liability that is attributable to past service (Actuarial Accrued Liability) and that attributable to future service.
3. Actuarial Assumptions Estimates are made as to the occurrence of certain events that determine the level of benefits to be paid and how long they will be provided. The more important actuarial assumptions include the investment return on assets, salary increases and the rates of turnover, disability, retirement and mortality.
4. Actuarial Accrued Liability The portion of the Present Value of Benefits that is attributable to past service.
5. Normal Cost The portion of the Present Value of Benefits that is attributable to benefits to be earned in the coming year.
6. Actuarial Assets Market value of assets (adjusted by payables and receivables).
7. Unfunded Actuarial Accrued Liability That portion of the Actuarial Accrued Liability not covered by System Assets.
8. PERAC Public Employee Retirement Administration Commission, a division of the State government which has regulatory authority over the administration of the retirement system.
9. PRIT Pension Reserves Investment Trust Fund is the state controlled and administered fund for the investment of assets for members of the retirement system.
10. GASB Government Accounting Standards Board (issues guidance for disclosure of retirement system liabilities).





## NORTHAMPTON RETIREMENT SYSTEM

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### Acknowledgement of Qualification

Acknowledgement of Qualification for January 1, 2010 actuarial valuation of the Northampton Retirement System:

I, Lawrence Stone, am a consultant for Stone Consulting, Inc. I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Lawrence B. Stone  
Member, American Academy of Actuaries

