

January 1, 2014

Actuarial Valuation Report

Quincy Retirement Board

Lawrence B. Stone



stoneconsulting,inc

5 West Mill Street, Suite 4
Medfield, Massachusetts 02052
T: 508.359.9600 • F: 508.359.0190
Lstone@stoneconsult.com



December 1, 2014

Quincy Retirement Board
1250 Hancock Street
Suite 506S
Quincy, MA 02169

Dear Quincy Retirement Board:

Stone Consulting, Inc. has performed a January 1, 2014 actuarial valuation of the Quincy 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. 27. 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 Quincy 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 level to increase 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 length of the funding schedule contained in this actuarial valuation report is twenty-one years (fully funded in Fiscal 2036). The contributions are structured to increase the total contribution by 5.40% each year.

The maximum length of the amortization is until Fiscal 2040. These limits are contained in Section 22F of Chapter 32 of the Massachusetts General Laws and related statutes.

■ Quincy Retirement Board
Actuarial Valuation as of January 1, 2014

The contribution amount for Fiscal Year 2016 is \$24,742,790 which is \$6,764 more than the anticipated contribution amount from the prior funding schedule based on a July 1 payment date. PERAC and GASB guidelines indicate that actuarial valuations should be conducted at least every other year. The Quincy Retirement Board conducted their previous actuarial valuation effective January 1, 2012.

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.

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.

Respectfully submitted,
STONE CONSULTING, INC.
Actuaries for the Plan

Lawrence B. Stone
Member, American Academy of Actuaries

TABLE OF CONTENTS

	PAGE
Certification Letter	
Introduction	1
January 1, 2014 Valuation Summary	1
January 1, 2014 Actuarial Valuation Results.....	3
Demographic Information	4
History of Active Participants.....	4
Distribution of Plan Members	5
Valuation Methodology.....	7
Actuarial Accrued Liability and Funded Status	8
History of Actuarial Valuation of Assets (AVA) and Unfunded Actuarial Accrued Liability (UAAL)	9
Development of Funding Schedule.....	10
Funding Schedule	11
Assumptions and Methodology Summary	12
Assets.....	13
Calculation of Valuation Assets as of January 1, 2014	14
Disclosure Information Under GASB Statement 25	15
PERAC Information Disclosure	16
Actuarial Methods and Assumptions	17
Summary of Principal Provisions.....	21
Glossary of Terms.....	24

Introduction

This report presents the results of the actuarial valuation of the Quincy Retirement System. The valuation was performed at the request of the Retirement Board as of January 1, 2014 for the purpose of determining the contribution requirements for Fiscal Year 2016 and beyond. The contribution requirements are based on:

- The financial condition of the system as of December 31, 2013
- 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, 2014);
- Economic assumptions regarding salary increases and investment earnings; and
- Other actuarial assumptions (e.g., withdrawals, retirement, mortality, etc.)

January 1, 2014 Valuation Summary

	January 1, 2014	January 1, 2012	Change
Contribution Fiscal 2016	\$24,742,790	\$24,736,026	\$6,764
Funding Schedule Length (as of Fiscal 2016)	21 years	25 years	-4 years
Amortization Increase	5.40% contribution increases	3.91%	N/A
Funding Ratio	47%	48%	-1%
Interest Rate Assumption	8.00%	8.00%	0.00%
Salary Increase Rate Assumption	3.75% Ultimate with 3 year select period	3.75% Ultimate with 3 year select period	0.00%

- The Fiscal Year 2016 contribution is \$6,764 greater than the planned 2016 contribution. Stone Consulting, with agreement from the Retirement Board, values assets using a four-year asset smoothing method. 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 consistent with the method used in the prior valuation.

- The System, over the two-year period from January 1, 2012 through December 31, 2013, experienced a 11.8% annual return on the market value of assets versus our assumption of an 8.00% return which resulted in a \$20.3 million net actuarial asset gain. The System's asset portfolio, effective December 31, 2013 is approximately 71% equities and 29% fixed income and short-term investments. The interest rate assumption was maintained at 8.00% to reflect anticipated market performance.
- The select and ultimate salary assumption has been maintained from the prior valuation. Total compensation changed by 6.2% over the prior valuation; however average annual compensation (compensation divided by number of active members) changed by 3.7%.
- The funding level of the Quincy Retirement System is 47% compared to 48% for the January 1, 2012 actuarial valuation. The funding level is estimated to be below the median of Massachusetts' Contributory Retirement Systems.

The schedule length is twenty-one (21) years, requiring the use of Section 22F of the Massachusetts General Laws, Chapter 32. The maximum period permitted under Section 22F of Chapter 32 of the Massachusetts General Laws is 25 years (2040). The contributions have been set so that each will be 5.40% higher than the prior year's contribution, until 2036, when the contribution decreases.

- Non-economic assumptions were changed from the January 1, 2012 actuarial valuation. The mortality assumption is based upon the RP-2000 table projected with Generational Mortality and scale BB. The previous assumption used the RP2000 Table projected 17 years. The net effect of this change increased the accrued liability by \$24.8 million.
- Projection using generational mortality produces a different mortality table for each year of birth. In this manner, the expected continued increase in how long a person lives is reflected. For example, a participant who is currently age 25 (and will not turn 65 for another 40 years) would be expected to live appreciably longer past 65 years of age than someone who is currently 65. Thus a superannuation retirement benefit starting in 2054 would on average be paid for appreciably longer than a similar benefit beginning in 2014.

January 1, 2014 Actuarial Valuation Results

	January 1, 2014	January 1, 2012	Percentage Change
Funding			
Contribution for Fiscal 2016	\$24,742,790		
Contribution for Fiscal 2016 based on current schedule		\$24,736,026	-0.1%
Members *			
■ Actives			
a. Number	1,356	1,324	2.4%
b. Annual Compensation	\$80,332,777	\$75,630,036	6.2%
c. Average Annual Compensation	\$59,242	\$57,122	3.7%
d. Average Attained Age	49.7	49.7	0.0%
e. Average Past Service	13.4	13.6	-1.6%
■ Retired, Disabled and Beneficiaries			
a. Number	1,567	1,561	0.4%
b. Total Benefits*	\$41,896,035	\$39,500,840	6.1%
c. Average Benefits*	\$26,736	\$25,305	5.7%
d. Average Age	73.7	73.2	0.7%
■ Inactives			
a. Number	180	250	-28.0%
■ Terminated Vested			
a. Number	33	30	10.0%
Normal Cost			
a. Total Normal Cost as of January 1, 2014	\$10,424,753	\$9,482,392	9.9%
b. Less Expected Members' Contributions	7,347,049	6,836,608	7.5%
c. Normal Cost to be funded by the Municipality	\$3,077,704	\$2,645,784	16.3%
d. Adjustment to July 1, 2015	186,497	160,324	16.3%
e. Administrative Expense Assumption	518,154	550,000	-5.8%
f. Normal Cost Adjusted to July 1, 2015	\$3,782,355	\$3,356,108	12.7%
Actuarial Accrued Liability as of January 1, 2014			
a. Active Members	\$238,189,691	\$212,030,247	12.3%
b. Inactive Members	1,161,483	1,446,917	-19.7%
c. Terminated Vested Members	3,066,951	2,448,422	25.3%
c. Retired Members and Beneficiaries	391,379,587	361,686,014	9.1%
d. Total	\$633,797,711	\$577,611,600	9.7%
Unfunded Actuarial Accrued Liability			
a. Actuarial Accrued Liability as of January 1, 2014	\$633,797,711	\$577,611,600	9.7%
b. Less Actuarial Value of Assets as of January 1, 2014	296,239,378	275,220,220	7.6%
c. Unfunded Actuarial Accrued Liability as of January 1, 2014	\$337,558,333	\$302,391,380	11.6%
d. Adjustment to July 1, 2015	\$21,445,373	\$18,461,260	
e. Unfunded Actuarial Accrued Liability as of July 1, 2015	\$359,003,706	\$320,852,640	

*Excluding State reimbursed COLA

Demographic Information

	January 1, 2014	Percentage Change
Members		
■ Actives		
a. Number	1,356	2.4%
b. Annual Compensation	\$80,332,777	6.2%
c. Average Annual Compensation	\$59,242	3.7%
d. Average Attained Age	49.7	0.0%
e. Average Past Service	13.4	-1.6%
■ Retired, Disabled and Beneficiaries		
a. Number	1,567	0.4%
b. Total Annual Retirement Allowance excluding State-reimbursed COLA	\$41,896,035	6.1%
■ Inactives		
a. Number	180	-28.0%
■ Terminated Vested		
a. Number	33	10.0%

- The data was supplied by the Quincy Retirement Board. The data was checked under broad parameters for reasonableness. With the assistance of the staff of the Quincy Retirement Board, we were able to develop a database sufficient for valuation purposes.

History of Active Participants

Valuation Year	Number	Average Age	Average Past Service	Average Ann'l Compensation
2014	1,356	49.7	13.4	\$59,242
2012	1,324	49.7	13.6	\$57,122
2010	1,419	49.1	12.5	\$54,185
2007	1,426	47.4	11.3	\$46,781
2005	1,339	47.0	11.4	\$44,431
2003	1,384	46.9	11.8	\$42,594
2001	1,459	47.8	12.8	\$38,948

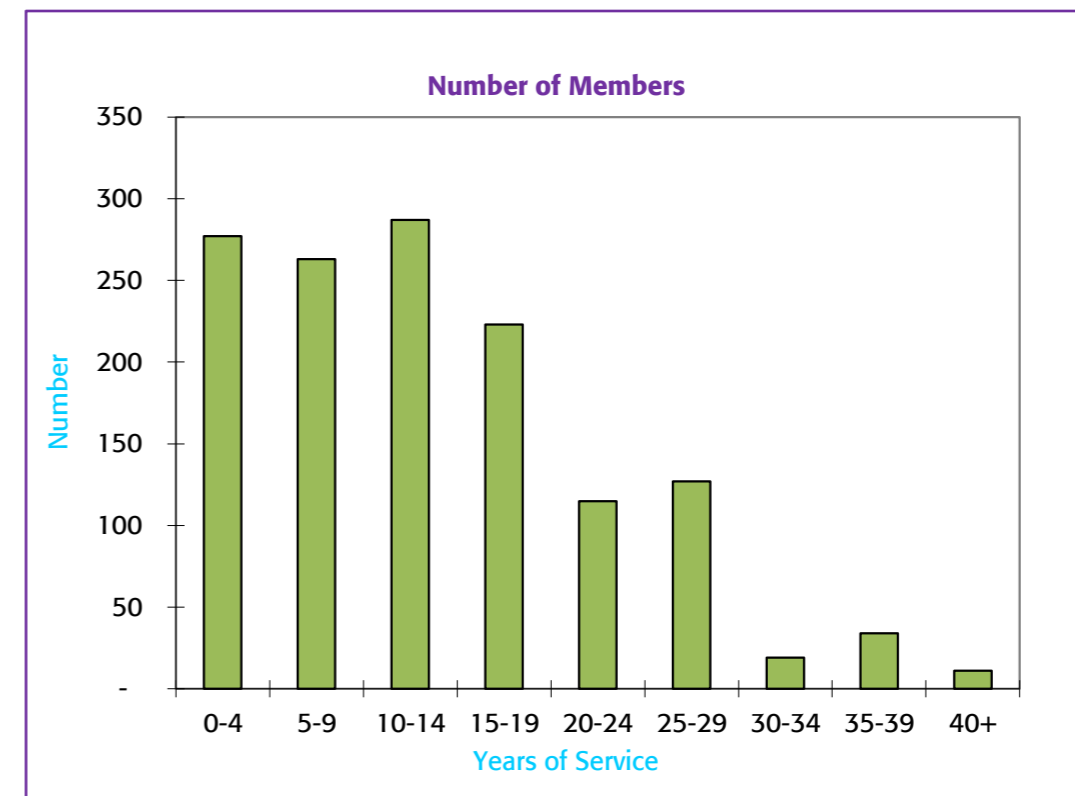
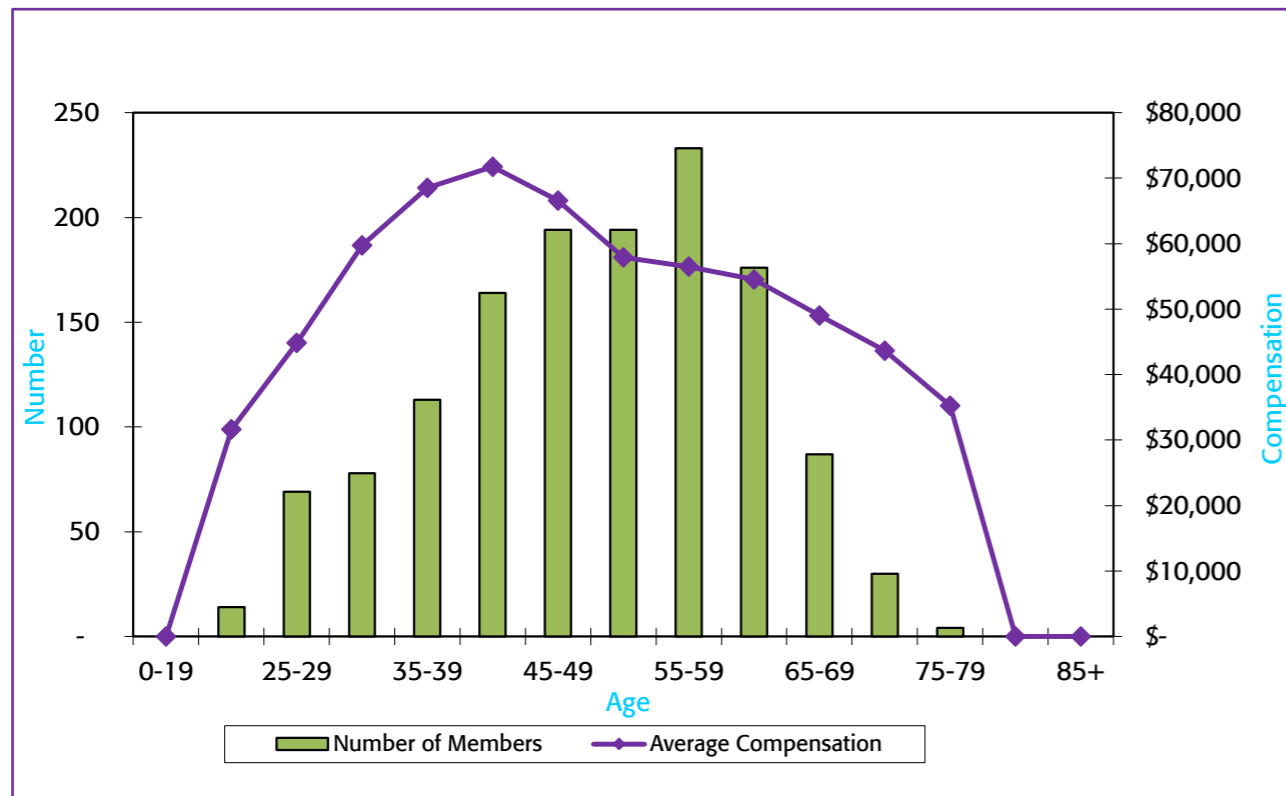
- Employee age has increased by 1.9 years and service has increased by .6 years over the course of the past thirteen years. This is consistent with the trend in the Commonwealth towards an aging of the employee population. Average annual compensation has grown by 52.1% (3.3% annually) over the course of the past thirteen years.

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

Distribution of Plan Members as of January 1, 2014

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	14	-	-	-	-	-	-	-	-	14	442,962	31,640
25-29	52	17	-	-	-	-	-	-	-	69	3,094,250	44,844
30-34	41	27	10	-	-	-	-	-	-	78	4,659,595	59,738
35-39	24	33	44	12	-	-	-	-	-	113	7,743,366	68,525
40-44	25	38	43	49	9	-	-	-	-	164	11,765,326	71,740
45-49	30	36	38	54	26	10	-	-	-	194	12,917,542	66,585
50-54	31	32	40	30	18	42	1	-	-	194	11,234,582	57,910
55-59	30	47	55	32	18	32	10	9	-	233	13,164,624	56,501
60-64	20	18	40	26	20	24	5	18	5	176	9,595,220	54,518
65-69	9	8	12	12	17	17	1	5	6	87	4,264,911	49,022
70-74	1	6	5	7	6	2	1	2	-	30	1,309,420	43,647
75-79	-	1	-	1	1	-	1	-	-	4	140,979	35,245
80-84	-	-	-	-	-	-	-	-	-	-	-	-
85+	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	277	263	287	223	115	127	19	34	11	1,356	\$ 80,332,777	\$ 59,242

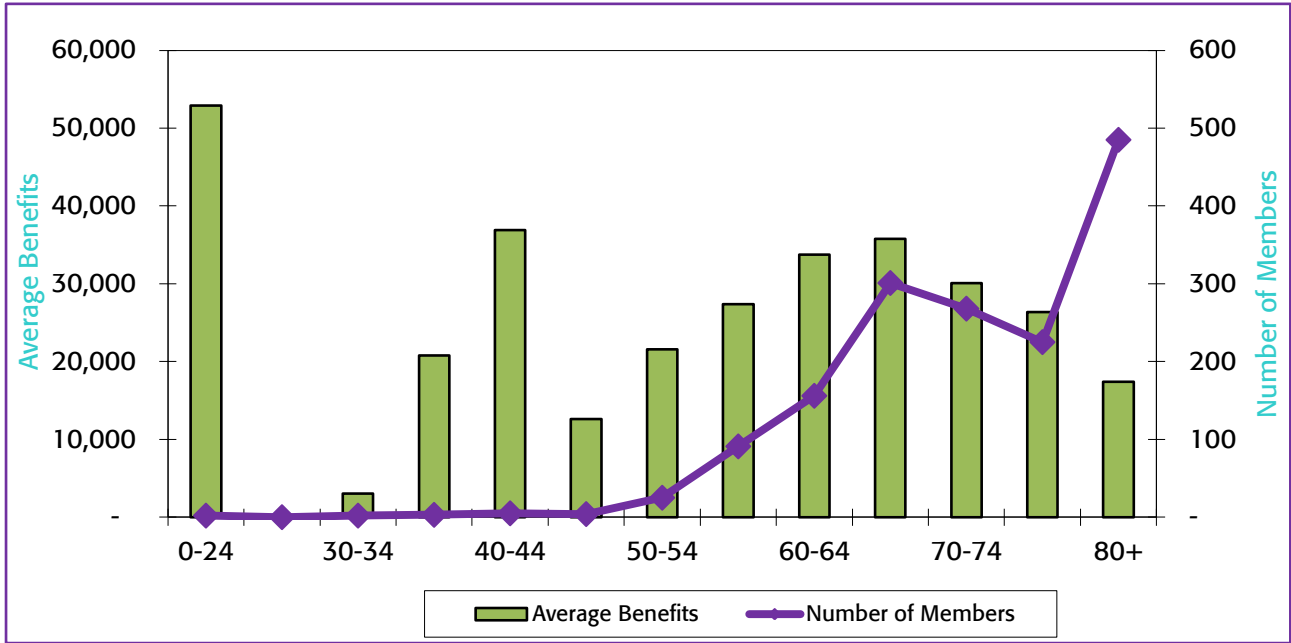


Distribution of Plan Members as of January 1, 2014
Retired Members

Retired Members and Beneficiaries			
Age	Number	Average Benefit	Total Benefit
0-24	2	52,885	105,771
25-29	-	-	-
30-34	2	3,044	6,089
35-39	2	14,415	28,831
40-44	1	5,684	5,684
45-49	3	12,306	36,919
50-54	15	17,109	256,637
55-59	78	23,429	1,827,488
60-64	139	32,240	4,481,401
65-69	269	34,480	9,275,221
70-74	231	29,064	6,713,850
75-79	199	25,389	5,052,391
80+	462	17,158	7,927,184
TOTAL	1,403	\$ 25,458	\$ 35,717,465

Disabled Members			
Age	Number	Average Benefit	Total Benefit
0-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	1	33,554	33,554
40-44	4	44,676	178,702
45-49	1	13,448	13,448
50-54	10	28,311	283,107
55-59	13	50,865	661,242
60-64	17	45,835	779,188
65-69	32	46,723	1,495,124
70-74	37	36,258	1,341,552
75-79	26	33,640	874,629
80+	23	22,523	518,025
TOTAL	164	\$ 37,674	\$ 6,178,570

Total			
Age	Number	Average Benefit	Total Benefit
0-24	2	52,885	105,771
25-29	-	-	-
30-34	2	3,044	6,089
35-39	3	20,795	62,384
40-44	5	36,877	184,386
45-49	4	12,592	50,367
50-54	25	21,590	539,744
55-59	91	27,349	2,488,730
60-64	156	33,722	5,260,589
65-69	301	35,782	10,770,345
70-74	268	30,057	8,055,402
75-79	225	26,342	5,927,020
80+	485	17,413	8,445,209
TOTAL	1,567	\$ 26,736	\$ 41,896,035



Benefits shown are net of State reimbursed COLA.

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

	January 1, 2014	% of Payroll*
Gross Normal Cost (GNC)	\$10,424,753	13.0%
Employees Contribution	\$7,347,049	9.1%
Net Normal Cost (NNC)	\$3,077,704	3.8%
Adjusted to Beginning of Fiscal Year 2016	\$186,497	
Administrative Expense	<u>\$518,154</u>	0.6%
Adjusted Net Normal Cost With Admin. Expense	\$3,782,355	

*Payroll paid in 2013 for employees as of January 1, 2014 is \$80,332,777. Payroll for new hires in 2013 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 withdrawals) 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.

Actuarial Accrued Liability and Funded Status

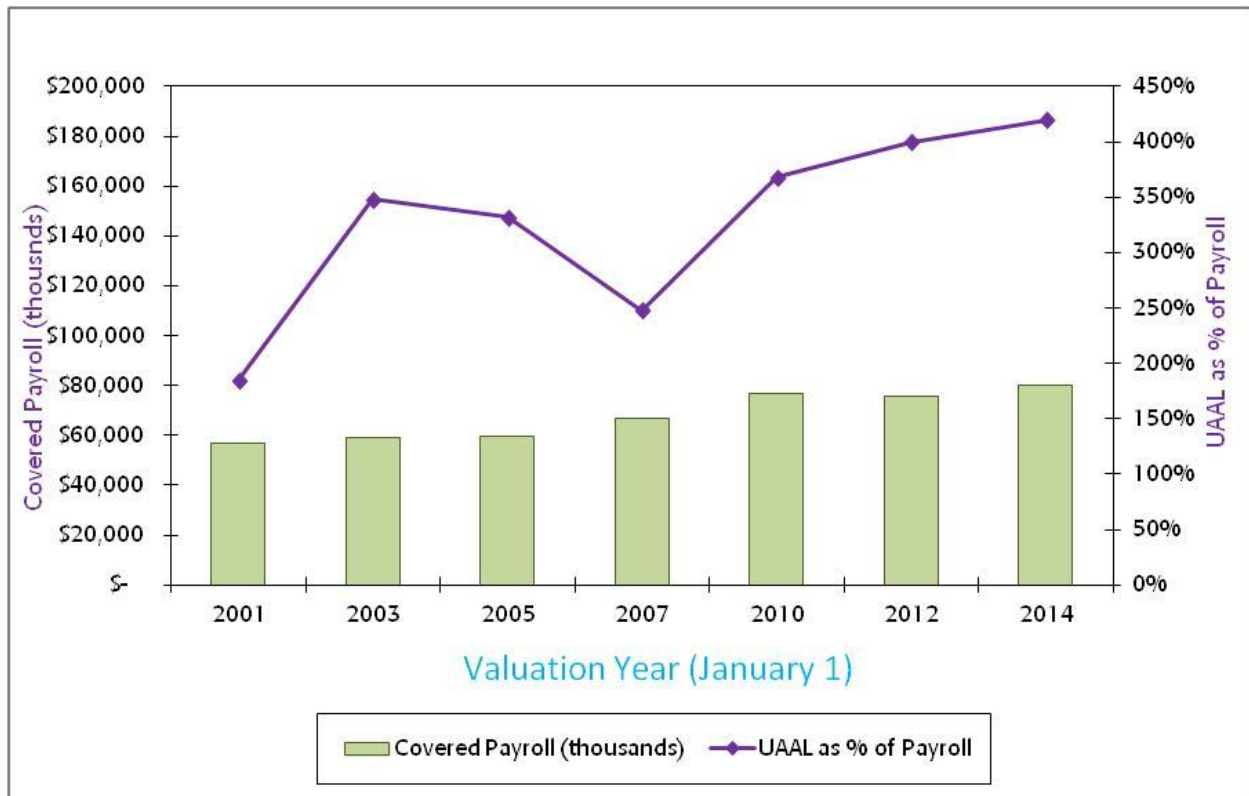
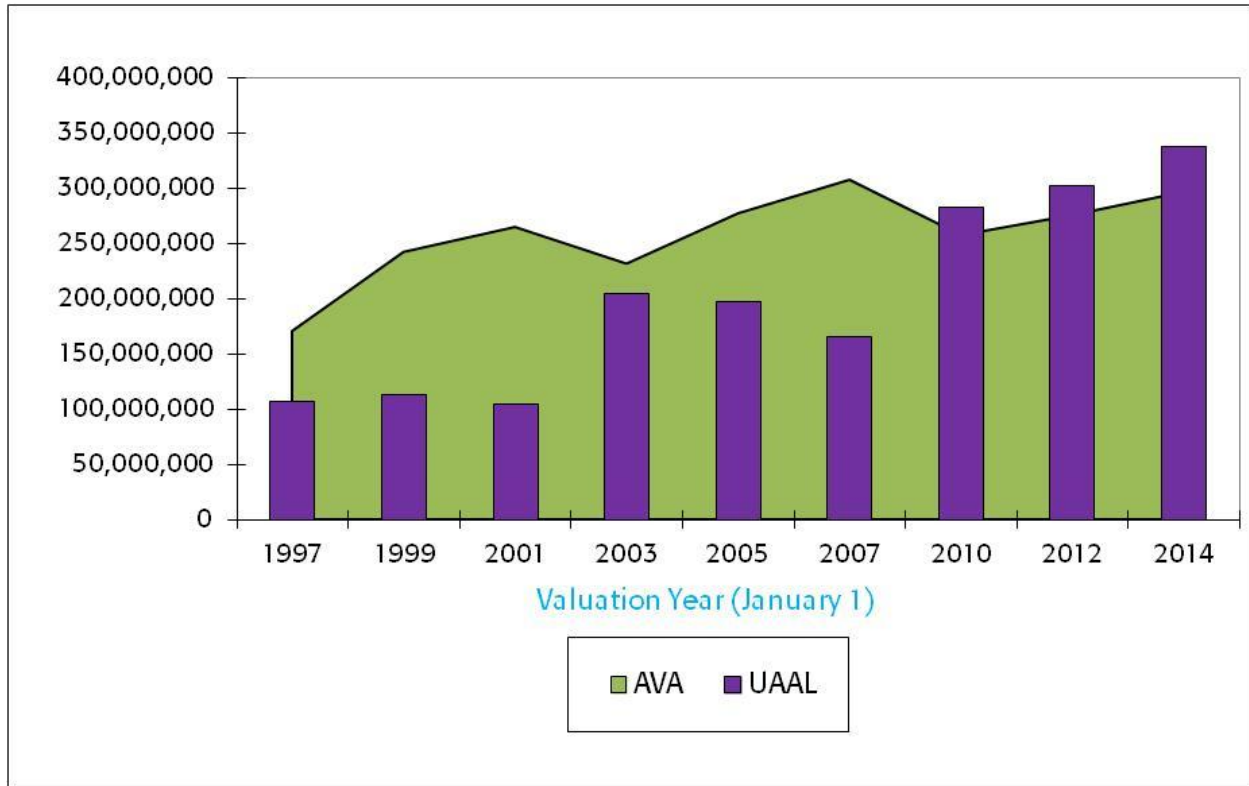
		January 1, 2014	Percentage Change
Active Actuarial Accrued Liability		\$ 238,189,691	12.3%
Superannuation	\$ 216,110,648		
Death	\$ 4,975,805		
Disability	\$ 15,063,932		
Withdrawal	\$ 2,039,306		
Retiree, Inactive, Survivor and Beneficiary Actuarial Accrued Liability		\$ 395,608,020	8.1%
Retirees and Beneficiaries	\$ 328,341,545		
Disabled	\$ 63,038,041		
Vested Terminated	\$ 3,066,951		
Inactive	\$ 1,161,483		
Total Actuarial Accrued Liability (AAL)		\$ 633,797,711	9.7%
Actuarial Value of Assets (AVA)		\$ 296,239,378	7.6%
Unfunded Actuarial Accrued Liability		\$ 337,558,333	11.6%
Funded Ratio (AVA / AAL)			
2014 (8.00% interest rate):		47%	
2012 (8.00% interest rate):		48%	

- 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 \$633,797,711. This along with an actuarial value of assets of \$296,239,378 produces a funded status of 47%. This compares to a funded status of 48% for the 2012 valuation.

The charts on the following page are:

- History of the unfunded actuarial accrued liability (UAAL) and the valuation assets (AVA) over the course of the past nine actuarial valuations.
- History of the UAAL as a percentage of covered pay, and the covered pay.

History of Actuarial Valuation of Assets (AVA) and Unfunded Actuarial Accrued Liability (UAAL)



Development of Funding Schedule

Net Employer Normal Cost for Fiscal 2016	3,782,355
Net 3(8)(c) Payments	(60,749)
Amortization	21,021,184
Total Appropriation required for Fiscal 2016	24,742,790

- The funding schedule is composed of the normal cost, the net 3(8)(c) payments and the amortization of the actuarial accrued unfunded liability and is adjusted by the administrative expense assumption. The contribution is assumed to be made at the beginning of the Fiscal Year. The 3(8)(c) payments are the amount that the Quincy Retirement System pays to or receives from other retirement boards for service that a retiree had with a different retirement system. The net 3(8)(c) payments is the difference between what the Quincy Retirement System paid out minus what was received by the System.
- The contribution amount for Fiscal 2016 is \$24,742,790. The funding schedule is presented on page 11. The schedule's length is twenty-one (21) years (for the fresh start base), using Section 22F of MGL Chapter 32.
- In developing the funding schedule, we used a fresh start approach in which the unfunded actuarial accrued liability (UAAL), other than the UAAL due to 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 can result in a funding schedule in which the changes in contribution amounts from year to year are more consistent. The amortization is adjusted each year to maintain a constant increase in the total contribution. The contribution in Fiscal 2016 is set to be the amount resulting from a 5.40% increase on the beginning-of-fiscal-year value of the Fiscal 2015 contribution. The following contributions each increase by 5.40%, until FY 2036, where there is a decrease of 20.6%.



QUINCY RETIREMENT SYSTEM

FUNDING SCHEDULE

Fiscal Year	Net Normal Cost	Unfunded Liability*	Funding Amortization of UAAL	Net 3(8)(c) Payments	Schedule Contribution**
2016	3,782,355	359,163,389	21,021,184	(60,749)	24,742,790
2017	3,933,649	365,193,581	22,206,001	(60,749)	26,078,901
2018	4,090,995	365,270,637	23,456,916	(60,749)	27,487,162
2019	4,254,635	369,158,819	24,777,583	(60,749)	28,971,469
2020	4,424,820	369,361,768	26,171,857	(60,749)	30,535,928
2021	4,601,813	370,645,104	27,643,804	(60,749)	32,184,868
2022	4,785,886	370,441,405	29,197,714	(60,749)	33,922,851
2023	4,977,321	368,543,186	30,838,113	(60,749)	35,754,685
2024	5,176,414	364,721,479	32,569,773	(60,749)	37,685,438
2025	5,383,471	358,723,843	34,397,730	(60,749)	39,720,451
2026	5,598,809	350,272,202	36,327,295	(60,749)	41,865,356
2027	5,822,762	339,060,499	38,364,072	(60,749)	44,126,085
2028	6,055,672	324,752,141	40,513,970	(60,749)	46,508,894
2029	6,297,899	306,977,224	42,783,224	(60,749)	49,020,374
2030	6,549,815	285,329,520	45,178,408	(60,749)	51,667,474
2031	6,811,808	259,363,201	47,706,459	(60,749)	54,457,518
2032	7,084,280	228,589,282	50,374,693	(60,749)	57,398,224
2033	7,367,651	192,471,756	53,190,825	(60,749)	60,497,728
2034	7,662,357	150,423,405	56,162,997	(60,749)	63,764,605
2035	7,968,852	101,801,241	59,299,791	(60,749)	67,207,894
2036	8,287,606	45,901,566	45,901,566	(60,749)	54,128,423
2037	8,619,110	-	-	(60,749)	8,558,361

Amortization of Unfunded Liability as of July 1, 2015

Year	Type	Original Amort. Amount	Percentage Increasing	Original # of Years	Current Amort. Amount	Years Remaining
2005	ERI - HA(2002)	27,716	4.50%	24	44,978	13
2005	ERI - City(2002)	317,193	4.50%	24	514,757	13
2006	ERI - City(2003)	404,362	4.50%	23	627,962	13
2006	ERI - HA(2003)	24,895	4.50%	23	38,661	13
2016	Fresh Start	N/A	N/A	21	N/A	21

* Fiscal Years 2018 and 2020 include recognition of the following deferred gains:

2018:	\$5,155,950
2020:	\$2,569,967

** Fresh Start amortization is set to be the amount needed to result in an adjusted payment which is 5.4% higher than the prior fiscal year for the next 20 years with a smaller payment in year 21. The increase to lower (approximately 4.7%) due to a change in contribution timing.

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.

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:

Valuation Date	January 1, 2014 Valuation
Interest Rate	8.00% (same as prior valuation).
Salary Increase	3-year select period with 3.75% ultimate rate (same as prior valuation).
COLA	3% of \$12,000
COLA Frequency	Granted every year
Mortality	RP-2000 table (sex-distinct) projected with Generational Mortality and scale BB. 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 used the RP-2000 table for healthy annuitants (sex-distinct) projected with Generational Mortality and scale BB, ages set forward 2 years. (Prior valuation used RP-2000 projected 17 years.)
Overall Disability	Groups 1 and 2 50% ordinary disability 50% accidental disability Group 4 10% ordinary disability 90% accidental disability
Retirement Rates	Group 4 Ages 50 – 65 Groups 1 and 2, hired before April 2, 2012 Ages 50 – 70 Groups 1 and 2, hired after April 1, 2012 Ages 60 – 70
Administrative Expense	\$518,154 budget estimated for FY 2016 provided by Quincy Retirement Board.

Assets

a.	Cash	\$	3,388,680.94
b.	Pooled Domestic Equity Funds		85,047,093.96
c.	Pooled International Equity Funds		72,366,771.00
d.	Pooled Domestic Fixed Income Funds		62,698,913.66
e.	Pooled International Fixed Income Funds		6,432,849.39
f.	Pooled Global Fixed Income Funds		11,951,627.00
g.	Pooled Alternative Investments		22,702,035.84
h.	Pooled Real Estate Funds		26,698,021.34
i.	Hedge Funds		5,765,018.06
j.	PRIT Fund		2,678,476.96
k.	Sub-Total:	\$	299,729,488.15
l.	Accounts Receivable		4,360,747.93
m.	Interest Due and Accrued		59.80
	Accounts Payable		<u>(125,001.03)</u>
n.	Sub-Total:	\$	4,235,806.70
o.	Market Value of Assets [(k) + (n)]	\$	303,965,294.85

- We were furnished with the System's annual report by the Board. The market value of assets as of December 31, 2013 (adjusted for payables and receivables) is \$303,965,295.
- The asset allocation is approximately 30% fixed income, cash, receivables and payables and 70% 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 8.00% interest rate assumption is within the reasonable assumption range. We encourage close monitoring for changes in investment performance against expectations.
- Actuarial value of assets (AVA) of \$296,239,378 is based on a four-year smoothing method. Investment gains or losses above or below the expected rate of investment return are recognized over 4 years, 25% per year. The AVA must be no more than 110% of the market value of assets and no less than 90% of the market value of assets.
- Future contributions will be affected by the deferred net losses. At the time of the next valuation, as of January 1, 2016, there will be \$5,155,950 of net gains recognized, decreasing the UAAL by that amount. Another \$2,569,967 gain will be recognized in 2018. This has been reflected in the funding schedule shown on page 11 of this report.

Calculation of Valuation Assets as of January 1, 2014

4-YEAR PHASE-IN OF GAINS AND LOSSES

1. Market value of assets including receivable/payable as of 01/01/2014 \$303,965,294.85

2. Phase-in of asset gains and losses

	Plan Year (1)	Original Amount (2)	Percent Unrecognized (3)	Amount Unrecognized (2) x (3)
a.	2013	\$10,279,869	75%	\$7,709,902
b.	2012	\$9,982,804	50%	\$4,991,402
c.	2011	(\$19,901,549)	25%	(\$4,975,387)
d.	2010	\$8,850,455	0%	\$0
e.	2009	\$20,776,303	0%	\$0
f.	Total			\$7,725,917

3. Valuation assets without corridor as of 01/01/2014
(1. - 2.f.)

4. Corridor Check

- a. 90% of Market Value
- b. 110% of Market Value

5. Valuation assets with corridor as of 01/01/2014 \$296,239,378
3. within Corridor

6. Calculation of return on valuation assets

a. Valuation assets as of 01/01/2012 \$275,220,220

b. ER contribs + EE contribs - Ben Pymts - Expenses (\$23,617,164)

c. Actual return on valuation assets \$44,636,322
5. - (6.a. + 6.b.)

d. Weighted value of valuation assets \$261,485,745

e. Return on valuation assets 17.1%
6.c. / 6.d.

f. Annualized return on assets 8.2%

■ Quincy Retirement Board
Actuarial Valuation as of January 1, 2014

Disclosure Information Under GASB Statement 25

SCHEDULES OF FUNDING PROGRESS

(Dollars In Thousands)

Actuarial Valuation Date	Actuarial Value of Assets A	Actuarial Accrued Liability B	Unfunded AAL (UAAL) B-A	Funded Ratio A/B	Covered Payroll C	UAAL as a % of Covered Payroll (B-A)/C
1/1/2014	\$296,239	\$633,798	\$337,559	47%	\$80,333	420%
1/1/2012	\$275,220	\$577,612	\$302,391	48%	\$75,630	400%
1/1/2010	\$257,135	\$539,914	\$282,779	48%	\$76,888	368%
1/1/2007	\$307,082	\$472,269	\$165,187	65%	\$66,710	248%
1/1/2005	\$276,794	\$474,569	\$197,775	58%	\$59,493	332%

NOTES TO SCHEDULES

Additional information as of the latest actuarial valuation follows:

Valuation Date	1/1/2014
Actuarial cost method	Entry Age Normal
Amortization method	Fresh Start, 5.40% Contribution Increases
Remaining amortization period	21 years for the fresh start base
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 \$303,965,294.85
Actuarial assumptions:	
Investment Rate of Return	8.00% per year
Projected Salary Increases	3-year select period with 3.75% ultimate rate

■ Quincy Retirement Board
Actuarial Valuation as of January 1, 2014

PERAC Information Disclosure

The most recent actuarial valuation of the System was prepared by Stone Consulting, Inc. as of January 1, 2014

The normal cost for employees on that date was:	\$7,347,049	9.1%	of payroll
The normal cost for the employer was:	\$3,077,704	3.8%	of payroll

The actuarial liability for active members was:	\$238,189,691
The actuarial liability for retired members was (includes inactives):	\$392,541,070
Total actuarial accrued liability:	\$633,797,711
System assets as of that date (\$303,965,295 Market Value):	\$296,239,378
Unfunded actuarial accrued liability:	\$337,558,333

The ratio of system's assets to total actuarial liability was:	47%
--	-----

As of that date the total covered employee payroll was:	\$80,332,777
---	--------------

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

Investment Return: 8.00% per annum
Rate of Salary Increase: 3.75% ultimate rate

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)
1/1/2014	\$296,239	\$633,798	\$337,559	47%	\$80,333	420%
1/1/2012	\$275,220	\$577,612	\$302,391	48%	\$75,630	400%
1/1/2010	\$257,135	\$539,914	\$282,779	48%	\$76,888	368%
1/1/2007	\$307,082	\$472,269	\$165,187	65%	\$66,710	248%
1/1/2005	\$276,794	\$474,569	\$197,775	58%	\$59,493	332%

Actuarial Methods and Assumptions

ACTUARIAL METHODS

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.

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.

Fiscal Year Adjustment

The actuarial results are adjusted by the valuation interest rate and salary scale to the beginning of Fiscal Year 2016. The unfunded actuarial accrued liability is rolled forward with normal cost and further adjusted by anticipated contributions and interest.

ACTUARIAL ASSUMPTIONS

Investment Return

8.00% per year net of investment expenses.

Regular Interest Rate Credited to Annuity Savings Account

2% per year.

Salary Increases

3.75% Ultimate rate, with the follow select amounts by group and department:

Increase	Group 1, 2	Fire	Police
Year 1	7.75%	18.75%	20.74%
Year 2	7.75%	15.75%	4.48%
Year 3	7.75%	4.00%	4.00%

Actuarial Methods and Assumptions
(Continued)

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.

Rate of Withdrawal

Service	Group 1 and 2	Group 4
0	15%	1.5%
1	12%	1.5%
2	10%	1.5%
3	9%	1.5%
4	8%	1.5%
5	7.6%	1.5%
10	5.4%	1.5%
15	3.3%	0.0%
20	2.0%	0.0%
25	1.0%	0.0%
30+	0.0%	0.0%

Disability Prior to Retirement

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

Rate of Disability

Age	Group 1 and 2	Group 4
20	0.01%	0.10%
25	0.02%	0.20%
30	0.03%	0.30%
35	0.06%	0.30%
40	0.10%	0.30%
45	0.15%	1.00%
50	0.19%	1.25%
55	0.24%	1.20%
60	0.28%	0.85%

Disability is assumed to be 50% ordinary and 50% accidental for Group 1 and 2 and 10% ordinary and 90% accidental for Group 4.

Actuarial Methods and Assumptions
(Continued)

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	Group 1 & 2 Male	Group 1 & 2 Female	Group 4	Hired after 4/1/2012		
				Group 1 & 2 Male	Group 1 & 2 Female	Group 4
50	1%	1.5%	2%	0%	0%	1.5%
51	1%	1.5%	2%	0%	0%	1.5%
52	1%	2.0%	2%	0%	0%	1.5%
53	1%	2.5%	2%	0%	0%	1.5%
54	2%	2.5%	7.5%	0%	0%	5%
55	2%	5.5%	15%	0%	0%	10%
56	2.5%	6.5%	10%	0%	0%	7%
57	2.5%	6.5%	10%	0%	0%	20%
58	5%	6.5%	10%	0%	0%	10%
59	6.5%	6.5%	15%	0%	0%	15%
60	12%	5%	20%	25%	30%	20%
61	20%	13%	20%	20%	13%	20%
62	30%	15%	25%	30%	15%	25%
63	25%	12.5%	25%	25%	12.5%	25%
64	22%	18%	30%	22%	18%	30%
65	40%	15%	100%	40%	15%	100%
66	25%	20%	N/A	25%	20%	N/A
67	25%	20%	N/A	25%	20%	N/A
68	30%	25%	N/A	30%	25%	N/A
69	30%	20%	N/A	30%	20%	N/A
70	100%	100%	N/A	100%	100%	N/A

Mortality

RP-2000 table (sex-distinct) projected with Generational Mortality and scale BB. (Prior valuation used RP-2000 mortality table with a 17 year projection). During employment the healthy employee mortality table is used. Post-employment the healthy annuitant table is used.

Disabled Life Mortality

RP-2000 table for healthy annuitants (sex-distinct) projected with Generational Mortality and scale BB, 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 with a 17 year projection).

■ Quincy Retirement Board
Actuarial Valuation as of January 1, 2014

Actuarial Methods and Assumptions
(Continued)

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).

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.

Administrative Expenses

Estimated budgeted amount of \$518,154 for the Fiscal Year 2016 excluding investment management fees and custodial fee is added to the Normal Cost.

Net 3(8)(c)

Net 3(8)(c) payments are assumed to be the same level as the past calendar year for all future years.

Credited Service

All service is assumed to be due to employment with the municipality.

Contribution Timing

Contributions are assumed to be made in the beginning of the fiscal year (July 1).

Total Payroll Increase

The total payroll is assumed to increase at 4.00% per year.

Valuation Date

January 1, 2014.

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:

Date of Hire	Member Contribution Rate
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 three consecutive years that produce the highest average or, if greater, during the last three years (whether or not consecutive) preceding retirement. For members hired after April 1, 2012, five-year averages will be used.

4. CREDITED SERVICE

Period during which an employee contributes to the retirement system plus certain periods of military service and "purchased" service.

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.

Summary of Principal Provisions
(Continued)

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):

Benefit Percentage	Group 1	Group 2	Group 4
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
Hired after April 1, 2012*			
2.5%	67+	62+	57+
2.35	66	61	56
2.20	65	60	55
2.05	64	59	54
1.90	63	58	53
1.75	62	57	52
1.60	61	56	51
1.45	60	55	50

*Reduction is .125% for each year early instead of .15% per year for employees with over 30 years of service.

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).

b. Retirement Allowance

Determined in the same manner as "Service Retirement" section above with the member eligible to start collecting a benefit at age 55, (or age 57 for post-April 1, 2012 hires) or defer until later at his or her discretion. If a member chooses, his or her contributions with interest may be withdrawn. The amount of interest he or she will receive depends on length of service and whether or not the termination of employment was voluntary.

Summary of Principal Provisions
(Continued)

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 "Service Retirement" section and calculated as if the member had attained age 55 (or age 57 for those hired after April 1, 2012), if younger. 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).

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) and member had attained age 55 (or age 57 for those hired after April 1, 2012) if younger. Minimum monthly benefits provided as follows: spouse - \$500, first child - \$120, each additional child - \$90

10. OCCUPATIONAL DEATH

a. Eligibility

Dies as a result of an occupational injury.

b. Benefit Amount

72% of pay plus refund of annuity savings fund balance. In the case of an accidental disability retiree who dies of the same cause, the beneficiary receives 72% of the last 12 months salary or the current pension amount, whichever is greater.

Summary of Principal Provisions (Continued)

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

- Option A

Allowance payable monthly for the life of the member.

- Option B

Allowance payable monthly for the life of the member with a guarantee of remaining member contributions with interest.

- 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.

Glossary of Terms

- 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.

- 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.

- 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.

■ Quincy Retirement Board
Actuarial Valuation as of January 1, 2014

■ Actuarial Accrued Liability

The portion of the Present Value of Benefits that is attributable to past service.

■ Normal Cost

The portion of the Present Value of Benefits that is attributable to benefits to be earned in the coming year.

■ Actuarial Assets

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.

■ Unfunded Actuarial Accrued Liability

That portion of the Actuarial Accrued Liability not covered by System Assets.

■ PERAC

Public Employee Retirement Administration Commission, a division of the State government which has regulatory authority over the administration of the retirement system.

■ PRIT

Pension Reserves Investment Trust Fund is the state controlled and administered fund for the investment of assets for members of the retirement system.

■ GASB

Government Accounting Standards Board (issues guidance for disclosure of retirement system liabilities).