January 1, 2014

Actuarial Valuation Report

Lawrence Retirement Board

Lawrence B. Stone

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November 20, 2014

Lawrence Retirement Board
354 Merrimack Street #302, Entry C
Lawrence, MA 01843

Dear Lawrence Retirement Board:

Stone Consulting, Inc. has performed a January 1, 2014 actuarial valuation of the Lawrence 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 Lawrence 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 decrease 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-three years (fully funded in Fiscal 2038) and the amortization increase is 3.42%. The amortization increase cannot exceed 4.00% annually. 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.

The contribution amount for Fiscal Year 2016 is $18,396,280 which is $232,591 higher than the anticipated contribution amount for Fiscal 2016 from the prior funding schedule. PERAC and GASB guidelines indicate that actuarial valuations should be conducted at least every other year. The Lawrence 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

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Introduction

This report presents the results of the actuarial valuation of the Lawrence 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	$18,396,280	$18,163,689	$232,591
Funding Schedule Length (as of Fiscal 2016)	23 years	23 years	0 years
Amortization Increase	3.42%	3.42%	0.00%
Funding Ratio	45%	39%	5% (rounding)
Interest Rate Assumption	7.75%	7.75%	0.00%
Salary Increase Rate Assumption	3.75% ultimate plus 4% steps for first 5 years of service	Same	0.00%

- The Fiscal Year 2016 contribution is $232,591 higher than the planned 2016 contribution. Stone Consulting, with agreement from the Retirement Board, values assets using market value of assets.

The System experienced a 14.3% annual return on the market value of assets versus our assumption of a 7.75% return which resulted in a $17.6 million net actuarial gain. The assets are mainly invested in Pension Reserves Investment Trust (PRIT). The interest rate assumption was maintained at 7.75% to reflect anticipated market performance.

- The salary increase assumption is based on the same select and ultimate table as the prior valuation. Total compensation changed by 21.5% over the prior valuation; however average annual compensation (compensation divided by number of active members) changed by 5.0%. This assumption is based on expected future experience. There was a slight salary loss. This is calculated by comparing the actuarial accrued liability (AAL) for members who were active this valuation and the prior valuation using projected and actual salaries.

- The funding level of the Lawrence Retirement System is 45% compared to 39% 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-three (23) years (which is five less than the remaining schedule from the prior valuation). The maximum period permitted under Section 22F of Chapter 32 of the Massachusetts General Laws is 25 years (2040). The contribution amount is $232,591 higher than the anticipated contribution from the prior funding schedule. The contribution is made at the beginning of the fiscal year. The prior year contribution was made in three parts: 50% on September 30, 25% on January 1, and 25% on April 1.

- Non-economic assumptions were changed from the January 1, 2012 actuarial valuation. The mortality assumptions are based upon the RP2000 Table (sex-distinct) increased with generational mortality and Scale BB. The previous assumption used an 18 year projection with Scale AA. The net effect of this change increased the accrued liability by $15.7 million and Gross Normal Cost by $425 thousand.

- 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 be 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	$18,396,280		
Contribution for Fiscal 2016 based on current schedule		$18,163,689	1.3%
Members *			
▪ Actives			
a. Number	1,519	1,313	15.7%
b. Annual Compensation	$67,766,770	$55,767,015	21.5%
c. Average Annual Compensation	$44,613	$42,473	5.0%
d. Average Attained Age	44.6	45.9	-2.9%
e. Average Past Service	10.8	11.9	-9.5%
▪ Retired, Disabled and Beneficiaries			
a. Number	879	885	-0.7%
b. Total Benefits*	$21,643,207	20,478,978	5.7%
c. Average Benefits*	$ 24,623	$23,140	6.4%
d. Average Age	73.5	73.6	-0.1%
▪ Inactives			
a. Number	309	378	-18.3%
Normal Cost			
a. Gross Normal Cost	$8,469,461	$6,789,018	24.8%
b. Less Expected Members' Contributions	6,197,062	5,055,585	22.6%
c. Normal Cost to be funded by the Municipality	$2,272,399	$1,733,433	31.1%
d. Eighteen month adjustment	146,394	111,672	31.1%
e. Administrative Expense Assumption	469,174	427,000	9.9%
f. Adjusted Normal Cost and Expense	$2,887,967	$2,272,105	27.1%

*Excluding State reimbursed COLA

	January 1, 2014	January 1, 2012	Percentage Change
Actuarial Accrued Liability as of January 1, 2014			
a. Active Members	$166,391,208	$140,906,488	18.1%
b. Inactive Members	3,185,441	3,348,485	-4.9%
c. Retired Members and Beneficiaries	209,606,312	191,802,065	9.3%
d. Total	$379,182,961	$336,057,038	12.8%
Unfunded Actuarial Accrued Liability			
a. Actuarial Accrued Liability	$379,182,961	$336,057,038	12.8%
b. Less Actuarial Value of Assets	168,979,467	132,574,747	27.5%
c. Unfunded Actuarial Accrued Liability	$210,203,493	$203,482,291	3.3%
d. Eighteen month adjustment	$10,978,689	$10,947,350	
e. Adjusted Unfunded Actuarial Accrued Liability	$221,182,182	$214,429,641	

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

- Payroll changed by 21.5% over the course of the past two years. Average annual compensation changed by 5.0% over the same time period.

- The salary increase assumption includes general wage adjustments, step increases, and promotional increases.

History of Active Participants

Valuation Year	Number	Average Age	Average Past Service	Average Annual Compensation
2014	1,519	44.6	10.8	$44,613
2012	1,313	45.9	11.9	$42,473
2010	1,368	45.2	11.4	$42,274
2008	1,503	44.6	10.4	$39,639
2007	1,517	44.3	9.9	$39,010
2004	1,569	42.4	8.1	$32,094
2003	1,734	41.9	7.4	$30,923
2000	1,672	42.4	8.4	$27,567

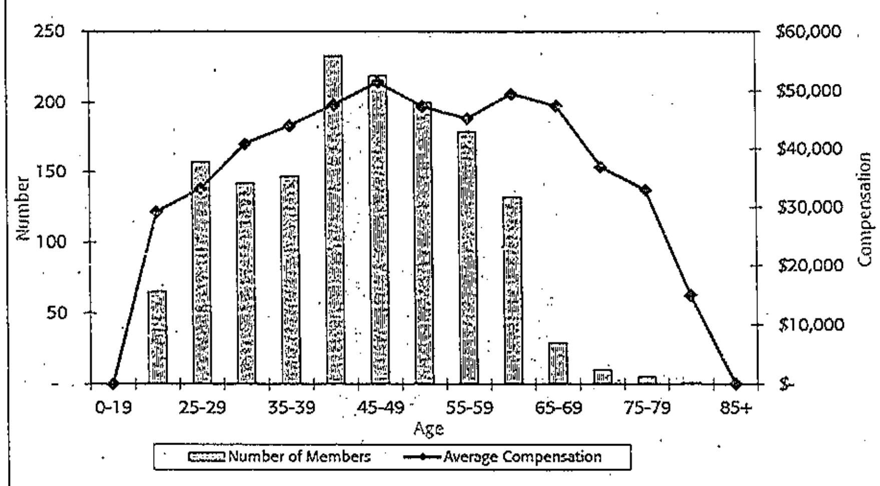
- Employee age has increased by 2.2 years and service has increased by 2.4 years over the past fourteen years. Average annual compensation has grown by 61.8% (3.5% annually) during that time. Based on our discussions with the Lawrence Retirement Board, the large increase in the number of active participants between the 2012 valuation and the 2014 valuation is reasonable and relates to increases in school department employment.

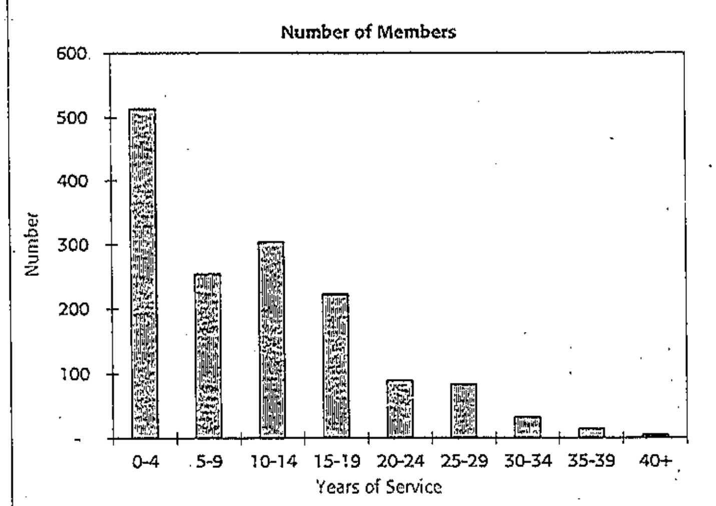
The charts on the following pages summarize demographic information regarding active and retiree members.

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	65	-	-	-	-	-	-	-	-	65	1,399,397	29,221
25-29	141	16	-	-	-	-	-	-	-	157	5,201,742	33,132
30-34	71	52	19	-	-	-	-	-	-	142	5,799,037	40,838
35-39	50	37	49	11	-	-	-	-	-	147	6,465,547	43,983
40-44	78	42	59	48	5	1	-	-	-	233	11,090,133	47,597
45-49	30	32	59	51	29	18	-	-	-	219	11,291,925	51,561
50-54	36	33	39	39	25	17	7	4	-	200	9,465,221	47,326
55-59	21	27	41	39	12	20	11	5	3	179	8,100,103	45,252
60-64	16	12	24	25	14	22	12	5	2	132	6,530,116	49,471
65-69	5	3	8	4	3	5	1	-	-	29	1,375,521	47,432
70-74	-	-	3	3	1	1	2	-	-	10	368,534	36,853
75-79	1	-	2	2	-	-	-	-	-	5	164,496	32,899
80-84	-	-	1	-	-	-	-	-	-	1	14,999	14,999
85+	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	514	254	304	222	89	84	33	14	5	1,519	$ 67,766,770	$ 44,613





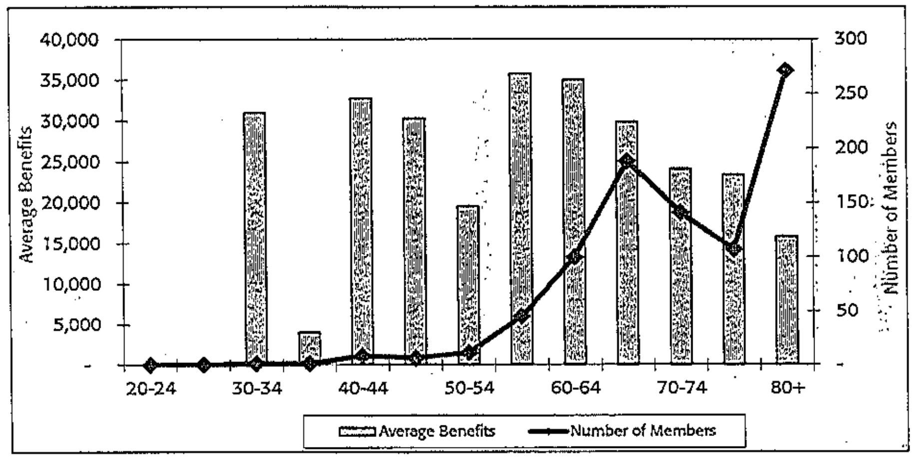
Distribution of Plan Members as of January 1, 2014

Retired Members

Retired Members and Beneficiaries			
Age	Number	Average Benefit	Total Benefit
20-24	-	-	-
25-29	-	-	-
30-34	-	-	-
35-39	1	4,032	4,032
40-44	2	30,134	60,267
45-49	3	33,752	101,257
50-54	6	8,106	48,634
55-59	31	35,204	1,091,323
60-64	84	33,614	2,823,577
65-69	151	28,417	4,290,979
70-74	120	23,813	2,857,619
75-79	97	22,642	2,196,252
80+	248	15,362	3,809,838
TOTAL	743	$ 23,262	$ 17,283,778

Disabled Members			
Age	Number	Average Benefit	Total Benefit
20-24	-	-	-
25-29	-	-	-
30-34	1	30,995	30,995
35-39	-	-	-
40-44	6	33,678	202,065
45-49	3	26,849	80,548
50-54	5	33,315	166,577
55-59	14	37,011	518,148
60-64	16	42,735	683,760
65-69	37	35,708	1,321,191
70-74	21	25,924	544,411
75-79	10	31,561	315,611
80+	23	21,571	496,123
TOTAL	136	$ 32,055	$ 4,359,429

Total			
Age	Number	Average Benefit	Total Benefit
20-24	-	-	-
25-29	-	-	-
30-34	1	30,995	30,995
35-39	1	4,032	4,032
40-44	8	32,792	262,332
45-49	6	30,301	181,805
50-54	11	19,565	215,211
55-59	45	35,766	1,609,471
60-64	100	35,073	3,507,337
65-69	188	29,852	5,612,171
70-74	141	24,128	3,402,029
75-79	107	23,475	2,511,863
80+	271	15,889	4,305,961
TOTAL	879	$ 24,623	$ 21,643,207



Benefits shown are net of State reimbursed COLA.

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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

Valuation Date	January 1, 2014	% of Payroll*
Gross Normal Cost (GNC)	$8,469,461	12.5%
Employees Contribution	$6,197,062	9.1%
Net Normal Cost (NNC)	$2,272,399	3.4%
Adjusted to Beginning of Fiscal Year 2016	$146,394	
Administrative Expense	$469,174	0.7%
Adjusted Net Normal Cost With Admin. Expense	$2,887,967	

*Payroll paid in 2013 for employees as of January 1, 2013 is $67,766,770. Payroll for new hires in 2013 was annualized.

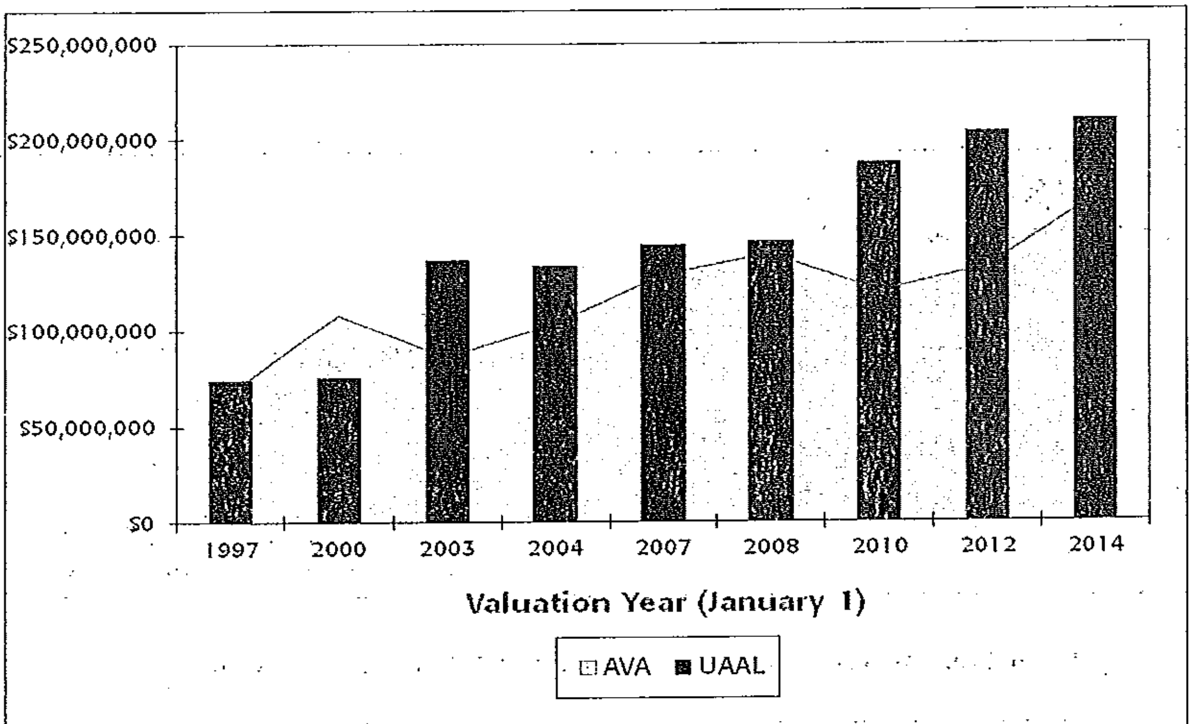
- The gross normal cost (GNC) is the "price" of benefits accruing in the current year if the assumptions underlying the normal cost were realized.
- An individual normal cost represents that part of the cost of a member's future benefits that are assigned to the current year as if the costs are to remain 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.

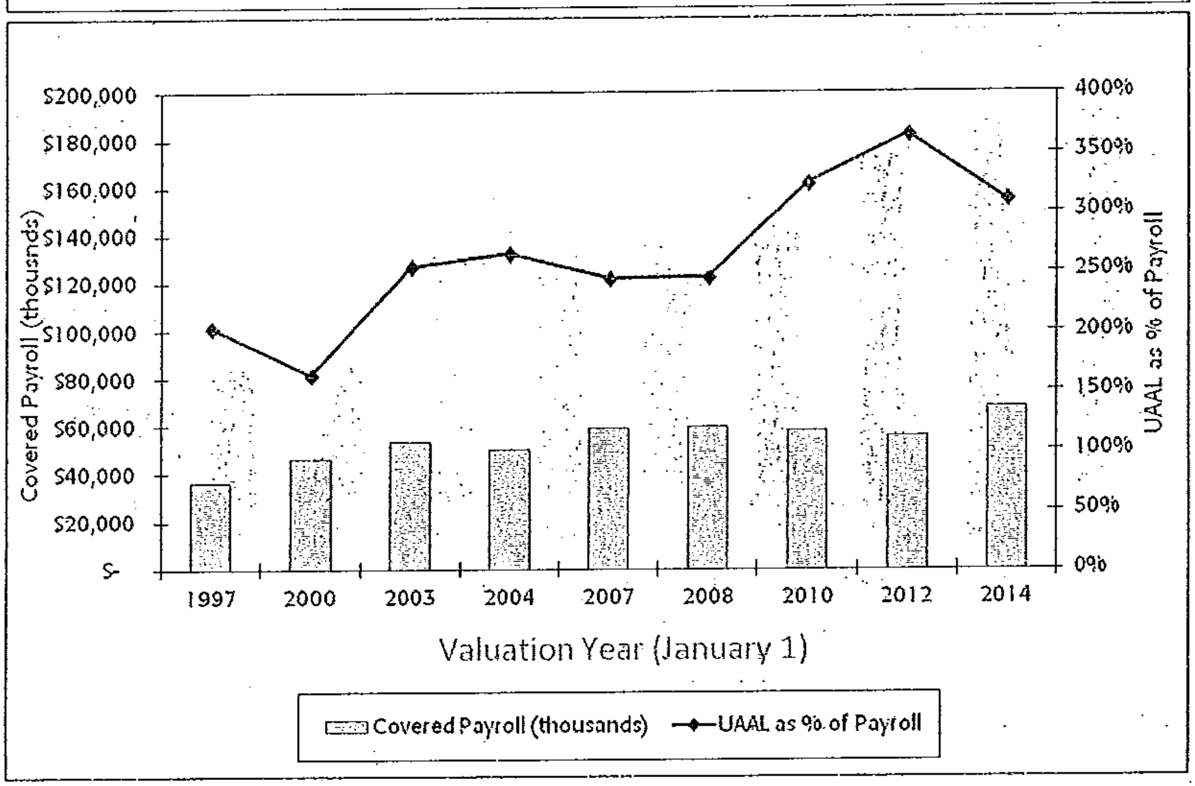
Actuarial Accrued Liability and Funded Status

		January 1, 2014	Percentage Change
Active Actuarial Accrued Liability			
Superannuation	$150,733,630		
Death	3,798,335		
Disability	9,992,510		
Withdrawal	1,866,733		
Total		$166,391,208	18.1%
Retiree, Inactive, Survivor and Beneficiary Actuarial Accrued Liability			
Retirees and Beneficiaries	$162,391,628		
Disabled	47,214,684		
Inactive	3,185,441		
Total		212,791,753	9.0%
Total Actuarial Accrued Liability (AAL)		$379,182,961	12.8%
Actuarial Value of Assets (AVA)		168,979,467	27.5%
Unfunded Actuarial Accrued Liability		$210,203,494	3.3%
Funded Ratio (AVA / AAL)			
2014 (7.75% interest rate):		45%	
2012 (7.75% interest rate):		39%	

- 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 $379,182,961. This along with an actuarial value of assets of $168,979,467 produces a funded status of 45%. This compares to a funded status of 39% for the 2012 valuation.
- The chart on the following page is a history of the unfunded actuarial accrued liability (UAAL) and the valuation assets (AVA) over the course of the past nine actuarial valuations.

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





Development of Funding Schedule

Net Employer Normal Cost for Fiscal 2016	$2,887,967
Net 3(8)(c) payments	692,185
Amortization	14,816,128
Total Appropriation required for Fiscal 2016	$18,396,280

- 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 in the beginning of the Fiscal Year (July 1).

- The 3(8)(c) payments is the net of payments made to or from different Chapter 32 Retirement Systems to reflect benefits paid due to service either with the Lawrence Retirement System or other Chapter 32 Retirement Systems.

- The contribution amount for Fiscal 2016 is $18,396,280. The funding schedule is presented on page 11. The schedule's length is twenty-three (23) years (for the fresh start base) which is the same as the January 1, 2013 valuation remaining schedule's length. The maximum funding schedule length allowed by Section 22F of Chapter 32 of the Massachusetts General Laws is twenty-five years to Fiscal 2040.

- 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 percentage increase is 3.42%, which is consistent with the amortization used in the prior valuation. The maximum amortization increase allowed under Section 22F of Chapter 32 is 4.00%.

  Note that using an increasing amortization can result in the UAAL increasing for a number of years before starting to decrease.

FUNDING SCHEDULE

Fiscal Year	Normal Cost	Unfunded Liability	Funding Amortization of UAAL	Net 3(8)(c) Payments	Schedule Contribution
2016	2,887,967	221,182,182	14,816,128	692,185	18,396,280
2017	3,010,706	222,359,423	15,327,878	692,185	19,030,769
2018	3,138,661	223,076,490	15,857,332	692,185	19,688,177
2019	3,272,054	223,278,643	16,405,102	692,185	20,369,340
2020	3,411,116	222,906,240	16,971,825	692,185	21,075,125
2021	3,556,088	221,894,333	17,558,156	692,185	21,806,429
2022	3,707,222	220,172,231	18,164,776	692,185	22,564,183
2023	3,864,779	217,663,032	18,792,388	692,185	23,349,352
2024	4,029,032	214,283,119	19,441,720	692,185	24,162,937
2025	4,200,266	209,941,608	20,113,524	692,185	25,005,975
2026	4,378,777	204,539,760	20,808,581	692,185	25,879,543
2027	4,564,875	197,970,346	21,527,695	692,185	26,784,756
2028	4,758,883	190,116,956	22,271,703	692,185	27,722,770
2029	4,961,135	180,853,261	21,601,019	692,185	27,254,339
2030	5,171,983	171,594,290	22,339,774	692,185	28,203,942
2031	5,391,793	160,821,741	23,103,794	692,185	29,187,772
2032	5,620,944	148,391,087	23,893,944	692,185	30,207,073
2033	5,859,834	134,145,672	24,711,117	692,185	31,263,136
2034	6,108,877	117,915,733	25,556,237	692,185	32,357,299
2035	6,368,504	99,517,357	26,430,261	692,185	33,490,949
2036	6,639,166	78,751,346	27,334,175	692,185	34,665,526
2037	6,921,330	55,402,001	28,269,004	692,185	35,882,519
2038	7,215,487	29,235,804	29,235,804	692,185	37,143,476
2039	7,522,145	-	-	692,185	8,214,330

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	ERI2002-LHA	2,746	4.50%	24	4,456	13
2005	ERI 2002-VOC	19,415	4.00%	24	29,889	13
2005	ERI2002-City	405,220	4.00%	24	623,818	13
2005	ERI2003-City	129,504	4.00%	24	199,365	13
2005	ERI2003-VOC	4,729	4.00%	24	7,280	13
2016	Fresh Start	13,951,320	3.42%	23	13,951,320	23

<u>Notes on Amortization of Unfunded Liability</u>

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	7.75%
Salary Increase	3.75% ultimate plus 4% steps for the first 5 years of service
COLA	3% of $12,000
COLA Frequency	Granted every year
Mortality	RP-2000 table (sex distinct, healthy employees for actives and healthy annuitants for retirees) projected with scale BB and generational mortality. For members retired under an Accidental Disability (job-related), 50% of deaths are assumed to be from the same cause as the disability. Disabled mortality is the healthy retiree table ages set forward 2 years. *(Prior valuation used RP2000 projected 17 years with scale AA.)*
Overall Disability	

	Ordinary	Accidental
Groups 1 and 2	50%	50%
Group 4	10%	90%

Retirement Rates	Groups 1 and 2: Ages 55 – 70, Group 4: Ages 50 – 65 Post April 1, 2012 Hires: Groups 1 and 2: Ages 60 – 70, Group 4: Ages 50 – 65
Administrative Expense	$469,174 budget estimated for FY 2016 provided by Lawrence Retirement Board.

Assets

a.	Cash	$422,267.01
b.	PRIT Cash	1,800,152.16
b.	PRIT Fund	167,338,666.17
c.	Sub-Total:	$169,561,085.34
d.	Prepaid Expenses	$6,946.67
e.	Accounts Receivable	266,762.47
f.	Accounts Payable	(855,327.03)
g.	Sub-Total:	$(581,617.89)
h.	Market Value of Assets [(c) + (g)]	$168,979,467.45

- 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 $168,979,467.45.

- The asset allocation as of December 31, 2013 was approximately 20% cash, receivables, payables and fixed income and 80% equities and other similar asset classes.

- 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 7.00% to 8.50% for domestic equities, 8.25% to 8.50% for international equities, 9.50% for emerging markets, 8.00% for hedge funds, 10% for venture capital, 6.00% for real estate and 4.50% for core 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.

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	$168,979	$379,183	$210,204	45%	$67,767	310%
1/1/2012	$132,575	$336,057	$203,482	39%	$55,767	365%
1/1/2010	$120,292	$307,626	$187,334	39%	$57,831	324%
1/1/2008	$139,750	$285,983	$146,233	49%	$59,578	245%
1/1/2007	$128,728	$272,947	$144,219	47%	$59,179	244%

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	Closed - Approximate level percent of payroll
Remaining amortization period	23 years for the fresh start base
Asset valuation method	Market value of assets (adjusted by accounts payable and receivable)

Actuarial Assumptions

Investment Rate of Return	7.75% per year
Projected salary increases	3.75% ultimate rate plus 4% steps for the first five years of service

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:	$6,197,062	9.1% of payroll
The normal cost for the employer was:	$2,272,399	3.4% of payroll

The actuarial liability for active members was:	$166,391,208
The actuarial liability for retired members was (includes inactives):	$212,791,753
Total actuarial accrued liability:	$379,182,961
System assets as of that date:	$168,979,467
Unfunded actuarial accrued liability:	$210,203,493

The ratio of system's assets to total actuarial liability was:	45%

As of that date the total covered employee payroll was:	$67,766,770

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

Investment Return:	7.75% per annum
Rate of Salary Increase:	Select and ultimate

SCHEDULE OF FUNDING PROGRESS (Dollars in $1,000'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	$168,979	$379,183	$210,204	45%	$67,767	310%
1/1/2012	$132,575	$336,057	$203,482	39%	$55,767	365%
1/1/2010	$120,292	$307,626	$187,334	39%	$57,831	324%
1/1/2008	$139,750	$285,983	$146,233	49%	$59,578	245%
1/1/2007	$128,728	$272,947	$144,219	47%	$59,179	244%

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).

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

7.75% per year net of investment expenses.

Salary Increases

3.75% ultimate rate plus 4% steps for the first 5 years of service.

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. A member would need to be eligible for the benefit to be assumed to retire. See Summary of Principal Provisions Number 5 for eligibility requirements.

				Hired after 4/1/2012		
Age	Group 1 & 2 Male	Group 1 & 2 Female	Group 4	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

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

Disabled Life Mortality

The RP-2000 mortality table for healthy annuitants (sex-distinct) projected with scale BB and Generational Mortality 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 projected 17 years with scale AA)*.

Actuarial Methods and Assumptions (Continued)

Regular Interest Rate Credited to Annuity Savings Account

2% per year.

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 $469,174 for the Fiscal Year 2016 excluding investment management fees and custodial fee is added to the Normal Cost.

Step Increases

Step increases are assumed to be part of the salary increase assumption.

Credited Service

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

3(8)(c)

Net 3(8)(c) payments are added to the contribution amount, they have not been included in the Accrued Liability. They are assumed to remain constant.

Contribution Timing

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

Municipality

Refers to the various employers that comprise the Retirement System.

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

1) For Group 1, 2 and 4 and hired pre-April 1, 2012: Completion of 20 years of credited service or attainment of age 55 and completion of 10 years of credited service. If a member of group 4, age 55 with no service requirement is also eligible for service retirement.

2) Hired after April 1, 2012: (Group 1 – Age 60, Group 2 – Age 55, Group 4 – Age 50) and completion of 10 years of service

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.

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.

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.

Summary of Principal Provisions
(Continued)

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.

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.

Glossary (continued)

- 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.

- 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 five-year rolling period. The phase-in is 20% for year one, 40% for year two, 60% for year three, 80% for year four and 100% for year five. 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).