# Lawrence Retirement System

## Actuarial Valuation
## January 1, 2012

STONE
CONSULTING, INC.

April 2013

STONE
CONSULTING, INC.

April 10, 2013

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

Dear Lawrence Retirement Board:

Stone Consulting, Inc. has performed a January 1, 2012 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. 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 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 remain approximately 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

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schedule contained in this actuarial valuation report is twenty-five years (fully funded by 2038) and the amortization increase is 3.42% amortization. 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 2014 is $16,969,496 that is $673,858 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 Lawrence Retirement Board conducted their previous actuarial valuation effective January 1, 2010. This satisfies these guidelines. The current funding ratio of 39% is the same as the January 1, 2010 funding ratio.

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.

The undersigned is a consultant for Stone Consulting, Inc. and a member of the American Academy of Actuaries and meets 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
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, 2012 for the purpose of determining the contribution requirements for Fiscal Year 2014 and beyond. The contribution requirements are based on:

- The financial condition of the system as of December 31, Lawrence
- 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, 2012);
- Economic assumptions regarding salary increases and investment earnings; and
- Other actuarial assumptions (i.e., terminations, retirement, death, etc.)

## JANUARY 1, 2012 VALUATION SUMMARY

| | January 1, 2012 | January 1, 2010 | Change |
|---|---|---|---|
| **Contribution Fiscal 2014** | $16,969,496 | $16,295,638 | $673,858 |
| **Funding Schedule Length** | 25 years | 27 years | -2 years |
| **Amortization Increase** | 3.42% | 2.48% | 0.94% |
| **Funding Ratio** | 39% | 39% | 0% |
| **Interest Rate Assumption** | 7.75% | 8.00% | -0.25% |
| **Salary Increase Rate Assumption** | 3.75% ultimate plus 4% steps for first 5 years of service | 4.50% | N/A |

- The Fiscal Year 2014 contribution is $673,858 more than the planned 2014 contribution. The System experienced a $4.7 million actuarial asset loss since January 1, 2010. Stone Consulting, with agreement from the Retirement Board, values assets using market value of assets.

The System experienced a 6.4% annual rate of return on the market value of assets versus our assumption of an 8.00% annual return. The System's asset portfolio, effective December 31, 2011 was 76% equities and 24% fixed income and short-term investments. The interest rate assumption was changed to 7.75% to reflect anticipated market performance. This increased the accrued liability by $8.2 million.

- The salary increase assumption was changed to 3.75% plus 4% steps for the first five years of service from 4.50% to reflect lower anticipated increases. This decreased the accrued liability by $6.5 million. Total compensation changed by -3.6% over the prior valuation; however average annual compensation (compensation divided by number of active members) changed by 0.5% or 0.23% per year.

- The funding level of the Lawrence Retirement System is 39% compared to 39% for the January 1, 2010 actuarial valuation. The funding level is estimated to be below the median of Massachusetts' Contributory Retirement Systems.

  The schedule length is twenty-five years. This is in accordance with legislation which has extended the maximum length of the funding schedule to Fiscal 2040 and reduced the maximum amortization increase to 4%. These limitations are contained in Section 22F of Chapter 32. The FY 2014 contribution is $673,858 more than the anticipated amount from the prior actuarial valuation. Without use of Section 22F the maximum period permitted under Chapter 32 of the Massachusetts General Laws is 17 years (2030) with a maximum amortization increase of 4.5%.

- Non-economic assumptions were changed from the January 1, 2010 actuarial valuation. Mortality was changed to the RP2000 mortality table projected 17 years with Scale AA. This increased the accrued liability by $4.1 million. Changes were made to the retirement, withdrawal and disability assumptions. These assumptions are based on assumptions from the most recent published PERAC experience study of local retirement systems. This increased the accrued liability by $5.4 million.

- This valuation also recognizes net 3(8)(c) payments. This increased the normal cost by $512,000. These payments were not recognized in the prior valuation.

## JANUARY 1, 2012 ACTUARIAL VALUATION RESULTS

| | January 1, 2012 | January 1, 2010 | Percentage Change |
|---|---|---|---|
| **Funding** | | | |
| • Contribution for Fiscal 2014 | $16,969,496 | | |
| • Contribution for Fiscal 2014 based on current schedule | | $16,295,638 | 4% |
| **Members *** | | | |
| • ***Actives*** | | | |
| a. Number | 1,313 | 1,368 | -4.0% |
| b. Annual Compensation | $55,767,015 | $57,830,511 | -3.6% |
| c. Average Annual Compensation | $42,473 | $42,274 | 0.5% |
| d. Average Attained Age | 45.9 | 45.2 | 1.5% |
| e. Average Past Service | 11.9 | 11.4 | 4.4% |
| • ***Retired, Disabled and Beneficiaries*** | | | |
| a. Number | 885 | 878 | 0.8% |
| b. Total Benefits* | $20,478,978 | $18,720,146 | 9.4% |
| c. Average Benefits* | $23,140 | $21,321 | 8.5% |
| c. Average Age | 73.6 | 73.7 | -0.1% |
| • ***Inactives*** | | | |
| a. Number | 378 | 460 | -17.8% |
| **Normal Cost** | | | |
| a. Total Normal Cost | $6,789,018 | $6,464,912 | 5.0% |
| b. Less Expected Members' Contributions | 5,055,585 | 5,126,938 | -1.4% |
| c. Normal Cost to be funded by the Municipality | $1,733,433 | $1,337,974 | 29.6% |
| d. Eighteen month Adjustment ** | 111,672 | 29,773 | 275.1% |
| e. Administrative Expense Assumption | 427,000 | 434,000 | -1.6% |
| f. Adjusted Normal Cost | $2,272,105 | $1,801,747 | 26.1% |

*Excluding State reimbursed COLA
**Six month adjustment for 2010 valuation

## SUMMARY OF JANUARY 1, 2012 VALUATION
## (Continued)

| | January 1, 2012 | January 1, 2010 | Percentage Change |
|---|---|---|---|
| **Actuarial Accrued Liability as of January 1, 2012** | | | |
| a. Active Members | $140,906,488 | $133,543,044 | 5.5% |
| b. Inactive Members | 3,348,485 | 4,258,317 | -21.4% |
| c. Retired Members and Beneficiaries | 191,802,065 | 169,824,279 | 12.9% |
| d. Total | $336,057,038 | $307,625,640 | 9.2% |
| **Unfunded Actuarial Accrued Liability** | | | |
| a. Actuarial Accrued Liability | $336,057,038 | $307,625,640 | 9.2% |
| b. Less Actuarial Value of Assets | 132,574,747 | 120,292,096 | 10.2% |
| c. Unfunded Actuarial Accrued Liability | $203,482,291 | 187,333,544 | |
| d. Eighteen month Adjustment* | $ 10,947,350 | $8,044,417 | |
| e. Unfunded Actuarial Accrued Liability | $214,429,641 | $195,377,961 | |

*Six month adjustment for 2010 valuation

## DEMOGRAPHIC INFORMATION

| Members | January 1, 2012 | Percentage Change |
|---|---|---|
| • ***Actives*** | | |
| a. Number | 1,313 | -4.0% |
| b. Annual Compensation | $55,767,015 | -3.6% |
| c. Average Annual Compensation | $42,473 | 0.5% |
| d. Average Attained Age | 45.9 | 1.5% |
| e. Average Past Service | 11.9 | 4.4% |
| • ***Retired, Disabled and Beneficiaries*** | | |
| a. Number | 885 | 0.8% |
| b. Total Annual Retirement Allowance excluding State-reimbursed COLA | $20,478,978 | 9.4% |
| • ***Inactives*** | | |
| a. Number | 378 | -17.8% |

- 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 -3.6% over the course of the past two years. Average annual compensation changed by 0.5% over the same time period.

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

## *HISTORY OF ACTIVE PARTICIPANTS*

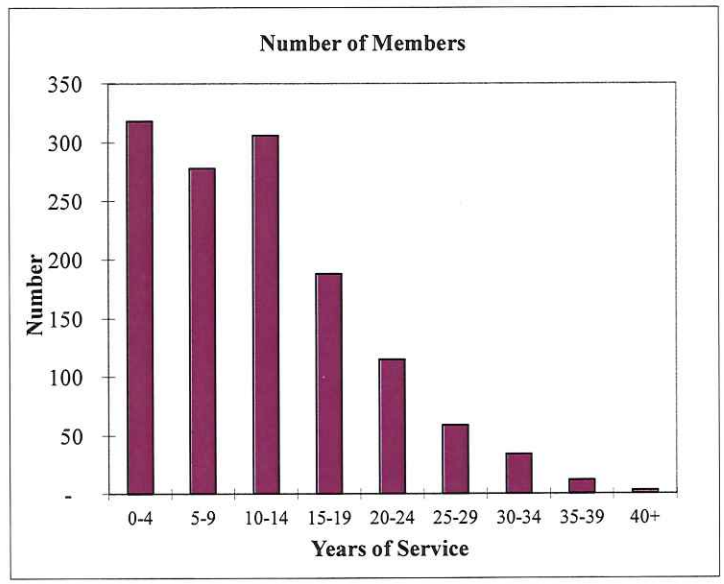
| Valuation Year | Number | Average Age | Average Past Service | Average Ann'l Compensation |
|---|---|---|---|---|
| 2012 | 1,313 | 45.9 | 11.9 | $42,473 |
| 2010 | 1,368 | 45.2 | 11.4 | $42,274 |
| 2008 | 1,503 | 44.6 | 10.4 | $39,639 |
| 2007 | 1,517 | 44.3 | 9.9 | $39,010 |
| 2004 | 1,569 | 42.4 | 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 3.5 years and service has increased by 3.5 years over the course of the past twelve years. Average annual compensation has grown by 54.1% (3.7% annually) over the same time period. Our impression is that the changes in age and service are somewhat greater than in most other systems but consistent with the general graying of the Massachusetts work force. However, the average age having increased significantly is still lower than many other Massachusetts public sector entities. Many other Massachusetts public sector entities have average age nearer to 48 years.

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

# LAWRENCE CONTRIBUTORY RETIREMENT SYSTEM
## Distribution of Plan Members as of January 1, 2012
## 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 | 26 | 1 | - | - | - | - | - | - | - | 27 | 565,190 | 20,933 |
| 25-29 | 74 | 21 | - | - | - | - | - | - | - | 95 | 2,815,504 | 29,637 |
| 30-34 | 61 | 38 | 28 | 1 | - | - | - | - | - | 128 | 4,607,896 | 35,999 |
| 35-39 | 38 | 39 | 44 | 12 | - | - | - | - | - | 133 | 5,566,507 | 41,853 |
| 40-44 | 32 | 45 | 74 | 43 | 12 | 1 | - | - | - | 207 | 9,761,576 | 47,157 |
| 45-49 | 32 | 49 | 44 | 44 | 38 | 9 | 1 | - | - | 217 | 9,963,223 | 45,913 |
| 50-54 | 21 | 30 | 41 | 27 | 14 | 16 | 12 | - | - | 161 | 7,065,342 | 43,884 |
| 55-59 | 22 | 32 | 43 | 38 | 25 | 14 | 11 | 8 | 1 | 194 | 8,859,314 | 45,667 |
| 60-64 | 8 | 14 | 23 | 12 | 18 | 12 | 8 | 4 | 2 | 101 | 4,647,615 | 46,016 |
| 65-69 | 3 | 8 | 5 | 8 | 7 | 5 | 2 | - | - | 38 | 1,520,281 | 40,007 |
| 70-74 | 1 | - | 2 | 2 | - | 2 | - | - | - | 7 | 264,248 | 37,750 |
| 75-79 | - | - | 2 | 1 | 1 | - | - | - | - | 4 | 116,331 | 29,083 |
| 80-84 | - | 1 | - | - | - | - | - | - | - | 1 | 13,989 | 13,989 |
| 85+ | - | - | - | - | - | - | - | - | - | - | - | - |
| **TOTAL** | **318** | **278** | **306** | **188** | **115** | **59** | **34** | **12** | **3** | **1,313** | **$ 55,767,015** | **$ 42,473** |

# Distribution of Plan Members as of January 1, 2012

## Retired Members

**Disabled Member**

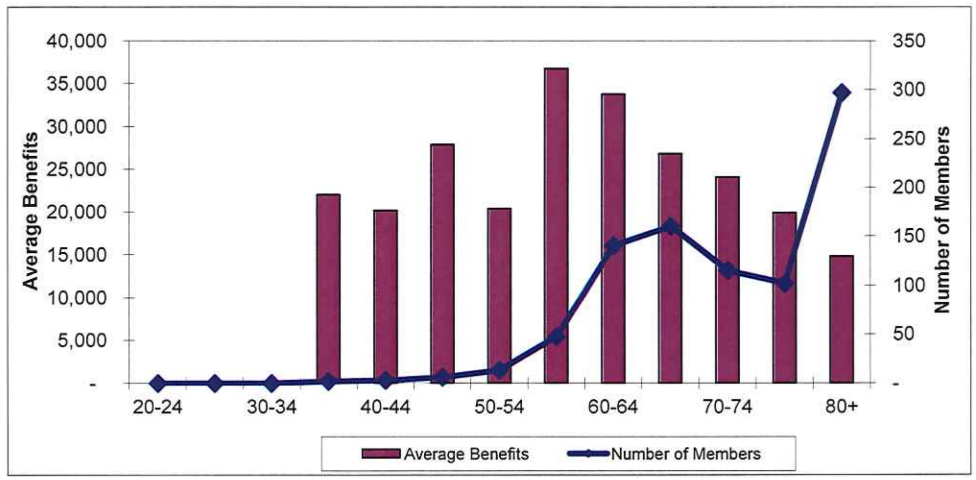
| Age | Number | Average Benefit | Total Benefit |
|---|---|---|---|
| 20-24 | - | - | - |
| 25-29 | - | - | - |
| 30-34 | - | - | - |
| 35-39 | 1 | 40,232 | 40,232 |
| 40-44 | 1 | 1,736 | 1,736 |
| 45-49 | 4 | 26,905 | 107,622 |
| 50-54 | 6 | 35,006 | 210,034 |
| 55-59 | 17 | 42,181 | 717,075 |
| 60-64 | 30 | 35,417 | 1,062,507 |
| 65-69 | 32 | 31,237 | 999,589 |
| 70-74 | 13 | 28,271 | 367,524 |
| 75-79 | 12 | 26,974 | 323,689 |
| 80+ | 22 | 19,399 | 426,773 |
| **TOTAL** | **138** | **$ 30,846** | **$ 4,256,781** |

**Retired Members and Beneficiaries**

| Age | Number | Average Benefit | Total Benefit |
|---|---|---|---|
| 20-24 | - | - | - |
| 25-29 | - | - | - |
| 30-34 | - | - | - |
| 35-39 | 1 | 3,800 | 3,800 |
| 40-44 | 2 | 29,414 | 58,827 |
| 45-49 | 2 | 29,818 | 59,635 |
| 50-54 | 7 | 7,870 | 55,089 |
| 55-59 | 30 | 33,696 | 1,010,870 |
| 60-64 | 110 | 33,340 | 3,667,426 |
| 65-69 | 128 | 25,709 | 3,290,720 |
| 70-74 | 102 | 23,530 | 2,400,029 |
| 75-79 | 90 | 18,970 | 1,707,341 |
| 80+ | 275 | 14,431 | 3,968,461 |
| **TOTAL** | **747** | **$ 21,716** | **$ 16,222,197** |

**Total**

| Age | Number | Average Benefit | Total Benefit |
|---|---|---|---|
| 20-24 | - | - | - |
| 25-29 | - | - | - |
| 30-34 | - | - | - |
| 35-39 | 2 | 22,016 | 44,033 |
| 40-44 | 3 | 20,188 | 60,563 |
| 45-49 | 6 | 27,876 | 167,257 |
| 50-54 | 13 | 20,394 | 265,124 |
| 55-59 | 47 | 36,765 | 1,727,945 |
| 60-64 | 140 | 33,785 | 4,729,933 |
| 65-69 | 160 | 26,814 | 4,290,308 |
| 70-74 | 115 | 24,066 | 2,767,552 |
| 75-79 | 102 | 19,912 | 2,031,029 |
| 80+ | 297 | 14,799 | 4,395,234 |
| **TOTAL** | **885** | **$ 23,140** | **$ 20,478,978** |




**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, 2012 | % of Payroll* |
|---|---|---|---|
| Gross Normal Cost (GNC) | $ | 6,789,018 | 12.2% |
| Employees Contribution | | 5,055,585 | 9.1% |
| Net Normal Cost (NNC) | $ | 1,733,433 | 3.1% |
| Adjusted to Beginning of Fiscal Year 2014 | $ | 111,672 | |
| Administrative Expense | $ | 427,000 | 0.8% |
| Adjusted Net Normal Cost With Admin. Expense | $ | 2,272,105 | |

*Payroll paid in 2011 for employees as of January 1, 2012 is $55,767,015. Payroll for new hires in 2011 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.

## ACTUARIAL ACCRUED LIABILITY AND FUNDED STATUS

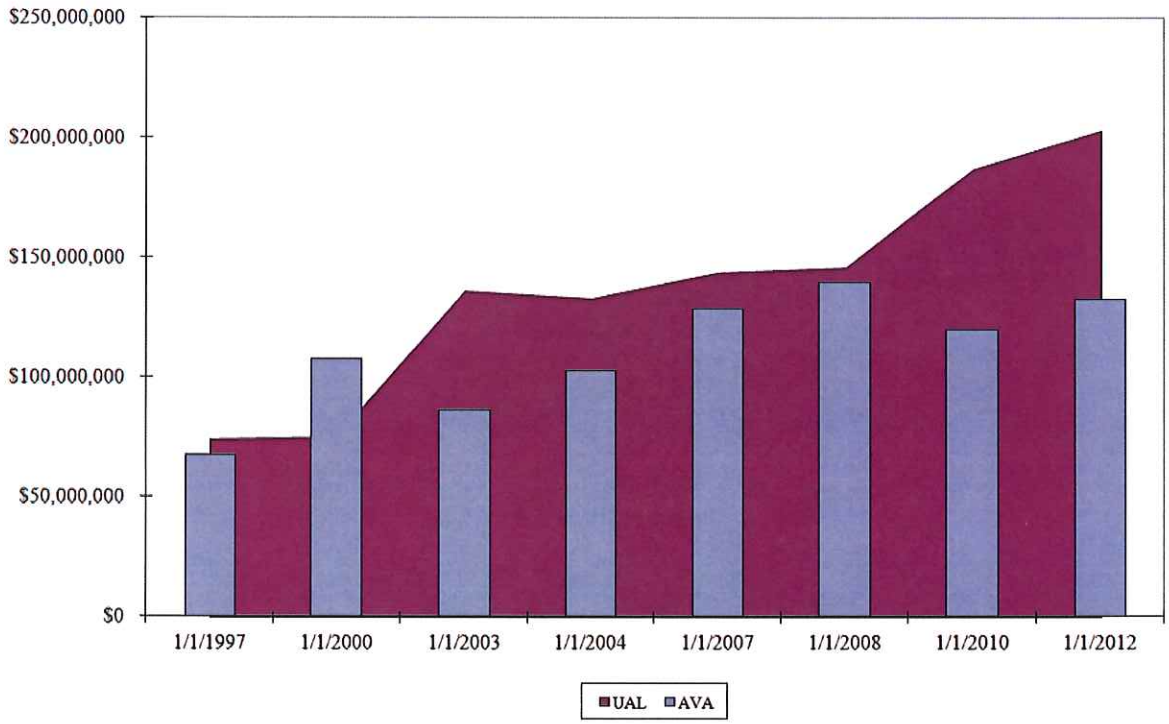
| | | | January 1, 2012 | Percentage Change |
|---|---|---|---|---|
| **Active Actuarial Accrued Liability** | | | $ 140,906,488 | 5.5% |
| Superannuation | $ | 126,517,865 | | |
| Death | $ | 3,114,534 | | |
| Disability | $ | 8,708,244 | | |
| Termination | $ | 2,565,845 | | |
| **Retiree, Inactive, Survivor and Beneficiary Actuarial Accrued Liability** | | | 195,150,550 | 12.1% |
| Retirees and Beneficiaries | $ | 146,834,874 | | |
| Disabled | $ | 44,967,191 | | |
| Inactive | $ | 3,348,485 | | |
| **Total Actuarial Accrued Liability (AAL)** | | | $ 336,057,038 | 9.2% |
| **Actuarial Value of Assets (AVA)** | | | $ 132,574,747 | 10.2% |
| **Unfunded Actuarial Accrued Liability** | | | $ 203,482,291 | |
| **Funded Ratio (AVA / AAL)** | | | | |
| 2012 (7.75% interest rate): | | 39% | | |
| 2010 (8.00% 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 $336,057,038. This along with an actuarial value of assets of $132,574,747 produces a funded status of 39%. This compares to a funded status of 39% for the 2010 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 eight actuarial valuations.

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



## DEVELOPMENT OF FUNDING SCHEDULE

| | | |
|---|---|---|
| Net Employer Normal Cost for Fiscal 2014 | $ | 2,272,105 |
| Net 3(8)(c) Payments | | 512,147 |
| Amortization | $ | 13,641,991 |
| Interest adjustment to payment date | $ | 543,253 |
| Total Appropriation required for Fiscal 2014 | $ | 16,969,496 |

- The funding schedule is composed of the normal cost, net 3(8)(c) payments and the amortization of the actuarial accrued unfunded liability and is adjusted by the administrative expense assumption.

- The contribution amount for Fiscal 2014 is $16,969,496. The funding schedule is presented on page 14. The schedule's length is twenty-five (25) years (for the fresh start base) which is two years less than the January 1, 2010 valuation schedule's length. The maximum length allowed under Section 22F of Chapter 32 is twenty-seven years to Fiscal 2040. The maximum funding schedule length allowed by Chapter 32 of the Massachusetts General Laws without regard to Section 22F is seventeen years to 2030.

- In developing the funding schedule, we used a fresh start approach in which the unfunded actuarial accrued liability 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 increase is 2.48% whereas 3.26% amortization was used in the prior valuation. The maximum amortization increase allowed under Section 22F of Chapter 32 is 4.00%.

- In prior years, there was grant money deposited in the retirement system. This was not included as a contribution from the various entities that make up the Lawrence Retirement System. There have been numerous discussions whether these will continue to be contributed. The outcome of these discussions has the potential to affect the future funding level of the Retirement system.

## FUNDING SCHEDULE

| Fiscal Year | Normal Cost | Unfunded Liability | Funding Amortization of UAL | Net 3(8)(c) Payments | Schedule Contribution | Adjusted for Timing of Payment |
|---|---|---|---|---|---|---|
| 2014 | 2,272,105 | 214,429,641 | 13,641,991 | 512,147 | 16,426,243 | 16,969,496 |
| 2015 | 2,368,669 | 216,348,693 | 14,113,205 | 512,147 | 16,994,021 | 17,556,052 |
| 2016 | 2,469,338 | 217,908,739 | 14,600,721 | 512,147 | 17,582,205 | 18,163,689 |
| 2017 | 2,574,285 | 219,064,390 | 15,105,103 | 512,147 | 18,191,535 | 18,793,171 |
| 2018 | 2,683,692 | 219,766,131 | 15,626,938 | 512,147 | 18,822,777 | 19,445,289 |
| 2019 | 2,797,749 | 219,959,981 | 16,166,829 | 512,147 | 19,476,725 | 20,120,864 |
| 2020 | 2,916,653 | 219,587,121 | 16,725,402 | 512,147 | 20,154,203 | 20,820,748 |
| 2021 | 3,040,611 | 218,583,502 | 17,303,306 | 512,147 | 20,856,064 | 21,545,822 |
| 2022 | 3,169,837 | 216,879,411 | 17,901,210 | 512,147 | 21,583,194 | 22,297,000 |
| 2023 | 3,304,555 | 214,399,011 | 18,519,809 | 512,147 | 22,336,510 | 23,075,230 |
| 2024 | 3,444,998 | 211,059,841 | 19,159,818 | 512,147 | 23,116,964 | 23,881,494 |
| 2025 | 3,591,411 | 206,772,274 | 19,821,981 | 512,147 | 23,925,539 | 24,716,811 |
| 2026 | 3,744,046 | 201,438,941 | 20,507,067 | 512,147 | 24,763,260 | 25,582,237 |
| 2027 | 3,903,168 | 194,954,094 | 21,215,870 | 512,147 | 25,631,185 | 26,478,867 |
| 2028 | 4,069,052 | 187,202,936 | 21,949,213 | 512,147 | 26,530,412 | 27,407,833 |
| 2029 | 4,241,987 | 178,060,886 | 21,267,500 | 512,147 | 26,021,634 | 26,882,228 |
| 2030 | 4,422,272 | 168,944,874 | 21,994,848 | 512,147 | 26,929,267 | 27,819,879 |
| 2031 | 4,610,218 | 158,338,653 | 22,747,072 | 512,147 | 27,869,437 | 28,791,143 |
| 2032 | 4,806,152 | 146,099,929 | 23,525,022 | 512,147 | 28,843,321 | 29,797,235 |
| 2033 | 5,010,414 | 132,074,463 | 24,329,577 | 512,147 | 29,852,138 | 30,839,416 |
| 2034 | 5,223,357 | 116,095,114 | 25,161,649 | 512,147 | 30,897,152 | 31,918,992 |
| 2035 | 5,445,349 | 97,980,809 | 26,022,177 | 512,147 | 31,979,674 | 33,037,314 |
| 2036 | 5,676,777 | 77,535,425 | 26,912,136 | 512,147 | 33,101,059 | 34,195,787 |
| 2037 | 5,918,040 | 54,546,594 | 27,832,531 | 512,147 | 34,262,717 | 35,395,863 |
| 2038 | 6,169,556 | 28,784,403 | 28,784,403 | 512,147 | 35,466,107 | 36,639,051 |
| 2039 | 6,431,762 | - | - | 512,147 | 6,943,909 | 7,173,560 |

### Amortization of Unfunded Liability as of July 1, 2013

| Year | Type | Original Amort. Amount | Percentage Increasing | Original # of Years | Current Amort. Amount | Years Remaining |
|---|---|---|---|---|---|---|
| 2005 | ERI2002-LHA | 2,746 | 4.50% | 24 | 4,081 | 15 |
| 2005 | ERI 2002-VOC | 19,415 | 4.00% | 24 | 27,634 | 15 |
| 2005 | ERI2002-City | 405,220 | 4.00% | 24 | 576,754 | 15 |
| 2005 | ERI2003-City | 129,504 | 4.00% | 24 | 184,325 | 15 |
| 2005 | ERI2003-VOC | 4,729 | 4.00% | 24 | 6,731 | 15 |
| 2014 | Fresh Start | 12,842,466 | 3.42% | 25 | 12,842,466 | 25 |

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:

| Assumption | January 1, 2012 Valuation |
|---|---|
| Interest Rate | 7.75%<br>(8.00% prior valuation) |
| Salary Increase | 3.75% ultimate plus 4% steps for the first 5 years of service<br>(4.50%, prior valuation) |
| COLA | 3% of $12,000 |
| COLA Frequency | Granted every year |
| Mortality | RP-2000 table (sex-distinct) projected 17 years with scale AA. Pre-retirement mortality was for healthy employees and post-retirement mortality was for healthy annuitants. 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 RP-2000 projected table, ages set forward 2 years.<br>*(prior valuation used RP-2000 with 10 year projection.)* |
| Overall Disability | Groups 1 and 2<br>50% ordinary disability<br>50% accidental disability<br><br>Group 4<br>10% ordinary disability<br>90% accidental disability |
| Retirement Rates | Groups 1 and 2<br>Ages 55 – 70<br>*(prior valuation 55 – 65)*<br>Group 4<br>Ages 50 – 65 |
| Administrative Expense | $427,000 budget estimated for FY 2014 provided by Lawrence Retirement Board. |

## ASSETS

| | | | |
|---|---|---|---|
| a. | Cash | $ | 4,685,487.58 |
| b. | PRIT Cash | | 650,190.18 |
| c. | PRIT Fund | | 126,570,230.54 |
| d. | Sub-Total: | $ | 133,246,325.30 |
| e. | Prepaid Expenses | $ | 6,616.64 |
| f. | Accounts Receivable | | 1,333,800.36 |
| g. | Accounts Payable | | (671,578.53) |
| h. | Sub-Total: | $ | 668,838.47 |
| i. | Market Value of Assets [(d) + (h)] | $ | 133,915,163.77 |

- We were furnished with the System's annual report by the Board. The market value of assets as of December 31, 2011 (adjusted for interest due and accrued, payables and receivables) is $133,915,163.77.

- The asset allocation is approximately 4% cash, receivables, payables and short-term investments, 19% fixed income, and 77% equities, alternative investments and real estate.

- 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 10.50% for equities and 3.65% to 6.50% 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.

# DISCLOSURE INFORMATION UNDER GASB STATEMENT 25

*Schedules of Funding Progress*

(Dollars In Thousands)

| Actuarial Valuation Date | Actuarial Value of Assets | Actuarial Accrued Liability | Unfunded AAL (UAAL) | Funded Ratio | Covered Payroll | UAAL as a % of Covered Payroll |
|---|---|---|---|---|---|---|
| | A | B | B-A | A/B | C | (B-A)/C |
| 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% |
| 1/1/2004 | $103,202 | $236,420 | $133,218 | 44% | $50,355 | 265% |

*Notes to Schedules*

Additional information as of the latest actuarial valuation follows:

| | |
|---|---|
| Valuation date | 1/1/2012 |
| Actuarial cost method | Entry Age Normal |
| Amortization method | Approximate level percent of payroll<br>Closed |
| Remaining amortization period | 25 years, 15 years for the ERI's. |
| Asset valuation method | Market value adjusted by accounts payable and receivables. |
| Actuarial assumptions: | |
| Investment Rate of Return | 7.75% per year |
| Projected Salary Increases | 3.75% ultimate rate plus 4% steps for the first 5 years of service (4.50% prior valuation) |

## PERAC INFORMATION DISCLOSURE

| | | |
|---|---|---|
| The most recent actuarial valuation of the System was prepared by Stone Consulting, Inc. as of January 1, 2012 | | |
| The normal cost for employees on that date was: | $5,055,585 | 9.1% of payroll |
| The normal cost for the employer was: | $1,733,433 | 3.1% of payroll |
| The actuarial liability for active members was: | $140,906,488 | |
| The actuarial liability for retired members was (includes inactives): | $195,150,550 | |
| Total actuarial accrued liability: | $336,057,038 | |
| System assets as of that date: | $132,574,747 | |
| Unfunded actuarial accrued liability: | $203,482,291 | |
| The ratio of system's assets to total actuarial liability was: | 39% | |
| As of that date the total covered employee payroll was: | $55,767,015 | |

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

Investment Return: 7.75% per annum
Rate of Salary Increase: 3.75% per annum ultimate plus 4% steps for the first 5 years of service

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) |
|---|---|---|---|---|---|---|
| 1/1/2012 | $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% |
| 1/1/2004 | $103,202 | $236,420 | $133,218 | 44% | $50,355 | 265% |

# 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.<br><br>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). |
| 3. | Fiscal Year Adjustment | The actuarial results are adjusted by the valuation interest rate and salary scale to the beginning of Fiscal Year 2014. 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. (Changed from 8.00% prior valuation) |
| 2. | Salary Increases | 3.75% ultimate plus 4% steps for the first 5 years of service. (4.50%, prior valuation) |

## 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. *(Changed fro prior valuation)*

| | **Rate of Withdrawal** | |
|---|---|---|
| ***Age*** | ***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% | 1.5% |
| 20 | 2% | 0.0% |
| 25 | 1% | 0.0% |
| 30+ | 0.0% | 0.0% |

4. 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. *(Changed from prior valuation)*

## 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:

**Rates of Retirement**

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

6. Mortality

The RP-2000 mortality table projected 17 years with Scale AA (sex-distinct). Pre-retirement mortality was for healthy employees and post-retirement mortality was for healthy annuitants.
*(previously RP-2000 with 10 year projection)*

7. Disabled Life Mortality

The RP-2000 mortality table for healthy annuitants (sex-distinct) set-forward by 2 years. Prior valuation used RP-2000 without projection. Death is assumed to be due to the same cause as the disability 50% of the time.

8. Regular Interest Rate Credited to Annuity Savings Account

2% per year.

## ACTUARIAL METHODS AND ASSUMPTIONS
## (Continued)

| | | |
|---|---|---|
| 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 $427,000 for the Fiscal Year 2014 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 | Service between date of hire and date of membership is assumed to be purchased by all members. |
| 14. | 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. |
| 15. | Contribution Timing | Contribution is being made December 31 but the interest adjustment shown in this report is based on the prior history of later contribution. The first payment is for 50% of the contribution at September 30th; the second is for 25% of the contribution at January 1st and the third is for 25% at April 1st. |
| 16. | Valuation Date | January 1, 2012. |

## 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 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.

## 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):

| 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 |

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).

## 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.<br><br>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). |

## 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. |

## 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. |

## GLOSSARY OF TERMS
## (Continued)

| | | |
|---|---|---|
| 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). |
| 11. | 3(8)(c) Payment | Payment made by a retirement system to another retirement system. The purpose is to reimburse the portion of a retirement allowance due to service with a previous retirement system. |