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**Public Employees Retirement Association (PERA)
of New Mexico
Annual Actuarial Valuation
as of June 30, 2013**





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

October 31, 2013

The Retirement Board
Public Employees Retirement Association
Santa Fe, New Mexico

Members of the Board:

We have conducted the annual actuarial valuation of the Public Employees Retirement Association (PERA) of New Mexico as of June 30, 2013; the results of the valuation are contained in the following report. The annual valuation is used to determine the sufficiency of the statutory contribution rates and, if necessary, the amount required to fund the annual normal cost and amortize the unfunded actuarial accrued liability over a 30-year period. The results of this valuation apply to the fiscal year beginning July 1, 2013 and ending June 30, 2014 (FY 2014). Information contained in our report for plan years prior to June 30, 2010 is based upon valuations performed by the association's prior actuary.

In performing the valuation, we relied on data supplied by the Public Employees Retirement Association (PERA) and performed limited tests on the data for consistency and reasonableness. In determining the Fund's liabilities, future events, such as investment returns, deaths, retirements, etc., are anticipated based upon the set of actuarial assumptions as approved by the Board.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: fund experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

This is to certify that the undersigned are members of the American Academy of Actuaries and have experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the Fund.

Respectfully submitted,

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Section I: Board Summary

The table below summarizes the results of the June 30, 2013 actuarial valuation as compared with the prior year.

Table I-1(a): Comparative Summary of Principal Results (All PERA Divisions)

| Valuation Date | June 30, 2013 | June 30, 2012 |
|--|-----------------------|-----------------------|
| Total Annual Payroll | \$ 2,049,737,510 | \$ 1,994,280,107 |
| Total Valuation Payroll | \$ 2,131,727,010 | \$ 2,074,051,311 |
| Actuarial Accrued Liability (AAL) | | |
| Active and Deferred Vested Members | \$ 6,243,367,726 | \$ 6,731,898,673 |
| Retired Members and Survivors | <u>10,814,012,296</u> | <u>11,056,145,174</u> |
| Total | \$ 17,057,380,022 | \$ 17,788,043,847 |
| Actuarial Value of Assets | \$ 12,438,151,665 | \$ 11,612,047,019 |
| Funded Ratio | 72.9 % | 65.3 % |
| Unfunded Actuarial Accrued Liability (UAAL) (AAL - Actuarial Value of Assets) | \$ 4,619,228,357 | \$ 6,175,996,828 |
| Calculation of Required Contribution | | |
| Statutory Contribution Rate | | |
| Employer Contribution Rate | 14.59 % | 13.88 % |
| Member Contribution Rate | <u>12.04 %</u> | <u>11.24 %</u> |
| Total | 26.63 % | 25.12 % |
| Less Normal Cost: | | |
| Retirement | 14.55 % | 16.06 % |
| Termination | 3.42 % | 3.66 % |
| Pre-Retirement Survivors | 0.42 % | 0.51 % |
| Disability | <u>0.53 %</u> | <u>0.59 %</u> |
| Total Normal Cost | 18.92 % | 20.82 % |
| Amount Remaining to Amortize UAAL | 7.71 % | 4.30 % |
| Amortization Period | 128 years | Infinite |
| Increase in Statutory Rate Necessary to Amortize UAAL over 30 Years | 4.25 % | 12.14 % |



Section I: Board Summary

Summary of Key Findings – PERA

An objective of the Board's funding policy is to maximize the stability in the statutory contribution rates while maintaining the adequacy of funding necessary for the actuarial soundness of each Division in the Fund. The Board has set forth criteria for measuring actuarial soundness and making recommendations for adjustments to the statutory rates of each Division. The funding method for PERA determines the sufficiency of statutorily required contribution rates to fund the annual normal cost plus an amount to fully amortize the unfunded actuarial accrued liability (UAAL) over 30 years for each Division.

The investment earnings of PERA is allocated on the basis of each Divisions' share of the total PERA Fund balance as of the valuation date. Therefore, each Division shares in the asset experience of the total Fund.

- The total PERA Fund experienced an investment gain of approximately \$1.47 billion investment return on the market value of assets. The actuarial value of assets smooth the unexpected portion of the market return over a four year period. The return on the actuarial value of assets was 10.45% compared to an expected return of 7.75%. The significant investment loss from 2009 has now been fully recognized in the actuarial value of assets. As of June 30, 2013, the actuarial value of assets is 98.1% of market value. Table III-4 provides the development of the actuarial value of assets.
- Senate Bill 27 decreased the cost-of-living adjustment from 3% to 2% per year effective July 1, 2013 and also established a new COLA eligibility period effective July 1, 2013. These changes resulted in a decrease of \$1.69 billion to Fund liabilities and an increase of 6.6% to the funded ratio.
- The total actuarial gain due to the investment experience of the total PERA Fund is \$309.9 million. The loss on non-investment related items totaled \$53.0 million. The net gain due to the plan's experience was \$256.9 million.
- The total decrease to the UAAL of PERA is \$1.56 billion and results in an increase to the funded ratio from 65.3% to 72.9%.
- Based on the current statutory rates and actuarial assumptions, the UAAL is projected to be fully amortized in 128 years.

The summary of results and discussion of key findings for each Division begins on the following page.



Section I: Board Summary

Table I-1(b): Comparative Summary of Principal Results (State General Division)

| Valuation Date | June 30, 2013 | June 30, 2012 |
|--|----------------------|----------------------|
| Total Annual Payroll | \$ 835,817,618 | \$ 803,873,875 |
| Total Valuation Payroll | \$ 869,250,323 | \$ 836,028,830 |
| Actuarial Accrued Liability (AAL) | | |
| Active and Deferred Vested Members | \$ 2,658,321,112 | \$ 2,897,844,067 |
| Retired Members and Survivors | <u>4,865,439,224</u> | <u>4,921,071,371</u> |
| Total | \$ 7,523,760,336 | \$ 7,818,915,438 |
| Actuarial Value of Assets | \$ 4,996,425,681 | \$ 4,724,562,943 |
| Funded Ratio | 66.4 % | 60.4 % |
| Unfunded Actuarial Accrued Liability (UAAL) (AAL - Actuarial Value of Assets) | \$ 2,527,334,655 | \$ 3,094,352,495 |
| Calculation of Required Contribution | | |
| Statutory Contribution Rate | | |
| Employer Contribution Rate | 16.59 % | 15.09 % |
| Member Contribution Rate | <u>8.92 %</u> | <u>8.92 %</u> |
| Total | 25.51 % | 24.01 % |
| Less Normal Cost: | | |
| Retirement | 13.18 % | 14.45 % |
| Termination | 3.54 % | 3.82 % |
| Pre-Retirement Survivors | 0.33 % | 0.40 % |
| Disability | <u>0.53 %</u> | <u>0.59 %</u> |
| Total Normal Cost | 17.58 % | 19.26 % |
| Amount Remaining to Amortize UAAL | 7.93 % | 4.75 % |
| Amortization Period | Infinite | Infinite |
| Increase in Statutory Rate Necessary to Amortize UAAL over 30 Years | 8.12 % | 15.68 % |



Section I: Board Summary

Summary of Key Findings – State General Division

The UAAL decreased from \$3.09 billion to \$2.53 billion and results in a 7.56% of payroll decrease to the annual amount necessary to amortize the UAAL over a 30-year period. The funded ratio increased from 60.4% to 66.4%. Table IV-3 provides the reconciliation of the UAAL. In the course of preparing the valuation report, we note the following key findings:

- The State General Division experienced a net actuarial gain of \$4.0 million during the plan year ended June 30, 2013. The gain is primarily comprised of a \$122.0 million investment related gain which is offset by a \$118.0 million loss due to non-investment related experience which was primarily due to retirement experience and new entrants. Table IV-4 provides the detailed information on the sources and magnitude of actuarial gains and losses.
- The passage of Senate Bill 27 resulted in a \$726.0 million reduction in the UAAL.
- The financing period for the unfunded liability based upon the statutory contribution rates is an infinite period for the fifth consecutive year.



Section I: Board Summary

Table I-1(c): Comparative Summary of Principal Results (State Police/Corrections Division)

| Valuation Date | June 30, 2013 | June 30, 2012 |
|---|--------------------|--------------------|
| Total Annual Payroll | \$ 90,225,253 | \$ 87,137,037 |
| Total Valuation Payroll | \$ 93,834,263 | \$ 90,622,518 |
| Actuarial Accrued Liability (AAL) | | |
| Active and Deferred Vested Members | \$ 311,301,260 | \$ 338,669,992 |
| Retired Members and Survivors | <u>518,419,678</u> | <u>555,342,642</u> |
| Total | \$ 829,720,938 | \$ 894,012,634 |
| Actuarial Value of Assets | \$ 926,108,695 | \$ 851,976,386 |
| Funded Ratio | 111.6 % | 95.3 % |
| Unfunded Actuarial Accrued Liability (UAAL) <i>(AAL - Actuarial Value of Assets)</i> | \$ (96,387,757) | \$ 42,036,248 |
| Calculation of Required Contribution | | |
| Statutory Contribution Rate | | |
| Employer Contribution Rate | 25.18 % | 23.69 % |
| Member Contribution Rate | <u>8.72 %</u> | <u>8.70 %</u> |
| Total | 33.90 % | 32.39 % |
| Less Normal Cost: | | |
| Retirement | 23.65 % | 26.55 % |
| Termination | 2.94 % | 3.20 % |
| Pre-Retirement Survivors | 0.78 % | 0.93 % |
| Disability | <u>1.14 %</u> | <u>1.28 %</u> |
| Total Normal Cost | 28.51 % | 31.96 % |
| Amount Remaining to Amortize UAAL | 5.39 % | 0.43 % |
| Amortization Period | 0 | Infinite |
| Increase in Statutory Rate Necessary to Amortize UAAL over 30 Years | N/A | 2.13 % |



Section I: Board Summary

Summary of Key Findings – State Police/Corrections Division

As of June 30, 2013, the actuarial value of assets exceeded accrued liabilities by \$96.4 million. As of June 30, 2012, the accrued liabilities exceeded the actuarial value of assets by \$42.0 million. This represents a decrease in the UAAL of \$138.4 million from the previous year. The normal cost rate decreased from 31.96% to 28.51%. The funded ratio increased from 95.3% to 111.6%. Table IV-3 provides the reconciliation of the UAAL. In the course of preparing the valuation report, we note the following key findings:

- The State Police/Corrections Division experienced a net actuarial gain of \$57.9 million and an increase of 16.3% in the funded ratio during the plan year ended June 30, 2013. The gain is comprised of a \$23.6 million investment related gain and a \$34.3 million gain due to non-investment related experience which was primarily due to salary gains. Table IV-4 provides the detailed information on the sources and magnitude of actuarial gains and losses.
- The passage of Senate Bill 27 decreased the UAAL by \$90.4 million.



Section I: Board Summary

Table I-1(d): Comparative Summary of Principal Results (Municipal General Division)

| Valuation Date | June 30, 2013 | June 30, 2012 |
|--|----------------------|----------------------|
| Total Annual Payroll | \$ 803,398,205 | \$ 791,529,406 |
| Total Valuation Payroll | \$ 835,534,133 | \$ 823,190,582 |
| Actuarial Accrued Liability (AAL) | | |
| Active and Deferred Vested Members | \$ 2,109,062,602 | \$ 2,243,993,581 |
| Retired Members and Survivors | <u>3,206,775,122</u> | <u>3,233,715,609</u> |
| Total | \$ 5,315,837,724 | \$ 5,477,709,190 |
| Actuarial Value of Assets | \$ 4,108,957,408 | \$ 3,808,143,673 |
| Funded Ratio | 77.3 % | 69.5 % |
| Unfunded Actuarial Accrued Liability (UAAL) (AAL - Actuarial Value of Assets) | \$ 1,206,880,316 | \$ 1,669,565,517 |
| Calculation of Required Contribution | | |
| Statutory Contribution Rate | | |
| Employer Contribution Rate | 9.46 % | 9.45 % |
| Member Contribution Rate | <u>13.57 %</u> | <u>12.07 %</u> |
| Total | 23.03 % | 21.52 % |
| Less Normal Cost: | | |
| Retirement | 11.04 % | 11.99 % |
| Termination | 3.82 % | 4.07 % |
| Pre-Retirement Survivors | 0.49 % | 0.60 % |
| Disability | <u>0.47 %</u> | <u>0.53 %</u> |
| Total Normal Cost | 15.82 % | 17.19 % |
| Amount Remaining to Amortize UAAL | 7.21 % | 4.33 % |
| Amortization Period | 36 years | Infinite |
| Increase in Statutory Rate Necessary to Amortize UAAL over 30 Years | 0.76 % | 6.87 % |



Section I: Board Summary

Summary of Key Findings – Municipal General Division

The UAAL decreased from \$1.67 billion to \$1.21 billion and results in a 6.11% of payroll decrease to the annual amount necessary to amortize the UAAL over a 30-year period. As of the June 30, 2013 valuation, the current statutory contribution rates would require a 0.76% of payroll increase in order to amortize the UAAL over a 30-year period. The current statutory rate will amortize the UAAL over a 36-year period. The funded ratio increased from 69.5% to 77.3%. Table IV-3 provides the reconciliation of the UAAL. In the course of preparing the valuation report, we note the following key findings:

- The Municipal General Division experienced a net actuarial gain of \$84.9 million and a 7.8% increase to the funded ratio during the plan year ended June 30, 2013. The gain is comprised of a \$103.3 million investment related gain which is partially offset by an \$18.4 million loss due to non-investment related experience which was primarily due to retirement experience and new entrants. Table IV-5 provides the detailed information on the sources and magnitude of actuarial gains and losses.
- The passage of Senate Bill 27 reduced the UAAL by \$489.9 million.
- The financing period for the unfunded liability based upon the statutory contribution rates exceeds the 30-year period for the fourth consecutive year.



Section I: Board Summary

Table I-1(e): Comparative Summary of Principal Results (Municipal Police Division)

| Valuation Date | June 30, 2013 | June 30, 2012 |
|--|----------------------|----------------------|
| Total Annual Payroll | \$ 201,525,064 | \$ 196,453,568 |
| Total Valuation Payroll | \$ 209,586,067 | \$ 204,311,711 |
| Actuarial Accrued Liability (AAL) | | |
| Active and Deferred Vested Members | \$ 741,006,828 | \$ 808,999,795 |
| Retired Members and Survivors | <u>1,405,287,798</u> | <u>1,477,921,371</u> |
| Total | \$ 2,146,294,626 | \$ 2,286,921,166 |
| Actuarial Value of Assets | \$ 1,627,455,783 | \$ 1,504,516,513 |
| Funded Ratio | 75.8 % | 65.8 % |
| Unfunded Actuarial Accrued Liability (UAAL) (AAL - Actuarial Value of Assets) | \$ 518,838,843 | \$ 782,404,653 |
| Calculation of Required Contribution | | |
| Statutory Contribution Rate | | |
| Employer Contribution Rate | 18.20 % | 18.21 % |
| Member Contribution Rate | <u>17.15 %</u> | <u>15.67 %</u> |
| Total | 35.35 % | 33.88 % |
| Less Normal Cost: | | |
| Retirement | 23.95 % | 27.27 % |
| Termination | 2.46 % | 2.60 % |
| Pre-Retirement Survivors | 0.36 % | 0.44 % |
| Disability | <u>0.60 %</u> | <u>0.66 %</u> |
| Total Normal Cost | 27.37 % | 30.97 % |
| Amount Remaining to Amortize UAAL | 7.98 % | 2.91 % |
| Amortization Period | Infinite | Infinite |
| Increase in Statutory Rate Necessary to Amortize UAAL over 30 Years | 5.68 % | 18.23 % |



Section I: Board Summary

Summary of Key Findings – Municipal Police Division

The UAAL decreased from \$782.4 million to \$518.8 million and results in a 12.55% of payroll decrease to the annual amount necessary to amortize the UAAL over a 30-year period. The funded ratio increased from 65.8% to 75.8%. Table IV-3 provides the reconciliation of the UAAL. In the course of preparing the valuation report, we note the following key findings:

- The Municipal Police Division experienced a net actuarial gain of \$72.0 million and a 10.0% increase to the funded ratio during the plan year ended June 30, 2013. The gain is comprised of a \$41.5 million investment related gain and a \$30.5 million gain due to non-investment related experience which was primarily due to salary experience. Table IV-5 provides the detailed information on the sources and magnitude of actuarial gains and losses.
- The passage of Senate Bill 27 reduced the UAAL by \$252.6 million.
- The financing period for the unfunded liability based upon the statutory contribution rates is an infinite period for the fifth consecutive year.



Section I: Board Summary

Table I-1(f): Comparative Summary of Principal Results (Municipal Fire Division)

| Valuation Date | June 30, 2013 | June 30, 2012 |
|--|--------------------|--------------------|
| Total Annual Payroll | \$ 118,771,370 | \$ 115,286,221 |
| Total Valuation Payroll | \$ 123,522,225 | \$ 119,897,670 |
| Actuarial Accrued Liability (AAL) | | |
| Active and Deferred Vested Members | \$ 423,675,924 | \$ 442,391,238 |
| Retired Members and Survivors | <u>818,090,474</u> | <u>868,094,181</u> |
| Total | \$ 1,241,766,398 | \$ 1,310,485,419 |
| Actuarial Value of Assets | \$ 779,204,098 | \$ 722,847,504 |
| Funded Ratio | 62.7 % | 55.2 % |
| Unfunded Actuarial Accrued Liability (UAAL) (AAL - Actuarial Value of Assets) | \$ 462,562,300 | \$ 587,637,915 |
| Calculation of Required Contribution | | |
| Statutory Contribution Rate | | |
| Employer Contribution Rate | 21.02 % | 21.08 % |
| Member Contribution Rate | <u>17.45 %</u> | <u>16.02 %</u> |
| Total | 38.47 % | 37.10 % |
| Less Normal Cost: | | |
| Retirement | 25.03 % | 28.12 % |
| Termination | 1.85 % | 1.96 % |
| Pre-Retirement Survivors | 0.41 % | 0.49 % |
| Disability | <u>0.35 %</u> | <u>0.38 %</u> |
| Total Normal Cost | 27.64 % | 30.95 % |
| Amount Remaining to Amortize UAAL | 10.83 % | 6.15 % |
| Amortization Period | Infinite | Infinite |
| Increase in Statutory Rate Necessary to Amortize UAAL over 30 Years | 9.84 % | 20.90 % |



Section I: Board Summary

Summary of Key Findings – Municipal Fire Division

The UAAL decreased from \$587.6 million to \$462.6 million and results in an 11.06% of payroll decrease to the annual amount necessary to amortize the UAAL over a 30-year period. The funded ratio increased from 55.2% to 62.7%. Table IV-3 provides the reconciliation of the UAAL. In the course of preparing the valuation report, we note the following key findings:

- The Municipal Fire Division experienced a net actuarial gain of \$38.1 million and a 7.5% increase to the funded ratio during the plan year ended June 30, 2013. The gain is comprised of a \$19.6 million investment related gain and an \$18.5 million gain due to non-investment related experience which was primarily due to salary experience. Table IV-5 provides the detailed information on the sources and magnitude of actuarial gains and losses.
- The passage of Senate Bill 27 resulted in a decrease in the UAAL of \$131.2 million.
- The financing period for the unfunded liability based upon the statutory contribution rates is an infinite period for the fifth consecutive year.

Section II of the report provides summarized information on the membership data used in the valuation. Section III covers the Fund's assets and Section IV covers the Fund's liabilities. The results of the valuation are provided in Section V and the accounting information is in Section VI. The appendices provide additional information on A) the Fund members, B) the actuarial assumptions and methods, and C) the summary of the benefit provisions of the Fund. It is important to note that all information contained in this report for periods prior to June 30, 2010 were produced by a prior actuarial consulting firm.



Section II: Membership Data

Data regarding the membership of the Fund for use in the valuation were furnished by PERA. The following tables summarize the membership data as of June 30, 2013.

Table II-1: Summary of Membership Data as of June 30, 2013

| Group | Count | | | | | |
|-------------------------------|---------------|---------------------------|-------------------|------------------|----------------|---------------|
| | State General | State Police/ Corrections | Municipal General | Municipal Police | Municipal Fire | Totals |
| Total Active Members | 19,980 | 1,956 | 22,123 | 3,744 | 2,209 | 50,012 |
| Inactive Members | | | | | | |
| Deferred Vested | 2,559 | 122 | 1,644 | 148 | 73 | 4,546 |
| Other | 975 | 141 | 1,882 | 138 | 56 | 3,192 |
| Total Inactive Members | 3,534 | 263 | 3,526 | 286 | 129 | 7,738 |
| Retirees | | | | | | |
| Service* | 12,971 | 1,140 | 8,811 | 2,549 | 1,478 | 26,949 |
| Disabled | 515 | 28 | 368 | 36 | 11 | 958 |
| Beneficiaries | 1,832 | 158 | 1,532 | 270 | 164 | 3,956 |
| Total Retirees | 15,318 | 1,326 | 10,711 | 2,855 | 1,653 | 31,863 |
| Totals | 38,832 | 3,545 | 36,360 | 6,885 | 3,991 | 89,613 |

* Counts include Co-Payees as follows:

State General - 246

State Police - 68

Municipal General - 251

Municipal Police - 191

Municipal Fire - 112



Section II: Membership Data

Table II-2: Summary of Active Membership Valuation Data

| Division | Number | | Total Payroll | | Average Salary | |
|---------------------------------|--------|--------|-----------------|-----------------|----------------|----------|
| | 2013 | 2012 | 2013 | 2012 | 2013 | 2012 |
| State Division | | | | | | |
| General | 19,980 | 19,325 | \$ 835,817,618 | \$ 803,873,875 | \$41,833 | \$41,598 |
| Police | 520 | 493 | 30,881,589 | 29,212,380 | 59,388 | 59,254 |
| Adult Corrections | 1,107 | 1,098 | 47,273,615 | 45,717,743 | 42,704 | 41,637 |
| Juvenile Corrections | 329 | 325 | 12,070,049 | 12,206,914 | 36,687 | 37,560 |
| Total State Division | 21,936 | 21,241 | \$ 926,042,871 | \$ 891,010,912 | \$42,216 | \$41,948 |
| Municipal Division | | | | | | |
| General Coverage Plans | | | | | | |
| Plan 1 | 910 | 1,224 | \$ 25,297,944 | \$ 30,318,030 | \$27,800 | \$24,770 |
| Plan 2 | 6,479 | 6,112 | 221,597,787 | 211,060,414 | 34,202 | 34,532 |
| Plan 3 | 13,266 | 12,653 | 499,681,822 | 494,086,116 | 37,666 | 39,049 |
| Plan 4 | 732 | 706 | 23,847,678 | 23,509,364 | 32,579 | 33,299 |
| Detention Officers Plan 1 | 736 | 739 | 32,972,974 | 32,555,482 | 44,800 | 44,053 |
| Total General | 22,123 | 21,434 | \$ 803,398,205 | \$ 791,529,406 | \$36,315 | \$36,929 |
| Police Coverage Plans | | | | | | |
| Plan 1 | 139 | 140 | \$ 6,165,182 | \$ 5,766,102 | \$44,354 | \$41,186 |
| Plan 2 | 66 | 72 | 2,466,039 | 2,545,605 | 37,364 | 35,356 |
| Plan 3 | 66 | 52 | 2,828,045 | 2,200,305 | 42,849 | 42,314 |
| Plan 4 | 132 | 141 | 5,952,053 | 6,506,779 | 45,091 | 46,147 |
| Plan 5 | 3,341 | 3,255 | 184,113,745 | 179,434,777 | 55,107 | 55,126 |
| Total Police | 3,744 | 3,660 | \$ 201,525,064 | \$ 196,453,568 | \$53,826 | \$53,676 |
| Fire Coverage Plans | | | | | | |
| Plan 1 | 51 | 51 | \$ 2,229,231 | \$ 1,801,519 | \$43,710 | \$35,324 |
| Plan 2 | 23 | 10 | 1,146,867 | 354,161 | 49,864 | 35,416 |
| Plan 3 | 4 | 5 | 119,128 | 187,216 | 29,782 | 37,443 |
| Plan 4 | 10 | 13 | 465,654 | 593,338 | 46,565 | 45,641 |
| Plan 5 | 2,121 | 2,069 | 114,810,490 | 112,349,987 | 54,130 | 54,302 |
| Total Fire | 2,209 | 2,148 | \$ 118,771,370 | \$ 115,286,221 | \$53,767 | \$53,671 |
| Total Municipal Division | 28,076 | 27,242 | \$1,123,694,639 | \$1,103,269,195 | \$40,023 | \$40,499 |
| Total PERA | 50,012 | 48,483 | \$2,049,737,510 | \$1,994,280,107 | \$40,985 | \$41,134 |



Section II: Membership Data

Table II-3: Summary of Deferred Vested Members as of June 30, 2013

| Division | Number | Average Age | Average Service | Average Annual Benefit |
|---------------------------------|--------------|--------------|-----------------|------------------------|
| State Division | | | | |
| General | 2,559 | 51.98 | 9.26 | \$ 12,052 |
| Police/Hazardous Duty | <u>122</u> | 47.66 | 9.98 | 10,121 |
| Total State Division | 2,681 | 51.78 | 9.29 | \$ 11,964 |
| Municipal Division | | | | |
| General | 1,644 | 52.70 | 9.23 | \$ 9,170 |
| Police | 148 | 45.75 | 8.99 | 11,998 |
| Fire | <u>73</u> | 43.38 | 7.57 | 11,810 |
| Total Municipal Division | 1,865 | 51.78 | 9.15 | \$ 9,498 |
| PERA Totals | 4,546 | 51.78 | 9.23 | \$ 10,952 |



Section II: Membership Data

Table II-4: Summary of Retirees and Survivors as of June 30, 2013

| Type of Retirement | Division | | | | | Total |
|-----------------------|---------------|------------------------------|----------------------|---------------------|-------------------|---------------|
| | State General | State Police/ Corrections | Municipal General | Municipal Police | Municipal Fire | |
| Service | | | | | | |
| Number | 12,971 | 1,140 | 8,811 | 2,549 | 1,478 | 26,949 |
| Total Annual Benefits | \$370,940,476 | \$ 35,752,297 | \$232,266,395 | \$ 94,924,928 | \$56,698,129 | \$790,582,225 |
| Avg Annual Benefit | \$ 28,598 | \$ 31,362 | \$ 26,361 | \$ 37,240 | \$ 38,361 | \$ 29,336 |
| Avg Age | 68.16 | 62.29 | 67.26 | 58.47 | 60.45 | 66.28 |
| Disability | | | | | | |
| Number | 515 | 28 | 368 | 36 | 11 | 958 |
| Total Annual Benefits | \$ 8,043,486 | \$ 419,697 | \$ 5,547,978 | \$ 727,523 | \$ 238,290 | \$ 14,976,974 |
| Avg Annual Benefit | \$ 15,618 | \$ 14,989 | \$ 15,076 | \$ 20,209 | \$ 21,663 | \$ 15,634 |
| Avg Age | 55.46 | 54.79 | 54.46 | 47.13 | 53.57 | 54.72 |
| Survivors | | | | | | |
| Number | 1,832 | 158 | 1,532 | 270 | 164 | 3,956 |
| Total Annual Benefits | \$ 29,596,185 | \$ 3,466,881 | \$ 23,113,073 | \$ 6,176,857 | \$ 4,521,165 | \$ 66,874,161 |
| Avg Annual Benefit | \$ 16,155 | \$ 21,942 | \$ 15,087 | \$ 22,877 | \$ 27,568 | \$ 16,904 |
| Avg Age | 69.42 | 62.80 | 69.21 | 64.47 | 69.66 | 68.75 |
| Total | | | | | | |
| Number | 15,318 | 1,326 | 10,711 | 2,855 | 1,653 | 31,863 |
| Total Annual Benefits | \$408,580,147 | \$ 39,638,875 | \$260,927,446 | \$101,829,308 | \$61,457,584 | \$872,433,360 |
| Avg Annual Benefit | \$ 26,673 | \$ 29,894 | \$ 24,361 | \$ 35,667 | \$ 37,179 | \$ 27,381 |
| Avg Age | 67.89 | 62.19 | 67.10 | 58.89 | 61.31 | 66.24 |



Section II: Membership Data

Table II-5: Summary of Historical Active Membership Valuation Data by Division

| Valuation Date | Number | Annual Payroll | Average Annual Pay | % Change In Average Pay |
|--|--------|----------------|--------------------|-------------------------|
| State General Division | | | | |
| 6/30/2013 | 19,980 | \$ 835,817,618 | \$ 41,833 | 0.57 % |
| 6/30/2012 | 19,325 | 803,873,875 | 41,598 | (0.31)% |
| 6/30/2011 | 19,614 | 818,428,532 | 41,727 | 0.53 % |
| 6/30/2010 | 20,867 | 866,094,897 | 41,505 | (0.31)% |
| 6/30/2009 | 22,479 | 935,865,642 | 41,633 | 3.48 % |
| State Police/Corrections Division | | | | |
| 6/30/2013 | 1,956 | \$ 90,225,253 | \$ 46,127 | 1.43 % |
| 6/30/2012 | 1,916 | 87,137,037 | 45,479 | 2.13 % |
| 6/30/2011 | 1,881 | 83,759,230 | 44,529 | 1.50 % |
| 6/30/2010 | 2,001 | 87,783,090 | 43,870 | (3.83)% |
| 6/30/2009 | 2,087 | 95,202,963 | 45,617 | (0.01)% |
| Municipal General Division | | | | |
| 6/30/2013 | 22,123 | \$ 803,398,205 | \$ 36,315 | (1.66)% |
| 6/30/2012 | 21,434 | 791,529,406 | 36,929 | 4.56 % |
| 6/30/2011 | 20,848 | 736,339,828 | 35,319 | (2.70)% |
| 6/30/2010 | 20,584 | 747,207,121 | 36,300 | 11.61 % |
| 6/30/2009 | 23,448 | 762,628,387 | 32,524 | 3.06 % |
| Municipal Police Division | | | | |
| 6/30/2013 | 3,744 | \$ 201,525,064 | \$ 53,826 | 0.28 % |
| 6/30/2012 | 3,660 | 196,453,568 | 53,676 | 2.86 % |
| 6/30/2011 | 3,603 | 188,010,463 | 52,182 | 0.45 % |
| 6/30/2010 | 3,581 | 186,026,978 | 51,948 | 3.65 % |
| 6/30/2009 | 3,701 | 185,497,931 | 50,121 | 4.00 % |
| Municipal Fire Division | | | | |
| 6/30/2013 | 2,209 | \$ 118,771,370 | \$ 53,767 | 0.18 % |
| 6/30/2012 | 2,148 | 115,286,221 | 53,671 | 4.45 % |
| 6/30/2011 | 2,111 | 108,475,708 | 51,386 | (0.32)% |
| 6/30/2010 | 2,064 | 106,404,835 | 51,553 | 3.39 % |
| 6/30/2009 | 2,047 | 102,064,575 | 49,861 | 5.40 % |

Table II-6: Summary of Historical Active Membership Valuation Data for All Divisions

| Valuation Date | Number | Annual Payroll | Average Annual Pay | % Change In Average Pay |
|----------------|--------|------------------|--------------------|-------------------------|
| 6/30/2013 | 50,012 | \$ 2,049,737,510 | \$ 40,985 | (0.36)% |
| 6/30/2012 | 48,483 | 1,994,280,107 | 41,134 | 2.16 % |
| 6/30/2011 | 48,057 | 1,935,013,761 | 40,265 | (0.83)% |
| 6/30/2010 | 49,097 | 1,993,516,921 | 40,604 | 4.89 % |
| 6/30/2009 | 53,762 | 2,081,259,498 | 38,712 | 3.23 % |



Section III: PERA Assets

The following tables provide a summary of PERA's market value and actuarial value of assets (excluding Legislative Division) as of June 30, 2013.

Table III-1: Market Value Summary as of June 30, 2013

| Division | June 30, 2013 | June 30, 2012 |
|-------------------------------------|--------------------------|--------------------------|
| State General | \$ 5,092,870,789 | \$ 4,709,463,523 |
| State Police/Corrections | 943,985,205 | 849,253,521 |
| Municipal General | 4,188,271,875 | 3,795,973,074 |
| Municipal Police | 1,658,870,270 | 1,499,708,168 |
| Municipal Fire | <u>794,244,935</u> | <u>720,537,327</u> |
| Total Market Value of Assets | \$ 12,678,243,074 | \$ 11,574,935,613 |

Table III-2: Actuarial Value Summary as of June 30, 2013

| Division | June 30, 2013 | June 30, 2012 |
|--|--------------------------|--------------------------|
| State General | \$ 4,996,425,681 | \$ 4,724,562,943 |
| State Police/Corrections | 926,108,695 | 851,976,386 |
| Municipal General | 4,108,957,408 | 3,808,143,673 |
| Municipal Police | 1,627,455,783 | 1,504,516,513 |
| Municipal Fire | <u>779,204,098</u> | <u>722,847,504</u> |
| Total Actuarial Value of Assets | \$ 12,438,151,665 | \$ 11,612,047,019 |



Section III: PERA Assets

The following tables provide information on PERA's assets at market value and cash flow.

Table III-3: Market Value Reconciliation (Total PERA with Legislature)

| | June 30, 2013 | June 30, 2012 |
|---|--------------------------|--------------------------|
| Beginning of Year Market Value | \$ 11,600,023,988 | \$ 11,994,454,699 |
| Audit Adjustment | 9,209,724 | |
| Revised Beginning of Year Market Value | \$ 11,609,233,712 | \$ 11,994,454,699 |
| Revenues: | | |
| a. Member Contributions | 226,164,967 | 248,069,863 |
| b. Employer Contributions | 285,560,291 | 274,905,978 |
| c. Purchases of Service | 9,132,788 | 10,150,366 |
| d. Investment Income | | |
| 1. Adjustments of investments to market value | 807,617,924 | (419,577,802) |
| 2. Interest, dividends, etc. | 293,385,358 | 248,668,445 |
| 3. Realized gains (losses) | 414,433,852 | 103,170,490 |
| 4. Security lending | (14,121,020) | (22,207,561) |
| e. Other Income | 429,831 | 22,766,276 |
| f. Total Revenues | \$ 2,022,603,991 | \$ 465,946,055 |
| Expenditures: | | |
| a. Benefit Payments | 842,710,961 | 780,144,516 |
| b. Refunds of Member Contributions | 45,113,887 | 45,771,456 |
| c. Administrative and Investment Expenses | 36,271,929 | 34,460,794 |
| d. Total Expenditures | \$ 924,096,777 | \$ 860,376,766 |
| End of Year Market Value | \$ 12,707,740,926 | \$ 11,600,023,988 |

The market value rate of return for the plan year is 12.83% on an adjusted basis and 12.92% on an unadjusted basis. These returns are based on a simplified dollar-weighted basis which may not match more precise time-weighted return calculations. PERA's cash flow is (3.32)% as a percentage of average market value. A mature system such as PERA is expected to exhibit negative net cash flow as the number of members receiving benefit payments becomes a larger portion of total membership. There are 1.57 contributing active members for each member receiving a benefit as of June 30, 2013. We expect this measure to decline over future years and result in an increase in the percentage of negative cash flow.



Section III: PERA Assets

The actuarial value of assets represents a "smoothed" value developed with the purpose of dampening the impact of market volatility on the assets used in determining valuation results. The actuarial value of assets has been calculated by spreading the recognition of excess investment income over four years. The amount of excess investment income in each year is the difference between expected actuarial value investment income and actual market value investment income. Table III-4 provides the calculation of the amount of the current year excess investment income to be phased-in as well as the amount of deferred investment income from the prior years.

**Table III-4: Development of Actuarial Value of Assets as of June 30, 2013
(Total PERA with Legislative Division)**

| | | | |
|---|-------------------------|----|-------------------------|
| A. Actuarial Value Beginning of Year | | \$ | 11,637,215,832 |
| B. Market Value End of Year | | | 12,707,740,926 |
| C. Revised Market Value Beginning of Year | | | 11,609,233,712 |
| D. Cash Flow | | | |
| D1. Contributions | | \$ | 511,725,258 |
| D2. Service Purchases | | | 9,132,788 |
| D3. Benefit Payments and Refunds | | | (887,824,848) |
| D4. Net | | \$ | (366,966,802) |
| E. Investment Income | | | |
| E1. Market Total (B - C - D4) | | \$ | 1,465,474,016 |
| E2. Assumed Rate | | | 7.75% |
| E3. Amount for Immediate Recognition | | | 887,664,263 |
| E4. Amount for Phased-In Recognition | | | 577,809,753 |
| F. Phased-In Recognition of Investment Income | | | |
| F1. Current Year: 0.25 *E4 | | \$ | 144,452,438 |
| F2. First Prior Year (2011/2012) | \$(1,010,896,575) x 25% | | (252,724,144) |
| F3. Second Prior Year (2010/2011) | 1,250,963,970 x 25% | | 312,740,993 |
| F4. Third Prior Year (2009/2010) | 381,994,416 x 25% | | 95,498,604 |
| F5. Total Recognized Investment Gain | | \$ | 299,967,891 |
| G. Audit Adjustment | | \$ | 9,209,724 |
| H. Actuarial Value End of Year | | | \$12,467,090,908 |
| (A + D4 + E3 + F5 + G) | | | |
| I. Difference Between Market & Actuarial Values | | \$ | 240,650,018 |
| J. Rate of Return on Actuarial Value | | | 10.45 % |
| K. Actuarial Value as a Percentage of Market Value | | | 98.11 % |



Section III: PERA Assets

Table III-5: Allocation of Actuarial Value by Division as of June 30, 2013

| | State Division | | PERA Totals w/o Legislative |
|--|-------------------------|-----------------------|-----------------------------------|
| | General | Police | |
| Member Contribution Fund | \$ 841,174,061 | \$ 58,260,570 | \$ 2,311,166,114 |
| Employer Contribution Fund | 1,580,911,608 | 406,762,291 | 3,801,767,328 |
| Retirement Reserve Fund | 2,670,785,120 | 478,962,344 | 6,565,309,632 |
| Total Fund Balances | \$ 5,092,870,789 | \$ 943,985,205 | \$ 12,678,243,074 |
| Approximate % of Total Fund Balance* | 40.17% | 7.45% | 100% |
| Actuarial Value Adjustment* | (96,445,108) | (17,876,510) | (240,091,409) |
| Total Actuarial Value of Assets | \$ 4,996,425,681 | \$ 926,108,695 | \$ 12,438,151,665 |

| | Municipal Division | | | PERA Totals w/o Legislative |
|--|-------------------------|-------------------------|-----------------------|-----------------------------------|
| | General | Police | Fire | |
| Member Contribution Fund | \$ 1,000,561,795 | \$ 247,882,167 | \$ 163,287,521 | \$ 2,311,166,114 |
| Employer Contribution Fund | 1,163,656,138 | 486,149,977 | 164,287,314 | 3,801,767,328 |
| Retirement Reserve Fund | 2,024,053,942 | 924,838,126 | 466,670,100 | 6,565,309,632 |
| Total Fund Balances | \$ 4,188,271,875 | \$ 1,658,870,270 | \$ 794,244,935 | \$ 12,678,243,074 |
| Approximate % of Total Fund Balance* | 33.04% | 13.08% | 6.26% | 100.00% |
| Actuarial Value Adjustment* | (79,314,467) | (31,414,487) | (15,040,837) | (240,091,409) |
| Total Actuarial Value of Assets | \$ 4,108,957,408 | \$ 1,627,455,783 | \$ 779,204,098 | \$ 12,438,151,665 |

* The actuarial value adjustment is the difference between the actuarial value of assets derived in Table III-4 and the total fund balance at market value. It was allocated to each group in proportion to the Total PERA Fund Balance. Please note that the Legislature Division accounted for approximately 0.23% of the Total PERA Fund Balance and is detailed in a separate report.



Section III: PERA Assets

The actuarial valuation assumes the rate of investment return on the assets of the Fund is 7.75% annually. This assumption is based upon the reasonable long-term expected return on the assets. In each year, the Fund will experience actuarial gains and losses due to the actual investment return of the assets. Table III-6 provides the calculation of the gain or loss due to the investment experience on the actuarial value of assets for the year ending June 30, 2013.

Table III-6: Actuarial Investment Gain (Loss) for the Year Ending June 30, 2013
(Dollar Amounts in Millions)

| | State General | State Police/ Corrections | Municipal General | Municipal Police | Municipal Fire | Total |
|--|------------------|---------------------------------|----------------------|---------------------|-------------------|-------------|
| 1. Beginning of Year Actuarial Value of Assets (AVA) | \$ 4,724.6 | \$ 852.0 | \$ 3,808.1 | \$ 1,504.5 | \$ 722.8 | \$ 11,612.0 |
| 2. Employee and Employer Contributions | 235.0 | 22.6 | 158.1 | 62.9 | 38.3 | 516.9 |
| 3. Benefit Payments | (443.2) | (37.5) | (252.1) | (96.7) | (56.8) | (886.3) |
| 4. Interest [1 x 7.75% + (2 + 3) x 7.75% x 0.5] | 358.1 | 65.5 | 291.5 | 115.3 | 55.3 | 885.6 |
| 5. Expected End of Year AVA (1 + 2 + 3 + 4) | \$ 4,874.5 | \$ 902.5 | \$ 4,005.6 | \$ 1,586.0 | \$ 759.6 | \$ 12,128.2 |
| 6. Actual End of Year AVA | 4,996.4 | 926.1 | 4,109.0 | 1,627.5 | 779.2 | 12,438.2 |
| 7. Actuarial Investment Gain (Loss) (6 - 5) | \$ 122.0 | \$ 23.6 | \$ 103.3 | \$ 41.5 | \$ 19.6 | \$ 309.9 |



Section III: PERA Assets

Statutory Reserve Transfers

Each year following receipt of the report of the annual actuarial valuation, the excess, if any, of the actuarial present value of pensions and refunds being paid or likely to be paid to members and survivors over the balance in the retirement reserve fund (RRF) shall be transferred to the retirement reserve fund from the employers accumulation fund (EAF). Table III-7 shows the necessary transfer amounts.

Table III-7: Statutory Reserve Transfers as of June 30, 2013

| Division | Reported Fund Balances | Actuarial Present Value of Pensions Being Paid | Transfer |
|---------------------------------------|--------------------------|--|--------------------|
| State General | | | |
| Members Contribution Fund | \$ 841,174,061 | | |
| Employers Accumulation Fund | 1,580,911,608 | | \$ (2,194,654,104) |
| Retirement Reserve Fund | 2,670,785,120 | \$ 4,865,439,224 | 2,194,654,104 |
| State Police/Corrections | | | |
| Members Contribution Fund | 58,260,570 | | |
| Employers Accumulation Fund | 406,762,291 | | (39,457,334) |
| Retirement Reserve Fund | 478,962,344 | 518,419,678 | 39,457,334 |
| Municipal General | | | |
| Members Contribution Fund | 1,000,561,795 | | |
| Employers Accumulation Fund | 1,163,656,138 | | (1,182,721,180) |
| Retirement Reserve Fund | 2,024,053,942 | 3,206,775,122 | 1,182,721,180 |
| Municipal Police | | | |
| Members Contribution Fund | 247,882,167 | | |
| Employers Accumulation Fund | 486,149,977 | | (480,449,672) |
| Retirement Reserve Fund | 924,838,126 | 1,405,287,798 | 480,449,672 |
| Municipal Fire | | | |
| Members Contribution Fund | 163,287,521 | | |
| Employers Accumulation Fund | 164,287,314 | | (351,420,374) |
| Retirement Reserve Fund | 466,670,100 | 818,090,474 | 351,420,374 |
| Total End of Year Market Value | \$ 12,678,243,074 | | |



Section IV: PERA Liabilities

The total actuarial present value of benefits is the value as of the valuation date of all future benefits expected to be paid to current members of the Fund. An actuarial cost method allocates each individual's present value of benefits to past and future years of service. The actuarial accrued liability includes the portion of the active member present value of benefits allocated to past service as well as the entire present value of benefits for retirees, beneficiaries and inactive members. The portion of the actuarial present value allocated to the future service of active members is called the present value of future normal costs. Table IV-1 presents the calculation and allocation of the actuarial present value of benefits.

Table IV-1: Calculation and Allocation of the Actuarial Present Value as of June 30, 2013

| | Actuarial Accrued Liability | Present Value of Future Normal Cost | Total Actuarial Present Value |
|--------------------------------------|-----------------------------|-------------------------------------|-------------------------------|
| Active Members | | | |
| Service Retirement | \$ 5,576,862,294 | \$ 2,469,819,855 | \$ 8,046,682,149 |
| Termination Benefits | 187,163,235 | 564,038,333 | 751,201,568 |
| Survivor Benefits | 74,738,639 | 70,579,681 | 145,318,320 |
| Disability Retirement | 83,435,407 | 91,938,695 | 175,374,102 |
| Total for Active Members | \$ 5,922,199,575 | \$ 3,196,376,564 | \$ 9,118,576,139 |
| Inactive Members | \$ 321,168,151 | | \$ 321,168,151 |
| Retirees and Beneficiaries | | | |
| Service Retirements | \$ 9,903,469,421 | | \$ 9,903,469,421 |
| Beneficiaries | 700,053,535 | | 700,053,535 |
| Disability Retirements | 210,489,340 | | 210,489,340 |
| Total for Retirees and Beneficiaries | \$ 10,814,012,296 | | \$ 10,814,012,296 |
| Total | \$ 17,057,380,022 | \$ 3,196,376,564 | \$ 20,253,756,586 |

Under the valuation funding method, an unfunded actuarial accrued liability (UAAL) exists to the extent that the actuarial accrued liability exceeds the actuarial value of assets as presented in Section III. The calculation of the UAAL by Division as of the valuation date is shown in Table IV-2 on the following page.



Section IV: PERA Liabilities

Table IV-2: Calculation of the Unfunded Actuarial Accrued Liability and Funded Ratio
(Dollar Amounts in Millions)

| | State General | State Police/ Corrections | Municipal General | Municipal Police | Municipal Fire |
|---|------------------|------------------------------|----------------------|---------------------|-------------------|
| 1. Actuarial Accrued Liability | \$ 7,523.8 | \$ 829.7 | \$ 5,315.8 | \$ 2,146.3 | \$ 1,241.8 |
| 2. Actuarial Value of Assets | 4,996.4 | 926.1 | 4,109.0 | 1,627.5 | 779.2 |
| 3. Unfunded Actuarial Accrued Liability (1-2) | 2,527.4 | (96.4) | 1,206.9 | 518.8 | 462.6 |
| Funded Ratio (2 / 1) | 66.4% | 111.6% | 77.3% | 75.8% | 62.7% |

Although the terminology used to describe the excess of PERA’s actuarial accrued liability over the actuarial value of assets is call the “unfunded” actuarial accrued liability, the calculated annual contribution rates in the valuation include an annual amortization payment required to fully amortize the UAAL within 30 years. In some cases, the current statutory rates are less than these calculated rates.

The funded ratio is the ratio of the actuarial value of assets (Table III-2) divided by the actuarial accrued liability (Table IV-1) as of the valuation date. As of June 30, 2013, the funded ratio of PERA is 72.92% as compared to a ratio of 65.28% as of June 30, 2012. Due to the recognition of the investment gain from the 2013 plan year and the passage of Senate Bill 27, there has been a general increase in the funded ratio across all divisions. The ratio is a commonly used measure of the funding progress and can be useful in reviewing the historical trend of a Fund’s funding progress. Such a review should also consider the impact to this measure over the historical period due to changes to fund benefits, changes to the actuarial assumptions and methods, and the significant impact that investment experience can have on the ratio over short-term periods. We caution that no single “point in time” measure can provide a universal basis for comparing one plan’s funded status to another.



Section IV: PERA Liabilities

The calculation of PERA’s actuarial assets and liabilities requires the use of several assumptions concerning the future experience of PERA and its members. In each annual valuation, the latest year of actual experience is compared to that expected by the prior valuation. The differences are actuarial gains and losses which decrease or increase the UAAL. Table IV-3 provides the reconciliation of the UAAL.

Table IV-3: Reconciliation of the UAAL
(Dollar Amounts in Millions)

| | State General | State Police/ Corrections | Municipal General | Municipal Police | Municipal Fire |
|---|------------------|------------------------------|----------------------|---------------------|-------------------|
| 1. Beginning of Year UAAL | \$ 3,094.4 | \$ 42.0 | \$ 1,669.6 | \$ 782.4 | \$ 587.6 |
| 2. Normal Cost | 161.0 | 29.0 | 141.5 | 63.3 | 37.1 |
| 3. Contributions | (235.0) | (22.6) | (158.1) | (62.9) | (38.3) |
| 4. Interest [1 x 7.75% + (2 + 3) x 7.75% x 0.5] | 236.9 | 3.5 | 128.7 | 60.6 | 45.5 |
| 5. Expected UAAL before changes (1 + 2 + 3 + 4) | 3,257.3 | 51.9 | 1,781.7 | 843.4 | 631.9 |
| 6. Assumption Changes | 0 | 0 | 0 | 0 | 0 |
| 7. Plan Changes | (726.0) | (90.4) | (489.9) | (252.6) | (131.2) |
| 8. Expected UAAL after changes (5 + 6 + 7) | 2,531.3 | (38.5) | 1,291.8 | 590.8 | 500.7 |
| 9. Actual UAAL | 2,527.3 | (96.4) | 1,206.9 | 518.8 | 462.6 |
| 10. Total Actuarial Gain (Loss) | 4.0 | 57.9 | 84.9 | 72.0 | 38.1 |

Tables IV-4 and IV-5 on the following pages provide details of the sources of actuarial gains and losses for state divisions and municipal divisions respectively.



Section IV: PERA Liabilities

Table IV-4: Actuarial Gains & Losses by Source for State Divisions
(Dollar Amounts in Millions)

| Source | State General | | | State Police/Corrections | | |
|-----------------------------|------------------|---------------|--------------------|--------------------------|----------------|--------------------|
| | UAAL | Funded Ratio | Contribution Rate* | UAAL | Funded Ratio | Contribution Rate* |
| Expected Value | \$3,257.3 | 59.9 % | 21.51 % | \$51.9 | 94.6 % | 3.16 % |
| Retirement | 139.1 | (1.0)% | 0.04 % | (4.0) | 0.4 % | (0.24)% |
| Disability | 7.9 | (0.1)% | 0.00 % | 0.3 | (0.0)% | 0.02 % |
| Pre-Retirement Death | (0.8) | 0.0 % | (0.00)% | (0.1) | 0.0 % | (0.01)% |
| Withdrawal | (8.0) | 0.1 % | (0.00)% | (3.2) | 0.3 % | (0.19)% |
| Pay Increases | (81.1) | 0.6 % | (0.08)% | (23.7) | 2.5 % | (1.44)% |
| New Entrants | 50.8 | (0.4)% | 0.01 % | 6.8 | (0.7)% | 0.41 % |
| Post-Retirement Death | 0.3 | (0.0)% | 0.00 % | (8.8) | 0.9 % | (0.53)% |
| Data Adjustments | 9.3 | (0.1)% | 0.00 % | (1.4) | 0.1 % | (0.08)% |
| Other | 0.5 | (0.0)% | (0.01)% | (0.2) | 0.0 % | (0.01)% |
| Investment Return | (122.0) | 1.5 % | (0.81)% | (23.6) | 2.4 % | (1.43)% |
| Total (Gain) or Loss | (\$4.0) | 0.7 % | (0.85)% | (\$57.9) | 6.1 % | (3.51)% |
| Assumption Changes | 0.0 | 0.0 % | 0.00 % | 0.0 | 0.0 % | 0.00 % |
| Plan Changes | (726.0) | 5.8 % | (4.61)% | (90.4) | 11.0 % | (5.32)% |
| Actual Value | \$2,527.3 | 66.4 % | 16.05 % | (\$96.4) | 111.6 % | (5.67)% |

* Impact on Contribution Rate based on 30 year period and current valuation payroll.



Section IV: PERA Liabilities

Table IV-5: Actuarial Gains & Losses by Source for Municipal Divisions
(Dollar Amounts in Millions)

| Source | Municipal General | | | Municipal Police | | | Municipal Fire | | |
|-----------------------------|-------------------|---------------|--------------------|------------------|---------------|--------------------|-----------------|---------------|--------------------|
| | UAAL | Funded Ratio | Contribution Rate* | UAAL | Funded Ratio | Contribution Rate* | UAAL | Funded Ratio | Contribution Rate* |
| Expected Value | \$1,781.7 | 69.2 % | 11.95 % | \$843.4 | 65.3 % | 22.79 % | \$631.9 | 54.6 % | 28.21 % |
| Retirement | 56.1 | (0.7)% | 0.49 % | 6.2 | (0.2)% | 0.21 % | (3.5) | 0.1 % | (0.15)% |
| Disability | 6.2 | (0.1)% | 0.05 % | 1.9 | (0.1)% | 0.07 % | 0.0 | 0.0 % | 0.00 % |
| Pre-Retirement Death | (1.6) | 0.0 % | (0.01)% | (0.2) | 0.0 % | (0.01)% | (0.1) | 0.0 % | (0.00)% |
| Withdrawal | (3.0) | 0.0 % | (0.03)% | (2.5) | 0.1 % | (0.09)% | 3.3 | (0.1)% | 0.15 % |
| Pay Increases | (84.9) | 1.0 % | (0.74)% | (36.2) | 1.0 % | (1.24)% | (25.7) | 1.0 % | (1.13)% |
| New Entrants | 32.6 | (0.4)% | 0.28 % | 16.8 | (0.5)% | 0.58 % | 6.7 | (0.3)% | 0.30 % |
| Post-Retirement Death | 2.0 | (0.0)% | 0.02 % | (18.1) | 0.5 % | (0.62)% | 0.0 | 0.0 % | 0.00 % |
| Data Adjustments | 10.6 | (0.1)% | 0.09 % | 1.8 | (0.0)% | 0.06 % | 1.0 | (0.0)% | 0.04 % |
| Other | 0.4 | (0.0)% | 0.00 % | (0.2) | 0.0 % | (0.01)% | (0.2) | 0.0 % | (0.01)% |
| Investment Return | (103.3) | 1.8 % | (0.90)% | (41.5) | 1.7 % | (1.42)% | (19.6) | 1.4 % | (0.86)% |
| Total (Gain) or Loss | (\$84.9) | 1.6 % | (0.74)% | (\$72.0) | 2.5 % | (2.47)% | (\$38.1) | 2.2 % | (1.68)% |
| Assumption Changes | 0.0 | 0.0 % | 0.00 % | 0.0 | 0.0 % | 0.00 % | 0.0 | 0.0 % | 0.00 % |
| Plan Changes | (489.9) | 6.5 % | (3.24)% | (252.6) | 8.0 % | (6.66)% | (131.2) | 6.0 % | (5.86)% |
| Actual Value | \$1,206.9 | 77.3 % | 7.97 % | \$518.8 | 75.8 % | 13.66 % | \$462.6 | 62.7 % | 20.67 % |

* Impact on Contribution Rate based on 30 year period and current valuation payroll.



Section V: Actuarial Funding Calculation

Section IV of this report presented PERA's actuarial accrued liability as the portion of the present value of benefits allocated to past years of service. The portion of the active members' present value of benefits allocated to future years of service is funded through annual normal cost contributions comprised of both active member and employer contributions.

The annual required contribution rate is the percentage of valuation payroll necessary to fund the annual normal cost of the Fund and fully amortize the UAAL over 30 years in accordance with the Board's funding objectives. The calculated rate is expected to remain constant over the remaining amortization period and is provided in Table V-1.

Table V-1(a): Valuation Results for State General Division

| | June 30, 2013 | June 30, 2012 |
|--|-----------------|-----------------|
| 1. Total Valuation Payroll | \$ 869,250,323 | \$ 836,028,830 |
| 2. Present Value of Future Benefits | 8,628,761,867 | 9,007,917,405 |
| 3. Present Value of Future Normal Costs | 1,105,001,531 | 1,189,001,967 |
| 4. Actuarial Accrued Liability (2 - 3) | \$7,523,760,336 | \$7,818,915,438 |
| 5. Actuarial Value of Assets | 4,996,425,681 | 4,724,562,943 |
| 6. Unfunded Actuarial Accrued Liability (UAAL) (4 - 5) | \$2,527,334,655 | \$3,094,352,495 |
| 7. UAAL Amortization Payment (30 year funding) | \$ 139,506,214 | \$ 170,805,003 |
| a. Amortization Payment as a Percent of Payroll (7 / 1) | 16.05 % | 20.43 % |
| 8. Total Normal Cost | \$ 152,815,151 | \$ 161,015,291 |
| a. Normal Cost as a Percent of Payroll (8 / 1) | 17.58 % | 19.26 % |
| 9. Total Required Contribution | \$ 292,321,365 | \$ 331,820,294 |
| a. Required Contribution Rate (7a + 8a) | 33.63 % | 39.69 % |
| 10. Expected Statutory Contribution Rates | | |
| a. Employer Contribution Rate | 16.59 % | 15.09 % |
| b. Member Contribution Rate | 8.92 % | 8.92 % |
| c. Total Statutory Contribution Rate (a + b) | 25.51 % | 24.01 % |
| 11. (Excess) Shortfall of Rates Under Funding Policy Objectives (9a - 10c) | 8.12 % | 15.68 % |



Section V: Actuarial Funding Calculation

Table V-1(b): Valuation Results for State Police/Correction Division

| | June 30, 2013 | June 30, 2012 |
|--|-----------------|----------------|
| 1. Total Valuation Payroll | \$ 93,834,263 | \$ 90,622,518 |
| 2. Present Value of Future Benefits | 1,097,841,737 | 1,179,678,965 |
| 3. Present Value of Future Normal Costs | 268,120,799 | 285,666,331 |
| 4. Actuarial Accrued Liability (2 - 3) | \$ 829,720,938 | \$ 894,012,634 |
| 5. Actuarial Value of Assets | 926,108,695 | 851,976,386 |
| 6. Unfunded Actuarial Accrued Liability (UAAL) (4 - 5) | \$ (96,387,757) | \$ 42,036,248 |
| 7. UAAL Amortization Payment (30 year funding) | \$ (5,320,503) | \$ 2,320,357 |
| a. Amortization Payment as a Percent of Payroll (7 / 1) | (5.67)% | 2.56 % |
| 8. Total Normal Cost | \$ 26,753,328 | \$ 28,962,160 |
| a. Normal Cost as a Percent of Payroll (8 / 1) | 28.51 % | 31.96 % |
| 9. Total Required Contribution | \$ 21,432,825 | \$ 31,282,517 |
| a. Required Contribution Rate (7a + 8a) | 22.84 % | 34.52 % |
| 10. Expected Statutory Contribution Rates | | |
| a. Employer Contribution Rate | 25.18 % | 23.69 % |
| b. Member Contribution Rate | 8.72 % | 8.70 % |
| c. Total Statutory Contribution Rate (a + b) | 33.90 % | 32.39 % |
| 11. (Excess) Shortfall of Rates Under Funding Policy Objectives (9a - 10c) | (11.06)% | 2.13 % |



Section V: Actuarial Funding Calculation

Table V-1(c): Valuation Results for Municipal General Division

| | June 30, 2013 | June 30, 2012 |
|--|-----------------|-----------------|
| 1. Total Valuation Payroll | \$ 835,534,133 | \$ 823,190,582 |
| 2. Present Value of Future Benefits | 6,287,706,445 | 6,557,361,542 |
| 3. Present Value of Future Normal Costs | 971,868,721 | 1,079,652,352 |
| 4. Actuarial Accrued Liability (2 - 3) | \$5,315,837,724 | \$5,477,709,190 |
| 5. Actuarial Value of Assets | 4,108,957,408 | 3,808,143,673 |
| 6. Unfunded Actuarial Accrued Liability (UAAL) (4 - 5) | \$1,206,880,316 | \$1,669,565,517 |
| 7. UAAL Amortization Payment (30 year funding) | \$ 66,618,524 | \$ 92,158,260 |
| a. Amortization Payment as a Percent of Payroll (7 / 1) | 7.97 % | 11.20 % |
| 8. Total Normal Cost | \$ 132,154,147 | \$ 141,495,003 |
| a. Normal Cost as a Percent of Payroll (8 / 1) | 15.82 % | 17.19 % |
| 9. Total Required Contribution | \$ 198,772,671 | \$ 233,653,263 |
| a. Required Contribution Rate (7a + 8a) | 23.79 % | 28.39 % |
| 10. Expected Statutory Contribution Rates | | |
| a. Employer Contribution Rate | 9.46 % | 9.45 % |
| b. Member Contribution Rate | 13.57 % | 12.07 % |
| c. Total Statutory Contribution Rate (a + b) | 23.03 % | 21.52 % |
| 11. (Excess) Shortfall of Rates Under Funding Policy Objectives (9a - 10c) | 0.76 % | 6.87 % |



Section V: Actuarial Funding Calculation

Table V-1(d): Valuation Results for Municipal Police Division

| | June 30, 2013 | June 30, 2012 |
|--|----------------------|----------------------|
| 1. Total Valuation Payroll | \$ 209,586,067 | \$ 204,311,711 |
| 2. Present Value of Future Benefits | 2,656,852,961 | 2,861,189,049 |
| 3. Present Value of Future Normal Costs | <u>510,558,335</u> | <u>574,267,883</u> |
| 4. Actuarial Accrued Liability (2 - 3) | \$2,146,294,626 | \$2,286,921,166 |
| 5. Actuarial Value of Assets | <u>1,627,455,783</u> | <u>1,504,516,513</u> |
| 6. Unfunded Actuarial Accrued Liability (UAAL) (4 - 5) | \$ 518,838,843 | \$ 782,404,653 |
| 7. UAAL Amortization Payment (30 year funding) | \$ 28,639,358 | \$ 43,187,914 |
| a. Amortization Payment as a Percent of Payroll (7 / 1) | 13.66 % | 21.14 % |
| 8. Total Normal Cost | \$ 57,356,190 | \$ 63,277,532 |
| a. Normal Cost as a Percent of Payroll (8 / 1) | 27.37 % | 30.97 % |
| 9. Total Required Contribution | \$ 85,995,548 | \$ 106,465,446 |
| a. Required Contribution Rate (7a + 8a) | 41.03 % | 52.11 % |
| 10. Expected Statutory Contribution Rates | | |
| a. Employer Contribution Rate | 18.20 % | 18.21 % |
| b. Member Contribution Rate | <u>17.15 %</u> | <u>15.67 %</u> |
| c. Total Statutory Contribution Rate (a + b) | 35.35 % | 33.88 % |
| 11. (Excess) Shortfall of Rates Under Funding Policy Objectives (9a - 10c) | 5.68 % | 18.23 % |



Section V: Actuarial Funding Calculation

Table V-1(e): Valuation Results for Municipal Fire Division

| | June 30, 2013 | June 30, 2012 |
|--|-----------------|-----------------|
| 1. Total Valuation Payroll | \$ 123,522,225 | \$ 119,897,670 |
| 2. Present Value of Future Benefits | 1,582,593,576 | 1,693,868,813 |
| 3. Present Value of Future Normal Costs | 340,827,178 | 383,383,394 |
| 4. Actuarial Accrued Liability (2 - 3) | \$1,241,766,398 | \$1,310,485,419 |
| 5. Actuarial Value of Assets | 779,204,098 | 722,847,504 |
| 6. Unfunded Actuarial Accrued Liability (UAAL) (4 - 5) | \$ 462,562,300 | \$ 587,637,915 |
| 7. UAAL Amortization Payment (30 year funding) | \$ 25,532,952 | \$ 32,436,995 |
| a. Amortization Payment as a Percent of Payroll (7 / 1) | 20.67 % | 27.05 % |
| 8. Total Normal Cost | \$ 34,146,659 | \$ 37,108,909 |
| a. Normal Cost as a Percent of Payroll (8 / 1) | 27.64 % | 30.95 % |
| 9. Total Required Contribution | \$ 59,679,611 | \$ 69,545,904 |
| a. Required Contribution Rate (7a + 8a) | 48.31 % | 58.00 % |
| 10. Expected Statutory Contribution Rates | | |
| a. Employer Contribution Rate | 21.02 % | 21.08 % |
| b. Member Contribution Rate | 17.45 % | 16.02 % |
| c. Total Statutory Contribution Rate (a + b) | 38.47 % | 37.10 % |
| 11. (Excess) Shortfall of Rates Under Funding Policy Objectives (9a - 10c) | 9.84 % | 20.90 % |



Section V: Actuarial Funding Calculation

Table V-1(f): Valuation Results for All PERA Divisions

| | June 30, 2013 | June 30, 2012 |
|--|------------------|------------------|
| 1. Total Valuation Payroll | \$ 2,131,727,010 | \$ 2,074,051,311 |
| 2. Present Value of Future Benefits | 20,253,756,586 | 21,300,015,774 |
| 3. Present Value of Future Normal Costs | 3,196,376,564 | 3,511,971,927 |
| 4. Actuarial Accrued Liability (2 - 3) | \$17,057,380,022 | \$17,788,043,847 |
| 5. Actuarial Value of Assets | 12,438,151,665 | 11,612,047,019 |
| 6. Unfunded Actuarial Accrued Liability (UAAL) (4 - 5) | \$ 4,619,228,357 | \$ 6,175,996,828 |
| 7. UAAL Amortization Payment (30 year funding) | \$ 254,976,546 | \$ 340,908,528 |
| a. Amortization Payment as a Percent of Payroll (7 / 1) | 11.96 % | 16.44 % |
| 8. Total Normal Cost | \$ 403,225,475 | \$ 431,858,893 |
| a. Normal Cost as a Percent of Payroll (8 / 1) | 18.92 % | 20.82 % |
| 9. Total Required Contribution | \$ 658,202,021 | \$ 772,767,421 |
| a. Required Contribution Rate (7a + 8a) | 30.88 % | 37.26 % |
| 10. Expected Statutory Contribution Rates | | |
| a. Employer Contribution Rate | 14.59 % | 13.88 % |
| b. Member Contribution Rate | 12.04 % | 11.24 % |
| c. Total Statutory Contribution Rate (a + b) | 26.63 % | 25.12 % |
| 11. Expected (Excess) Shortfall in Employer Contribution Rate (9a - 10c) | 4.25 % | 12.14 % |

Table V-2: Contribution Rate Summary

| Division | Employer Only | | |
|--------------------------|------------------------|----------------|---------------|
| | Current Statutory Rate | 30-year Rate | Difference |
| State General | 16.59 % | 24.71 % | 8.12 % |
| State Police/Corrections | 25.18 % | 14.12 % | (11.06)% |
| Municipal General | 9.46 % | 10.22 % | 0.76 % |
| Municipal Police | 18.20 % | 23.88 % | 5.68 % |
| Municipal Fire | 21.02 % | 30.86 % | 9.84 % |
| PERA Total | 14.59 % | 18.84 % | 4.25 % |



Section V: Actuarial Funding Calculation

Table V-3: Statutory Contribution Rate Summary

| Division and Coverage Plan | Contribution Rates | |
|--|--------------------|----------|
| | Member | Employer |
| State Division | | |
| General Coverage Plan 3 | 8.92 % | 16.59 % |
| Police and Adult Corrections Plan 1 | 9.10 % | 25.10 % |
| Hazardous Duty (Juvenile Correctional Officers) Plan 2 | 6.28 % | 25.72 % |
| Weighted Average for Police/Corrections* | 8.72 % | 25.18 % |
| Municipal Division | | |
| General Coverage Plans | | |
| Plan 1 | 8.50 % | 7.00 % |
| Plan 2 | 10.65 % | 9.15 % |
| Plan 3 | 14.65 % | 9.15 % |
| Plan 4 | 17.15 % | 11.65 % |
| Detention Officers Plan 1 | 18.15 % | 16.65 % |
| Weighted Average* | 13.57 % | 9.46 % |
| Police Coverage Plans | | |
| Plan 1 | 8.50 % | 10.00 % |
| Plan 2 | 8.50 % | 15.00 % |
| Plan 3 | 8.50 % | 18.50 % |
| Plan 4 | 13.85 % | 18.50 % |
| Plan 5 | 17.80 % | 18.50 % |
| Weighted Average* | 17.15 % | 18.20 % |
| Fire Coverage Plans | | |
| Plan 1 | 9.50 % | 11.00 % |
| Plan 2 | 9.50 % | 17.50 % |
| Plan 3 | 9.50 % | 21.25 % |
| Plan 4 | 14.30 % | 21.25 % |
| Plan 5 | 17.70 % | 21.25 % |
| Weighted Average* | 17.45 % | 21.02 % |

* PERA financial records do not provide an asset breakdown by coverage plan which necessitates the use of a weighted average contribution rate for the purpose of comparing assets to the actuarial accrued liability and determining the financing period for the unfunded actuarial accrued liability. Contribution rates are weighted by payroll.



Section VI: Accounting Information

The tables provided in this section present disclosure information necessary to comply with GASB requirements and are relevant for the annual financial reporting of PERA.

Table VI-1: GASB Statement No. 25 Schedule of Funding Progress

| Actuarial Valuation Date | Actuarial Value of Plan Assets (a) | Actuarial Liability (AAL) Entry Age (b) | Unfunded AAL (UAAL) (b - a) | Funded Ratio (a / b) | Annual Payroll (c) | UAAL as a Percentage of Annual Payroll ((b - a) / c) |
|--------------------------|------------------------------------|---|-----------------------------|----------------------|--------------------|--|
| 6/30/2013 | \$ 12,438,151,665 | \$ 17,057,380,022 | \$4,619,228,357 | 72.9 % | \$2,049,737,510 | 225.4 % |
| 6/30/2012 | 11,612,047,019 | 17,788,043,847 | 6,175,996,828 | 65.3 % | 1,994,280,107 | 309.7 % |
| 6/30/2011 | 11,855,217,373 | 16,826,392,409 | 4,971,175,036 | 70.5 % | 1,935,013,761 | 256.9 % |
| 6/30/2010 | 12,243,712,850 | 15,601,461,460 | 3,357,748,610 | 78.5 % | 1,993,516,921 | 168.4 % |
| 6/30/2009 | 12,553,985,916 | 14,908,279,200 | 2,354,293,284 | 84.2 % | 2,081,259,498 | 113.1 % |
| 6/30/2008 | 12,816,218,012 | 13,740,335,321 | 924,117,309 | 93.3 % | 1,965,064,160 | 47.0 % |
| 6/30/2007 | 12,032,214,874 | 12,962,480,229 | 930,265,355 | 92.8 % | 1,908,519,615 | 48.7 % |
| 6/30/2006 | 10,850,217,103 | 11,781,722,238 | 931,505,135 | 92.1 % | 1,774,918,446 | 52.5 % |
| 6/30/2005 | 9,997,484,609 | 10,902,768,775 | 905,284,166 | 91.7 % | 1,607,838,716 | 56.3 % |
| 6/30/2004 | 9,267,268,071 | 9,950,224,296 | 682,956,225 | 93.1 % | 1,499,069,439 | 45.6 % |
| 6/30/2003 | 8,971,080,804 | 9,215,945,484 | 244,864,680 | 97.3 % | 1,437,357,206 | 17.0 % |

Table VI-2: Schedule of Employer Contributions

| Fiscal Year Ended June 30 | Actuarial Valuation Date | Annual Required Contribution (ARC)* |
|---------------------------|--------------------------|-------------------------------------|
| 2014 | 6/30/2013 | \$401,601,924* |
| 2013 | 6/30/2012 | 523,617,049 |
| 2012 | 6/30/2011 | 466,059,490 |
| 2011 | 6/30/2010 | 355,192,459 |
| 2010 | 6/30/2009 | 327,447,665 |
| 2009 | 6/30/2008 | 302,068,680 |
| 2008 | 6/30/2007 | 292,578,920 |
| 2007 | 6/30/2006 | 256,298,224 |
| 2006 | 6/30/2005 | 235,066,020 |
| 2005 | 6/30/2004 | 219,163,952 |
| 2004 | 6/30/2003 | 206,835,702 |

* Current ARC is projected amount based on expected increase in payroll. Actual ARC will be based on actual payroll for the plan year when known.



Section VI: Accounting Information

Table VI-3: Solvency Test by Division
State General

| Valuation Date | Aggregate Accrued Liabilities For | | | | Actuarial Value of Assets | Portion of Accrued Liabilities Covered by Actuarial Value of Assets | | |
|----------------|-----------------------------------|--|--|------------------|---------------------------|---|-------|-----|
| | (1) Active Member Contributions | (2) Retirees, Survivors and Inactive Members | (3) Active Members (Employer Financed Portion) | | | (1) | (2) | (3) |
| 6/30/2013 | \$ 841,174,061 | \$ 5,064,595,209 | \$ 1,617,991,066 | \$ 4,996,425,681 | 100.00% | 82.05% | 0.00% | |
| 6/30/2012 | 787,435,758 | 5,117,428,346 | 1,914,051,334 | 4,724,562,943 | 100.00 | 76.94 | 0.00 | |
| 6/30/2011 | 796,011,595 | 4,725,622,520 | 1,961,725,462 | 4,883,299,367 | 100.00 | 86.49 | 0.00 | |
| 6/30/2010 | 801,399,015 | 4,253,964,884 | 1,931,877,225 | 5,053,620,284 | 100.00 | 99.96 | 0.00 | |
| 6/30/2009 | 778,454,953 | 3,758,596,895 | 2,197,858,388 | 5,187,238,906 | 100.00 | 100.00 | 29.58 | |

State Police/Corrections

| Valuation Date | Aggregate Accrued Liabilities For | | | | Actuarial Value of Assets | Portion of Accrued Liabilities Covered by Actuarial Value of Assets | | |
|----------------|-----------------------------------|--|--|----------------|---------------------------|---|---------|-----|
| | (1) Active Member Contributions | (2) Retirees, Survivors and Inactive Members | (3) Active Members (Employer Financed Portion) | | | (1) | (2) | (3) |
| 6/30/2013 | \$ 58,260,570 | \$ 525,211,454 | \$ 246,248,914 | \$ 926,108,695 | 100.00% | 100.00% | 100.00% | |
| 6/30/2012 | 54,156,044 | 561,452,471 | 278,404,119 | 851,976,386 | 100.00 | 100.00 | 84.90 | |
| 6/30/2011 | 53,270,846 | 522,073,854 | 271,764,015 | 862,058,143 | 100.00 | 100.00 | 100.00 | |
| 6/30/2010 | 54,011,741 | 468,885,120 | 260,549,805 | 889,169,394 | 100.00 | 100.00 | 100.00 | |
| 6/30/2009 | 51,976,907 | 428,702,219 | 279,377,481 | 909,538,277 | 100.00 | 100.00 | 100.00 | |



Section VI: Accounting Information

Municipal General

| Valuation Date | Aggregate Accrued Liabilities For | | | | Portion of Accrued Liabilities Covered by Actuarial Value of Assets | | |
|----------------|-----------------------------------|--|--|---------------------------|---|--------|-------|
| | (1) Active Member Contributions | (2) Retirees, Survivors and Inactive Members | (3) Active Members (Employer Financed Portion) | Actuarial Value of Assets | (1) | (2) | (3) |
| 6/30/2013 | \$1,000,561,795 | \$ 3,309,385,678 | \$ 1,005,890,251 | \$ 4,108,957,408 | 100.00% | 93.93% | 0.00% |
| 6/30/2012 | 949,311,379 | 3,336,286,064 | 1,192,111,747 | 3,808,143,673 | 100.00 | 85.69 | 0.00 |
| 6/30/2011 | 926,331,337 | 3,086,715,812 | 1,107,402,880 | 3,845,662,093 | 100.00 | 94.58 | 0.00 |
| 6/30/2010 | 925,603,163 | 2,755,080,040 | 1,057,656,417 | 3,960,653,469 | 100.00 | 100.00 | 26.47 |
| 6/30/2009 | 919,259,180 | 2,389,664,666 | 1,183,487,976 | 4,052,373,108 | 100.00 | 100.00 | 62.82 |

Municipal Police

| Valuation Date | Aggregate Accrued Liabilities For | | | | Portion of Accrued Liabilities Covered by Actuarial Value of Assets | | |
|----------------|-----------------------------------|--|--|---------------------------|---|--------|-------|
| | (1) Active Member Contributions | (2) Retirees, Survivors and Inactive Members | (3) Active Members (Employer Financed Portion) | Actuarial Value of Assets | (1) | (2) | (3) |
| 6/30/2013 | \$ 247,882,167 | \$ 1,413,249,313 | \$ 485,163,146 | \$ 1,627,455,783 | 100.00% | 97.62% | 0.00% |
| 6/30/2012 | 231,924,646 | 1,488,001,979 | 566,994,541 | 1,504,516,513 | 100.00 | 85.52 | 0.00 |
| 6/30/2011 | 231,902,509 | 1,374,649,843 | 540,837,909 | 1,527,062,745 | 100.00 | 94.22 | 0.00 |
| 6/30/2010 | 229,843,016 | 1,233,854,770 | 503,208,106 | 1,575,381,241 | 100.00 | 100.00 | 22.19 |
| 6/30/2009 | 226,520,464 | 1,119,080,749 | 518,225,913 | 1,615,789,548 | 100.00 | 100.00 | 52.14 |

Municipal Fire

| Valuation Date | Aggregate Accrued Liabilities For | | | | Portion of Accrued Liabilities Covered by Actuarial Value of Assets | | |
|----------------|-----------------------------------|--|--|---------------------------|---|--------|-------|
| | (1) Active Member Contributions | (2) Retirees, Survivors and Inactive Members | (3) Active Members (Employer Financed Portion) | Actuarial Value of Assets | (1) | (2) | (3) |
| 6/30/2013 | \$ 163,287,521 | \$ 822,738,793 | \$ 255,740,084 | \$ 779,204,098 | 100.00% | 74.86% | 0.00% |
| 6/30/2012 | 147,973,606 | 875,612,944 | 286,898,869 | 722,847,504 | 100.00 | 65.65 | 0.00 |
| 6/30/2011 | 146,327,512 | 816,875,672 | 264,880,643 | 737,135,025 | 100.00 | 72.33 | 0.00 |
| 6/30/2010 | 146,535,083 | 730,613,903 | 248,379,172 | 764,888,462 | 100.00 | 84.64 | 0.00 |
| 6/30/2009 | 143,289,802 | 672,838,620 | 240,944,987 | 789,046,075 | 100.00 | 95.98 | 0.00 |



Section VI: Accounting Information

Table VI-3: Solvency Test for All PERA Divisions

PERA Totals

| Valuation Date | Aggregate Accrued Liabilities For | | | | Actuarial Value of Assets | Portion of Accrued Liabilities Covered by Actuarial Value of Assets | | |
|----------------|-----------------------------------|--|--|-------------------|---------------------------|---|-------|-----|
| | (1) Active Member Contributions | (2) Retirees, Survivors and Inactive Members | (3) Active Members (Employer Financed Portion) | | | (1) | (2) | (3) |
| 6/30/2013 | \$2,311,166,114 | \$ 11,135,180,447 | \$ 3,611,033,461 | \$ 12,438,151,665 | 100.00% | 90.95% | 0.00% | |
| 6/30/2012 | 2,170,801,433 | 11,378,781,804 | 4,238,460,610 | 11,612,047,019 | 100.00 | 82.97 | 0.00 | |
| 6/30/2011 | 2,153,843,799 | 10,525,937,701 | 4,146,610,909 | 11,855,217,373 | 100.00 | 92.17 | 0.00 | |
| 6/30/2010 | 2,157,392,018 | 9,442,398,717 | 4,001,670,725 | 12,243,712,850 | 100.00 | 100.00 | 16.09 | |
| 6/30/2009 | 2,119,501,306 | 8,368,883,149 | 4,419,894,745 | 12,553,985,914 | 100.00 | 100.00 | 46.73 | |



Section VI: Accounting Information

**Table VI-4: Schedule of Retirants Added to and Removed from Rolls by Division
State General**

| Valuation Date | Added to Rolls | | Removed from Rolls | | Rolls End of Year | | % Increase in Annual Allowances | Average Annual Allowances |
|----------------|----------------|-------------------|--------------------|-------------------|-------------------|-------------------|---------------------------------|---------------------------|
| | Number Added | Annual Allowances | Number Removed | Annual Allowances | Number | Annual Allowances | | |
| 6/30/2013 | 1,285 | \$43,656,998 | 358 | \$ 7,006,726 | 15,318 | \$408,580,147 | 9.85% | \$ 26,673 |
| 6/30/2012 | 1,075 | 35,697,983 | 323 | 5,911,795 | 14,391 | 371,929,875 | 8.71 | 25,845 |
| 6/30/2011 | 1,005 | 34,914,890 | 347 | 6,179,881 | 13,639 | 342,143,687 | 9.17 | 25,086 |
| 6/30/2010 | 858 | 30,142,074 | 319 | 5,583,947 | 12,981 | 313,408,678 | 8.50 | 24,144 |
| 6/30/2009 | 599 | 22,350,689 | 200 | 2,724,236 | 12,442 | 288,850,551 | 7.29 | 23,216 |

State Police/Corrections

| Valuation Date | Added to Rolls | | Removed from Rolls | | Rolls End of Year | | % Increase in Annual Allowances | Average Annual Allowances |
|----------------|----------------|-------------------|--------------------|-------------------|-------------------|-------------------|---------------------------------|---------------------------|
| | Number Added | Annual Allowances | Number Removed | Annual Allowances | Number | Annual Allowances | | |
| 6/30/2013 | 60 | \$ 2,706,075 | 23 | \$ 725,085 | 1,326 | \$39,638,875 | 5.26% | \$ 29,894 |
| 6/30/2012 | 83 | 3,323,294 | 21 | 561,598 | 1,289 | 37,657,885 | 7.91 | 29,215 |
| 6/30/2011 | 90 | 3,480,618 | 20 | 507,415 | 1,227 | 34,896,189 | 9.31 | 28,440 |
| 6/30/2010 | 67 | 2,521,381 | 18 | 337,044 | 1,157 | 31,922,986 | 7.35 | 27,591 |
| 6/30/2009 | 71 | 2,869,837 | 1 | 78,768 | 1,108 | 29,738,649 | 10.36 | 26,840 |



Section VI: Accounting Information

Municipal General

| Valuation Date | Added to Rolls | | Removed from Rolls | | Rolls End of Year | | % Increase in Annual Allowances | Average Annual Allowances |
|----------------|----------------|-------------------|--------------------|-------------------|-------------------|-------------------|---------------------------------|---------------------------|
| | Number Added | Annual Allowances | Number Removed | Annual Allowances | Number | Annual Allowances | | |
| 6/30/2013 | 933 | \$29,438,538 | 281 | \$ 4,828,481 | 10,711 | \$260,927,446 | 10.41% | \$ 24,361 |
| 6/30/2012 | 761 | 23,166,131 | 240 | 3,984,904 | 10,059 | 236,317,389 | 8.83 | 23,493 |
| 6/30/2011 | 767 | 23,981,216 | 269 | 3,952,559 | 9,538 | 217,136,162 | 10.16 | 22,765 |
| 6/30/2010 | 741 | 22,219,130 | 234 | 3,359,126 | 9,040 | 197,107,505 | 10.58 | 21,804 |
| 6/30/2009 | 510 | 17,121,178 | 112 | 1,840,853 | 8,533 | 178,247,502 | 9.38 | 20,889 |

Municipal Police

| Valuation Date | Added to Rolls | | Removed from Rolls | | Rolls End of Year | | % Increase in Annual Allowances | Average Annual Allowances |
|----------------|----------------|-------------------|--------------------|-------------------|-------------------|-------------------|---------------------------------|---------------------------|
| | Number Added | Annual Allowances | Number Removed | Annual Allowances | Number | Annual Allowances | | |
| 6/30/2013 | 177 | \$ 8,276,701 | 46 | \$ 1,276,954 | 2,855 | \$101,829,308 | 7.38% | \$ 35,667 |
| 6/30/2012 | 183 | 8,670,002 | 33 | 967,953 | 2,724 | 94,829,561 | 8.84 | 34,813 |
| 6/30/2011 | 166 | 8,033,315 | 30 | 821,737 | 2,574 | 87,127,512 | 9.02 | 33,849 |
| 6/30/2010 | 166 | 7,192,629 | 26 | 676,463 | 2,438 | 79,915,934 | 8.88 | 32,779 |
| 6/30/2009 | 113 | 5,321,543 | 0 | 0 | 2,298 | 73,399,767 | 7.82 | 31,941 |

Municipal Fire

| Valuation Date | Added to Rolls | | Removed from Rolls | | Rolls End of Year | | % Increase in Annual Allowances | Average Annual Allowances |
|----------------|----------------|-------------------|--------------------|-------------------|-------------------|-------------------|---------------------------------|---------------------------|
| | Number Added | Annual Allowances | Number Removed | Annual Allowances | Number | Annual Allowances | | |
| 6/30/2013 | 70 | \$ 4,239,651 | 20 | \$ 590,379 | 1,653 | \$61,457,584 | 6.31% | \$ 37,179 |
| 6/30/2012 | 86 | 4,861,646 | 31 | 901,384 | 1,603 | 57,808,312 | 7.35 | 36,063 |
| 6/30/2011 | 98 | 5,203,080 | 23 | 617,946 | 1,548 | 53,848,050 | 9.31 | 34,786 |
| 6/30/2010 | 77 | 4,123,767 | 16 | 542,892 | 1,473 | 49,262,916 | 7.84 | 33,444 |
| 6/30/2009 | 60 | 3,341,836 | 10 | 444,498 | 1,412 | 45,682,041 | 6.77 | 32,353 |



Section VI: Accounting Information

Table VI-4: Schedule of Retirants Added to and Removed from Rolls for All PERA Divisions

PERA Totals

| Valuation Date | Added to Rolls | | Removed from Rolls | | Rolls End of Year | | % Increase in Annual Allowances | Average Annual Allowances |
|----------------|----------------|-------------------|--------------------|-------------------|-------------------|-------------------|---------------------------------|---------------------------|
| | Number Added | Annual Allowances | Number Removed | Annual Allowances | Number | Annual Allowances | | |
| 6/30/2013 | 2,525 | \$88,317,963 | 728 | \$14,427,625 | 31,863 | \$ 872,433,360 | 9.25% | \$ 27,381 |
| 6/30/2012 | 2,188 | 75,719,056 | 648 | 12,327,634 | 30,066 | 798,543,022 | 8.62 | 26,560 |
| 6/30/2011 | 2,126 | 75,613,119 | 689 | 12,079,538 | 28,526 | 735,151,600 | 9.46 | 25,771 |
| 6/30/2010 | 1,909 | 66,198,980 | 613 | 10,499,472 | 27,089 | 671,618,019 | 9.04 | 24,793 |
| 6/30/2009 | 1,353 | 51,005,083 | 323 | 5,088,355 | 25,793 | 615,918,510 | 8.06 | 23,879 |

Table VI-5: Summary of Actuarial Methods and Assumptions

| | |
|--|---|
| Valuation date | June 30, 2013 |
| Actuarial cost method | Entry Age Normal |
| Amortization method | Level Percent of Payroll, Open |
| Payroll growth rate | 4.00% |
| Remaining amortization period | 30 years |
| Asset valuation method | 4-year Smoothed Market |
| Actuarial assumptions: | |
| Investment rate of return* | 7.75% |
| Projected salary increases* | 4.00% – 19.00% |
| Post-retirement benefit increases | 2.00% compounded annually (2.50% for certain retirees and disabled participants with annual benefits less than \$20,000) |

* Includes inflation at 3.50%



Appendix A: Additional Membership Data

Table A-1: Schedule of Active Participant Data as of June 30, 2013 by Division

State General

| Nearest Age | Completed Years of Service | | | | | | | Total | Payroll |
|-------------|----------------------------|--------|----------|----------|----------|----------|-----|--------|----------------|
| | Under 5 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30+ | | |
| Under 20 | 17 | | | | | | | 17 | \$ 520,553 |
| 20 to 24 | 432 | 14 | | | | | | 446 | 11,313,086 |
| 25 to 29 | 1,142 | 364 | 7 | 1 | | | | 1,514 | 47,824,259 |
| 30 to 34 | 1,055 | 874 | 225 | 10 | | | | 2,164 | 77,598,440 |
| 35 to 39 | 851 | 720 | 558 | 153 | 8 | | | 2,290 | 91,268,011 |
| 40 to 44 | 760 | 666 | 612 | 486 | 197 | 2 | | 2,723 | 116,716,391 |
| 45 to 49 | 781 | 642 | 562 | 447 | 470 | 48 | | 2,950 | 130,791,157 |
| 50 to 54 | 678 | 707 | 563 | 480 | 502 | 75 | 6 | 3,011 | 133,507,561 |
| 55 to 59 | 483 | 638 | 541 | 430 | 422 | 62 | 24 | 2,600 | 119,665,571 |
| 60 | 91 | 98 | 94 | 81 | 66 | 11 | 2 | 443 | 19,841,448 |
| 61 | 81 | 105 | 94 | 68 | 63 | 16 | 3 | 430 | 20,503,465 |
| 62 | 59 | 93 | 77 | 50 | 33 | 6 | 2 | 320 | 15,271,286 |
| 63 | 49 | 70 | 62 | 29 | 29 | 6 | 1 | 246 | 11,756,788 |
| 64 | 32 | 72 | 46 | 22 | 19 | 7 | 2 | 200 | 9,350,953 |
| 65 | 28 | 53 | 46 | 24 | 17 | 4 | | 172 | 7,965,539 |
| 66 | 25 | 38 | 30 | 9 | 16 | 7 | | 125 | 6,385,752 |
| 67 | 19 | 28 | 18 | 8 | 9 | | 1 | 83 | 3,942,227 |
| 68 | 19 | 11 | 11 | 7 | 3 | 1 | 1 | 53 | 2,510,743 |
| 69 | 9 | 13 | 14 | 2 | | 2 | | 40 | 2,285,286 |
| 70 | 10 | 13 | 8 | 2 | 6 | 2 | | 41 | 1,773,728 |
| 71 | 5 | 7 | 7 | 3 | 3 | 2 | | 27 | 1,076,334 |
| 72 | 4 | 12 | 3 | 1 | 1 | 1 | 1 | 23 | 1,008,466 |
| 73 | 4 | 4 | 7 | 1 | | | | 16 | 750,724 |
| 74 | 1 | 3 | 1 | 5 | | | | 10 | 536,143 |
| 75 | 4 | 3 | 2 | 1 | | 1 | 1 | 12 | 612,994 |
| 76 | 3 | 2 | 2 | 1 | | | | 8 | 478,096 |
| 77 | | | | | | | | | |
| 78 | 2 | | 1 | 1 | | | 1 | 5 | 194,472 |
| 79 | | | 1 | | | | | 1 | 28,660 |
| 80 & Over | 4 | 3 | 2 | | | | 1 | 10 | 339,487 |
| Total | 6,648 | 5,253 | 3,594 | 2,322 | 1,864 | 253 | 46 | 19,980 | \$ 835,817,618 |

Average Age: 45.39

Average Service: 9.26



Appendix A: Additional Membership Data

State Police/Corrections

| Nearest Age | Completed Years of Service | | | | | | | Total | Payroll |
|--------------|----------------------------|------------|------------|------------|------------|-----------|----------|--------------|----------------------|
| | Under 5 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30+ | | |
| Under 20 | 5 | | | | | | | 5 | \$ 169,889 |
| 20 to 24 | 188 | 15 | | | | | | 203 | 7,717,440 |
| 25 to 29 | 189 | 108 | 23 | | | | | 320 | 13,010,413 |
| 30 to 34 | 102 | 95 | 108 | 20 | | | | 325 | 14,296,449 |
| 35 to 39 | 76 | 72 | 79 | 73 | 20 | | | 320 | 15,573,873 |
| 40 to 44 | 63 | 44 | 62 | 66 | 74 | 10 | | 319 | 16,702,387 |
| 45 to 49 | 27 | 36 | 24 | 38 | 48 | 15 | | 188 | 9,318,016 |
| 50 to 54 | 19 | 33 | 32 | 31 | 23 | 5 | 4 | 147 | 7,196,075 |
| 55 to 59 | 16 | 13 | 18 | 19 | 12 | 6 | 4 | 88 | 4,221,965 |
| 60 | 2 | 1 | 2 | 1 | 1 | | 1 | 8 | 331,146 |
| 61 | 1 | 1 | 1 | | 2 | | | 5 | 243,250 |
| 62 | 1 | 2 | 4 | 3 | 2 | | | 12 | 604,299 |
| 63 | | | 1 | | | 1 | | 2 | 143,955 |
| 64 | 1 | | 1 | | | 1 | | 3 | 137,410 |
| 65 | | 1 | 1 | 2 | | | | 4 | 206,609 |
| 66 | | 1 | | 1 | 1 | | | 3 | 155,143 |
| 67 | | | | | | | | | |
| 68 | | | | | | | | | |
| 69 | | | | | | | | | |
| 70 | | | | | | | | | |
| 71 | | | | | | | | | |
| 72 | 1 | | 1 | | | 1 | | 3 | 148,560 |
| 73 | | | | | | | | | |
| 74 | | | | | | | | | |
| 75 | | | | | | | | | |
| 76 | | | | | | | | | |
| 77 | | | | | | | | | |
| 78 | | | | | | | | | |
| 79 | | | | | | | | | |
| 80 & Over | 1 | | | | | | | 1 | 48,372 |
| Total | 692 | 422 | 357 | 254 | 183 | 39 | 9 | 1,956 | \$ 90,225,253 |

Average Age: 37.32

Average Service: 9.45



Appendix A: Additional Membership Data

Municipal General

| Nearest Age | Completed Years of Service | | | | | | | | Total | Payroll |
|--------------|----------------------------|--------------|--------------|--------------|--------------|------------|-----------|---------------|-----------------------|---------|
| | Under 5 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30+ | | | |
| Under 20 | 511 | 1 | | | | | | 512 | \$ 8,216,892 | |
| 20 to 24 | 1,279 | 26 | | | | | | 1,305 | 31,484,913 | |
| 25 to 29 | 1,432 | 521 | 6 | | | | | 1,959 | 58,404,524 | |
| 30 to 34 | 1,232 | 793 | 248 | 12 | | | | 2,285 | 76,934,367 | |
| 35 to 39 | 956 | 756 | 384 | 196 | 10 | | | 2,302 | 83,863,884 | |
| 40 to 44 | 1,298 | 708 | 450 | 440 | 200 | 2 | | 3,098 | 115,870,397 | |
| 45 to 49 | 841 | 647 | 420 | 401 | 329 | 81 | 3 | 2,722 | 109,926,387 | |
| 50 to 54 | 816 | 734 | 507 | 421 | 440 | 99 | 4 | 3,021 | 123,672,873 | |
| 55 to 59 | 716 | 635 | 400 | 367 | 367 | 82 | 29 | 2,596 | 104,853,702 | |
| 60 | 122 | 92 | 75 | 71 | 50 | 14 | 3 | 427 | 16,667,373 | |
| 61 | 98 | 93 | 84 | 55 | 41 | 14 | 5 | 390 | 15,286,896 | |
| 62 | 73 | 90 | 68 | 43 | 33 | 10 | 3 | 320 | 13,287,125 | |
| 63 | 60 | 83 | 47 | 31 | 17 | 6 | 3 | 247 | 10,146,943 | |
| 64 | 59 | 62 | 46 | 22 | 21 | 3 | 4 | 217 | 8,606,885 | |
| 65 | 44 | 55 | 33 | 20 | 20 | 7 | 2 | 181 | 7,373,333 | |
| 66 | 31 | 39 | 27 | 16 | 13 | 6 | 2 | 134 | 5,318,674 | |
| 67 | 24 | 20 | 8 | 9 | 12 | 2 | | 75 | 2,843,311 | |
| 68 | 24 | 12 | 8 | 3 | 1 | | 2 | 50 | 1,593,185 | |
| 69 | 22 | 19 | 12 | 6 | 2 | 1 | 2 | 64 | 2,320,616 | |
| 70 | 16 | 14 | 4 | 5 | 3 | 3 | | 45 | 1,417,128 | |
| 71 | 9 | 10 | 4 | 2 | 2 | 1 | | 28 | 837,091 | |
| 72 | 13 | 5 | 5 | 7 | | | | 30 | 1,135,237 | |
| 73 | 2 | 8 | 2 | 4 | 1 | 1 | 1 | 19 | 672,345 | |
| 74 | 5 | 3 | 6 | 2 | | | | 16 | 412,147 | |
| 75 | 8 | | 2 | 1 | 1 | | | 12 | 278,835 | |
| 76 | 7 | 5 | 2 | 2 | | | | 16 | 403,437 | |
| 77 | 5 | 4 | 2 | 1 | 2 | | | 14 | 440,872 | |
| 78 | 2 | 3 | | 1 | | 2 | | 8 | 291,702 | |
| 79 | 1 | 3 | 3 | 1 | 1 | | | 9 | 335,867 | |
| 80 & Over | 9 | 7 | 2 | 1 | 2 | | | 21 | 501,266 | |
| Total | 9,715 | 5,448 | 2,855 | 2,140 | 1,568 | 334 | 63 | 22,123 | \$ 803,398,205 | |

Average Age: 43.47

Average Service: 7.92



Appendix A: Additional Membership Data

Municipal Police

| Nearest Age | Completed Years of Service | | | | | | | Total | Payroll |
|--------------|----------------------------|------------|------------|------------|------------|-----------|----------|--------------|-----------------------|
| | Under 5 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30+ | | |
| Under 20 | 6 | | | | | | | 6 | \$ 162,046 |
| 20 to 24 | 191 | 8 | | | | | | 199 | 7,867,685 |
| 25 to 29 | 374 | 195 | 7 | | | | | 576 | 26,757,666 |
| 30 to 34 | 242 | 347 | 100 | 1 | | | | 690 | 35,829,139 |
| 35 to 39 | 173 | 183 | 237 | 90 | 4 | 0 | 0 | 687 | 38,484,489 |
| 40 to 44 | 99 | 113 | 215 | 284 | 38 | | | 749 | 44,433,462 |
| 45 to 49 | 64 | 75 | 107 | 145 | 59 | 3 | | 453 | 26,446,086 |
| 50 to 54 | 34 | 31 | 50 | 54 | 30 | 6 | | 205 | 11,690,842 |
| 55 to 59 | 24 | 20 | 25 | 21 | 12 | 4 | 1 | 107 | 5,895,700 |
| 60 | 2 | 2 | 1 | 5 | 2 | 1 | | 13 | 653,437 |
| 61 | 6 | 4 | 1 | 3 | 2 | 1 | | 17 | 944,492 |
| 62 | 1 | 1 | 1 | 4 | 2 | | 1 | 10 | 693,070 |
| 63 | 1 | 2 | 4 | 2 | | | 2 | 11 | 584,260 |
| 64 | | | 2 | 2 | | | 2 | 6 | 348,660 |
| 65 | | 3 | | 1 | | | | 4 | 251,026 |
| 66 | | | 2 | | 1 | | | 3 | 183,898 |
| 67 | 1 | 1 | | | | | | 2 | 80,825 |
| 68 | | 1 | | | | | | 1 | 33,720 |
| 69 | 2 | | | | | | | 2 | 59,134 |
| 70 | 1 | | | | | | | 1 | 56,454 |
| 71 | | | | | | | | | |
| 72 | | | | | | | | | |
| 73 | | | | | | | | | |
| 74 | | | | | | | | | |
| 75 | | | | | | | | | |
| 76 | 1 | | | | | | | 1 | 42,892 |
| 77 | | | | | | | | | |
| 78 | | | | | | | | | |
| 79 | | | | | | | | | |
| 80 & Over | 1 | | | | | | | 1 | 26,082 |
| Total | 1,223 | 986 | 752 | 612 | 150 | 15 | 6 | 3,744 | \$ 201,525,064 |

Average Age: 37.85

Average Service: 9.00



Appendix A: Additional Membership Data

Municipal Fire

| Nearest Age | Completed Years of Service | | | | | | | | Total | Payroll |
|--------------|----------------------------|------------|------------|------------|-----------|-----------|----------|--------------|-------|-----------------------|
| | Under 5 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30+ | | | |
| Under 20 | 6 | | | | | | | | 6 | \$ 169,707 |
| 20 to 24 | 116 | 3 | | | | | | | 119 | 4,912,366 |
| 25 to 29 | 237 | 111 | 2 | | | | | | 350 | 15,526,293 |
| 30 to 34 | 175 | 242 | 72 | 2 | | | | | 491 | 25,059,404 |
| 35 to 39 | 100 | 180 | 143 | 58 | | | | | 481 | 25,524,449 |
| 40 to 44 | 34 | 66 | 104 | 146 | 19 | 1 | | | 370 | 22,421,884 |
| 45 to 49 | 8 | 40 | 39 | 82 | 34 | 2 | | | 205 | 12,799,798 |
| 50 to 54 | 3 | 13 | 24 | 47 | 29 | 7 | 3 | | 126 | 8,251,799 |
| 55 to 59 | 1 | 3 | 6 | 15 | 6 | 5 | 2 | | 38 | 2,649,194 |
| 60 | 1 | | 2 | 1 | 1 | | 1 | | 6 | 393,976 |
| 61 | | | | 1 | 1 | | 1 | | 3 | 188,324 |
| 62 | | | 1 | 1 | | | 1 | | 3 | 224,053 |
| 63 | | 1 | | 2 | | | 1 | | 4 | 289,051 |
| 64 | 1 | 1 | 1 | | 1 | | | | 4 | 238,249 |
| 65 | | | | | | | | | | |
| 66 | | | | | | | | | | |
| 67 | | | | | | | | | | |
| 68 | | | | 1 | | | | | 1 | 53,343 |
| 69 | | | | | | | | | | |
| 70 | | | | | | | | | | |
| 71 | 1 | | | | | | | | 1 | 24,520 |
| 72 | | | | | | | | | | |
| 73 | | | 1 | | | | | | 1 | 44,959 |
| 74 | | | | | | | | | | |
| 75 | | | | | | | | | | |
| 76 | | | | | | | | | | |
| 77 | | | | | | | | | | |
| 78 | | | | | | | | | | |
| 79 | | | | | | | | | | |
| 80 & Over | | | | | | | | | | |
| Total | 683 | 660 | 395 | 356 | 91 | 16 | 8 | 2,209 | | \$ 118,771,370 |

Average Age: 36.65

Average Service: 9.10



Appendix A: Additional Membership Data

All PERA Divisions

| Nearest Age | Completed Years of Service | | | | | | | | Total | Payroll |
|--------------|----------------------------|---------------|--------------|--------------|--------------|------------|------------|---------------|-------------------------|---------|
| | Under 5 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30+ | | | |
| Under 20 | 545 | 1 | | | | | | 546 | \$ 9,239,087 | |
| 20 to 24 | 2,206 | 66 | | | | | | 2,272 | 63,295,489 | |
| 25 to 29 | 3,374 | 1,299 | 45 | 1 | | | | 4,719 | 161,523,154 | |
| 30 to 34 | 2,806 | 2,351 | 753 | 45 | | | | 5,955 | 229,717,798 | |
| 35 to 39 | 2,156 | 1,911 | 1,401 | 570 | 42 | | | 6,080 | 254,714,706 | |
| 40 to 44 | 2,254 | 1,597 | 1,443 | 1,422 | 528 | 15 | | 7,259 | 316,144,522 | |
| 45 to 49 | 1,721 | 1,440 | 1,152 | 1,113 | 940 | 149 | 3 | 6,518 | 289,281,444 | |
| 50 to 54 | 1,550 | 1,518 | 1,176 | 1,033 | 1,024 | 192 | 17 | 6,510 | 284,319,151 | |
| 55 to 59 | 1,240 | 1,309 | 990 | 852 | 819 | 159 | 60 | 5,429 | 237,286,133 | |
| 60 | 218 | 193 | 174 | 159 | 120 | 26 | 7 | 897 | 37,887,380 | |
| 61 | 186 | 203 | 180 | 127 | 109 | 31 | 9 | 845 | 37,166,426 | |
| 62 | 134 | 186 | 151 | 101 | 70 | 16 | 7 | 665 | 30,079,832 | |
| 63 | 110 | 156 | 114 | 64 | 46 | 14 | 6 | 510 | 22,920,997 | |
| 64 | 93 | 135 | 96 | 46 | 41 | 11 | 8 | 430 | 18,682,158 | |
| 65 | 72 | 112 | 80 | 47 | 37 | 11 | 2 | 361 | 15,796,507 | |
| 66 | 56 | 78 | 59 | 26 | 31 | 13 | 2 | 265 | 12,043,467 | |
| 67 | 44 | 49 | 26 | 17 | 21 | 2 | 1 | 160 | 6,866,363 | |
| 68 | 43 | 24 | 19 | 11 | 4 | 1 | 3 | 105 | 4,190,991 | |
| 69 | 33 | 32 | 26 | 8 | 2 | 3 | 2 | 106 | 4,665,036 | |
| 70 | 27 | 27 | 12 | 7 | 9 | 5 | | 87 | 3,247,310 | |
| 71 | 15 | 17 | 11 | 5 | 5 | 3 | | 56 | 1,937,945 | |
| 72 | 18 | 17 | 9 | 8 | 1 | 2 | 1 | 56 | 2,292,262 | |
| 73 | 6 | 12 | 10 | 5 | 1 | 1 | 1 | 36 | 1,468,027 | |
| 74 | 6 | 6 | 7 | 7 | | | | 26 | 948,290 | |
| 75 | 12 | 3 | 4 | 2 | 1 | 1 | 1 | 24 | 891,829 | |
| 76 | 11 | 7 | 4 | 3 | | | | 25 | 924,425 | |
| 77 | 5 | 4 | 2 | 1 | 2 | | | 14 | 440,872 | |
| 78 | 4 | 3 | 1 | 2 | | 2 | 1 | 13 | 486,173 | |
| 79 | 1 | 3 | 4 | 1 | 1 | | | 10 | 364,527 | |
| 80 & Over | 15 | 10 | 4 | 1 | 2 | | 1 | 33 | 915,207 | |
| Total | 18,961 | 12,769 | 7,953 | 5,684 | 3,856 | 657 | 132 | 50,012 | \$ 2,049,737,510 | |

Average Age: 43.27

Average Service: 8.65



Appendix A: Additional Membership Data

**Table A-2: Number of Annual Retirement Allowances of Benefit Recipients
as of June 30, 2013**

| Type of Pension | Number | Total Annual Benefits | Average Annual Pension |
|---|---------------|-----------------------|------------------------|
| Service Retirement Pensions | | | |
| Single Life Pension Terminating Upon Death* | 11,662 | \$ 336,586,783 | \$ 28,862 |
| Two Life 100% Survivor Pension | | | |
| Retired Member Recipient* | 11,049 | 323,124,753 | 29,245 |
| Survivor Recipient | 1,934 | 39,155,688 | 20,246 |
| Two Life 50% Survivor Pension | | | |
| Retired Member Recipient* | 4,016 | 123,416,490 | 30,731 |
| Survivor Recipient | 763 | 9,073,810 | 11,892 |
| Single Life with Temporary Child Survivor Pension | | | |
| Retired Member Recipient* | 202 | 7,333,387 | 36,304 |
| Child Recipient | 3 | 102,306 | 34,102 |
| Total Service Retirement Pensions | 29,629 | \$ 838,793,217 | \$ 28,310 |
| Disability Retirement Pensions | | | |
| Single Life Pension Terminating Upon Death* | 287 | \$ 4,457,572 | \$ 15,532 |
| Two Life 100% Survivor Pension | | | |
| Retired Member Recipient* | 566 | 8,680,378 | 15,336 |
| Survivor Recipient | 172 | 2,446,320 | 14,223 |
| Two Life 50% Survivor Pension | | | |
| Retired Member Recipient* | 113 | 1,783,886 | 15,787 |
| Survivor Recipient | 20 | 162,982 | 8,149 |
| Single Life with Temporary Child Survivor Pension | | | |
| Retired Member Recipient* | 12 | 175,952 | 14,663 |
| Child Recipient | 4 | 65,329 | 16,332 |
| Total Disability Retirement Pensions | 1,174 | \$ 17,772,419 | \$ 15,138 |
| Pre-Retirement Survivor Pensions | | | |
| Spouse Recipient | 1,011 | \$ 15,441,558 | 15,274 |
| Child Recipient | 49 | 426,166 | 8,697 |
| Total Pre-Retirement Survivor Pensions | 1,060 | \$ 15,867,724 | \$ 14,970 |
| Total Pensions Being Paid | 31,863 | \$ 872,433,360 | \$ 27,381 |

* Includes Co-Payees



Appendix A: Additional Membership Data

Table A-3: Distribution of Participants Receiving Benefits as of June 30, 2013

| Attained Age | Retired Member | | Disabled Member | | Survivor Beneficiaries | | Totals | |
|--------------|----------------|----------------------|-----------------|----------------------|------------------------|----------------------|---------------|-----------------------|
| | Number | Annual Pensions | Number | Annual Pensions | Number | Annual Pensions | Number | Annual Pensions |
| Under 40 | 20 | \$ 567,072 | 33 | \$ 542,569 | 242 | \$ 3,409,165 | 295 | \$ 4,518,806 |
| 40 to 44 | 283 | 10,248,034 | 72 | 1,238,501 | 104 | 1,601,041 | 459 | 13,087,576 |
| 45 to 49 | 1,269 | 46,492,886 | 120 | 2,324,250 | 137 | 2,144,472 | 1,526 | 50,961,608 |
| 50 to 54 | 2,636 | 96,445,569 | 197 | 3,398,828 | 215 | 3,505,980 | 3,048 | 103,350,377 |
| 55 to 59 | 3,170 | 113,311,409 | 296 | 4,688,734 | 309 | 5,574,361 | 3,775 | 123,574,504 |
| 60 to 64 | 4,806 | 158,371,494 | 220 | 2,618,530 | 398 | 7,918,214 | 5,424 | 168,908,238 |
| 65 to 69 | 5,608 | 154,929,117 | 19 | 135,803 | 480 | 9,367,429 | 6,107 | 164,432,349 |
| 70 to 74 | 3,824 | 94,838,398 | 1 | 29,759 | 508 | 9,007,113 | 4,333 | 103,875,270 |
| 75 to 79 | 2,538 | 60,102,471 | 0 | 0 | 495 | 8,720,842 | 3,033 | 68,823,313 |
| 80 to 84 | 1,561 | 33,054,687 | 0 | 0 | 483 | 8,307,690 | 2,044 | 41,362,377 |
| 85 to 89 | 850 | 16,632,690 | 0 | 0 | 367 | 4,738,655 | 1,217 | 21,371,345 |
| 90 to 94 | 287 | 4,615,364 | 0 | 0 | 163 | 2,053,159 | 450 | 6,668,523 |
| 95 to 99 | 79 | 795,416 | 0 | 0 | 46 | 482,213 | 125 | 1,277,629 |
| 100 & Over | 18 | 177,618 | 0 | 0 | 9 | 43,827 | 27 | 221,445 |
| Total | 26,949 | \$790,582,225 | 958 | \$ 14,976,974 | 3,956 | \$ 66,874,161 | 31,863 | \$ 872,433,360 |



Appendix A: Additional Membership Data

**Table A-4: Distribution of Retirees & Beneficiaries
by Years of Service at Retirement**

| Division | Years of Credited Service at Retirement | | | | | | | Total |
|-----------------------------------|---|---------|----------|----------|----------|----------|---------|----------------|
| | Under 5 | 5 to 9 | 10 to 14 | 15 to 19 | 20 to 24 | 25 to 29 | 30+ | |
| State General | | | | | | | | |
| Average Monthly Benefit* | \$ 1,622 | \$ 822 | \$ 1,242 | \$ 1,784 | \$ 2,471 | \$ 2,954 | \$2,692 | \$2,231 |
| Average Final Average Salary | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Number of Retirees/Beneficiaries* | 187 | 1,617 | 1,826 | 1,863 | 2,321 | 5,611 | 903 | 14,328 |
| State Police/Corrections | | | | | | | | |
| Average Monthly Benefit* | \$ 1,454 | \$1,430 | \$ 1,475 | \$ 2,034 | \$ 2,704 | \$ 3,171 | \$3,502 | \$2,542 |
| Average Final Average Salary | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Number of Retirees/Beneficiaries* | 45 | 98 | 108 | 121 | 242 | 357 | 74 | 1,045 |
| Municipal General | | | | | | | | |
| Average Monthly Benefit* | \$ 1,538 | \$ 680 | \$ 1,086 | \$ 1,698 | \$ 2,382 | \$ 2,864 | \$2,677 | \$2,040 |
| Average Final Average Salary | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Number of Retirees/Beneficiaries* | 207 | 1,323 | 1,415 | 1,431 | 1,607 | 3,557 | 415 | 9,955 |
| Municipal Police | | | | | | | | |
| Average Monthly Benefit* | \$ 1,869 | \$1,470 | \$ 1,747 | \$ 2,822 | \$ 3,310 | \$ 3,293 | \$3,375 | \$3,043 |
| Average Final Average Salary | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Number of Retirees/Beneficiaries* | 60 | 78 | 130 | 525 | 1,596 | 147 | 43 | 2,579 |
| Municipal Fire | | | | | | | | |
| Average Monthly Benefit* | \$ 1,760 | \$1,746 | \$ 2,278 | \$ 2,915 | \$ 3,366 | \$ 3,031 | \$2,705 | \$3,143 |
| Average Final Average Salary | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Number of Retirees/Beneficiaries* | 11 | 34 | 84 | 281 | 1,014 | 71 | 44 | 1,539 |
| Totals for All Divisions | | | | | | | | |
| Average Monthly Benefit* | \$ 1,605 | \$ 807 | \$ 1,230 | \$ 1,966 | \$ 2,790 | \$ 2,935 | \$2,749 | \$2,296 |
| Average Final Average Salary | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Number of Retirees/Beneficiaries* | 510 | 3,150 | 3,563 | 4,221 | 6,780 | 9,743 | 1,479 | 29,446 |

* Does not include the following number of retirees/beneficiaries with missing years of service at retirement

- State General – 990
- State Police/Corrections – 281
- Municipal General – 756
- Municipal Police – 276
- Municipal Fire – 114



Appendix A: Additional Membership Data

Table A-5: Distribution of Recent Retiree Ages at Retirement

| Division | 2008-09 Retirees | 2009-10 Retirees | 2010-11 Retirees | 2011-12 Retirees | 2012-13 Retirees | All Current Retirees & Beneficiaries |
|--|------------------|------------------|------------------|------------------|------------------|--------------------------------------|
| State General | | | | | | |
| Number | 621 | 729 | 897 | 913 | 1,193 | 15,318 |
| Average Monthly Benefit at Retirement | \$ 2,196 | \$ 2,317 | \$ 2,280 | \$ 2,226 | \$ 2,267 | \$ 1,795 |
| Average Age at Retirement | 57.88 | 58.09 | 58.62 | 59.06 | 59.79 | 56.86 |
| State Police/Corrections | | | | | | |
| Number | 74 | 55 | 76 | 71 | 59 | 1,326 |
| Average Monthly Benefit at Retirement | \$ 2,484 | \$ 2,403 | \$ 2,628 | \$ 2,456 | \$ 2,530 | \$ 2,035 |
| Average Age at Retirement | 49.58 | 50.24 | 51.87 | 52.65 | 52.05 | 51.27 |
| Municipal General | | | | | | |
| Number | 515 | 648 | 670 | 640 | 789 | 10,711 |
| Average Monthly Benefit at Retirement | \$ 2,051 | \$ 2,097 | \$ 2,194 | \$ 2,064 | \$ 2,084 | \$ 1,677 |
| Average Age at Retirement | 57.57 | 57.83 | 57.80 | 58.39 | 59.73 | 56.99 |
| Municipal Police | | | | | | |
| Number | 118 | 145 | 150 | 162 | 174 | 2,855 |
| Average Monthly Benefit at Retirement | \$ 2,623 | \$ 2,885 | \$ 3,095 | \$ 3,105 | \$ 3,052 | \$ 2,410 |
| Average Age at Retirement | 47.93 | 46.66 | 49.50 | 47.78 | 48.79 | 47.56 |
| Municipal Fire | | | | | | |
| Number | 61 | 65 | 84 | 66 | 65 | 1,653 |
| Average Monthly Benefit at Retirement | \$ 2,970 | \$ 3,293 | \$ 3,554 | \$ 3,792 | \$ 3,512 | \$ 2,446 |
| Average Age at Retirement | 48.18 | 47.99 | 49.27 | 48.19 | 48.63 | 47.85 |
| Totals for All Current Retirees | | | | | | |
| Number | 1,389 | 1,642 | 1,877 | 1,852 | 2,280 | 31,863 |
| Average Monthly Benefit at Retirement | \$ 2,228 | \$ 2,322 | \$ 2,385 | \$ 2,311 | \$ 2,306 | \$ 1,854 |
| Average Age at Retirement | 56.05 | 56.31 | 56.91 | 57.21 | 58.41 | 55.37 |



Appendix B: Summary of Actuarial Assumptions & Methods

Actuarial Assumptions Used for the Valuation

Assumed Rate of Investment Return. 7.75% per annum net of administrative and investment expenses. The investment assumption was changed from 8.00% to 7.75% effective June 30, 2011 based on a recent study of the economic assumptions used in the valuation.

The estimates of future inflation, real investment return in excess of inflation and salary increases are used in combination with the demographic estimates to determine the present value of amounts expected to be paid in the future.

Price Inflation. 3.5% per annum, compounded annually, effective June 30, 2011.

Real Investment Return. 4.25% over price inflation (3.75% over wage growth), effective June 30, 2011. This is the rate of return (net of administrative and investment expenses) to be produced by investing a pool of assets in an inflation-free environment.

Salary Increases. Salary increases occur in recognition of (i) individual merit and longevity, (ii) inflation-related depreciation of the purchasing power of salaries, and (iii) other factors such as productivity gains and competition from other employers for personnel. These rates were first used for the June 30, 2005 actuarial valuation. Sample rates follow:

| Attributable to: | Annual Rates of Salary Increase for Sample Years of Service | | | | |
|--|---|------|------|------|------|
| | 1 | 5 | 10 | 15 | 20 |
| General Increase in Wage Level Due to: | | | | | |
| Inflation | 3.5% | 3.5% | 3.5% | 3.5% | 3.5% |
| Other Factors | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Increase Due to Merit/Longevity: | | | | | |
| State General | 8.0 | 2.0 | 0.5 | 0.5 | 0.5 |
| State Police | 13.5 | 9.0 | 6.8 | 4.5 | 2.3 |
| State Corrections | 15.0 | 3.5 | 3.5 | 3.5 | 3.5 |
| Municipal General | 2.5 | 1.5 | 0.5 | 0.5 | 0.5 |
| Municipal Police | 9.5 | 4.0 | 2.8 | 2.0 | 1.8 |
| Municipal Fire | 10.0 | 5.5 | 2.7 | 1.3 | 1.5 |



Appendix B: Summary of Actuarial Assumptions & Methods

In the following schedules, State Corrections includes Adult Corrections Officers and Juvenile Corrections Officers and Municipal General includes Municipal Detention Officers.

Mortality Assumption. For active members, mortality rates are shown for sample ages in the following schedule. No provision was made for future mortality improvement.

| Pre-Retirement Mortality Rates by Division | | | | | | |
|--|---------------|---------|--------------|---------|-------------------|---------|
| Age | State General | | State Police | | State Corrections | |
| | Male | Female | Male | Female | Male | Female |
| 20 | 0.0176% | 0.0135% | 0.0390% | 0.0342% | 0.0210% | 0.0210% |
| 25 | 0.0226 | 0.0133 | 0.0468 | 0.0390 | 0.0280 | 0.0280 |
| 30 | 0.0301 | 0.0171 | 0.0598 | 0.0468 | 0.0385 | 0.0385 |
| 35 | 0.0398 | 0.0293 | 0.0809 | 0.0598 | 0.0665 | 0.0665 |
| 40 | 0.0692 | 0.0415 | 0.1156 | 0.0809 | 0.1225 | 0.1225 |
| 45 | 0.0904 | 0.0611 | 0.1871 | 0.1156 | 0.1820 | 0.1820 |
| 50 | 0.1131 | 0.0889 | 0.3499 | 0.1871 | 0.2555 | 0.2555 |
| 55 | 0.1434 | 0.1480 | 0.5899 | 0.3499 | 0.3570 | 0.3570 |
| 60 | 0.2376 | 0.3115 | 0.9013 | 0.5899 | 0.5110 | 0.5110 |
| 65 | 0.4732 | 0.5962 | 1.4413 | 0.9013 | 0.8680 | 0.8680 |

| Pre-Retirement Mortality Rates by Division | | | | | | |
|--|-------------------|---------|------------------|---------|----------------|---------|
| Age | Municipal General | | Municipal Police | | Municipal Fire | |
| | Male | Female | Male | Female | Male | Female |
| 20 | 0.0342% | 0.0317% | 0.0189% | 0.0171% | 0.0189% | 0.0171% |
| 25 | 0.0390 | 0.0318 | 0.0225 | 0.0195 | 0.0225 | 0.0195 |
| 30 | 0.0468 | 0.0359 | 0.0283 | 0.0234 | 0.0283 | 0.0234 |
| 35 | 0.0598 | 0.0427 | 0.0379 | 0.0299 | 0.0379 | 0.0299 |
| 40 | 0.0809 | 0.0538 | 0.0536 | 0.0404 | 0.0536 | 0.0404 |
| 45 | 0.1156 | 0.0720 | 0.0828 | 0.0578 | 0.0828 | 0.0578 |
| 50 | 0.1871 | 0.1018 | 0.1553 | 0.0936 | 0.1553 | 0.0936 |
| 55 | 0.3499 | 0.1572 | 0.2682 | 0.1750 | 0.2682 | 0.1750 |
| 60 | 0.5899 | 0.2952 | 0.4155 | 0.2949 | 0.4155 | 0.2949 |
| 65 | 0.9013 | 0.5095 | 0.6565 | 0.4506 | 0.6565 | 0.4506 |



Appendix B: Summary of Actuarial Assumptions & Methods

For inactive members, mortality rates are based on the 2000 Group Annuity Mortality Table (1971 GAM projected), set back 3 years for men and 7 years for women for healthy lives. Special disabled mortality is used for disabled lives. All deaths-in-service are assumed to be non-duty.

Post-retirement and post-disablement mortality rates are shown for sample ages in the following schedule.

| Post-Retirement and Post-Disablement Mortality Rates | | | | |
|--|-----------------|---------|------------------|---------|
| Age | Post-retirement | | Post-disablement | |
| | Male | Female | Male | Female |
| 20 | 0.0378% | 0.0342% | 5.1360% | 2.6300% |
| 25 | 0.0450 | 0.0390 | 5.2360 | 2.6300 |
| 30 | 0.0566 | 0.0468 | 4.4270 | 2.6300 |
| 35 | 0.0758 | 0.0598 | 2.9780 | 2.4200 |
| 40 | 0.1072 | 0.0809 | 2.0450 | 2.1800 |
| 45 | 0.1655 | 0.1156 | 1.9280 | 2.0800 |
| 50 | 0.3107 | 0.1871 | 2.1270 | 2.1900 |
| 55 | 0.5363 | 0.3499 | 2.4660 | 2.4900 |
| 60 | 0.8309 | 0.5899 | 3.0070 | 2.8800 |
| 65 | 1.3130 | 0.9013 | 3.8570 | 3.2300 |
| 70 | 2.2037 | 1.4413 | 5.1870 | 3.6200 |
| 75 | 3.7677 | 2.4514 | 7.2610 | 4.0200 |
| 80 | 5.8349 | 4.1064 | 10.4530 | 4.6500 |
| 85 | 9.4487 | 6.4629 | 15.2880 | 6.8600 |



Appendix B: Summary of Actuarial Assumptions & Methods

Rates of Retirement. These rates are used to measure the probability of members retiring at the indicated ages or indicated service.

| Percents Retiring at Indicated Ages (by Coverage Plan) | | | | | | | | |
|--|---------------|--------|--------|-------------|-------------------|--------|-----------|-----------|
| Retirement Ages | State General | | State | State | Municipal General | | Municipal | Municipal |
| | Male | Female | Police | Corrections | Male | Female | Police | Fire |
| 60 | 40% | 40% | 50% | 25% | 40% | 35% | 50% | 30% |
| 61 | 50 | 50 | 50 | 20 | 50 | 50 | 40 | 30 |
| 62 | 45 | 50 | 50 | 20 | 40 | 35 | 30 | 65 |
| 63 | 45 | 40 | 75 | 30 | 35 | 35 | 25 | 20 |
| 64 | 35 | 40 | 75 | 45 | 45 | 35 | 25 | 20 |
| 65 | 40 | 35 | 100 | 40 | 35 | 30 | 40 | 20 |
| 66 | 22 | 30 | | 40 | 20 | 15 | 40 | 20 |
| 67 | 25 | 30 | | 40 | 20 | 18 | 40 | 100 |
| 68 | 25 | 15 | | 40 | 18 | 18 | 40 | |
| 69 | 20 | 25 | | 40 | 15 | 20 | 40 | |
| 70 | 25 | 35 | | 100 | 15 | 18 | 100 | |
| 71 | 15 | 35 | | | 15 | 15 | | |
| 72 | 20 | 30 | | | 15 | 25 | | |
| 73 | 20 | 20 | | | 20 | 18 | | |
| 74 | 20 | 20 | | | 30 | 50 | | |
| 75 | 40 | 40 | | | 30 | 50 | | |
| 76 | 40 | 40 | | | 30 | 50 | | |
| 77 | 50 | 40 | | | 30 | 50 | | |
| 78 | 50 | 40 | | | 40 | 50 | | |
| 79 | 50 | 40 | | | 40 | 50 | | |
| 80 | 100 | 100 | | | 100 | 100 | | |

Note: The above rates are increased by 75% for those eligible to retire prior to July 1, 2016 to reflect the increased probability of retirements due to the change in the eligibility period for cost-of-living increases resulting from the passage of Senate Bill 27.



Appendix B: Summary of Actuarial Assumptions & Methods

| Percents Retiring at Indicated Service (by Coverage Plan) | | | | | | | | |
|---|---------------|--------------|-------------------|-------------------|------------------|---------------|----------------|---------------|
| Service | State General | State Police | State Corrections | Municipal General | Municipal Police | | Municipal Fire | |
| | | | | | Plans 1, 2 | Plans 3, 4, 5 | Plans 1, 2 | Plans 3, 4, 5 |
| 20 | | 20% | 25% | 30% | | 35% | | 22% |
| 21 | | 25 | 25 | 30 | | 35 | | 20 |
| 22 | | 8 | 25 | 30 | | 35 | | 30 |
| 23 | | 8 | 30 | 30 | | 30 | | 30 |
| 24 | | 8 | 30 | 30 | | 20 | | 20 |
| 25 | 50% | 8 | 30 | 45 | 25% | 25 | 15% | 15 |
| 26 | 40 | 20 | 30 | 35 | 20 | 20 | 20 | 20 |
| 27 | 35 | 20 | 30 | 25 | 25 | 25 | 15 | 15 |
| 28 | 20 | 20 | 30 | 15 | 25 | 25 | 18 | 18 |
| 29 | 20 | 50 | 40 | 20 | 15 | 15 | 18 | 18 |
| 30 | 20 | 100 | 45 | 20 | 50 | 50 | 20 | 20 |
| 31 | 15 | | 45 | 15 | 50 | 50 | 15 | 15 |
| 32 | 10 | | 100 | 10 | 100 | 100 | 20 | 20 |
| 33 | 10 | | | 10 | | | 50 | 50 |
| 34 | 15 | | | 15 | | | 100 | 100 |
| 35 | 20 | | | 20 | | | | |
| 36 | 20 | | | 20 | | | | |
| 37 | 20 | | | 20 | | | | |
| 38 | 40 | | | 50 | | | | |
| 39 | 40 | | | 50 | | | | |
| 40 | 75 | | | 100 | | | | |
| 41 | 75 | | | | | | | |
| 42 | 75 | | | | | | | |
| 43 | 75 | | | | | | | |
| 44 | 75 | | | | | | | |
| 45 | 100 | | | | | | | |

Note: The above rates are increased by 75% for those eligible to retire prior to July 1, 2016 to reflect the increased probability of retirements due to the change in the eligibility period for cost-of-living increases resulting from the passage of Senate Bill 27.



Appendix B: Summary of Actuarial Assumptions & Methods

Rates of Separation From Active Membership. The rates are used to measure probabilities of active members terminating that status for a reason other than disability or death. The rates do not apply to members who are within the retirement rate range. Separation rates are presumed to be service related during the first 5 to 8 years of employment and age related thereafter.

| Sample Ages | Years of Service | Percents of Active Members Terminating During Year | | | | | | | | | |
|-------------|--------------------|--|--------------|-------------------|-------|-------------------|-------|------------------|-------|----------------|-------|
| | | State General | State Police | State Corrections | | Municipal General | | Municipal Police | | Municipal Fire | |
| | | | | Men | Women | Men | Women | Men | Women | Men | Women |
| All | 0 | 39.0% | 8.0% | 35.0% | 28.0% | 38.0% | 40.0% | 28.0% | 30.0% | 18.0% | 30.0% |
| | 1 | 20.0 | 8.0 | 21.0 | 35.0 | 20.0 | 21.0 | 13.0 | 15.0 | 10.0 | 22.5 |
| | 2 | 13.0 | 5.0 | 17.0 | 13.0 | 13.0 | 15.0 | 9.0 | 10.0 | 6.0 | 15.0 |
| | 3 | 10.0 | 6.8 | 12.0 | 10.0 | 11.0 | 13.0 | 8.0 | 7.5 | 4.3 | 7.5 |
| | 4 | 8.5 | 4.5 | 7.0 | 13.0 | 8.5 | 11.0 | 7.5 | 4.5 | 3.5 | 7.0 |
| | 5 | | | n/a | 13.0 | 7.0 | 8.5 | | | | |
| | 6 | | | n/a | 13.0 | | | | | | |
| | 7 | | | n/a | 8.0 | | | | | | |
| | Over Select Period | | | | | | | | | | |
| 20 | | 12.0 | 4.1 | 7.0 | 0.0 | 6.0 | 13.2 | 4.9 | 3.0 | 3.8 | 3.8 |
| 25 | | 9.1 | 4.9 | 7.0 | 5.0 | 6.0 | 10.2 | 4.9 | 3.0 | 3.8 | 3.8 |
| 30 | | 5.9 | 4.2 | 7.0 | 6.0 | 6.0 | 6.9 | 4.2 | 3.0 | 3.4 | 3.4 |
| 35 | | 3.9 | 3.3 | 5.7 | 7.5 | 4.7 | 5.1 | 3.1 | 3.0 | 2.5 | 2.5 |
| 40 | | 3.3 | 2.8 | 4.9 | 9.0 | 3.4 | 4.0 | 2.4 | 3.0 | 2.1 | 2.1 |
| 45 | | 2.9 | 2.7 | 4.4 | 7.0 | 3.0 | 3.4 | 2.1 | 3.0 | 2.1 | 2.1 |
| 50 | | 2.8 | 2.7 | 3.9 | 5.0 | 3.0 | 3.2 | 2.1 | 3.0 | 2.1 | 2.1 |
| 55 | | 3.0 | 1.6 | 4.2 | 0.0 | 3.0 | 3.1 | 2.1 | 3.0 | 2.1 | 2.1 |
| 60 | | 3.4 | 1.5 | 3.6 | 0.0 | 3.0 | 3.0 | 2.1 | 3.0 | 2.1 | 2.1 |
| 65 | | 4.2 | 1.5 | 0.0 | 0.0 | 3.0 | 3.0 | 2.1 | 3.0 | 2.1 | 2.1 |



Appendix B: Summary of Actuarial Assumptions & Methods

Rates of Disability. The rates are used to measure the probabilities of active members becoming disabled. Rates for sample ages follow. All disabilities are assumed to be non-duty.

| Percents Becoming Disabled at Indicated Ages (by Coverage Plan) | | | | | | | | |
|---|---------------|--------|--------------|-------------------|-------------------|--------|------------------|----------------|
| Sample Ages | State General | | State Police | State Corrections | Municipal General | | Municipal Police | Municipal Fire |
| | Male | Female | | | Male | Female | | |
| 20 | 0.00% | 0.01% | 0.05% | 0.13% | 0.03% | 0.04% | 0.06% | 0.02% |
| 25 | 0.02 | 0.02 | 0.05 | 0.14 | 0.04 | 0.04 | 0.07 | 0.02 |
| 30 | 0.02 | 0.02 | 0.09 | 0.16 | 0.08 | 0.04 | 0.08 | 0.02 |
| 35 | 0.06 | 0.06 | 0.14 | 0.21 | 0.12 | 0.04 | 0.12 | 0.02 |
| 40 | 0.09 | 0.09 | 0.35 | 0.27 | 0.17 | 0.06 | 0.17 | 0.08 |
| 45 | 0.14 | 0.15 | 0.42 | 0.46 | 0.25 | 0.14 | 0.26 | 0.08 |
| 50 | 0.36 | 0.37 | 0.69 | 0.90 | 0.39 | 0.25 | 0.42 | 0.33 |
| 55 | 0.59 | 0.53 | 1.59 | 1.39 | 0.65 | 0.39 | 0.73 | 0.33 |
| 60 | 0.72 | 0.58 | 0.00 | 0.00 | 0.80 | 0.51 | 1.22 | 1.17 |
| 65 | 0.75 | 0.58 | 0.00 | 0.00 | 0.82 | 0.59 | 1.32 | 0.00 |

Administrative and Investment Expenses. All expenses are deducted from gross investment income.

Active Member Group Size. The valuation is based on a stationary group size.



Miscellaneous and Technical Assumptions

| | |
|------------------------------------|--|
| Marriage Assumption: | 100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses. |
| Pay Increase Timing: | Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date. |
| Decrement Timing: | All decrements are assumed to occur in the middle of the fiscal year. |
| Eligibility Testing: | Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur. |
| Decrement Relativity: | Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects. |
| Decrement Operation: | Disability and mortality decrements do not operate during the first 5 years of service. Neither disability nor withdrawal decrements operate during retirement eligibility. |
| Loads: | Retiree liabilities were increased by 1% to account for the pop-up provision. |
| Incidence of Contributions: | Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report and the actual payroll payable at the time contributions are made. |
| Normal Form of Benefit: | A straight life payment is the assumed normal form of benefit. |
| Benefit Service: | Exact fractional service is used to determine the amount of benefit payable. |
| Optional Forms of Payment: | Based on valuation interest and a unisex blend of valuation mortality. |
| Data Changes: | For missing dates of birth for active members, the member was assumed to enter the system at the average entry age. For retiree records with a joint and survivor option and a missing beneficiary date of birth, the beneficiary was assumed to be 3 years younger if the member was male and 3 years older if the member was female. |



Definitions of Technical Terms

Actuarial Accrued Liability. The difference between the actuarial present value of future benefits payments and the actuarial present value of future normal costs.

Actuarial Cost Method. A mathematical procedure for allocating the dollar amount of the “actuarial present value of future benefit payments” between future normal cost and actuarial accrued liability.

Actuarial Present Value. The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.

Amortization. Paying off an interest-discounted amount with periodic payments of interest and principal – as opposed to paying off with a lump sum payment.

Experience Gain (Loss). The difference between actual actuarial costs and anticipated actuarial costs – during the period between two valuation dates.

Normal Cost. The actuarial cost allocated to the current year by the actuarial cost method.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and the actuarial value of assets. Sometimes referred to as “unfunded accrued liability.”



Appendix C: Summary of Plan Provisions

Normal Retirement Eligibility Conditions

Applicable to all members:

- Any age with 25 or more years of credited service; or
- Age 60 or older with 20 or more years of credited service; or
- Age 61 or older with 17 or more years of credited service; or
- Age 62 or older with 14 or more years of credited service; or
- Age 63 or older with 11 or more years of credited services or
- Age 64 or older with 8 or more years of credited service; or
- Age 65 or older with 5 or more years of credited service.

Applicable to Municipal Police (Plans 3, 4, & 5) and Municipal Fire (Plans 3, 4, & 5) members:

- Any age with 20 or more years of credited service

Note: Due to the passage of Senate Bill 27, State General and Municipal General Members hired between July 1, 2010 and June 30, 2013 are grandfathered into Tier 1 coverage plans, with the same eligibility criteria as members hired prior to July 1, 2010 .

Normal Retirement Pension Amount

The amount of normal retirement pension is based on:

- Final average salary, which is the average of salary for the 36 consecutive months of credited service producing the largest average;
- Credited service (years and months); and the
- Coverage plan.



Appendix C: Summary of Plan Provisions

The pension accrual factor and maximum pension, as a percent of final average salary, under each coverage plan are shown below. The table reflects the change to the maximum pension percentage resulting from the passage of Senate Bill 27.

| Coverage Plan | Pension Factor Per Year of Credited Service | Maximum Pension as Percent of Final Average Salary |
|--|---|--|
| State General Member Coverage Plan 3 | 3.0% | 90% |
| State Police and Adult Corrections Officers Member Coverage Plan 1 | 3.0 | 90 |
| Hazardous Duty (Juvenile Corrections Officer) Coverage Plan 2 | 3.0 | 90 |
| Municipal General Member Coverage Plan 1 | 2.0 | 90 |
| Municipal General Member Coverage Plan 2 | 2.5 | 90 |
| Municipal General Member Coverage Plan 3 | 3.0 | 90 |
| Municipal General Member Coverage Plan 4 | 3.0 | 90 |
| Municipal Detention Officer Coverage Plan 1 | 3.0 | 90 |
| Municipal Police Member Coverage Plan 1 | 2.0 | 90 |
| Municipal Police Member Coverage Plan 2 | 2.5 | 90 |
| Municipal Police Member Coverage Plan 3 | 2.5 | 90 |
| Municipal Police Member Coverage Plan 4 | 3.0 | 90 |
| Municipal Police Member Coverage Plan 5 | 3.5 | 90 |
| Municipal Fire Member Coverage Plan 1 | 2.0 | 90 |
| Municipal Fire Member Coverage Plan 2 | 2.5 | 90 |
| Municipal Fire Member Coverage Plan 3 | 2.5 | 90 |
| Municipal Fire Member Coverage Plan 4 | 3.0 | 90 |
| Municipal Fire Member Coverage Plan 5 | 3.5 | 90 |



Appendix C: Summary of Plan Provisions

Vested Termination of Membership (Employment)

Termination of employment and membership with at least 5 years of credited service. Accumulated member contributions must be left on deposit. Payment of the pension is available upon eligibility for normal retirement. In addition, certain disability and survivor pension provisions apply.

Normal and Optional Forms of Payment

The normal form of payment is for life. Optional contingent survivor beneficiary forms of payment are available on an actuarial equivalent basis. Total pension payments can never be less than the member's accumulated contributions.

Survivor Pensions – Death in the Line of Duty

Pensions are paid to the eligible spouse and eligible children if survivor coverage has not been elected under the Elective Survivor Pension Beneficiary provision. The amount of pension payable for life to an eligible spouse is the greater of 1) 50% of final average salary or 2) the accrued normal retirement pension reduced for option B election. The amount of pension payable to each eligible child is an equal share of 25% of final average salary. If there is not an eligible spouse or the eligible spouse dies, and if there are 2 or more eligible children, the amount of pension payable to each eligible child is an equal share of 50% of final average salary. An eligible child is an unmarried natural or adopted child who is under age 18. A child's pension terminates upon death, marriage or reaching age 18. The pension of any remaining eligible children is recalculated whenever a child's pension is terminated.

Survivor Pensions – Death Not in the Line of Duty

Requires 5 years of credited service. Benefit applies to members and vested former members who have not elected coverage under the Elective Survivor Pension Beneficiary provision. Pensions are paid to an eligible spouse OR eligible children. The amount of pension payable for the life of an eligible spouse is the greater of 1) 30% of final average salary or 2) accrued normal retirement pension reduced for option B election. An eligible child pension is paid if there is not an eligible spouse or following the death of an eligible spouse. The amount of pension payable to each eligible child is an equal share of 25% of final average salary or, if greater, 50% of accrued normal retirement pension. An eligible child is an unmarried natural or adopted child who is under age 18. A child's pension terminates upon death, marriage or reaching age 18. The pension of any remaining eligible children is recalculated whenever a child's pension is terminated.



Appendix C: Summary of Plan Provisions

Elective Survivor Beneficiary Pension

Applicable to members with 5 or more years of credited service and vested former members who have elected option B and designated a survivor pension beneficiary who has an insurable interest. The amount of pension is the amount of accrued normal retirement pension under optional form of payment B (100% continuation to beneficiary).

Disability Retirement

Applicable to members and vested former members with 5 or more years of credited service. The 5 year credited service requirement is waived if the disability is incurred in line of duty. The amount of disability pension is the accrued normal retirement pension at time of disability retirement. If the disability is in line of duty, the credited service used is the amount that would have been acquired when first eligible for normal retirement.

Cost-of-Living Increases

Effective July 1, 2013, pensions are increased each July 1 by 2% subject to the following eligibility periods:

- If member retires prior to July 1, 2014, Cost-of-Living Adjustment (COLA) is payable after retirement has been in effect for at least 2 full calendar years.
- If member retires on or after July 1, 2014 but prior to July 1, 2015, COLA is payable after retirement has been in effect for at least 3 full calendar years.
- If member retires on or after July 1, 2015 but prior to July 1, 2016, COLA is payable after retirement has been in effect for at least 4 full calendar years.
- If member retires on or after July 1, 2016, COLA is payable after retirement has been in effect for at least 7 full calendar years.
- If retired on account of disability or if at least age 65, the waiting period is reduced to 1 full calendar year.

For certain retirees, pensions are increased each July 1 by 2.5% subject to the eligibility periods listed above, provided the conditions below are met:

- Retirees who retired with at least 25 years of service and whose annual pension is \$20,000 or less.
- Disabled retirees whose annual pension is \$20,000 or less.



Appendix C: Summary of Plan Provisions

Service Credit

Members in the State Police and Adult Corrections Officers Coverage Plan and members in the Municipal Detention Officers Coverage Plan receive 1.2 years of credited service for each year of service rendered.



Appendix C: Summary of Plan Provisions

Contributions by Members and Employers

Contributions by members and affiliated public employers are at the following rates shown below. The table reflects the changes resulting from the passage of Senate Bill 27.

| Coverage Plan | Percent of Salary Member* | Contribution Rate Employer^ |
|---|---------------------------|-----------------------------|
| State General Member Coverage Plan 3 | 8.92% | 16.59% |
| State Police Member and Adult Correctional Officer Member Coverage Plan 1 | 9.10 | 25.10 |
| Hazardous Duty (Juvenile Corrections) Member Coverage Plan 2 | 6.28 | 25.72 |
| Municipal General Member Coverage Plan 1 | 8.50 | 7.00 |
| Municipal General Member Coverage Plan 2 | 10.65 | 9.15 |
| Municipal General Member Coverage Plan 3 | 14.65 | 9.15 |
| Municipal General Member Coverage Plan 4 | 17.15 | 11.65 |
| Municipal Detention Officer Member Coverage Plan 1 | 18.15 | 16.65 |
| Municipal Police Member Coverage Plan 1 | 8.50 | 10.00 |
| Municipal Police Member Coverage Plan 2 | 8.50 | 15.00 |
| Municipal Police Member Coverage Plan 3 | 8.50 | 18.50 |
| Municipal Police Member Coverage Plan 4 | 13.85 | 18.50 |
| Municipal Police Member Coverage Plan 5 | 17.80 | 18.50 |
| Municipal Fire Member Coverage Plan 1 | 9.50 | 11.00 |
| Municipal Fire Member Coverage Plan 2 | 9.50 | 17.50 |
| Municipal Fire Member Coverage Plan 3 | 9.50 | 21.25 |
| Municipal Fire Member Coverage Plan 4 | 14.30 | 21.25 |
| Municipal Fire Member Coverage Plan 5 | 17.70 | 21.25 |

Interest is credited to member contributions on each June 30 at the rates set annually by the Retirement Board. Effective July 1, 2012, the interest crediting rate for member contributions is 2%.

* For employees whose annual salary is \$20,000 or less, the employee contribution rates shown above are reduced by 1.5%

^ The employer statutory rate will increase by 0.4% of payroll effective Fiscal Year 2015