

Public Education Employee Retirement System of Missouri

Actuarial Valuation
as of June 30, 2009

October 19, 2009

Board of Trustees
Public Education Employee Retirement System of Missouri
3210 W. Truman Blvd.
Jefferson City, MO 65109

Dear Members of the Board:

We are pleased to present the report of the actuarial valuation of the Public Education Employee Retirement System of Missouri ("PEERS") as of June 30, 2009.

This valuation provides data on the funding status of PEERS. The results of the valuation show that the total contribution level should be increased to 13.26% for the 2011 fiscal year to fund the Annual Required Contribution.

This valuation is based on the provisions of PEERS in effect as of June 30, 2009, data on the PEERS membership, and information on the asset value of the trust fund. All member data and asset information were provided by PEERS staff. While certain checks for reasonableness were performed, the data was used unaudited.

The actuarial cost methods and assumptions used in this valuation are the same as those disclosed in the actuarial valuation report as of June 30, 2008, with the exception of the expected interest on member contributions. This assumption was lowered from 6% to 2%.

To the best of our knowledge, this actuarial statement is complete and accurate, and has been prepared in accordance with generally accepted actuarial principles and practice. One or more of the undersigned are members of the American Academy of Actuaries (M.A.A.A.), as indicated and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Respectfully submitted,

PricewaterhouseCoopers LLP



Kim Nicholl, FSA, MAAA



Brandon Robertson, ASA, MAAA

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SUMMARY OF THE VALUATION

PURPOSES OF THE ACTUARIAL VALUATION

At your request we have performed the actuarial valuation of the Public Education Employee Retirement System of Missouri ("PEERS") as of June 30, 2009.

The purposes of an actuarial valuation are as follows:

- To determine the funding status of PEERS as of the valuation date,
- To determine the contribution rate which would provide for the normal cost of the system plus an amount which will amortize the unfunded actuarial accrued liability over 30 years, and if different, the contribution for the fiscal year ending June 30, 2011, under the statute, and
- To provide accounting and other data required by PEERS.

REPORT HIGHLIGHTS

The key results of the valuation are summarized in the following table:

| | June 30, 2008 | June 30, 2009 |
|---------------------------------------------------------------------------------------|----------------------|----------------------|
| | (\$ in Millions) | |
| A. Summary of Results | | |
| (1) Present Value of Future Benefits for: | | |
| (a) Active Members | \$ 3,122.5 | \$ 3,294.0 |
| (b) Retired Members | 1,215.0 | 1,305.0 |
| (c) Inactive Members and Other Liabilities | 108.1 | 94.1 |
| (d) Total | \$ 4,445.6 | \$ 4,693.1 |
| (2) Present Value of Future Normal Costs | \$ 1,167.0 | \$ 1,235.1 |
| (3) Actuarial Accrued Liability: (1) – (2) | \$ 3,278.6 | \$ 3,458.0 |
| (4) Actuarial Value of Assets | \$ 2,703.8 | \$ 2,792.2 |
| (5) Unfunded Actuarial Accrued Liability: (3) – (4) | \$ 574.8 | \$ 665.8 |
| (6) Total Contribution Rate, Member + Employer | 12.50% | 13.00% |
| (7) Normal Cost Rate | 11.23% | 10.88% |
| (8) Approximate Rate Available for Unfunded Actuarial Accrued Liability: (6) – (7) | 1.27% | 2.12% |
| (9) 30-Year Contribution Rate | 13.29% | 13.26% |
| (10) Recommended Contribution Fiscal Year End 2010 and 2011 Based on Statute | 13.00% | 13.26% |

| | <u>June 30, 2008</u> | <u>June 30, 2009</u> |
|---------------------------------------------------------------------------------------------------------|----------------------|----------------------|
| B. Highlights of Report | | |
| (1) Actuarial Accrued Liability Funding Ratio: | | |
| (a) Actuarial Value of Assets (millions) | \$ 2,703.8 | \$ 2,792.2 |
| (b) Actuarial Accrued Liability (millions) | 3,278.6 | 3,458.0 |
| (c) Funding Ratio: (a) / (b) | 82.5% | 80.7% |
| (2) Active Members: | | |
| (a) Number: | | |
| Male | 12,481 | 12,600 |
| Female | 38,384 | 38,634 |
| Total | <u>50,865</u> | <u>51,234</u> |
| (b) Expected Compensation for Fiscal Year (millions): | | |
| Male | \$ 417.5 | \$ 427.5 |
| Female | 960.1 | 990.0 |
| Total | <u>\$ 1,377.6</u> | <u>\$ 1,417.5</u> |
| (c) Average Age: | | |
| Male | 47.6 | 47.8 |
| Female | 46.5 | 46.8 |
| Total | 46.8 | 47.1 |
| (d) Average Service: | | |
| Male | 7.0 | 7.3 |
| Female | 7.4 | 7.8 |
| Total | 7.3 | 7.7 |
| (e) Average Expected Compensation for Fiscal Year (not in millions): | | |
| Male | \$ 33,447 | \$ 33,932 |
| Female | 25,012 | 25,624 |
| Total | <u>\$ 27,082</u> | <u>\$ 27,667</u> |
| (f) Average Amount of Assets per Active Member (based on actuarial value): | \$ 27,144 | \$ 27,606 |
| (3) Retired Members and Beneficiaries: | | |
| (a) Number Service Retired: | | |
| Life Annuities | 11,967 | 12,624 |
| Options | 4,729 | 4,933 |
| Total | <u>16,696</u> | <u>17,557</u> |
| (b) Number Disability Retired: | 514 | 541 |
| (c) Number Survivors, Beneficiaries: | <u>1,078</u> | <u>1,150</u> |
| (d) Total Persons Receiving Benefits: | 18,288 | 19,248 |
| (e) Average Monthly Pension Being Paid at Valuation Date for New Service Retired, Including Options: | \$ 761 | \$ 1,008 |
| (f) Average Amount of Assets per Service Retired (based on actuarial value): | \$ 66,439 | \$ 70,308 |
| (g) Average Amount of Assets per New Service Retired (based on actuarial value): | \$ 106,101 | \$ 106,638 |

MEMBERSHIP CHARACTERISTICS

Active and Inactive Membership

A total of 69,333 active and inactive members of PEERS are included in this 2009 actuarial valuation.

| | |
|-----------------------------------|---------------|
| Active members | 51,234 |
| Inactive members | <u>18,099</u> |
| Total active and inactive members | 69,333 |

Between the 2008 and 2009 actuarial valuations, the number of active employees increased by 369 or 0.73%. The average annual salaries of employees increased by 2.2% to \$27,667.

Summary of Changes in Membership

| | <u>Male</u> | <u>Female</u> | <u>Total</u> |
|----------------------------------------------------------|--------------|---------------|--------------|
| Active and Inactive Members 7/1/2008 | 16,406 | 51,082 | 67,488 |
| New Membership 7/1/2008 to 6/30/2009 | <u>2,038</u> | <u>5,145</u> | <u>7,183</u> |
| Total Membership Before Decreases | 18,444 | 56,227 | 74,671 |
| Decreases: | | | |
| Correction of Sex | 1 | (1) | 0 |
| Service Retirements | 372 | 948 | 1,320 |
| Disability Retirements | 11 | 33 | 44 |
| Withdrawals | 1,249 | 3,310 | 4,559 |
| Deaths | 62 | 55 | 117 |
| Other Terminations | 336 | 754 | 1,090 |
| Previous Memberships Voided | 5 | 19 | 24 |
| Reciprocity | 0 | 1 | 1 |
| Subtotal | <u>2,036</u> | <u>5,119</u> | <u>7,155</u> |
| Net membership June 30, 2009 (includes Inactive Members) | 16,408 | 51,108 | 67,516 |
| Additional Members Valued * | <u>869</u> | <u>948</u> | <u>1,817</u> |
| Active and Inactive members Valued, June 30, 2009 | 17,277 | 52,056 | 69,333 |

* Includes members who had terminated employment but were yet to be cashed out as of the valuation date.

Benefit Recipients

On June 30, 2009, PEERS was paying benefits to 19,151 retired members, beneficiaries and survivors. In addition, 97 members had benefits that were on hold due to returning to work. The total headcount for valuation purposes increased 5.2% from 18,288 on June 30, 2008, to 19,248 on June 30, 2009. The June 30, 2009 headcount consists of 17,557 service retirees, 541 disability retirees, and 1,150 beneficiaries and survivors.

There are two classes of retired members – members retired because of service and members retired because of disability.

The changes among the retired group of members during the 2008-2009 year were as follows:

| | <u>Service Retirements</u> | <u>Disability Retirements</u> | <u>Beneficiaries</u> | <u>Total</u> |
|----------------------------------------|--------------------------------|-----------------------------------|----------------------|--------------|
| Retired Members, July 1, 2008 | 16,696 | 514 | 1,078 | 18,288 |
| Added During Year | 1,325 | 44 | 112 | 1,481 |
| Died During Year | (551) | (17) | (38) | (606) |
| Resumed Retirement During Year | 18 | 0 | 1 | 19 |
| Resumed Employment During Year | <u>(27)</u> | <u>(1)</u> | <u>(3)</u> | <u>(31)</u> |
| Retired Members Valued, June 30, 2009 | 17,461 | 540 | 1,150 | 19,151 |
| Additional Members Valued ¹ | <u>96</u> | <u>1</u> | <u>0</u> | <u>97</u> |
| Retired Members Valued, June 30, 2009 | 17,557 | 541 | 1,150 | 19,248 |

¹ Additional members valued include participants whose benefits are currently on hold.

As of June 30, 2009, the average monthly benefit payable to new service retirees was \$1,008 compared to \$761 as of June 30, 2008. These average benefit amounts and the amounts shown in the tables that follow include all post-retirement benefit increases.

ACTUARIAL ASSUMPTIONS AND METHODS

The actuarial cost methods and assumptions used in this valuation are the same as those disclosed in the actuarial valuation report as of June 30, 2008, with the exception of the expected interest on member contributions. This assumption was lowered from 6% to 2%. The assumptions and methods are described in Appendix E.

EXPERIENCE DURING FY 2009

Overall the system experienced a net actuarial loss of about \$65.5 million.

The total net actuarial loss for the year ending June 30, 2009, is shown below and is broken out further in Table 18:

| | <u>(\$ in millions)</u> |
|---------------------------------------------------------------------------------------------------|-------------------------|
| 1. Actuarial (Gain) or Loss on Assets (at actuarial value) | \$ 156.5 |
| 2. Actuarial (Gain) or Loss on Liabilities Due to actual COLA vs. 3.25% expected (0.0% Jan. 2010) | (21.1) |
| 3. Actuarial (Gain) or Loss on Unfunded Liabilities Due to Reinstated and Purchased Service | 5.7 |
| 4. Actuarial (Gain) or Loss on Liabilities Due to Legislative Changes | 0.0 |
| 5. Actuarial (Gain) or Loss on Liabilities Due to Salary, Demographic, and Other Experience | <u>(75.6)</u> |
| 6. Total Actuarial (Gain) or Loss (Sum 1-5) | \$ 65.5 |

The PEERS investment return was about \$(490) million, compared with an expected return on the actuarial value of \$217 million resulting in a total loss of approximately \$707 million. The use of the five-year smoothing method to determine the actuarial value of assets recognizes 20% of this loss. Thus, the actuarial loss on investments was \$ 156.5 million as shown above.

COLA increases were less than expected, producing a gain of \$21.1 million. The reinstatement of forfeited service generated a liability loss of approximately \$1.0 million. The purchase of service other than reinstated service generated a liability loss of approximately \$4.7 million.

PEERS BENEFITS

A summary of the current benefit provisions appears in Appendix F. There were no changes to the benefit provisions of PEERS during the 2009 session of the Legislature which impact the results of this valuation.

ASSET INFORMATION

The market value of the assets of the fund which are available for benefits has been reduced from \$2.6 billion as of June 30, 2008 to \$2.1 billion as of June 30, 2009. The actuarial value of assets increased from \$2.7 billion as of June 30, 2008, to \$2.8 billion as of June 30, 2009. Actuarial value of assets now exceeds the market value by \$0.7 billion.

Based on the actuarial value, the assets of the fund returned about 2.0% which compares to the market value return of -19.1%. The difference is due to the deferral of investment losses from the current year's return and recognition of prior year's gains deferred under the asset smoothing method.

The detailed determinations of asset values utilized in this valuation and asset growth in the last year are set forth in Appendix B.

FUNDING STATUS

The funding status of PEERS is measured by the Funding Ratio, which is the ratio of the assets available for benefits to a benefit liability measure for the System. While there are several such measures that could be appropriately used, the measure that ties most closely to your funding plan is the Actuarial Accrued Liability (“AAL”).

Using the actuarial (smoothed) value of assets, the PEERS actuarial accrued liability funding ratio decreased from 82.5% at June 30, 2008, to 80.7% as of June 30, 2009. A significant portion of the decrease is due to asset losses.

Using the market value of assets, the PEERS actuarial accrued liability funding ratio decreased from 90.0% at June 30, 2007 to 78.6% at June 30, 2008, and decreased to 61.1% as of June 30, 2009.

GASB DISCLOSURE

PEERS produces its accounting statements under the terms of GASB Statement Number 25. In Table 16, you will find Required Supplemental Information mandated by that statement.

This information is presented in draft form for review by the System’s auditor. Please let us know if there are any changes so that we may maintain consistency with the System’s financial statements.

FUNDING PROCESS

In the 2003 session of the Legislature the funding provisions of PEERS were amended. The following changes were adopted:

1. The limitation on the total contribution rate (10% of pay) was eliminated.
2. Contribution rates will now be established by actuarial valuation.
3. The annual increase in the total contribution rate may not exceed 0.5% of pay.

As a result, the total contribution rate for the 2011 fiscal year may not increase by more than 0.5% of pay over the rate for the current fiscal year.

In the 2007 session of the Legislature the unfunded actuarial accrued liabilities associated with benefit changes shall be amortized over a twenty-year period. This provision had no impact on the contribution requirements of the plan, which were already limited by the annual increase limitation of 0.5% of pay established in the 2003 session of the legislature.

APPENDICES

APPENDIX A
MEMBERSHIP DATA

Table 1**Number, Average Age-Service-Salary, and Total Payroll
of Active Members Included in Actuarial Valuations****Male**

| Item | Actuarial Valuation as of June 30 | | | | |
|--------------------------|------------------------------------------|-------------|-------------|-------------|-------------|
| | 2005 | 2006 | 2007 | 2008 | 2009 |
| Number | 11,492 | 11,818 | 12,013 | 12,481 | 12,600 |
| Average Age | 47.5 | 47.3 | 47.4 | 47.6 | 47.8 |
| Average Years of Service | 6.9 | 7.0 | 7.1 | 7.0 | 7.1 |
| Average Annual Salary | \$ 27,708 | \$ 30,652 | \$ 32,012 | \$ 33,447 | \$ 33,932 |
| Total Payroll (000's) | \$ 318,421 | \$ 362,245 | \$ 384,561 | \$ 417,454 | \$ 427,538 |

Female

| Item | Actuarial Valuation as of June 30 | | | | |
|--------------------------|------------------------------------------|-------------|-------------|-------------|-------------|
| | 2005 | 2006 | 2007 | 2008 | 2009 |
| Number | 35,106 | 36,370 | 37,268 | 38,384 | 38,634 |
| Average Age | 46.3 | 46.1 | 46.3 | 46.5 | 46.8 |
| Average Years of Service | 7.2 | 7.2 | 7.3 | 7.4 | 7.6 |
| Average Annual Salary | \$ 20,987 | \$ 22,787 | \$ 23,898 | \$ 25,012 | \$ 25,624 |
| Total Payroll (000's) | \$ 736,783 | \$ 828,749 | \$ 890,638 | \$ 960,052 | \$ 989,947 |

Total

| Item | Actuarial Valuation as of June 30 | | | | |
|--------------------------|------------------------------------------|--------------|--------------|--------------|--------------|
| | 2005 | 2006 | 2007 | 2008 | 2009 |
| Number | 45,598 | 48,188 | 49,281 | 50,865 | 51,234 |
| Average Age | 46.6 | 46.4 | 46.6 | 46.8 | 47.1 |
| Average Years of Service | 7.1 | 7.1 | 7.2 | 7.3 | 7.5 |
| Average Annual Salary | \$ 22,645 | \$ 24,716 | \$ 25,876 | \$ 27,082 | \$ 27,667 |
| Total Payroll (000's) | \$ 1,055,204 | \$ 1,190,994 | \$ 1,275,199 | \$ 1,377,506 | \$ 1,417,485 |

Table 2

**Employee Distribution by Age and Years of Service
June 30, 2009**

| Age | Years of Service | | | | | | | Total |
|--------------|-------------------------|---------------|--------------|--------------|--------------|--------------|----------------------|---------------|
| | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30 & Over | |
| Under 20 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 39 |
| 20-24 | 1,533 | 13 | 0 | 0 | 0 | 0 | 0 | 1,546 |
| 25-29 | 2,817 | 337 | 13 | 0 | 0 | 0 | 0 | 3,167 |
| 30-34 | 3,044 | 786 | 168 | 2 | 0 | 0 | 0 | 4,000 |
| 35-39 | 3,112 | 1,110 | 417 | 80 | 5 | 0 | 0 | 4,724 |
| 40-44 | 3,338 | 1,749 | 838 | 237 | 103 | 4 | 0 | 6,269 |
| 45-49 | 3,393 | 2,415 | 1,624 | 558 | 267 | 142 | 17 | 8,416 |
| 50-54 | 2,767 | 2,158 | 1,980 | 933 | 449 | 206 | 99 | 8,592 |
| 55-59 | 2,076 | 1,508 | 1,378 | 981 | 642 | 217 | 107 | 6,909 |
| 60-64 | 1,369 | 1,099 | 847 | 606 | 440 | 210 | 136 | 4,707 |
| 65 & Over | 896 | 814 | 440 | 246 | 190 | 117 | 162 | 2,865 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 24,384 | 11,989 | 7,705 | 3,643 | 2,096 | 896 | 521 | 51,234 |

Table 3
Salary Distribution
Employees in Active Service
on June 30, 2009

| Annual Salary | Number | Percent |
|-------------------|---------------|---------------|
| Under \$10,000 | 4,800 | 9.4% |
| \$10,000 - 12,499 | 2,313 | 4.5% |
| \$12,500 - 14,999 | 3,101 | 6.0% |
| \$15,000 - 17,499 | 3,976 | 7.8% |
| \$17,500 - 19,999 | 4,500 | 8.8% |
| \$20,000 - 22,499 | 4,350 | 8.5% |
| \$22,500 - 24,999 | 4,335 | 8.5% |
| \$25,000 - 27,499 | 3,402 | 6.6% |
| \$27,500 - 29,999 | 3,153 | 6.2% |
| \$30,000 - 32,499 | 2,825 | 5.5% |
| \$32,500 - 34,999 | 2,397 | 4.7% |
| \$35,000 - 37,499 | 2,193 | 4.3% |
| \$37,500 - 39,999 | 1,917 | 3.7% |
| \$40,000 - 42,499 | 1,527 | 3.0% |
| \$42,500 - 44,999 | 1,305 | 2.5% |
| \$45,000 & Over | <u>5,140</u> | <u>10.0%</u> |
| Total | 51,234 | 100.0% |

Table 4

**Salary Increase Rates by Service Group
Employees in Both 2008 & 2009 Actuarial Valuations**

| Service in 2008 | Number | Percent Increase In Average Salary | |
|----------------------------|---------------|-------------------------------------------|-----------------|
| | | Actual | Expected |
| 1-4 | 12,679 | 3.4% | 6.7% |
| 5-9 | 11,413 | 3.7% | 5.5% |
| 10-14 | 7,476 | 4.0% | 5.0% |
| 15-19 | 3,578 | 3.8% | 5.0% |
| 20 & Over | <u>3,480</u> | <u>3.7%</u> | <u>5.0%</u> |
| Total | 38,626 | 3.7% | 5.7% |

Table 5

**Pensions in Force on June 30, 2009
by Type and Monthly Amount**

| Monthly | Service | Disability | Beneficiary | Total |
|-----------------|----------------|-------------------|--------------------|---------------|
| Less than \$100 | 1,425 | 30 | 153 | 1,608 |
| \$100 - 199 | 3,327 | 127 | 270 | 3,724 |
| \$200 - 299 | 2,634 | 112 | 222 | 2,968 |
| \$300 - 399 | 1,906 | 85 | 149 | 2,140 |
| \$400 - 499 | 1,464 | 51 | 103 | 1,618 |
| \$500 - 999 | 4,112 | 126 | 186 | 4,424 |
| \$1,000 - 1,499 | 1,545 | 9 | 46 | 1,600 |
| \$1,500 & Over | <u>1,144</u> | <u>1</u> | <u>21</u> | <u>1,166</u> |
| Total | 17,557 | 541 | 1,150 | 19,248 |

Table 6

**Pensions in Force on June 30, 2009
by Type and Age**

| Age | Service | Disability | Beneficiary | Total |
|--------------|----------------|-------------------|--------------------|---------------|
| Under 55 | 136 | 131 | 104 | 371 |
| 55-59 | 698 | 119 | 68 | 885 |
| 60-64 | 2,544 | 103 | 91 | 2,738 |
| 65-69 | 3,923 | 93 | 137 | 4,153 |
| 70-74 | 3,417 | 59 | 188 | 3,664 |
| 75-79 | 2,872 | 25 | 205 | 3,102 |
| 80-84 | 2,022 | 5 | 188 | 2,115 |
| 85-89 | 1,280 | 4 | 122 | 1,406 |
| 90 & Over | <u>665</u> | <u>2</u> | <u>47</u> | <u>714</u> |
| Total | 17,557 | 541 | 1,150 | 19,248 |

Table 7

Cost of Living Increases to Retired Members
June 30, 2009

| Retirement In | First Increase Effective Date | Percentage Increase | Increases Total Through January 2009 | January 2010 Increase | Total Increases Through January 2010 | Number of Retired Members at 6/30/09 |
|----------------|-------------------------------|---------------------|--------------------------------------|-----------------------|--------------------------------------|--------------------------------------|
| 1986 & Earlier | Various | Various | 80.00% | 0.00% | 80.00% | 1,316 |
| 1987 | Jan. 1991 | 4.00% | 74.21% | 0.00% | 74.21% | 262 |
| 1988 | Jan. 1992 | 4.00% | 67.48% | 0.00% | 67.48% | 373 |
| 1989 | Jan. 1993 | 3.10% | 61.05% | 0.00% | 61.05% | 376 |
| 1990 | Jan. 1994 | 3.00% | 56.23% | 0.00% | 56.23% | 446 |
| 1991 | Jan. 1995 | 2.50% | 51.68% | 0.00% | 51.68% | 438 |
| 1992 | Jan. 1996 | 3.00% | 47.97% | 0.00% | 47.97% | 491 |
| 1993 | Jan. 1997 | 2.80% | 43.66% | 0.00% | 43.66% | 491 |
| 1994 | Jan. 1998 | 2.30% | 39.73% | 0.00% | 39.73% | 561 |
| 1995 | Jan. 1999 | 1.70% | 36.59% | 0.00% | 36.59% | 612 |
| 1996 | Jan. 2000 | 2.00% | 34.30% | 0.00% | 34.30% | 655 |
| 1997 | Jan. 2001 | 3.70% | 31.68% | 0.00% | 31.68% | 729 |
| 1998 | Jan. 2002 | 3.30% | 26.98% | 0.00% | 26.98% | 731 |
| 1999 | Jan. 2003 | 1.10% | 22.93% | 0.00% | 22.93% | 824 |
| 2000 | Jan. 2004 | 2.10% | 21.59% | 0.00% | 21.59% | 877 |
| 2001 | Jan. 2005 | 3.30% | 19.08% | 0.00% | 19.08% | 865 |
| 2002 | Jan. 2006 | 2.50% | 15.29% | 0.00% | 15.29% | 916 |
| 2003 | Jan. 2007 | 4.30% | 12.48% | 0.00% | 12.48% | 991 |
| 2004 | Jan. 2008 | 2.70% | 7.84% | 0.00% | 7.84% | 1,045 |
| 2005 | Jan. 2009 | 5.00% | 5.00% | 0.00% | 5.00% | 1,074 |
| 2006 | Jan. 2010 | 0.00% | | 0.00% | 0.00% | 1,097 |
| 2007 | | | | | | 1,258 |
| 2008 | | | | | | 1,278 |
| 2009 | | | | | | 392 |
| 2010 | | | | | | |
| Total | | | | | | 18,098 |

Table 8**Analysis of Retired Membership by Type of Benefit
(Dollar Amounts in Millions)
June 30, 2009**

| Type of Benefit | Number | Annual Benefit | Total Liability |
|---------------------------------------|---------------|-----------------------|------------------------|
| Service Retirees | | | |
| Options 1 & 10 (Life Only) | 12,624 | 84.0 | 764.9 |
| Options 2 & 21 (100% J&S with Pop-Up) | 2,638 | 23.3 | 246.1 |
| Option 3 & 31 (75% J&S with Pop-Up) | 342 | 4.3 | 44.7 |
| Option 4 & 41 (50% J&S with Pop-Up) | 685 | 9.2 | 86.5 |
| Option 5 (10 Years Certain & Life) | 486 | 3.4 | 34.5 |
| Option 6 (5 Years Certain & Life) | 163 | 1.3 | 12.6 |
| Option 20 (100% J&S) | 171 | 0.8 | 7.3 |
| Option 30 (75% J&S) | 1 | 0.0 | 0.0 |
| Option 40 (50% J&S) | 23 | 0.2 | 1.1 |
| Accelerated Payment | <u>424</u> | <u>4.0</u> | <u>36.6</u> |
| Total | 17,557 | \$130.5 | \$1,234.3 |
| Disability Retirees | 541 | \$2.4 | \$22.9 |
| Beneficiaries of Retiree Deaths | 1,150 | \$5.0 | \$47.8 |

Note: Excludes retirees returned to work.

APPENDIX B
ASSET INFORMATION

Table 9**Market Value of Assets
Balance Sheet**

| | June 30, 2008 | June 30, 2009 |
|--------------------------------|-------------------------|-------------------------|
| Assets: | | |
| Cash | \$ 13,656,824 | \$ 8,492,059 |
| Contribution Receivable | 14,796,308 | 16,500,599 |
| Accrued Interest and Dividends | 15,963,556 | 22,961,699 |
| Investments | 2,564,645,329 | 2,095,636,749 |
| Trades Pending | 257,017,695 | 213,973,847 |
| Other Assets | 41,889 | 25,853 |
| Capital Assets | 0 | 0 |
| Prepaid Expenses | 0 | 0 |
| Due from PSRS | <u>0</u> | <u>0</u> |
| Total | \$ 2,866,121,601 | \$ 2,357,590,806 |
| Liabilities: | | |
| Accounts Payable | \$ 1,421,358 | \$ 1,299,927 |
| Employer Pay Liability | 0 | 471,191 |
| Interest Payable | 3,895,609 | 112,917 |
| Trades Pending | 284,291,457 | 233,272,052 |
| Net OPEB Obligation | 73,316 | 145,200 |
| Other Liabilities | 777,428 | 8,090,424 |
| Due to PSRS | <u>0</u> | <u>525,465</u> |
| Total | \$ 290,459,168 | \$ 243,917,175 |
| Net Assets | \$ 2,575,662,433 | \$ 2,113,673,631 |

Table 10

**Statement of Revenue and Expenses
Market Value Reconciliation For Fiscal Year Ended June 30, 2009**

| Operating Revenues | Amount |
|---------------------------------------------|--------------------|
| Contributions: | |
| Employers | \$ 85,915,562 |
| Members | <u>89,427,259</u> |
| Total Contributions | 175,342,821 |
| Net Investment Income: | |
| Interest | 16,527,226 |
| Dividends | 23,680,743 |
| Net Income from Security Lending Activities | <u>(35,085)</u> |
| Total Investment Income | 40,172,884 |
| Investment Return | |
| Net Capital Appreciation / (Depreciation) | (524,856,882) |
| Investment Expenses | <u>(4,868,308)</u> |
| Total Investment Return | (529,725,190) |
| Other Income | 757 |
| Total Operating Revenues | (314,208,728) |
| Operating Expenses | |
| Benefit Payments | 126,666,805 |
| Refunds to Members | 15,673,105 |
| Administrative Expenses | 5,431,199 |
| Other Expenses | <u>8,965</u> |
| Total Operating Expenses | 147,780,074 |
| Excess of Revenues over Expenses | (461,988,802) |
| Fund Balance, June 30, 2008 | 2,575,662,433 |
| Fund Balance, June 30, 2009 | \$ 2,113,673,631 |

Table 11

Growth of Cash Flow
(In Thousands)

| Year Ending June 30 | Contributions for the Year | Payments During the Year | | | External Cash Flow for the Year | Covered Payroll | Payments as Percent of Covered Payroll |
|------------------------|-------------------------------|----------------------------------------------------|----------|------------|---------------------------------------|--------------------|----------------------------------------------|
| | | Benefit Payments and Refund of Contributions | Expenses | Total | | | |
| 1986 | \$ 20,140 | \$ (8,974) | \$ (411) | \$ (9,385) | \$ 10,755 | \$ 245,407 | 3.8% |
| 1987 | 21,986 | (9,641) | (500) | (10,141) | 11,845 | 268,173 | 3.8 |
| 1988 | 23,927 | (10,886) | (538) | (11,424) | 12,503 | 304,029 | 3.8 |
| 1989 | 26,110 | (12,567) | (585) | (13,152) | 12,958 | 331,352 | 4.0 |
| 1990 | 28,176 | (14,643) | (712) | (15,355) | 12,821 | 359,577 | 4.3 |
| 1991 | 30,505 | (16,634) | (721) | (17,355) | 13,150 | 389,080 | 4.5 |
| 1992 | 31,470 | (18,858) | (813) | (19,671) | 11,799 | 398,147 | 4.9 |
| 1993 | 32,640 | (21,025) | (821) | (21,846) | 10,794 | 415,672 | 5.3 |
| 1994 | 35,298 | (23,772) | (901) | (24,673) | 10,625 | 452,339 | 5.5 |
| 1995 | 38,706 | (27,067) | (905) | (27,972) | 10,734 | 495,449 | 5.6 |
| 1996 | 42,122 | (30,338) | (1,233) | (31,571) | 10,551 | 538,022 | 5.9 |
| 1997 | 49,009 | (34,425) | (1,950) | (36,375) | 12,634 | 556,534 | 6.5 |
| 1998 | 54,844 | (38,460) | (2,652) | (41,112) | 13,732 | 616,303 | 6.7 |
| 1999 | 60,385 | (41,813) | (1,604) | (43,417) | 16,967 | 685,272 | 6.3 |
| 2000 | 68,684 | (51,432) | (1,920) | (53,352) | 15,332 | 735,362 | 7.3 |
| 2001 | 75,434 | (58,239) | (2,246) | (60,485) | 14,949 | 814,158 | 7.4 |
| 2002 | 91,990 | (67,737) | (2,574) | (70,311) | 21,679 | 895,420 | 7.8 |
| 2003 | 97,927 | (75,432) | (2,946) | (78,378) | 19,549 | 971,177 | 8.1 |
| 2004 | 100,602 | (85,290) | (3,210) | (88,500) | 12,102 | 984,866 | 9.0 |
| 2005 | 108,809 | (95,798) | (3,564) | (99,362) | 9,447 | 1,055,204 | 9.4 |
| 2006 | 129,763 | (104,704) | (4,358) | (109,062) | 20,701 | 1,190,989 | 9.2 |
| 2007 | 142,306 | (116,880) | (4,427) | (121,307) | 20,999 | 1,275,199 | 9.5 |
| 2008 | 159,359 | (129,573) | (4,681) | (134,254) | 25,105 | 1,377,506 | 9.7 |
| 2009 | 175,343 | (142,340) | (5,440) | (147,780) | 27,563 | 1,417,485 | 10.4 |

Table 12

Development of the Actuarial Value of Assets

| | | |
|--------------------------------------------|----------------------|----------------------|
| 1. Valuation Assets June 30, 2008 | | \$ 2,703,762,383 |
| 2. Activity for FY 2009 | | |
| a. Contributions | \$ 175,342,821 | |
| b. Benefits and Expenses | <u>(147,780,074)</u> | |
| c. Net Cash Flow | 27,562,747 | |
| 3. Expected Returns | 217,403,501 | |
| 4. Assets Before Allocation of G/L (1+2+3) | | 2,948,728,631 |
| 5. Actual Returns for 2009 | (489,552,306) | |
| 6. Excess Returns for 2009 (5-3) | (706,955,807) | |
| 7. Recognized Excess Returns | | |
| 2009 | (141,391,161) | |
| 2008 | (66,025,676) | |
| 2007 | 38,976,583 | |
| 2006 | 7,179,033 | |
| 2005 | <u>4,714,940</u> | |
| Total | | <u>(156,546,281)</u> |
| 8. Actuarial Value of Assets June 30, 2009 | | \$ 2,792,182,350 |

Note: Excess returns are total return on assets at market in excess of expected investment return at 8% on actuarial value.

APPENDIX C
ACTUARIAL DETERMINATIONS

Table 13

**Ten Year Historical Summary
(All Dollar Figures in Thousands)**

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Active Members | 43,533 | 45,517 | 46,728 | 46,863 | 45,880 | 46,598 | 48,188 | 49,281 | 50,865 | 51,234 |
| Retired Members | 13,061 | 13,673 | 14,270 | 14,837 | 15,445 | 16,142 | 16,760 | 17,539 | 18,288 | 19,248 |
| Actuarial Assets | \$ 1,522,660 | \$ 1,686,242 | \$ 1,810,619 | \$ 1,677,770 | \$ 1,837,308 | \$ 2,011,566 | \$ 2,218,638 | \$ 2,481,562 | \$ 2,703,762 | \$ 2,792,182 |
| UAAL | \$ (127,360) | \$ (50,166) | \$ 45,363 | \$ 371,946 | \$ 383,902 | \$ 402,928 | \$ 538,195 | \$ 501,250 | \$ 574,840 | \$ 665,862 |
| Benefit Payments and Refunds | \$ 51,432 | \$ 58,239 | \$ 67,737 | \$ 75,432 | \$ 85,290 | \$ 95,798 | \$ 104,704 | \$ 116,880 | \$ 129,573 | \$ 142,340 |
| Accumulated Members' Contributions | \$ 274,167 | \$ 301,936 | \$ 354,296 | \$ 394,925 | \$ 444,318 | \$ 466,259 | \$ 524,014 | \$ 580,853 | \$ 650,970 | \$ 693,962 |
| APV of Retirees' Benefits | \$ 467,653 | \$ 565,126 | \$ 651,295 | \$ 731,059 | \$ 804,864 | \$ 904,292 | \$ 1,020,486 | \$ 1,093,650 | \$ 1,215,036 | \$ 1,305,025 |

Table 14

**Determination of Normal Cost
June 30, 2009
For the 2009 - 2010 Plan Year**

| | Dollar (mid-year) | Rate¹ |
|--------------------------------------------------------------------------------|------------------------------|-------------------------|
| Active Members | | |
| Retirement Benefits | \$ 123,510,602 | 8.71% |
| Termination Benefits | 25,108,950 | 1.77% |
| Death Benefits | 3,546,082 | 0.25% |
| Disability Benefits | <u>2,118,634</u> | <u>0.15%</u> |
| Total Normal Cost | \$ 154,284,267 | 10.88% |
| Estimated Employee Contributions | <u>92,136,497</u> | |
| Employer Normal Cost (Total Normal Cost less Employee Contributions) | \$ 62,147,770 | |

¹ Normal cost rate was determined using an expected payroll of \$1,417,484,574.

Table 15

**Determination of the Unfunded Actuarial Accrued Liability
June 30, 2009**

Active Members:

| | |
|---------------------------------------|-------------------|
| Service Retirement | \$ 2,021,409,322 |
| Death Benefits | 44,483,860 |
| Disability Benefits | 19,048,372 |
| Termination Benefits | (26,049,830) |
| Inactives | <u>94,127,282</u> |
| Total for Active and Inactive Members | 2,153,019,006 |

Pay Status Members:

| | |
|------------------------------|-------------------|
| Service Retirees | 1,234,395,986 |
| Disability Retirees | 22,861,490 |
| Survivors | <u>47,767,502</u> |
| Total for Pay Status Members | 1,305,024,978 |

Total Actuarial Accrued Liability 3,458,043,984

Actuarial Value of Assets 2,792,182,350

Total Unfunded Actuarial Accrued Liability \$ 665,861,634

Table 16

Schedule of Funding Progress
(In Thousands)

| Actuarial Valuation Date | Actuarial Value of Assets (a) | Actuarial Liability (AAL) Entry Age (b) | Unfunded AAL (UAAL) (b-a) | Funded Ratio (a/b) | Covered Payroll (c) | UAAL as a Percentage of Covered Payroll ((b-a)/c) |
|--------------------------|-------------------------------|-----------------------------------------|---------------------------|--------------------|---------------------|---------------------------------------------------|
| 6/30/2000 | \$ 1,522,660 | \$ 1,395,300 | \$ (127,360) | 109.1% | \$ 735,400 | -17.3% |
| 6/30/2001 | 1,686,242 | 1,636,076 | (50,166) | 103.1% | 814,158 | -6.2% |
| 6/30/2002 | 1,810,619 | 1,855,982 | 45,363 | 97.6% | 895,420 | 5.1% |
| 6/30/2003 | 1,677,770 | 2,049,716 | 371,946 | 81.9% | 971,177 | 38.3% |
| 6/30/2004 | 1,837,308 | 2,221,210 | 383,902 | 82.7% | 984,866 | 39.0% |
| 6/30/2005 | 2,011,566 | 2,414,494 | 402,928 | 83.3% | 1,055,204 | 38.2% |
| 6/30/2006 | 2,218,638 | 2,756,833 | 538,195 | 80.5% | 1,190,994 | 45.2% |
| 6/30/2007 | 2,481,562 | 2,982,813 | 501,250 | 83.2% | 1,275,199 | 39.3% |
| 6/30/2008 | 2,703,762 | 3,278,602 | 574,840 | 82.5% | 1,377,506 | 41.7% |
| 6/30/2009 | 2,792,182 | 3,458,044 | 665,862 | 80.7% | 1,417,485 | 47.0% |

Schedule of Employer Contributions

| Actuarial Valuation Date | Annual Required Contribution ¹ | Employer Contribution | Percentage Contributed |
|--------------------------|-------------------------------------------|-----------------------|------------------------|
| 6/30/2000 | \$ 34,185,605 | \$ 34,185,605 | 100.0% |
| 6/30/2001 | 37,500,243 | 37,500,243 | 100.0% |
| 6/30/2002 | 45,773,119 | 45,773,119 | 100.0% |
| 6/30/2003 | 52,847,992 | 48,933,326 | 92.6% |
| 6/30/2004 | 62,315,910 | 49,976,898 | 80.2% |
| 6/30/2005 | 73,948,917 | 53,109,687 | 71.8% |
| 6/30/2006 | 79,707,834 | 61,745,505 | 77.5% |
| 6/30/2007 | 89,945,503 | 69,235,160 | 77.0% |
| 6/30/2008 | 90,727,016 | 77,988,839 | 86.0% |
| 6/30/2009 | 96,775,289 | 85,915,562 | 88.8% |

¹ Annual Required Contribution determined by applying the 30-year contribution rate (13.29%), net of the employee contribution rate (6.25%), to the estimated payroll on which contributions were made (\$1,374,648,992).

Notes in Trend Data

Information:

Valuation Date
Actuarial Cost Method
Amortization Method
Remaining Amortization Period (years)
Asset Valuation Method

Data
6/30/2009
Entry Age Normal
Level Percent, Open
30
5-Year Smoothed Market

Actuarial

Investment rate of return
Projected salary increases
Cost-of-living adjustments

8.0%
5.0% - 10.0%
3.25%

Table 17

**Calculation of Unfunded Actuarial Accrued Liability
June 30, 2009**

| | <u>Amount</u> |
|----------------------------------------------------|-------------------|
| (1) Present Value of Future Benefits for: | |
| Active Members | \$ 3,293,983,010 |
| Service Retirees | 1,234,395,986 |
| Disability Retirees | 22,861,490 |
| Survivors | 47,767,502 |
| Inactive Members | <u>94,127,282</u> |
| Total | 4,693,135,270 |
| (2) Present Value of Future Normal Costs | 1,235,091,286 |
| (3) Actuarial Accrued Liability ((1)-(2)) | 3,458,043,984 |
| (4) Actuarial Value of Assets | 2,792,182,350 |
| (5) Unfunded Actuarial Accrued Liability ((3)-(4)) | \$ 665,861,634 |

**Required Contribution Rate & Amortization of Unfunded Liability
for the Fiscal Year Ending 2010**

| | <u>Percentage of Payroll</u> |
|---------------------------------------------------------------------------------------------------|------------------------------|
| (1) Total Contribution Rate, Member + Employer | 13.00% |
| (2) Normal Cost Rate ¹ | 10.88% |
| (3) Approximate Rate Available for Unfunded Actuarial Accrued Liability ((1)-(2)) | 2.12% |
| (4) Benchmark Contribution Rate - Normal Cost Plus a Rate to fund UAAL over 30 Years ² | 13.26% |

¹ Normal cost rate was determined using an expected payroll of \$1,417,484,574.

² Contribution rate to amortize the UAAL was determined using valuation payroll of \$1,417,484,574. The benchmark contribution shown here has been adjusted for the 20 year amortization of unfunded liabilities due to changes in benefit provisions as amended in the 2007 legislative session. The increase in unfunded liabilities as of June 30, 2007, was \$1,120,898.

Table 18

Analysis of Actuarial Gains and Losses

| | <u>Amount</u> |
|----------------------------------------------------------------------------|---------------------|
| 1. Unfunded Actuarial Liability as of July 1, 2008 | \$ 574,839,663 |
| 2. Normal Cost for 2009 Plan Year | 144,650,219 |
| 3. Contribution Expected to be Received During Year (30-Year Rate) | (182,690,851) |
| 4. Interest to Year End @ 8.00% on 1., 2., and 3. | 44,465,547 |
| 5. Expected Unfunded Actuarial Liability as of June 30, 2009 | 581,264,578 |
| 6. Contribution Shortfall | 13,299,721 |
| 7. Actuarial (Gain)/Loss During the Year | |
| a. From Investment | 156,546,281 |
| b. From Actuarial Liabilities Due to Actual vs. Expected COLA ¹ | (21,146,964) |
| c. From Unfunded Actuarial Liabilities Due to Reinstated Service | 1,012,344 |
| d. From Unfunded Actuarial Liabilities Due to Other Purchased Service | 4,691,269 |
| e. From Actuarial Liabilities Due to Legislative Changes | 0 |
| f. From Actuarial Liabilities Due to Unexpected Salary Changes | (8,382,230) |
| g. From Actuarial Liabilities Due to Demographic Experience | (25,378,265) |
| h. From Actuarial Liabilities Due to Other ² | <u>(36,045,100)</u> |
| i. Total | 71,297,335 |
| 8. Actual Unfunded Actuarial Liability as of June 30, 2009 | \$ 665,861,634 |

¹ For COLA granted January 1, 2010 (0.00%).

² Includes impact of changing actuaries.

APPENDIX D
ADDITIONAL DATA

Table 19**Schedule of Active Member Valuation Data**

| Actuarial Valuation Date | Number of Members | Covered Annual Payroll (000) | Average Annual Salary | % Increase in Average Salary | Average Attained Age | Average Years of Service |
|---------------------------------|--------------------------|-------------------------------------|------------------------------|-------------------------------------|-----------------------------|---------------------------------|
| 6/30/1991 | 28,554 | \$ 389,080 | \$ 13,626 | 5.1% | 45.5 | 7.4 |
| 6/30/1992 | 28,410 | 398,147 | 14,014 | 2.8% | 45.7 | 7.6 |
| 6/30/1993 | 29,055 | 415,672 | 14,306 | 2.1% | 45.7 | 7.7 |
| 6/30/1994 | 30,662 | 452,339 | 14,752 | 3.1% | 45.5 | 7.6 |
| 6/30/1995 | 32,598 | 495,449 | 15,199 | 3.0% | 45.3 | 7.3 |
| 6/30/1996 | 34,153 | 538,022 | 15,753 | 3.6% | 45.2 | 7.2 |
| 6/30/1997 | 35,982 | 556,534 | 15,467 | -1.8% | 45.1 | 7.1 |
| 6/30/1998 | 38,672 | 616,303 | 15,937 | 3.0% | 44.8 | 6.7 |
| 6/30/1999 | 41,599 | 685,272 | 16,473 | 3.4% | 44.6 | 6.5 |
| 6/30/2000 | 43,533 | 735,400 | 16,893 | 2.5% | 44.5 | 6.4 |
| 6/30/2001 | 45,517 | 814,158 | 17,887 | 5.9% | 44.6 | 6.3 |
| 6/30/2002 | 46,728 | 895,420 | 19,162 | 7.1% | 44.8 | 6.4 |
| 6/30/2003 | 46,863 | 971,177 | 20,724 | 8.2% | 45.3 | 6.6 |
| 6/30/2004 | 45,880 | 984,866 | 21,466 | 3.6% | 46.2 | 7.0 |
| 6/30/2005 | 46,598 | 1,055,204 | 22,645 | 5.5% | 46.6 | 7.1 |
| 6/30/2006 | 48,188 | 1,190,994 | 24,716 | 9.1% | 46.4 | 7.1 |
| 6/30/2007 | 49,281 | 1,275,199 | 25,876 | 4.7% | 46.6 | 7.2 |
| 6/30/2008 | 50,865 | 1,377,506 | 27,082 | 4.7% | 46.8 | 7.3 |
| 6/30/2009 | 51,234 | 1,417,485 | 27,667 | 2.2% | 47.1 | 7.7 |

Table 20

**Solvency Test
(\$ in 000's)**

| Actuarial Valuation Date | Actuarial Accrued Liability | | | Net Assets Available for Benefits | Percentage of Actuarial Liabilities Covered by Net Assets for: | | |
|--------------------------|-----------------------------|--------------------------------------|---------------------------------------------------------|-----------------------------------|----------------------------------------------------------------|--------|--------|
| | Member Contributions (1) | Current Retirees & Beneficiaries (2) | Active & Inactive Members Employer Financed Portion (3) | | (1) | (2) | (3) |
| 6/30/1994 | 155,238 | 224,650 | 306,192 | 698,988 | 100.0% | 100.0% | 104.2% |
| 6/30/1995 | 169,846 | 252,034 | 364,519 | 778,325 | 100.0% | 100.0% | 97.8% |
| 6/30/1996 | 185,763 | 293,937 | 399,861 | 876,886 | 100.0% | 100.0% | 99.3% |
| 6/30/1997 | 204,757 | 312,390 | 447,065 | 1,001,035 | 100.0% | 100.0% | 108.2% |
| 6/30/1998 | 225,454 | 350,860 | 460,033 | 1,150,311 | 100.0% | 100.0% | 124.8% |
| 6/30/1999 | 231,252 | 396,846 | 540,413 | 1,335,308 | 100.0% | 100.0% | 130.9% |
| 6/30/2000 | 274,167 | 467,653 | 653,480 | 1,522,660 | 100.0% | 100.0% | 119.5% |
| 6/30/2001 | 301,936 | 565,126 | 769,014 | 1,686,242 | 100.0% | 100.0% | 106.5% |
| 6/30/2002 | 354,296 | 651,295 | 850,391 | 1,810,619 | 100.0% | 100.0% | 94.7% |
| 6/30/2003 | 394,925 | 731,059 | 923,732 | 1,677,770 | 100.0% | 100.0% | 59.7% |
| 6/30/2004 | 444,318 | 804,864 | 972,028 | 1,837,308 | 100.0% | 100.0% | 60.5% |
| 6/30/2005 | 466,259 | 904,292 | 1,043,943 | 2,011,566 | 100.0% | 100.0% | 61.4% |
| 6/30/2006 | 524,014 | 1,020,486 | 1,212,333 | 2,218,638 | 100.0% | 100.0% | 55.6% |
| 6/30/2007 | 580,853 | 1,093,650 | 1,308,310 | 2,481,562 | 100.0% | 100.0% | 61.7% |
| 6/30/2008 | 650,970 | 1,215,036 | 1,412,596 | 2,703,762 | 100.0% | 100.0% | 59.3% |
| 6/30/2009 | 693,962 | 1,305,025 | 1,459,057 | 2,792,182 | 100.0% | 100.0% | 54.4% |

Table 21

Schedule of Retirees and Beneficiaries Added to
and Removed From Valuation Headcount

| Actuarial Valuation Date | Service Retirees | | | Disability Retirees | | | Beneficiaries | | |
|--------------------------------|------------------|---------|----------------|---------------------|---------|----------------|---------------|---------|----------------|
| | Added | Removed | End of Year | Added | Removed | End of Year | Added | Removed | End of Year |
| 6/30/1991 | 712 | 277 | 8,505 | 24 | 13 | 175 | 54 | 4 | 219 |
| 6/30/1992 | 715 | 316 | 8,904 | 28 | 7 | 196 | 46 | 5 | 260 |
| 6/30/1993 | 689 | 336 | 9,257 | 26 | 10 | 215 | 40 | 7 | 293 |
| 6/30/1994 | 658 | 358 | 9,557 | 29 | 9 | 235 | 60 | 9 | 344 |
| 6/30/1995 | 782 | 372 | 9,967 | 33 | 19 | 249 | 54 | 12 | 386 |
| 6/30/1996 | 799 | 390 | 10,376 | 26 | 8 | 267 | 47 | 18 | 415 |
| 6/30/1997 | 823 | 388 | 10,811 | 22 | 13 | 276 | 63 | 18 | 460 |
| 6/30/1998 | 841 | 424 | 11,218 | 29 | 17 | 288 | 59 | 22 | 497 |
| 6/30/1999 | 813 | 431 | 11,600 | 35 | 7 | 316 | 67 | 19 | 545 |
| 6/30/2000 | 945 | 432 | 12,113 | 45 | 14 | 347 | 76 | 20 | 601 |
| 6/30/2001 | 987 | 468 | 12,632 | 53 | 22 | 378 | 76 | 14 | 663 |
| 6/30/2002 | 980 | 471 | 13,141 | 30 | 21 | 387 | 97 | 18 | 742 |
| 6/30/2003 | 979 | 501 | 13,619 | 31 | 13 | 405 | 96 | 25 | 813 |
| 6/30/2004 | 1,081 | 541 | 14,159 | 44 | 18 | 431 | 86 | 44 | 855 |
| 6/30/2005 | 1,116 | 505 | 14,770 | 43 | 26 | 448 | 98 | 29 | 924 |
| 6/30/2006 | 1,080 | 528 | 15,322 | 53 | 23 | 478 | 86 | 50 | 960 |
| 6/30/2007 | 1,250 | 563 | 16,009 | 29 | 18 | 489 | 120 | 39 | 1,041 |
| 6/30/2008 | 1,256 | 569 | 16,696 | 46 | 21 | 514 | 99 | 62 | 1,078 |
| 6/30/2009 | 1,439 | 578 | 17,557 | 45 | 18 | 541 | 113 | 41 | 1,150 |

Table 22

**Schedule of Retirees by Type
(\$ in 000's)**

| Actuarial Valuation Date | Service Retirees | | Disability | | Beneficiaries | |
|-----------------------------------------|-------------------------|-----------------|-------------------|-----------------|----------------------|-----------------|
| | Number | Benefits | Number | Benefits | Number | Benefits |
| 6/30/1994 | 9,557 | 18,534 | 235 | 417 | 344 | 572 |
| 6/30/1995 | 9,967 | 20,842 | 249 | 481 | 383 | 699 |
| 6/30/1996 | 10,376 | 23,785 | 267 | 550 | 415 | 820 |
| 6/30/1997 | 10,811 | 27,250 | 276 | 616 | 460 | 1007 |
| 6/30/1998 | 11,218 | 30,240 | 288 | 672 | 497 | 1,126 |
| 6/30/1999 | 11,600 | 35,395 | 316 | 826 | 545 | 1,384 |
| 6/30/2000 | 12,113 | 41,091 | 347 | 1002 | 601 | 1,653 |
| 6/30/2001 | 12,632 | 50,512 | 378 | 1,232 | 663 | 2,038 |
| 6/30/2002 | 13,141 | 57,697 | 387 | 1,346 | 742 | 2,413 |
| 6/30/2003 | 13,619 | 63,860 | 405 | 1,449 | 813 | 2,752 |
| 6/30/2004 | 14,159 | 70,710 | 431 | 1,558 | 855 | 3,076 |
| 6/30/2005 | 14,770 | 78,435 | 448 | 1,709 | 924 | 3,569 |
| 6/30/2006 | 15,322 | 85,639 | 478 | 1,873 | 960 | 3,736 |
| 6/30/2007 | 16,009 | 95,809 | 489 | 2,011 | 1,041 | 4,277 |
| 6/30/2008 | 16,696 | 105,791 | 514 | 2,177 | 1,078 | 4,582 |
| 6/30/2009 | 17,557 | 130,472 | 541 | 2,406 | 1,150 | 4,998 |

Average New Retiree Statistics

| Actuarial Valuation Date | New Service Retirees | Average New Benefit | % Change From Previous Year |
|-------------------------------------|---------------------------------|--------------------------------|----------------------------------------|
| 6/30/1994 | 571 | 306.20 | 11 |
| 6/30/1995 | 679 | 298.76 | (3) |
| 6/30/1996 | 797 | 330.40 | 11 |
| 6/30/1997 | 823 | 327.16 | (1) |
| 6/30/1998 | 805 | 324.82 | (1) |
| 6/30/1999 | 813 | 366.42 | 13 |
| 6/30/2000 | 945 | 431.89 | 18 |
| 6/30/2001 | 987 | 565.29 | 31 |
| 6/30/2002 | 980 | 660.51 | 17 |
| 6/30/2003 | 979 | 676.19 | 2 |
| 6/30/2004 | 1,081 | 665.97 | (2) |
| 6/30/2005 | 1,116 | 652.87 | (2) |
| 6/30/2006 | 1,080 | 676.06 | 4 |
| 6/30/2007 | 1,250 | 717.59 | 6 |
| 6/30/2008 | 1,256 | 760.85 | 6 |
| 6/30/2009 | 1,439 | 1,008.17 | 33 |

APPENDIX E
ACTUARIAL METHODS AND ASSUMPTIONS

STATEMENT OF FUNDING POLICY

In order to establish long-term, consistent methods in the funding of the System, the Board of Trustees has adopted this statement of its funding policy. The funding of the System shall be carried out in such a way that the burden of paying retirement costs shall be shared equitably by present and succeeding generations of members and taxpayers. To this end, the following principles shall apply:

1. The Board of Trustees shall adopt actuarial assumptions, each of which individually represents a reasonable long-term estimate of anticipated experience under the System, derived from experience studies conducted every fifth year.
2. The actuarial funding method used shall be the Entry Age Normal Method with normal costs calculated as a percentage of payroll.
3. It shall be the general objective to maintain an amortization period of 30 years or less in the funding of the Unfunded Actuarial Accrued Liability. Whenever a change is made in the System's benefit and contribution rate structures, the amortization period for the System after this change should not exceed 30 years initially. The benchmark contribution shown has been adjusted for the 20 year amortization of unfunded liabilities due to changes in benefit provisions as amended in the 2007 legislative session. However, this amendment had no impact on the final contribution rates, which were limited by the annual increase limitation of 0.5% of pay established in the 2003 session of the legislature.
4. If an escalation in future payroll is assumed in determining the amortization payments toward the Unfunded Actuarial Accrued Liability, then the annual rate of such escalation shall not exceed the expected rate of expansion in total System payroll based upon the actuarial assumptions.
5. Assets used in the actuarial valuation shall be valued using adjusted market values averaged over a period of five years.
6. Annual actuarial valuations shall be made of the System's assets and liabilities. The contribution rate shall be established based on the results of these valuations.

ACTUARIAL ASSUMPTIONS
(ADOPTED FOR USE WITH THE JUNE 30, 2006 VALUATION)

Investment Return

It is assumed that investments of the System will return, on average, a yield of 8% per annum compound, net of system expenses (investment and administrative expenses).

Salary and Payroll Increases

Salaries are assumed to increase each year at the rate of 5%. Longevity adjustments are made for those with less than 10 years of service.

| <u>Service</u> | <u>Longevity Adjustment</u> | <u>Total Increase</u> |
|----------------|-----------------------------|-----------------------|
| 0 | 5.00% | 10.00% |
| 1 | 3.25 | 8.25 |
| 2 | 1.75 | 6.75 |
| 3 | 1.05 | 6.05 |
| 4 | 0.90 | 5.90 |
| 5 | 0.75 | 5.75 |
| 6 | 0.60 | 5.60 |
| 7 | 0.45 | 5.45 |
| 8 | 0.30 | 5.30 |
| 9 | 0.15 | 5.15 |
| 10 and Over | 0.00 | 5.00 |

Total covered payroll of the entire membership is assumed to increase 5.0% per year in the future.

Mortality Rates

Mortality Rates for retirees, beneficiaries, and survivors are based on the GAM94 Table with male ages set forward one year and female ages set back two years. Mortality for active members are based on the following percentages of retiree mortality:

Male 70%
Female 60%

Illustrative rates per 1,000 members at various ages are as follows:

Service Retired Members, Beneficiaries and Survivors

| <u>Age</u> | <u>Male</u> | <u>Female</u> |
|------------|-------------|---------------|
| 20 | 0.530 | 0.273 |
| 30 | 0.821 | 0.314 |
| 40 | 1.156 | 0.598 |
| 50 | 2.872 | 1.206 |
| 60 | 8.986 | 3.359 |
| 70 | 25.951 | 11.763 |
| 80 | 68.615 | 31.727 |
| 90 | 167.260 | 93.820 |
| 100 | 333.461 | 237.713 |
| 110 | 496.356 | 444.368 |

Disability Retired Members, Male and Female

| <u>Age</u> | <u>Rate</u> |
|------------|-------------|
| 40 | 24.075 |
| 50 | 26.175 |
| 60 | 31.500 |
| 70 | 44.625 |
| 80 | 76.650 |
| 90 | 173.276 |
| 100 | 507.128 |

Withdrawal Rates

Termination of membership prior to eligibility for retirement from all causes other than death, disability or retirement, whether resulting in a refund or a deferred benefit, is assumed in accordance with the following illustrative rates per 1,000 members:

| <u>Service</u> | <u>Rate</u> |
|----------------|-------------|
| 0 | 300.0 |
| 1 | 220.0 |
| 2 | 150.0 |
| 3 | 120.0 |
| 4 | 100.0 |
| 5 | 81.0 |
| 10 | 48.0 |
| 15 | 33.0 |
| 20 | 18.0 |
| 25 | 0.0 |

Disability Rates

Retirement for disability prior to age 60 is assumed in accordance with the following illustrative rates per 1,000 eligible members:

| <u>Age</u> | <u>Male and Female Rates</u> |
|------------|------------------------------|
| 30 | 0.100 |
| 35 | 0.200 |
| 40 | 0.400 |
| 45 | 1.050 |
| 50 | 1.700 |
| 55 | 2.700 |

Retirement Rates

Retirement rates are only applied to those eligible for retirement. Retirement is assumed in accordance with the following rates per 1,000 eligible members:

| Age | Service | | | | | | |
|------------------|------------------|------|------|------|------|------|------|
| | <25 ² | 25 | 26 | 27 | 28 | 29 | 30+ |
| <50 ¹ | | 50 | 50 | 50 | 50 | 50 | 150 |
| 50 ¹ | | 50 | 50 | 50 | 50 | 50 | 250 |
| 51 ¹ | | 50 | 50 | 50 | 50 | 250 | 150 |
| 52 ¹ | | 50 | 50 | 50 | 250 | 150 | 150 |
| 53 ¹ | | 50 | 50 | 250 | 150 | 150 | 150 |
| 54 ¹ | | 50 | 250 | 150 | 150 | 150 | 150 |
| 55 | 30 | 270 | 170 | 170 | 170 | 170 | 170 |
| 56 | 30 | 170 | 170 | 170 | 170 | 170 | 170 |
| 57 | 30 | 170 | 170 | 170 | 170 | 170 | 170 |
| 58 | 30 | 170 | 170 | 170 | 170 | 170 | 170 |
| 59 | 30 | 170 | 170 | 170 | 170 | 170 | 170 |
| 60 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |
| 61 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 62 | 240 | 240 | 240 | 240 | 240 | 240 | 240 |
| 63 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| 64 | 140 | 140 | 140 | 140 | 140 | 140 | 140 |
| 65 | 260 | 260 | 260 | 260 | 260 | 260 | 260 |
| 66 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| 67 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| 68 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| 69 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| 70 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| 71 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| 72 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| 73 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| 74 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| 75+ | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |

¹ Rates for members with less than 30 years of service and not eligible for the Rule of 80 are applicable from 1999-2013.

² Rates for members who are younger than 60 are for early (age reduced) retirement.

Age-based rates are increased by 10 percent at first eligibility for retirement under the Rule of 80 for participants under age 60.

Interest on Member Accounts

2% per year.

Cost of Living Adjustments

The cost of living adjustment assumed in the valuation is 3.25% per year. The total lifetime COLA cannot exceed 80% of the original benefit. Future COLAs for current benefit recipients reflect actual cumulative adjustments granted at the time of valuation.

Asset Valuation Method

The Actuarial Value of Assets is based on a five-year average of adjusted market value returns. The actuarial value for a year is computed by taking the actuarial value at June 30 of the prior year, subtracting all expenses (including benefit payments), and adding contributions and expected investment return at 8%. The difference between the actual returns at market value for the year and expected returns is determined. Twenty percent (20%) of that difference is added to the actuarial value along with corresponding amounts from each of the prior four years. The Actuarial Value of Assets has been marked to the market value as of June 30, 2003.

Provisions for Expenses

The assumed investment return rate is intended to represent the net rate of return after payment of all investment and administrative expenses.

Beneficiaries

Eighty percent (80%) of males and females are assumed to be married or to have eligible dependent beneficiaries. Beneficiaries are assumed to be of the opposite sex from the member. Female beneficiaries are assumed to be 3 years younger than the member, and male beneficiaries are assumed to be 3 years older than the member.

Joint and Survivor Election

To recognize the subsidy present in the joint and survivor reduction factors calculated without provision for cost-of-living adjustments, the active member costs resulting from all decrements except disability and refunds were loaded by 0.75%.

Terminations

Half of all active members who terminate for reasons other than death, disability or retirement are assumed to take a refund of their member account balance. The other half are expected to elect a termination benefit deferred to first unreduced retirement age. The same approach is used to value vested, inactive members.

If the present value of the deferred benefit is less than the member account balance, the value of the member account balance is valued.

Return of Unused Member Account Balance

Under the single life annuity payment option, any unused balance of contributions and interest in the member account balance at the time of death is paid in a lump sum to a designated beneficiary. This benefit is approximated with a 3-year certain benefit.

Missing/Incomplete Data

Members without a date of birth provided are assumed to be 30 years old. Pensionable pay for valuation purposes is assumed to be the greater of the current year's salary, the previous year's salary and \$5,000. Pensionable pay for active members hired in the current year is assumed to be the greater of annualized pay and \$5,000. Pensionable pay for valuation purposes for inactive members is assumed to be the greater of the two most recent years of salary history provided and \$5,000.

APPENDIX F
SUMMARY OF BENEFIT PROVISIONS OF PEERS

MEMBER CONTRIBUTIONS

Half the total PEERS contribution rate. The current total PEERS contribution rate is 13.0% of pay and may increase 0.5% each year.

NORMAL (UNREDUCED) RETIREMENT

ELIGIBILITY

Attainment of age 60 with at least five years of Creditable Service, or Completion of 30 years of Creditable Service at any age, or Age plus Creditable Service is at least 80.

BENEFIT

1.61% of Final Average Salary for each year of Membership Service. A year of Prior Service is treated as 0.6 year of Membership Service. Any person retiring prior to age 62 under the Rule of 80 or with 30 years of creditable service will receive an additional benefit payable to attainment of age 62. This benefit is equal to 0.8% of Final Average Salary for each year of Membership Service.

COMPENSATION

All regular earnings as an employee of a PEERS-covered employer. Compensation or salary includes, but is not limited to, payments for extra duties, overtime payments and employer-paid medical, dental and vision insurance premiums for the member.

FINAL AVERAGE SALARY

Average monthly salary over the Member's three highest consecutive years of service. Effective August 28, 2007, the maximum increase in the annual compensation used for the final average salary shall not exceed ten percent.

MEMBERSHIP SERVICE

Service while a participating member of PEERS. Service is measured each year in relation to minimum salary for 20 hours per week in the position for that year.

PRIOR SERVICE

Service rendered in a covered position prior to November 1, 1965.

CREDITABLE SERVICE

Membership Service plus any Prior Service.

NORMAL FORM OF BENEFIT

Single Life Annuity

Options available include joint and survivor (50%, 75%, or 100%), term certain (60 or 120 months) and life thereafter, partial lump sum option (PLSO), and accelerated payment plan (APP).

EARLY (AGE REDUCED) RETIREMENT

ELIGIBILITY

Attainment of age 55 and under age 60 with at least five years of creditable service.

BENEFIT

Normal retirement benefit accrued to the date of early retirement, actuarially reduced from age 60.

SPECIAL NORMAL RETIREMENT – UNDER MODIFIED FORMULA

ELIGIBILITY

Retirement on or before July 1, 2013 at an age under 55 and with at least 25 years of creditable service but not eligible for the Rule of 80.

BENEFIT

Based on a percentage of final average salary per year of creditable service. Percentages are as follows:

| <u>Years of Service</u> | <u>Benefit Percentage</u> |
|-------------------------|---------------------------|
| 25-25.9 | 1.51% |
| 26-26.9 | 1.53 |
| 27-27.9 | 1.55 |
| 28-28.9 | 1.57 |
| 29-29.9 | 1.59 |

COLA ADJUSTMENTS

In any year in which the Board determines that the CPI has increased, the Board may provide for annual increases in the current benefit of up to 5%. For any member such adjustments commence in the fourth January after commencement of benefits. The total of such increases may not exceed 80% of the original benefit for any member.

DISABILITY BENEFITS

DEFINITION OF DISABILITY

Incapacity for performance of gainful employment after completion of five years of creditable service and before age 60.

BENEFIT

Lifetime benefit equal to 90% of accrued normal retirement benefit. Form of Benefit.

FORM OF BENEFIT

If eligible, surviving spouse may elect a survivor benefit. COLA adjustments similar to those provided retirees are provided on this benefit.

VESTING

ELIGIBILITY

Completion of five years of creditable service.

BENEFIT

Accrued normal retirement benefit payable at earliest retirement age based on service at date of termination. Benefit is based on formula in effect at commencement of benefit.

DEATH / SURVIVOR BENEFITS

REFUND

Refund of accumulated member contributions with interest

SURVIVOR BENEFITS

If the member has at least 5 years of creditable service at date of death, the spouse may receive a survivor benefit based on 100% J&S equivalent of the benefit accrued to date of death. The benefit may commence:

1. immediately if member is eligible to retire at date of death, or
2. at a future retirement date of the deceased member.

The benefit may be reduced for early commencement if the deceased member would not have been eligible for unreduced retirement at that date based on service to date of death.

COLA adjustments similar to those provided retirees are provided on these benefits.