## ACTUARIAL



## $199 \square$

The $100,000^{\text {th }}$ annuitant was added to PSERS' monthly pension payroll.

# buckconsultants <br> an ACS company <br> c s 

January 18, 2008

The Retirement Board
Public School Employees'
Retirement System of Pennsylvania
P.O. Box 125

Harrisburg, Pennsylvania 17108
Ladies and Gentlemen:
This report presents the results of the annual actuarial valuation of the Public School Employees' Retirement System of Pennsylvania as of June 30, 2007.

The valuation takes into account all of the promised benefits to which members are entitled as of June 30,2007 , including pension and survivor benefits; and as required by the Retirement Code is the basis for the contribution rate for fiscal year 2008/2009.

The valuation was based on the actuarial assumptions and methods as adopted by the Board of Trustees, including a valuation interest rate of $8 \frac{1}{2} \%$ per annum compounded annually. The actuarial assumptions and methods for funding are unchanged from the prior valuation.

The actuarial assumptions and methods for financial reporting meet the parameters set forth in Governmental Accounting Standards Board (GASB) Statements No. 25 and 43, and are unchanged from the prior valuation. The actuarial assumptions and methods for GASB 25 disclosure are the same as for pension funding, except that in fiscal years in which the amortization requirements of the PSERS code result in an equivalent single amortization period that is longer than 30 years, the GASB 25 amortization payment will be determined based on 30 -year level dollar funding. The Health Insurance funding provisions of the PSERS code differ from the GASB 43 disclosure retirements. For funding purposes the actuarial liability equals the assets in the health insurance account, and a contribution is determined that will assure the solvency of the account through the third fiscal year following the valuation date. For purposes of GASB 43 disclosure the Health Insurance actuarial liability and normal cost requirements have been determined under the entry age actuarial cost method, with 30-year level dollar funding. (The entry age actuarial cost method meets the GASB 43 parameters for determining actuarial liability and normal cost, and is the cost method specified by the PSERS code for the PSERS pension plan.)

## Assets and Membership Data

The Retirement System reported the individual data for members of the System as of the valuation date to the actuary. While we did not verify the data at their source, we did perform tests for internal consistency and reasonableness. The amount of assets in the trust fund taken into account in the valuation was based on statements prepared for us by the Retirement System.

## Funding Adequacy

The valuation results determine that the employer contribution rate for fiscal year 2008/2009 is $4.76 \%$. As of June 30, 2007, the total funded ratio of the plan (for Pensions and Health Insurance combined) is $85.8 \%$, based on the accrued liability and actuarial value of assets calculated under the funding requirements of Section 8328 of the Retirement Code.

## Financial Results and Membership Data

Detailed summaries of the financial results of the valuation and membership data used in preparing the valuation are shown in the valuation report. The actuary prepared supporting schedules included in the Actuarial and Statistical Section of the PSERS Comprehensive Annual Financial Report (CAFR), and also prepared the trend data schedules included in the Financial Section of the CAFR.

Qualified actuaries completed the valuation in accordance with accepted actuarial procedures as prescribed by the Actuarial Standards Board. The qualified actuaries are members of the American Academy of Actuaries and are experienced in performing actuarial valuations of public employee retirement systems. To the best of our knowledge, this report is complete and accurate and has been prepared in accordance with generally accepted actuarial principles and practice.

Respectfully submitted,


Janet Cranna, FSA
Principal, Consulting Actuary

S. Lynn Hill

Director, Retirement Consulting


Dana Spangher, FSA
Director, Consulting Actuary
JC/SLH/DS:pl

## Executive Summary

This report presents the actuarial valuation as of June 30, 2007 for the Public School Employees' Retirement System of Pennsylvania.

The principal valuation results include:

- The employer contribution rate for fiscal year 2008/2009, which is $4.76 \%$.
- The total funded ratio of the plan determined as of June 30, 2007 under the funding requirements of Section 8328 of the Retirement Code, which is $85.8 \%$ based on the accrued liability and the actuarial value of assets for Pensions and Health Insurance as of that date.
- The determination of the actuarial gain or loss as of June 30, 2007, which is a gain of $\$ 3.9$ billion.
- Annual disclosures as of June 30, 2007 as required by Statements No. 25 and 43 of the Governmental Accounting Standards Board.

The valuation was completed based upon membership and financial data submitted by the Retirement System. Detailed summaries of the financial results of the valuation and membership data used in preparing the valuation are included in the valuation report. The actuary prepared supporting schedules included in the Actuarial and Statistical Section of the PSERS Comprehensive Annual Financial Report (CAFR), and also prepared the trend data schedules included in the Financial Section of the CAFR.

## Changes Since Last Year

## Legislative and Administrative Changes

There were no legislative or administrative changes since the prior valuation.
The benefit provisions and contribution provisions are summarized in Table 13.

## Actuarial Assumptions and Methods

There were no significant changes to the actuarial assumptions or methods since the prior valuation.
The actuarial assumptions and methods are outlined in Table 12.

## Contribution Rates

The results of the valuation as of June 30, 2007 determine the employer contribution rate for fiscal year 2008/2009. The calculated employer contribution rate for the 2008/2009 fiscal year is $4.76 \%$, and the Board of Trustees certified this rate at their December 2007 meeting.

The average contribution rate payable by the members is $7.29 \%$. Effective January 1, 2002, the employee contribution rate for members who elected to have prior school service and intervening military service converted to Class T-D service increased by $1.25 \%$. However, anyone who enrolls (or re-enrolls) in PSERS on or after July 1, 2001 is automatically a member of Class T-D with regard to all subsequent school service and subsequent intervening military service, with a member rate equal to $7.5 \%$. The average member contribution rate of $7.29 \%$ is a pay-weighted average of member rates that vary based on date of hire and based on Class T-D membership.

## Reasons for Change in the Rate Calculated by the Actuary

The employer contribution rate calculated by the actuary decreased from $7.13 \%$ for fiscal year 2007/ 2008 to $4.76 \%$ for fiscal year 2008/2009. The decrease of $2.37 \%$ is due to the following sources:

- Change due to change in employer normal rate
0.00
- Decrease due to payroll growth
- Decrease due to actuarial gain on assets
- Decrease due to actuarial gain on liabilities
- Increase due to change in health insurance contribution rate 0.07
- Increase due to effect of $4 \%$ floor on FY 2007 pension contribution 0.69
- Total


## Summary of Principal Results

Summarized below are the principal financial results for the Public School Employees' Retirement System based upon the actuarial valuation as of June 30, 2007. Comparable results from the June 30, 2006 valuation are also shown.

| Item | June 30, 2007 | June 30, 2006 |
| :---: | :---: | :---: |
| Demographics |  |  |
| Active Members |  |  |
| - Number | 264,023 | 263,350 |
| - Average Annual Pay | \$ 43,217 | \$ 43,361 |
| Annuitants |  |  |
| - Number | 168,026 | 161,813 |
| - Average Annual Benefit Payment | \$ 20,970 | \$ 20,236 |
| Contribution Rates (as a Percentage of Payroll) | (Fiscal Year 200 | (Fiscal Year 2007/2008) |
| Employer Contribution Rate: |  |  |
| - Total Pension Contribution Rate | 4.00\% | 6.44\% |
| - Health Insurance Contribution Rate | 0.76 | 0.69 |
| - Total Contribution Rate Calculated by Actuary | 4.76\% | 7.13\% |
| - Total Contribution Rate Certified by Board | 4.76\% | 7.13\% |
| Member Average Contribution Rate | 7.29 | 7.25 |
| - Total Rate | 12.05\% | 14.38\% |
| Actuarial Funded Status* |  |  |
| - Accrued Liability | \$ 66,593.1 Mil | \$ 64,720.1 Mil |
| - Actuarial Value of Assets | 57,155.1 | 52,557.5 |
| - Unfunded Accrued Liability | \$ 9,438.0 | \$ 12,162.6 |
| - Funded Ratio <br> * Pensions and Health Insurance combined | 85.8 \% | 81.2 \% |

Five-Year History of Principal Financial Results
Five-Year History of Contribution Rates
(As a \% of Payroll)

|  |  | Employer Contributions |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Fiscal <br> Year | Member <br> Contributions | Normal <br> Cost | Unfunded <br> Accrued <br> Liability | Health <br> Care | Total * |
| 2008/2009 | $7.29 \%$ | $6.68 \%$ | $(3.37) \%$ | $0.76 \%$ | $4.76 \%$ |
| 2007/2008 | 7.25 | 6.68 | $(0.24)$ | 0.69 | 7.13 |
| 2006/2007 | 7.21 | 6.62 | $(0.95)$ | 0.74 | 6.46 |
| 2005/2006 | 7.16 | 7.61 | $(4.28)$ | 0.69 | 4.69 |
| 2004/2005 | 7.12 | 7.48 | $(7.10)$ | 0.23 | 4.23 |

* Certified by the Board.

The following chart shows a five-year history of employer contribution rates:


## Funded Ratio

The financing objective of the System is to:

- Fully fund all current costs based on the normal contribution rate determined under the funding method; and
- Liquidate the unfunded accrued liability based on the amortization schedules as required by the retirement code, i.e., a schedule of 10 or 30 years for each change in the unfunded accrued liability according to Act 40.

The total contribution rate of $4.76 \%$ of payroll payable by employers, when taken together with the contributions payable by the members, current assets, and expected future asset returns, is sufficient to achieve the financing objective.

The System's total funded ratio on the funding basis is measured by comparing the actuarial value of assets (based on a 5 -year moving average market value) with the accrued liability. The accrued liability for pensions is the present value of benefits accumulated to date under the System's funding method and reflects future pay increases for active employees. The accrued liability for Health Insurance equals the assets in the Health Insurance account.

On this basis, the System's total funded ratio (for Pensions and Health Insurance combined) is $85.8 \%$ as of June 30, 2007. This funded ratio is based on an actuarial value of assets of $\$ 57.2$ billion and an accrued liability of $\$ 66.6$ billion. The funded ratio for Pensions alone is also $85.8 \%$ as of June 30, 2007, based on an actuarial value of assets of $\$ 57.1$ billion, and an accrued liability of $\$ 66.5$ billion.

## Reasons for Change in the Total Funded Ratio

The total funded ratio increased from 81.2\% as of June 30, 2006 to $85.8 \%$ as of June 30, 2007. This increase is primarily due to experience gains on the assets and liabilities that occurred during the year. These gains were partially offset by contributions that were less than normal cost plus one year's interest on the June 30, 2006 unfunded accrued liability.

Five-Year History of
Total Funded Ratio*
(Dollar Amounts in Millions)

| Valuation <br> as of <br> June $\mathbf{3 0}$ | Accrued <br> Liability | Actuarial <br> Value of <br> Assets | Unfunded <br> Accrued <br> Liability | Funded <br> Ratio |
| :---: | :---: | :---: | :---: | :---: |
| $\mathbf{2 0 0 7}$ | $\$ 66,593.1$ | $\$ 57,155.1$ | $\$ 9,438.0$ | $85.8 \%$ |
| $\mathbf{2 0 0 6}$ | $64,720.1$ | $52,557.5$ | $12,162.6$ | 81.2 |
| $\mathbf{2 0 0 5}$ | $61,226.6$ | $51,219.3$ | $10,007.3$ | 83.7 |
| $\mathbf{2 0 0 4}$ | $57,123.0$ | $52,094.5$ | $5,028.5$ | 91.2 |
| $\mathbf{2 0 0 3}$ | $54,443.8$ | $52,900.5$ | $1,543.3$ | 97.2 |

* For Pensions and Health Insurance (under the funding provisions of the PSERS code)

The following chart shows a five-year history of the accrued liability and the actuarial value of assets:
Five-Year History of Accrued Liability and Actuarial Value of Assets
(Dollar Amounts in Billions)


The following chart shows a ten-year history of the total funded ratio for Pensions and Health Insurance:

$$
\begin{aligned}
& \text { Ten-Year History of Funded Ratio } \\
& \text { (1998-2007) }
\end{aligned}
$$



## GASB No. 25 Disclosure

Statement No. 25 of the Governmental Accounting Standards Board (GASB) established reporting standards for the annual financial reports of defined benefit pension plans. The System complied with Statement No. 25 beginning with the June 30, 1996 valuation. The statement requires disclosure of the "schedule of funding progress" and the "schedule of employer contributions" in the System's financial statements.

The schedule of funding progress shows historical trend information about the System's actuarial value of pension assets, the actuarial accrued liability for pensions and the unfunded actuarial accrued liability for pensions. The actuarial funded ratio for pensions is measured by comparing the actuarial value of pension assets (based on a 5 -year moving average market value) with the accrued liability for pensions. The accrued liability is the present value of pension benefits accumulated to date under the System's funding method and reflects future pay increases for active employees. On this basis, the System's funded ratio for pensions is $85.8 \%$ as of June 30, 2007. This funded ratio is based on an actuarial value of pension assets of $\$ 57.1$ billion and an accrued liability for pensions of $\$ 66.5$ billion. See Table 7 for more detail.

The schedule of employer contributions shows historical trend information about the GASB Annual Required Contribution (ARC) for pensions, and the percentage of the ARC contributed to the System. The pension contribution requirements of the PSERS code differ from the GASB disclosure requirements. As a result, there may be different determinations of contribution requirements for GASB accounting purposes and for State funding purposes. For GASB accounting purposes, the ARC equals the employer normal cost for pensions plus an amount that will amortize the unfunded actuarial accrued liability for pensions over a period no longer than 30 years. (For years ending on or before June 30, 2006, the maximum amortization period for the GASB ARC was 40 years.) Although the employer normal cost for GASB accounting equals the PSERS normal cost for funding, section 8328 of the PSERS code specifies different amortization periods for different portions of the unfunded accrued liability - each change in the unfunded accrued liability is amortized over either a 10 or 30year period - as well as a 4\% floor on the employer pension rate. Therefore, the resulting equivalent single amortization period may be any number of years. Table 8a presents the GASB 25 schedule of employer contributions.

## GASB No. 43 Disclosure

GASB Statement No. 43 established reporting standards for the annual financial reports of postemployment benefit plans other than pension plans, and these reporting requirements apply to the PSERS health insurance premium assistance plan. The System complied with Statement No. 43 beginning with the June 30, 2006 valuation. The statement requires disclosure of the "schedule of funding progress" and the "schedule of employer contributions" in the System's financial statements.

The health insurance liability and funding provisions of the PSERS code differ from the GASB disclosure requirements. As a result, there are different determinations of actuarial liability and contribution requirements for GASB accounting purposes and for State funding purposes. For purposes of funding, the actuarial liability equals the assets in the health insurance account, and the contribution required is the amount necessary to establish reserves sufficient to provide premium assistance payments to all participating eligible annuitants during the fiscal year that immediately follows the year the employer contribution is made. For GASB accounting purposes, the actuarial liability has been determined under the entry age actuarial cost method, and the Annual Required Contribution (ARC) is equal to the entry age normal cost for health insurance plus an amount that will amortize the entry age unfunded actuarial liability for health insurance over a period of 30 years. (The entry age actuarial cost method was selected for this calculation because it meets the GASB parameters for determining actuarial liability and normal cost, and is the cost method specified by the PSERS code for the PSERS pension plan.)

The GASB 43 schedule of funding progress, presented in Table 7, shows that as of June 30, 2007, the health insurance assets were $\$ 97,292,000$, measured on a market value basis, while the GASB 43 health insurance liabilities were $\$ 1,058,092,000$, resulting in a funded ratio of $9.2 \%$.

The GASB 43 schedule of employer contributions first applies to fiscal year 2006/2007, and is presented in Table 8b.

## Rate of Return

The investment return of the trust fund (i.e. total return including both realized and unrealized gains and losses) for fiscal years 2002/2003 through 2006/2007 is shown in the table below. The return based on the actuarial value of assets used for determining annual contribution rates is also shown.

The rate of return on market value reflects the investment earnings on the market value of assets from the beginning of the fiscal year to the end of the fiscal year. The actuarial assets are the assets recognized for valuation purposes. Actuarial assets are based on a smoothed market value that spreads the difference between the actual and expected return over a period of five years. The rate of return on the actuarial value of assets is a measure of the increase in the actuarial value of assets from the beginning of the fiscal year to the end of the fiscal year.

| Fiscal <br> Year | Rate of Return Based on Market Value * |  |
| :---: | :---: | :---: |
|  |  |  |
| 2006/2007 | $22.9 \%$ | $13.9 \%$ |
| 2005/2006 | 15.3 | 7.9 |
| 2004/2005 | 12.9 | 3.2 |
| 2003/2004 | 19.7 | 2.6 |
| 2002/2003 | 2.7 | 1.4 |

[^0]
## Table 1

## Summary of Results of Actuarial Valuation <br> As of June 30, 2007 <br> (Dollar Amounts in Thousands)



## Table 2

## Summary of Sources of Employer Contribution Rate As of June 30, 2007 <br> (Dollar Amounts in Thousands)



[^1]
## Table 3

## Determination of Health Insurance Contribution Rate For Fiscal Year 2008/2009 <br> (Dollar Amounts in Thousands)



Notes:

1. Current estimates of fiscal 2007/2008 membership payroll and administrative expenses, and of fiscal 2008/2009 administrative expenses, were provided by PSERS' staff.
2. $66 \%$ of eligible annuitants are assumed to elect coverage.
3. Premium Assistance payments equal $\$ 100$ per month per eligible annuitant.

## Table 4

## Summary of Market Value of Plan Assets

As of June 30, 2007
(Dollar Amounts in Thousands)

## Market Value

1. Market Value of Assets as of June 30, 2006
2. Contributions During Fiscal Year 2006/2007
3. Disbursements During Fiscal Year 2006/2007
4. Investment Return During Fiscal Year 2006/2007
a) Net Investment Return
b) Administrative Expenses
c) Investment Return After Expenses (a) - (b)
5. Market Value of Assets as of June 30, 2007
$(1)+(2)-(3)+(4 \mathrm{c})$
6. Rate of Return (per Wilshire)

## Asset Allocation by Account

1. Members' Savings Account
2. Annuity Reserve Account
3. State Accumulation Account
4. Health Insurance Account
5. Total $(1)+(2)+(3)+(4)$
\$ 57,328,444
1,601,630
4,150,656
\$ 12,696,900 38,029
\$ 12,658,871
\$ 67,438,289 22.93\%
\$ 10,183,433
31,603,788
25,553,776
97,292
\$ 67,438,289

## Table 5 <br> Derivation of Actuarial Value of Assets <br> As of June 30, 2007 <br> (Dollar Amounts in Thousands)



* The actuarial rate of return is the investment return based on the change in the actuarial value of the assets from the June 30, 2006 valuation to the June 30, 2007 valuation.


## Table 6

## Analysis of Change in Unfunded Accrued Liability As of June 30, 2007 <br> (Dollar Amounts in Thousands)



## Table 7

## Schedule of Funding Progress For Pensions *

 GASB Statement No. 25 Disclosure(Dollar Amounts in Thousands)

| Valuation as of June 30 | Actuarial Value of Assets | Actuarial Accrued Liability | Unfunded Actuarial Accrued Liability | Funded Ratio | Covered Payroll | Unfunded Accrued Liability as a Percentage of Covered Payroll |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2007 | \$ 57,057,838 | \$ 66,495,870 | \$ 9,438,032 | 85.8 \% | \$ 11,410,257 | 82.7 \% |
| 2006 | 52,464,726 | 64,627,361 | 12,162,635 | 81.2 | 11,419,049 | 106.5 |
| 2005 | 51,122,156 | 61,129,444 | 10,007,288 | 83.6 | 10,527,668 | 95.1 |
| 2004 | 51,949,622 | 56,978,143 | 5,028,521 | 91.2 | 10,030,705 | 50.1 |
| 2003 | 52,770,018 | 54,313,328 | 1,543,310 | 97.2 | 9,652,881 | 16.0 |
| 2002 | 54,193,064 | 51,693,207 | $(2,499,857)$ | 104.8 | 9,378,944 | (26.7) |

[^2]
## Schedule of Funding Progress For Postemployment Benefits Other Than Pensions * GASB Statement No. 43 Disclosure <br> (Dollar Amounts in Thousands)

| Valuation <br> as of <br> June 30 | Actuarial <br> Value of <br> Assets | Actuarial <br> Accrued <br> Liability | Unfunded <br> Actuarial <br> Accrued <br> Liability | Funded <br> Ratio | Unfunded <br> Covered <br> Payroll | Liability as a <br> Percentage of <br> Covered Payroll <br> 2007 <br> $\$ 97,292$ <br> $\$ 1,058,092$ <br> $\$ 960,800$ <br> 2006 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 92,777 | $1,056,154$ | $9.2 \%$ | $\$ 11,410,257$ | $8.4 \%$ |  |  |

[^3]
## Table 8a

## Schedule of Employer Contributions for Pensions

 GASB Statement No. 25 Disclosure(Dollar Amounts in Thousands)

| Fiscal <br> Year <br> Ended <br> June 30 | Annual <br> Required <br> Contribution | Actual <br> Employer <br> Contribution | Percentage <br> Contributed |
| :---: | :---: | :---: | :---: |
| 2007 | $\$ 1,708,821$ | $\$ 659,545$ | $39 \%$ |
| 2006 | $1,328,373$ | 456,878 | 34 |
| 2005 | 945,107 | 431,556 | 46 |
| 2004 | 321,091 | 321,091 | 100 |
| 2003 | 20,831 | 20,831 | 100 |
| 2002 | 539 | 539 | 100 |

The Annual Required Contribution (ARC) presented above was determined as part of the actuarial valuation as of two years prior to the dates indicated (i.e. the ARC for the fiscal year ended June 30, 2007 was determined by the valuation completed as of June 30, 2005).

Additional information as of the latest actuarial valuation follows:

Valuation Date:
Actuarial Cost Method:
Amortization Method:
Remaining Amortization Period:
Asset Valuation Method:

6/30/2007
Entry Age
Level dollar open
30 years
5-year smoothed market

Actuarial Assumptions:

- Investment Rate of Return * 8.50\%
- Projected Salaried Increases * 6.00\%
* Includes Inflation at: 3.25\%


## Table 8b

## Schedule of Employer Contributions for Postemployment Benefits Other than Pensions GASB Statement No. 43 Disclosure <br> (Dollar Amounts in Thousands)

| Fiscal <br> Year <br> Ended <br> June 30 | Annual <br> Required <br> Contribution | Actual <br> Employer <br> Contribution | Percentage <br> Contributed |
| :---: | :---: | :---: | :---: |
| 2007 | $\$ 94,970$ | $\$ 86,763$ | $91 \%$ |

The Annual Required Contribution (ARC) presented above was determined as part of the actuarial valuation as of one year prior to the dates indicated (i.e., the ARC for the fiscal year ended June 30, 2007 was determined by the valuation completed as of June 30, 2006).

Additional information as of the latest actuarial valuation follows:

Valuation Date:
Actuarial Cost Method:
Amortization Method:
Remaining Amortization Period:
Asset Valuation Method:

Actuarial Assumptions:

- Investment Rate of Return *
8.50\%
- Projected Salaried Increases *
6.00\%
* Includes Inflation at:


## Table 9

Solvency Test
Comparative Summary of Accrued Liability and Actuarial Value of Assets*
(Dollar Amounts in Thousands)

| Valuation |  |  |  |  |  |  |  |
| :---: | ---: | :---: | :---: | :---: | :---: | :---: | :---: |
| as of |  |  |  |  |  |  |  |
| June 30 | (1) <br> Active <br> Member <br> Contributions | (2) <br> Retirees <br> and <br> Beneficiaries | (3) <br> Active <br> Member <br> Employer <br> Financed | Actuarial <br> Value of <br> Assets |  | Portion of Accrued <br> Liability Covered by <br> Valuation Assets <br> (1) |  |
| 2007 | $\$ 10,183,433$ | $\$ 31,701,080$ | $\$ 24,708,649$ | $\$ 57,155,130$ | $100 \%$ | $100 \%$ | $62 \%$ |
| 2006 | $9,571,668$ | $29,209,941$ | $25,938,529$ | $52,557,503$ | 100 | 100 | 53 |
| 2005 | $9,116,347$ | $27,051,245$ | $25,058,989$ | $51,219,293$ | 100 | 100 | 60 |
| 2004 | $8,755,109$ | $24,482,234$ | $23,885,657$ | $52,094,479$ | 100 | 100 | 79 |
| 2003 | $8,282,753$ | $22,094,109$ | $24,066,913$ | $52,900,465$ | 100 | 100 | 94 |
| 2002 | $7,780,370$ | $19,978,567$ | $24,037,574$ | $54,296,368$ | 100 | 100 | 100 |

[^4]
## Table 10 <br> History and Projection of Contribution Rates and Funded Ratios ${ }^{1}$

|  |  | Contribution Rates ${ }^{2}$ |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Fiscal Year | Employer Payroll | Member | Employer Normal Cost Rate | Unfunded Liability Rate | Preliminary Employer Pension Rate | Final Employer Pension | Health Insurance Rate | Total Employer Rate | Funded Ratio |
| 1999/2000 | \$ 8,939,598 | 5.72\% | 6.40\% | (2.04)\% | 4.36\% | 4.36\% | 0.25\% | 4.61\% | 123.8\% |
| 2000/2001 | 9,414,884 | 5.77 | 6.29 | (4.65) | 1.64 | 1.64 | 0.30 | 1.94 | 114.4 |
| 2001/2002 ${ }^{3}$ | 9,378,944 | 6.43 | 5.63 | (6.05) | (0.42) | 0.00 | 1.09 | 1.09 | 104.8 |
| 2002/2003 ${ }^{4}$ | 9,652,881 | 7.10 | 7.20 | (10.03) | 1.00 | 0.18 | 0.97 | 1.15 | 97.2 |
| 2003/2004 | 10,030,705 | 7.08 | 7.25 | (4.27) | 2.98 | 2.98 | 0.79 | 3.77 | 91.2 |
| 2004/2005 ${ }^{5}$ | 11,062,589 | 7.12 | 7.48 | (7.10) | 0.38 | 4.00 | 0.23 | 4.23 | 83.7 |
| 2005/2006 | 11,505,093 | 7.16 | 7.61 | (4.28) | 3.33 | 4.00 | 0.69 | 4.69 | 81.2 |
| 2006/2007 ${ }^{6}$ | 11,821,951 | 7.21 | 6.62 | (0.95) | 5.67 | 5.72 | 0.74 | 6.46 | 85.8 |
| 2007/2008 | 12,881,244 | 7.25 | 6.68 | (0.24) | 6.44 | 6.44 | 0.69 | 7.13 | 90.5 |
| 2008/2009 | 12,500,000 | 7.29 | 6.68 | (3.37) | 3.31 | 4.00 | 0.76 | 4.76 | 93.8 |
| 2009/2010 | 12,866,029 | 7.31 | 6.64 | (6.15) | 0.49 | 4.00 | 0.75 | 4.75 | 96.8 |
| 2010/2011 | 13,226,878 | 7.33 | 6.62 | (8.37) | (1.75) | 4.00 | 0.74 | 4.74 | 99.0 |
| 2011/2012 | 13,603,456 | 7.35 | 6.59 | (10.55) | (3.96) | 4.00 | 0.74 | 4.74 | 99.1 |
| 2012/2013 | 14,001,264 | 7.37 | 6.57 | 3.93 | 10.50 | 10.50 | 0.73 | 11.23 | 100.1 |
| 2013/2014 | 14,420,497 | 7.39 | 6.54 | 2.18 | 8.72 | 8.72 | 0.72 | 9.44 | 100.6 |
| 2014/2015 | 14,859,650 | 7.41 | 6.52 | 1.01 | 7.53 | 7.53 | 0.72 | 8.25 | 100.9 |
| 2015/2016 | 15,333,694 | 7.42 | 6.50 | 0.88 | 7.38 | 7.38 | 0.70 | 8.08 | 101.1 |
| 2016/2017 | 15,848,584 | 7.44 | 6.48 | 0.80 | 7.28 | 7.28 | 0.68 | 7.96 | 101.3 |
| 2017/2018 | 16,409,583 | 7.45 | 6.46 | 0.75 | 7.21 | 7.21 | 0.67 | 7.88 | 101.5 |
| 2018/2019 | 17,015,045 | 7.46 | 6.44 | 0.72 | 7.16 | 7.16 | 0.64 | 7.80 | 101.7 |

1. The projection of contribution rates is based on the assumption that there are no changes in demographic or economic assumptions, no changes in benefit provisions, and no actuarial gains or losses other than gains or losses on the actuarial value of assets that result from recognizing currently deferred gains or losses on the market value of assets.
2. In general, the Preliminary Employer Pension Rate equals the sum of the rates for the Employer Normal Cost and the Unfunded Liability; the Final Employer Pension Rate is the greater of the Preliminary Pension Rate and any Pension Rate Floor stated in the PSERS Code (the Code). The Total Employer Rate is the sum of the Final Employer Pension Rate and the Employer Health Insurance Rate.
3. For fiscal year ending on or before June 30, 2002, there was no floor specified in the Code, but the Final Employer Pension Rate could not be less than $0 \%$, since money can only be removed from the trust for purposes allowed by the Code.
4. Act 2002-38 amended the Code to place a permanent 1\% floor on the Employer Pension Rate, but also provided that the Total Employer Rate for the year ending June 30, 2003 could not exceed $1.15 \%$, resulting in a $0.18 \%$ Final Employer Pension Rate (the Total Employer Rate of $1.15 \%$ minus the $0.97 \%$ Employer Health Insurance Rate).
5. Act 2003-40 amended the Code to increase the Employer Pension Rate Floor from $1 \%$ to 4\%.
6. Revised actuarial assumptions based on a five-year experience review ending June 30, 2005 were used to determine the contributions for the fiscal year ending June 30, 2007. Since the benefit changes under Act 2001-9 had not been in effect throughout the entire period covered by the study the Board decided, at its December 2005 meeting, to delay making any changes to the retirement rate assumptions until further data became available. The 5.72\% Final Employer Pension Rate equals the 6.46\% Total Employer Rate certified by the Board at that meeting, minus the $0.74 \%$ Employer Health Insurance Rate. The $5.67 \%$ Preliminary Employer Pension Rate equals the sum of the Employer Normal Cost and Unfunded Liability rates. The Normal Cost and Unfunded Liability rates were calculated by the actuary in January 2006, based on the package of assumptions adopted at the December 2005 meeting.

## Table 11

History and Projection of Annuitants, Beneficiaries, Survivor Annuitants and Active Members

| Valuation as of June 30 | New Annuitants During the Year | Annuitant Deaths During the Year | Annuitants at End of Year | Beneficiaries and Survivor Annuitants at End of Year | Total Annuitants, Beneficiaries and Survivor Annuitants | Active Members |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1998 |  |  | 120,665 | 6,149 | 126,814 | 220,703 |
| 1999 |  |  | 126,448 | 6,421 | 132,869 | 223,495 |
| 2000 |  |  | 127,404 | 6,654 | 134,058 | 234,210 |
| 2001 |  |  | 125,880 | 6,836 | 132,716 | 243,311 |
| 2002 |  |  | 134,300 | 7,114 | 141,414 | 242,616 |
| 2003 |  |  | 138,383 | 7,310 | 145,693 | 246,700 |
| 2004 |  |  | 143,997 | 7,555 | 151,552 | 247,901 |
| 2005 |  |  | 148,727 | 7,792 | 156,519 | 255,465 |
| 2006 |  |  | 153,757 | 8,056 | 161,813 | 263,350 |
| 2007 |  |  | 159,760 | 8,266 | 168,026 | 264,023 |
| 2008 | 15,018 | 4,351 | 170,427 | 8,735 | 179,162 | 264,023 |
| 2009 | 11,839 | 4,522 | 177,744 | 9,173 | 186,917 | 264,023 |
| 2010 | 12,188 | 4,704 | 185,228 | 9,574 | 194,802 | 264,023 |
| 2011 | 12,199 | 4,903 | 192,524 | 9,953 | 202,477 | 264,023 |
| 2012 | 12,170 | 5,088 | 199,606 | 10,307 | 209,913 | 264,023 |
| 2013 | 11,802 | 5,264 | 206,144 | 10,643 | 216,787 | 264,023 |
| 2014 | 11,671 | 5,458 | 212,357 | 10,971 | 223,328 | 264,023 |
| 2015 | 11,583 | 5,645 | 218,295 | 11,298 | 229,593 | 264,023 |
| 2016 | 11,405 | 5,822 | 223,878 | 11,618 | 235,496 | 264,023 |
| 2017 | 11,280 | 6,011 | 229,147 | 11,938 | 241,085 | 264,023 |

* The number for the first year of the projection reflects the assumption that all Active members age 74 and above, and that all vested members who have reached superannuation age retire immediately.


## Table 12

## Description of Actuarial Assumptions and Methods

## ASSUMPTIONS

Interest Rate: 8.5\% per annum, compounded annually (adopted as of June 30, 1990). The components are $3.25 \%$ for inflation and $5.25 \%$ for the real rate of return (both adopted as of June 30, 2005). Actuarial equivalent benefits are determined based on 4\% (since 1960).

Separation from Service: Illustrative rates of assumed separation from service are shown in the following table. (Rates of non-vested withdrawal, of death, and of disability were adopted as of June 30, 2005; other rates were adopted as of June 30, 2000):

| Age | Annual Rate of: |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Vested W | ithdrawal* |  |  |  |  |
|  | Non-Vested Withdrawal | Less than 10 Years of Service | 10 or More Years of Service | Death | Disability | Early Retirement** | Superannuation Retirement |
| Males |  |  |  |  |  |  |  |
| 25 | 12.40 \% | 5.50 \% | 1.40 \% | . 042 \% | . 024 \% |  |  |
| 30 | 10.00 | 3.00 | 1.40 | . 057 | . 024 |  |  |
| 35 | 11.00 | 3.00 | 1.10 | . 062 | . 100 |  |  |
| 40 | 11.00 | 3.00 | . 80 | . 072 | . 180 |  |  |
| 45 | 11.00 | 3.00 | . 50 | . 100 | . 180 |  |  |
| 50 | 11.00 | 3.00 | 1.78 | . 152 | . 280 |  | 24.00 \% |
| 55 | 10.50 | 3.00 | 3.50 | . 252 | . 430 | 10.00 \% | 24.00 |
| 60 | 10.00 | 2.40 | 4.50 | . 467 | . 580 | 10.00 | 28.00 |
| 65 |  |  |  | . 870 | . 100 |  | 20.00 |
| 69 |  |  |  | 1.335 | . 100 |  | 20.00 |
| Females |  |  |  |  |  |  |  |
| 25 | 14.10 \% | 9.50 \% | 4.00 \% | . 019 \% | . 040 \% |  |  |
| 30 | 14.10 | 7.50 | 4.00 | . 023 | . 040 |  |  |
| 35 | 14.10 | 5.50 | 2.00 | . 031 | . 080 |  |  |
| 40 | 10.90 | 3.50 | 1.00 | . 043 | . 130 |  |  |
| 45 | 10.90 | 3.00 | . 55 | . 061 | . 180 |  |  |
| 50 | 10.90 | 3.00 | 1.50 | . 085 | . 250 |  | 10.00 \% |
| 55 | 10.90 | 3.00 | 3.00 | . 146 | . 480 | 10.00 \% | 10.00 |
| 60 | 10.90 | 3.50 | 5.90 | . 284 | . 480 | 15.00 | 25.00 |
| 65 |  |  |  | . 561 | . 160 |  | 28.00 |
| 69 |  |  |  | . 866 | . 160 |  | 20.00 |

* Vested Withdrawal - At least 5 years service but not eligible for Early or Superannuation retirement.
** Early Retirement - Age 55 with 25 years service, but not eligible for Superannuation retirement.


## Description of Actuarial Assumptions and Methods (Continued)

Death after Retirement: The Uninsured Pensioners 1994 Mortality Table (UP94) with mortality improvements projected 10 years, and with age set back one year for males and females, adopted in 2005, are used to project mortality for healthy annuitants and for dependent beneficiaries. Special mortality tables based on PSERS' experience are used for disability retirements. (The 1995 George B. Buck Mortality Tables, rated forward one year for males and unadjusted for females, adopted in 2000, are used to determine actuarial equivalent benefits.)

Salary Increase: Effective average of 6\% per annum, compounded annually (adopted as of June 30, 2005). The components are $3.25 \%$ for inflation, $1 \%$ for real wage growth and $1.75 \%$ for merit or seniority increases. Representative values are as follows:

| Age | Annual Rate of <br> Salary Increase |
| :---: | :---: |
| 20 | $12.00 \%$ |
| 30 | 9.00 |
| 40 | 7.00 |
| 50 | 4.75 |
| 55 | 4.50 |
| 60 | 4.25 |
| 65 | 4.25 |
| 70 | 4.25 |

## MISCELLANEOUS

Option 4 Elections: 100\% of members are assumed to elect a refund of contributions and a reduced annuity.

Withdrawal Annuity: 90\% of members are assumed to commence payment immediately and 10\% are assumed to defer payment to superannuation age.

## Health Insurance

Elections: 65\% of eligible retirees are assumed to elect premium assistance.
Administrative Expenses: Assumed equal to 2\% of contributions made during the year.

## METHODS

Calculations: The actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement system, and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System.

Description of Actuarial Assumptions and Methods (Continued)
Asset Valuation Method: A five-year moving market average value of assets that recognizes the $81 / 2 \%$ actuarial expected investment return immediately and spreads the difference between the actual return on the market value of assets and the expected return on the actuarial value of assets over a period of five years (adopted as of June 30, 2001).

Actuarial Cost Method for Pension Funding: Entry Age Normal Cost Method (modified slightly as of June 30, 2005 to use a pay-weighted average normal contribution rate). The results of each June 30 valuation normally determine the employer contribution rate for the second succeeding fiscal year. The outstanding balance of the unfunded accrued liability as of June 30, 2001 and the decrease in the unfunded accrued liability due to the actuarial asset method change provided by Act 38 continue to be amortized over a 10-year period, with level dollar funding, beginning July 1, 2002. The increases in the unfunded accrued liability due to the July 1, 2002 and July 1, 2003 cost-of-living adjustments provided by Act 38 were both recognized at June 30, 2002 and continue to be amortized over a 10-year period, with level dollar funding starting on July 1, 2003 and July 1, 2004, respectively. All other changes in the unfunded accrued liability at June 30, 2001 and June 30, 2002 - including the Act 9 benefit changes are amortized over a 30-year period, with level dollar funding starting on July 1, 2002, and July 1, 2003, respectively. Post June 30, 2002 benefit changes for active members and retirees are amortized over a 10-year period with level dollar funding. Post June 30, 2002 gains and losses, and changes in the unfunded accrued liability resulting from changes in actuarial assumptions and methods, are amortized over a 30-year period with level dollar funding. Act 40 also provided a $4.00 \%$ floor on the employer pension rate.

Actuarial Cost Method for GASB 25 Accounting for Pensions: Same as for pension funding, except that in fiscal years in which the amortization requirements of the PSERS code result in an equivalent single amortization period that is longer than the maximum allowable period specified by GASB 25 (40 years for fiscal years ending on or before June 30, 2006; and 30 years for subsequent fiscal years), the GASB 25 amortization payment will be set equal to the level dollar amount that will amortize the unfunded accrued liability over a period equal to the maximum allowable period specified by GASB 25.

Actuarial Cost Method for Health Insurance Funding: The actuarial liability equals the assets in the health insurance account, and the results of the June 30 valuation determine the contribution rate for the second succeeding fiscal year. The rate so determined is the rate necessary to establish reserves sufficient to cover administrative expenses and provide premium assistance payments for all participating eligible annuitants during the third fiscal year that follows the valuation date.

Actuarial Cost Method for GASB 43 Accounting for Health Insurance: The actuarial liability is determined under the entry age actuarial cost method, and the Annual Required Contribution (ARC) for the fiscal year that follows the valuation date is equal to the entry age normal cost for health insurance plus an amount that will amortize the entry age unfunded actuarial liability for health insurance over a period of 30 years.

## DATA

Census and Assets: The valuation was based on members of the System as of June 30, 2007 and does not take into account future members. All census data was supplied by the System and was subject to reasonable consistency checks. The actuary adjusts the data to account for service and pay earned by members on or before the valuation that is not reported by the System until after the actuarial valuation is performed. Asset data was supplied by the System.

## Table 13

## Summary of Benefit and Contribution Provisions

## MEMBERSHIP

For valuation purposes, all employees are considered to be full coverage. All employees who become members on and after January 1, 1966 are members of the dual coverage group. Dual coverage members contribute to both PSERS and to Social Security.

## BENEFITS

## Superannuation Annuity

Eligibility

Amount

Age 62, or age 60 with 30 years of service, or 35 years of service regardless of age.
2.5\% of final average salary times years of school service and intervening military service. $2 \%$ of final average salary for non-school service and for members who do not elect Class T D coverage. Minimum of $\$ 100$ per year of service. "Final average salary" means the highest average annual salary for any 3 years of service.

Annual salary is subject to a limit of $\$ 200,000$, as adjusted under Section $401(\mathrm{a})(17)$. As of June 30, 2007, the adjusted limit is \$225,000.

For members who elect coverage under Class T-D, the maximum benefit is equal to the limit established by Section 415 of the Internal Revenue Code.

## Early Retirement Annuity

Eligibility
Age 55 with 25 years of service.
Amount
Accrued benefit as of date of retirement, reduced $1 / 4 \%$ for each month by which commencement of payments precedes Superannuation Age.

For members who elect coverage under Class T-D, the maximum benefit is equal to the limit established by Section 415 of the Internal Revenue Code.

## Withdrawal Annuity

Eligibility
Amount

5 years of service.
Accrued benefit deferred to superannuation retirement age or an actuarially reduced benefit payable immediately. Actuarially equivalent benefits are based on 4\% interest and the 1995 George B. Buck mortality tables, rated forward one year for males and unadjusted for females.

## Summary of Benefit and Contribution Provisions (Continued)

## Disability Annuity

Eligibility
Amount

5 years of service.
The standard single life annuity if the total number of credited service is greater than 16.667, otherwise the standard single life annuity multiplied by the lesser of the following ratios: $\left(Y^{*} / Y\right)$ or $(16.667 / Y)$ where Y is the number of years of credited service and $\mathrm{Y}^{*}$ is the total years of credited service if the member were to continue as a school employee until superannuation retirement age (or at current age, if later). Minimum of $\$ 100$ per year of service.

## Return of Contributions

Eligibility

Amount

## Death Benefit

Eligibility

Amount

Normal and
Optional Forms of Benefits

Normal Form:

Option 1:

Option 2:
Option 3:
Option 4:

Death of an active member or vestee who was eligible to receive an annuity.

The present value of the annuity which would have been effective if the member retired on the day before death. Option 1 (see below) assumed payable if no other option elected.

Life annuity with a guaranteed payment equal to member contributions with interest.

Reduced benefit with refund of balance of present value of annuity at retirement over payments received. If balance is less than $\$ 5,000$, benefit is paid in lump sum; otherwise, beneficiary may elect annuity and/or lump sum.

Joint and 100\% survivorship annuity.
Joint and 50\% survivorship annuity.
Benefit of equivalent actuarial value, including lump sum payment of member contributions.

## Health Care Premium Assistance

Eligibility

Amount

Retired members who:
(a) have $24 \frac{1}{2}$ or more years of service, or
(b) are disability annuitants, or
(c) have 15 or more years of service and who both terminated school service and retired after attaining superannuation age and
(d) participate in the PSERS Health Options Program or in an employer-sponsored health insurance program.

Participating eligible annuitants receive health insurance premium assistance payments from the Health Insurance Account equal to the lesser of $\$ 100$ per month or the actual monthly premium. All administrative expenses necessary to operate the health insurance premium assistance program are to be funded by the Health Insurance Account. The Health Insurance Account is credited with contributions of the Commonwealth and the employers.

## CONTRIBUTIONS

By Members

By Commonwealth and School Districts

Members who elected coverage under Class T-D and who were most recently enrolled prior to July 22, 1983 contribute at a rate of $61 / 2 \%$ of compensation, while members who elected coverage under Class T-D and who were most recently enrolled on or after July 22, 1983 contribute at a rate of $71 / 2 \%$ of compensation. Members who did not elect coverage under Class T-D and who were most recently enrolled prior to July 22, 1983 contribute at a rate of $51 / 4 \%$ of compensation, while members who did not elect coverage under Class T-D and who were most recently enrolled on or after July 22, 1983 and prior to July 1, 2001 contribute at a rate of $61 / 4 \%$ of compensation. Anyone who enrolls or re-enrolls on or after July 1, 2001 automatically has coverage under class T-D for subsequent school service and subsequent intervening military service, and must contribute at a rate of $7 \frac{1}{2} \%$ of compensation. Reduction in rate for a joint coverage member: $40 \%$ of Social Security tax, exclusive of disability and medical coverage portion.

Balance of required contribution determined as normal contribution, accrued liability contribution, supplemental annuity contribution, experience adjustment factor and premium assistance contribution, is funded by the Commonwealth and the School Districts.

## Table 14

Summary of Membership Data
As of June 30, 2007
(Dollar Amounts in Thousands)

## Active Members *

| Item | Male | Female | Total |
| :--- | :---: | :---: | :---: |
| Number of Members | 72,195 | 191,828 | 264,023 |
| Annual Salaries ** | $\$ 3,553,463$ | $\$$ | $7,856,794$ |
| Average Age*** | 44.5 | 44.7 | $44.410,257$ |
| Average Service*** | 11.7 | 10.5 | 10.8 |

* Excludes 109,186 inactive members and vestees.
** The salaries shown in the table above represent an annual rate of pay for for the year ended June 30, 2007 for members who were in active service on June 30, 2007.
Average complete years of age and service.

Annuitants and Beneficiaries

| Item | Number | Annual <br> Annuities \# | Average <br> Annuities | Average <br> Age |
| :--- | ---: | ---: | ---: | ---: |
| Annuitants |  |  |  |  |
| (Normal, Early and Withdrawal) | 152,361 | $\$$ | $3,327,020$ | $\$ 21,836$ |
| Survivors and Beneficiaries | 8,266 |  | 76,055 | 9,201 |
| Disabled Annuitants | 7,399 |  | 120,354 | 16,266 |

\# The annuities shown in the table above represent the annual amount payable as of July 1, 2007 for participants who were in payment on June 30, 2007.

## Exhibit I

## Active Membership Data as of June 30, 2007 <br> Number and Average Annual Salary

| Age | Years of Service |  |  |  |  |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40 + |  |
| Under 25 | 9,003 | 56 |  |  |  |  |  |  |  | 9,059 |
|  | \$29,360 | \$26,889 |  |  |  |  |  |  |  | \$29,345 |
| 25-29 | 20,474 | 5,886 | 46 |  |  |  |  |  |  | 26,406 |
|  | \$36,666 | \$45,601 | \$35,033 |  |  |  |  |  |  | \$38,655 |
| 30-34 | 9,697 | 13,078 | 2,962 | 32 |  |  |  |  |  | 25,769 |
|  | \$34,466 | \$49,371 | \$55,846 | \$41,510 |  |  |  |  |  | \$44,497 |
| 35-39 | 9,840 | 8,710 | 9,342 | 2,112 | 56 |  |  |  |  | 30,060 |
|  | \$27,009 | \$45,838 | \$58,494 | \$61,905 | \$42,436 |  |  |  |  | \$44,730 |
| 40-44 | 11,230 | 7,486 | 5,015 | 5,399 | 2,035 | 82 |  |  |  | 31,247 |
|  | \$23,277 | \$35,818 | \$52,668 | \$63,420 | \$62,958 | \$43,322 |  |  |  | \$40,572 |
| 45-49 | 10,939 | 9,431 | 5,714 | 4,276 | 4,712 | 2,289 | 137 |  |  | 37,498 |
|  | \$22,998 | \$31,581 | \$42,688 | \$56,654 | \$65,676 | \$64,275 | \$43,807 |  |  | \$39,953 |
| 50-54 | 7,775 | 8,323 | 6,879 | 5,616 | 4,341 | 6,968 | 5,220 | 71 |  | 45,193 |
|  | \$23,510 | \$32,381 | \$40,916 | \$51,088 | \$61,303 | \$70,428 | \$71,531 | \$48,462 |  | \$47,670 |
| 55-59 | 5,074 | 4,837 | 4,645 | 5,246 | 4,515 | 3,673 | 7,648 | 1,943 | 24 | 37,605 |
|  | \$24,046 | \$32,616 | \$40,185 | \$48,404 | \$56,264 | \$66,307 | \$75,110 | \$76,949 | \$46,653 | \$51,669 |
| 60-64 | 2,807 | 2,220 | 1,940 | 2,225 | 2,027 | 1,608 | 945 | 821 | 165 | 14,758 |
|  | \$20,590 | \$29,522 | \$34,935 | \$42,714 | \$48,766 | \$52,980 | \$61,517 | \$77,817 | \$77,937 | \$40,999 |
| Over 64 | 1,966 | 1,193 | 818 | 737 | 583 | 482 | 326 | 172 | 151 | 6,428 |
|  | \$14,567 | \$19,700 | \$25,428 | \$29,726 | \$33,933 | \$36,145 | \$39,048 | \$49,160 | \$72,101 | \$25,533 |
| Total | 88,805 | 61,220 | 37,361 | 25,643 | 18,269 | 15,102 | 14,276 | 3,007 | 340 | 264,023 |
|  | \$28,368 | \$39,156 | \$47,596 | \$53,602 | \$59,047 | \$65,394 | \$71,777 | \$74,924 | \$73,137 | \$43,217 |

## Exhibit II

The Number and Average Annual Annuity As of June 30, 2007

Retired on Account of Superannuation, Early Retirement and Those in Receipt of Withdrawal Annuities

| Age | Years of Service |  |  |  |  |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40 + |  |
| Under 50 | 1 | 1,991 | 1,280 | 399 | 115 | 22 | 1 |  |  | 3,809 |
|  | \$64 | \$776 | \$1,727 | \$4,234 | \$8,105 | \$12,617 | \$23,910 |  |  | \$1,753 |
| 50-54 |  | 502 | 1,089 | 503 | 264 | 259 | 151 | 13 |  | 2,781 |
|  |  | \$1,355 | \$1,645 | \$4,431 | \$9,861 | \$21,460 | \$31,332 | \$33,623 |  | \$6,483 |
| 55-59 |  | 415 | 2,252 | 1,201 | 753 | 1,401 | 7,479 | 3,059 | 2 | 16,562 |
|  |  | \$2,188 | \$1,935 | \$5,695 | \$11,649 | \$26,498 | \$43,330 | \$53,410 | \$39,672 | \$32,938 |
| 60-64 | 115 | 627 | 2,965 | 2,193 | 1,796 | 2,879 | 11,230 | 7,986 | 204 | 29,995 |
|  | \$999 | \$3,035 | \$2,939 | \$7,750 | \$14,856 | \$27,212 | \$38,037 | \$52,479 | \$59,070 | \$33,041 |
| 65-69 | 533 | 937 | 2,782 | 2,902 | 2,849 | 3,553 | 7,739 | 5,022 | 731 | 27,048 |
|  | \$917 | \$2,889 | \$3,876 | \$8,183 | \$13,848 | \$22,376 | \$32,626 | \$42,877 | \$56,107 | \$24,605 |
| 70-74 | 575 | 938 | 2,714 | 2,646 | 2,988 | 3,189 | 4,136 | 3,596 | 1,316 | 22,098 |
|  | \$633 | \$2,235 | \$3,544 | \$6,708 | \$11,174 | \$18,107 | \$27,038 | \$35,882 | \$43,496 | \$18,964 |
| 75-79 | 594 | 1,102 | 2,645 | 2,665 | 2,977 | 3,109 | 3,378 | 2,156 | 1,529 | 20,155 |
|  | \$551 | \$1,822 | \$3,395 | \$6,048 | \$10,722 | \$16,503 | \$24,108 | \$32,020 | \$41,329 | \$16,092 |
| 80-84 | 508 | 1,000 | 2,310 | 2,471 | 2,457 | 2,297 | 1,853 | 1,621 | 751 | 15,268 |
|  | \$490 | \$1,595 | \$3,304 | \$6,094 | \$10,426 | \$15,517 | \$20,707 | \$26,701 | \$37,552 | \$12,814 |
| 85-89 | 311 | 689 | 1,622 | 1,580 | 1,355 | 1,225 | 872 | 962 | 354 | 8,970 |
|  | \$555 | \$1,581 | \$3,346 | \$5,928 | \$9,426 | \$13,648 | \$18,499 | \$22,774 | \$30,469 | \$10,521 |
| Over 89 | 175 | 474 | 895 | 888 | 750 | 730 | 583 | 685 | 495 | 5,675 |
|  | \$688 | \$2,059 | \$3,943 | \$6,712 | \$10,367 | \$13,772 | \$18,150 | \$22,030 | \$25,701 | \$11,772 |
| Total | 2,812 | 8,675 | 20,554 | 17,448 | 16,304 | 18,664 | 37,422 | 25,100 | 5,382 | 152,361 |
|  | \$653 | \$1,788 | \$3,067 | \$6,634 | \$11,648 | \$19,946 | \$33,852 | \$42,892 | \$41,859 | \$21,836 |

## Exhibit III

The Number and Average Annual Annuity As of June 30, 2007

Beneficiaries and Survivor Annuitants

| Age | Years of Service |  |  |  |  |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40 + |  |
| Under 50 | 2 | 20 | 50 | 46 | 47 | 36 | 36 | 22 | 16 | 275 |
|  | \$488 | \$1,715 | \$2,043 | \$3,559 | \$5,643 | \$7,551 | \$12,698 | \$13,836 | \$11,518 | \$6,487 |
| 50-54 | 2 | 13 | 22 | 25 | 37 | 30 | 32 | 29 | 11 | 201 |
|  | \$365 | \$1,400 | \$2,423 | \$3,113 | \$6,224 | \$10,286 | \$16,027 | \$13,647 | 12,722 | 8,644 |
| 55-59 | 2 | 10 | 42 | 31 | 43 | 60 | 97 | 93 | 15 | 393 |
|  | \$291 | \$2,023 | \$3,150 | \$4,285 | \$6,299 | \$13,171 | \$16,489 | \$19,677 | \$13,354 | \$12,663 |
| 60-64 | 3 | 16 | 53 | 55 | 56 | 69 | 191 | 150 | 34 | 627 |
|  | \$331 | \$2,281 | \$2,815 | \$4,771 | \$7,176 | \$12,012 | \$16,605 | \$20,565 | \$12,473 | \$13,333 |
| 65-69 | 9 | 21 | 84 | 87 | 75 | 87 | 175 | 183 | 52 | 773 |
|  | \$631 | \$1,757 | \$3,259 | \$5,476 | \$7,234 | \$12,598 | \$16,911 | \$20,356 | \$18,214 | \$13,018 |
| 70-74 | 8 | 42 | 124 | 100 | 113 | 104 | 213 | 180 | 106 | 990 |
|  | \$605 | \$1,695 | \$2,869 | \$4,488 | \$7,202 | \$10,075 | \$13,068 | \$17,205 | \$21,985 | \$11,064 |
| 75-79 | 25 | 54 | 155 | 179 | 168 | 170 | 219 | 223 | 128 | 1,321 |
|  | \$551 | \$1,433 | \$2,979 | \$4,196 | \$6,659 | \$8,446 | \$12,597 | \$13,949 | \$18,065 | \$9,114 |
| 80-84 | 29 | 97 | 216 | 191 | 177 | 205 | 222 | 295 | 117 | 1,549 |
|  | \$639 | \$1,434 | \$2,539 | \$3,980 | \$6,391 | \$8,565 | \$10,116 | \$11,494 | \$15,627 | \$7,629 |
| 85-89 | 11 | 96 | 175 | 140 | 152 | 145 | 168 | 266 | 140 | 1,293 |
|  | \$531 | \$1,187 | \$2,235 | \$3,324 | \$5,537 | \$7,028 | \$9,191 | \$10,814 | \$12,194 | \$6,933 |
| Over 89 | 3 | 61 | 104 | 76 | 68 | 74 | 100 | 187 | 171 | 844 |
|  | \$505 | \$1,112 | \$2,082 | \$3,679 | \$4,937 | \$6,417 | \$7,066 | \$8,829 | \$9,500 | \$6,348 |
| Total | 94 | 430 | 1,025 | 930 | 936 | 980 | 1,453 | 1,628 | 790 | 8,266 |
|  | \$569 | \$1,432 | \$2,619 | \$4,106 | \$6,359 | \$9,213 | \$12,897 | \$14,414 | \$14,808 | \$9,201 |

## Exhibit IV

The Number and Average Annual Annuity As of June 30, 2007

Retired on Account of Disability

| Age | Years of Service |  |  |  |  |  |  |  |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40 + |  |
| Under 50 |  | 239 | 167 | 111 | 46 | 13 | 2 |  |  | 578 |
|  |  | \$10,349 | \$13,505 | \$18,032 | \$22,420 | \$24,180 | \$24,371 |  |  | \$14,057 |
| 50-54 |  | 196 | 190 | 156 | 150 | 134 | 26 |  |  | 852 |
|  |  | \$9,290 | \$11,383 | \$16,768 | \$23,923 | \$36,819 | \$43,048 |  |  | \$19,062 |
| 55-59 |  | 251 | 285 | 241 | 271 | 381 | 214 | 2 |  | 1,645 |
|  |  | \$8,144 | \$11,421 | \$15,383 | \$23,390 | \$35,010 | \$47,413 | \$50,776 |  | \$23,667 |
| 60-64 |  | 236 | 311 | 281 | 317 | 297 | 118 | 4 |  | 1,564 |
|  |  | \$6,930 | \$9,295 | \$12,317 | \$20,056 | \$28,640 | \$40,574 | \$46,850 |  | \$17,792 |
| 65-69 |  | 181 | 269 | 235 | 202 | 139 | 19 |  |  | 1,045 |
|  |  | \$5,317 | \$8,063 | \$10,322 | \$15,896 | \$25,862 | \$31,337 |  |  | \$12,400 |
| 70-74 |  | 132 | 185 | 147 | 122 | 81 | 15 | 3 |  | 685 |
|  |  | \$4,787 | \$6,848 | \$8,657 | \$13,837 | \$21,060 | \$27,409 | \$43,058 |  | \$10,374 |
| 75-79 |  | 93 | 158 | 103 | 104 | 44 | 5 |  | 1 | 508 |
|  |  | \$3,238 | \$5,630 | \$8,803 | \$12,919 | \$19,578 | \$22,130 |  | \$54,601 | \$8,795 |
| 80-84 |  | 71 | 66 | 50 | 57 | 40 | 11 | 2 |  | 297 |
|  |  | \$3,660 | \$6,183 | \$8,263 | \$11,539 | \$16,362 | \$21,261 | \$26,943 |  | \$9,027 |
| 85-89 |  | 30 | 35 | 25 | 29 | 21 | 12 |  |  | 152 |
|  |  | \$3,613 | \$5,719 | \$7,680 | \$10,469 | \$15,205 | \$23,408 |  |  | \$9,239 |
| Over 89 |  | 8 | 23 | 21 | 9 | 4 | 8 |  |  | 73 |
|  |  | \$2,753 | \$5,001 | \$8,217 | \$10,349 | \$15,562 | \$18,641 |  |  | \$8,413 |
| Total |  | 1,437 | 1,689 | 1,370 | 1,307 | 1,154 | 430 | 11 | 1 | 7,399 |
|  |  | \$7,140 | \$9,243 | \$12,532 | \$18,832 | \$29,715 | \$41,589 | \$42,910 | \$54,601 | \$16,266 |

## Exhibit V

Annuitant and Beneficiary Membership Data As of June 30, 2007

Number and Average Annual Benefit Excludes Partial Lump Sum Payments


## Exhibit VI

## 10 Year History of Membership Data

## Active Members

| Valuation <br> as of <br> June 30 | Number of <br> Active <br> Members | Percentage <br> Change in <br> Membership | Total Annual <br> Payroll <br> (Dollars in <br> Thousands) | Percentage <br> Change in <br> Payroll |
| :---: | :---: | :---: | :---: | :---: |
| 2007 | 264,023 | $0.26 \%$ | $\$ 11,410,257$ | $(0.08) \%$ |
| 2006 | 263,350 | $3.09 \%$ | $11,419,049$ | $8.47 \%$ |
| 2005 | 255,465 | $3.05 \%$ | $10,527,668$ | $4.95 \%$ |
| 2004 | 247,901 | $0.49 \%$ | $10,030,705$ | $3.91 \%$ |
| 2003 | 246,700 | $1.68 \%$ | $9,652,881$ | $2.92 \%$ |
| 2002 | 242,616 | $(0.29) \%$ | $9,378,944$ | $(0.38) \%$ |
| 2001 | 243,311 | $3.89 \%$ | $9,414,884$ | $5.32 \%$ |
| 2000 | 234,210 | $4.79 \%$ | $8,939,598$ | $8.39 \%$ |
| 1999 | 223,495 | $1.27 \%$ | $8,247,602$ | $1.93 \%$ |
| 1998 | 220,703 | $2.62 \%$ | $8,091,481$ | $4.47 \%$ |

## Exhibit VI

## 10 Year History of Membership Data

## The Number and Annual Annuities of Annuitant and Survivor Annuitant Members

| Year Ended June 30 | Number on roll | Annual Annuities (Dollars in Millions) | Average Annual Annuities | Additions * | Annual Annuities * (Dollars in Millions) | Deletions * | Annual Annuities * (Dollars in Millions) | Percentage Change in Membership | Percentage Change in Annuities |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2007 | 168,026 | \$ 3,523.4 | \$ 20,970 | 10,612 | \$ 307.5 | 4,399 | \$ 56.0 | 3.84\% | 7.60\% |
| 2006 | 161,813 | 3,274.5 | 20,236 | 10,637 |  | 5,343 |  | 3.38\% | 8.16\% |
| 2005 | 156,519 | 3,027.6 | 19,343 | 10,050 |  | 5,083 |  | 3.28\% | 8.20\% |
| 2004 | 151,552 | 2,798.2 | 18,464 | 10,526 |  | 4,667 |  | 4.02\% | 9.94\% |
| 2003 | 145,693 | 2,545.1 | 17,469 | 9,079 |  | 4,800 |  | 3.03\% | 13.20\% |
| 2002 | 141,414 | 2,248.3 | 15,899 | 13,003 |  | 4,305 |  | 6.55\% | 20.10\% |
| 2001 | 132,716 | 1,872.0 | 14,105 | 3,140 |  | 4,482 |  | (1.00)\% | 0.00\% |
| 2000 | 134,058 | 1,880.6 | 14,028 | 5,923 |  | 4,734 |  | 0.89\% | 2.73\% |
| 1999 | 132,869 | 1,830.6 | 13,777 | 10,609 |  | 4,554 |  | 4.77\% | 10.77\% |
| 1998 | 126,814 | 1,652.6 | 13,032 | 7,132 |  | 4,442 |  | 2.17\% | 14.21\% |

* The annual annuities added and deleted are for the annuitants and survivor annuitants who were added and deleted. Changes in annuitites for continuing payees may also occur due to finalization of benefit calculations and due to the commencement of supplemental annuity payments.


[^0]:    * Market value rate of return provided by Wilshire Associates Incorporated, the PSERS investment consultant.

[^1]:    * Based on Estimated Employer Payroll for Fiscal Year Ending 2009 of \$12,500,000.

[^2]:    * The amounts reported above include assets and liabilities for Pensions.

[^3]:    * The amounts reported above include assets and liabilities for Health Insurance Premium Assistance. The health insurance liabilities for GASB 43 disclosure have been calculated under the entry age normal cost method, which provides liabilities that differ from those determined under the funding requirements of the PSERS code.

[^4]:    * The amounts reported include assets and liabilities for both Pensions and Health Insurance.

