



**Cavanaugh Macdonald**  
CONSULTING, LLC

*The experience and dedication you deserve*



**Report on the Annual Basic Benefits Valuation of the  
School Employees' Retirement System of Ohio**

**Prepared as of June 30, 2013**



# Cavanaugh Macdonald

CONSULTING, LLC

*The experience and dedication you deserve*

November 5, 2013

Board of Trustees  
School Employees Retirement System  
Of Ohio  
300 East Broad Street  
Suite 100  
Columbus, OH 43215-3746

Dear Members of the Board:

Presented in this report are the results of the annual actuarial valuation of the basic benefits provided under the School Employees Retirement System of Ohio (SERS). The purpose of the valuation was to measure the System's funding progress and to determine the required employer contribution rates for the fiscal year beginning July 1, 2013.

The date of the valuation was June 30, 2013.

The valuation was based upon data, furnished by the Executive Director and the SERS staff, concerning active, inactive and retired members along with pertinent financial information. The complete cooperation of the SERS staff in furnishing materials requested is hereby acknowledged with appreciation.

Your attention is directed particularly to the summary of results on page 1 and the comments on page 6.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144

Phone (678) 388-1700 • Fax (678) 388-1730

[www.CavMacConsulting.com](http://www.CavMacConsulting.com)

Offices in Englewood, CO • Kennesaw, GA • Bellevue, NE • Hilton Head Island, SC



The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

A handwritten signature in blue ink that reads 'Thomas J. Cavanaugh'.

Thomas J. Cavanaugh, FSA, FCA, EA, MAAA  
Chief Executive Officer

A handwritten signature in blue ink that reads 'John J. Garrett'.

John J. Garrett, ASA, FCA, MAAA  
Principal and Consulting Actuary

A handwritten signature in blue ink that reads 'Todd B. Green'.

Todd B. Green, ASA, FCA, MAAA  
Principal and Consulting Actuary

TJC/JJG:kc

S:\Ohio SERS\Pension\Valuations\2013-06-30\Reports\SERS Pension Valuation Report as of 6-30-2013.doc



## **TABLE OF CONTENTS**

| <b><u>Section</u></b>  | <b><u>Item</u></b>                                  | <b><u>Page No.</u></b> |
|------------------------|---|------------------------|
| I                      | Summary of Principal Results                        | 1                      |
| II                     | Membership Data                                     | 3                      |
| III                    | Assets  | 5                      |
| IV                     | Comments on Valuation                               | 6                      |
| V                      | Derivation of Experience Gains and Losses           | 7                      |
| VI                     | Required Contribution Rates                         | 9                      |
| VII                    | Accounting Information                              | 10                     |
| <br>                   |   |                        |
| <b><u>Schedule</u></b> |   |                        |
| A                      | Valuation Balance Sheet and Solvency Test           | 14                     |
| B                      | Development of Actuarial Value of Assets            | 16                     |
| C                      | Statement of Actuarial Assumptions and Methods      | 17                     |
| D                      | Summary of Main Benefit and Contribution Provisions | 20                     |
| E                      | Detailed Tabulations of the Data                    | 26                     |
| F                      | Gain/Loss Analysis Details                          | 36                     |
| G                      | Glossary  | 46                     |
| <br>                   |   |                        |
| <b><u>Appendix</u></b> |   |                        |
| A                      | Actuarial Accrued Liabilities                       | 47                     |
| B                      | Breakdown of Total and Accrued Liabilities          | 48                     |
| C                      | Comparative Schedule                                | 49                     |



**REPORT ON THE ANNUAL VALUATION OF THE  
SCHOOL EMPLOYEES RETIREMENT SYSTEM OF OHIO**

**PREPARED AS OF JUNE 30, 2013**

**SECTION I – SUMMARY OF PRINCIPAL RESULTS**

1. This report, prepared as of June 30, 2013, presents the results of the annual actuarial valuation of the basic benefits provided under the System, including pension, Medicare Part B reimbursement and post-retirement death benefits. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized in the following table.

**SUMMARY OF PRINCIPAL RESULTS**

|   | June 30, 2013    | June 30, 2012    |
|---|------------------|------------------|
| <b>Active members included in valuation</b>   |                  |                  |
| Number  | 121,642          | 121,811          |
| Annual Compensation                           | \$2,746,827,535  | \$2,788,153,585  |
| <b>Retirees</b>                               |                  |                  |
| Number  | 70,771           | 69,038           |
| Annual allowances                             | \$898,267,601    | \$838,076,567    |
| <b>Deferred Vesteds</b>                       |                  |                  |
| Number  | 7,246            | 12,610           |
| Annual deferred allowances                    | \$29,094,575     | \$43,439,531     |
| <b>Assets (net of Health Care Assets)</b>     |                  |                  |
| Market related actuarial value                | \$11,125,960,356 | \$10,396,912,847 |
| Market value                                  | \$11,300,482,029 | \$10,331,658,392 |
| <b>Unfunded Accrued Liability</b>             | \$6,121,200,722  | \$6,357,653,176  |
| <b>Funded Ratio (MVA/AAL)</b>                 |                  |                  |
| Basic Benefits                                | 65.30%           | 62.83%           |
| Medicare Part B                               | 30.64%           | 29.48%           |
| Post-retirement Death Benefits                | 55.88%           | 52.94%           |
| <b>Employer Contribution Rate</b>             |                  |                  |
| Normal  | 1.30%            | 1.23%            |
| Accrued liability                             | <u>12.56</u>     | <u>12.61</u>     |
| Total   | 13.86%           | 13.84%           |
| Accrued liability amortization period (years) | 29               | 30               |



2. The board has set a total contribution rate of 24% of payroll; 14% from employers and 10% from employees. Employer contributions in excess of those required to support the basic benefits are allocated to retiree health care funding.
3. There was a decrease in the deferred vested participant population reported on the member data file furnished by the SERS staff as compared to the prior year's deferred vested headcount. The reduction in deferred vested members as compared to the vested deferred members as of June 30, 2012 was due to the enactment of SB 341. We have determined the change in the vested member population results in a \$27.8 million reduction to liabilities as shown on page 8.
4. The valuation balance sheet showing the results of the valuation is given in Schedule A.
5. Comments on the valuation results are given in Section IV, comments on the experience and the sources of actuarial gains and losses during the valuation year are given in Section V, and the rates of contribution payable by employers are given in Section VI.
6. Schedule B of this report presents the development of the actuarial value of assets. Schedule C details the actuarial assumptions and methods employed. Schedule D gives a summary of the benefit and contribution provisions of the plan.
7. All information in this report for years prior to the year ended June 30, 2008 were provided by the System's previous actuary and the accuracy of that information is the responsibility of that actuary.



## **SECTION II – MEMBERSHIP DATA**

Data regarding the membership of the System for use as a basis for the valuation were furnished by the System's staff. The following tables summarize the membership of the system as of June 30, 2013 upon which the valuation was based. Detailed tabulations of the data are given in Schedule E.

### **Active Members**

| Number  | Payroll         | Group Averages |      |         |
|---------|-----------------|----------------|------|---------|
|         |                 | Salary         | Age  | Service |
| 121,642 | \$2,746,827,535 | \$22,581       | 48.6 | 10.0    |

The total number of active members includes 58,818 vested members and 62,824 non-vested members. The vesting requirement is five years for members who retire prior to August 1, 2017 and ten years for those who retire on and after August 1, 2017.

The following table shows a six-year schedule of active member valuation data.

### **SCHEDULE OF SERS ACTIVE MEMBER VALUATION DATA**

| Valuation Date | Number  | Annual Payroll  | Annual Average Pay | % Increase in Average Pay |
|----------------|---------|-----------------|--------------------|---------------------------|
| 6/30/2008      | 124,370 | \$2,651,800,981 | \$21,322           | 0.8%                      |
| 6/30/2009      | 125,465 | 2,787,390,954   | 22,216             | 4.2                       |
| 6/30/2010      | 126,015 | 2,842,660,159   | 22,558             | 1.5                       |
| 6/30/2011      | 125,337 | 2,852,378,614   | 22,758             | 0.9                       |
| 6/30/2012      | 121,811 | 2,788,153,585   | 22,889             | 0.6                       |
| 6/30/2013      | 121,642 | 2,746,827,535   | 22,581             | (1.3)                     |



The following table shows the number and annual retirement allowances payable to retired members and their beneficiaries on the roll of the Retirement System as of the valuation date as well as certain group averages.

#### Retired Lives

| Type of Benefit Payment    | Number | Annual Benefits | Group Averages |      |
|----------------------------|--------|-----------------|----------------|------|
|                            |        |                 | Benefit        | Age  |
| Retirees and Beneficiaries | 60,944 | \$779,902,298   | \$12,797       | 74.9 |
| Disability                 | 5,438  | 84,452,874      | 15,530         | 64.9 |
| Survivors                  | 4,389  | 33,912,429      | 7,727          | 71.5 |
| Total in SERS              | 70,771 | \$898,267,601   | \$12,693       | 73.9 |

This valuation also includes 106,019 inactive members eligible for a contribution refund only (including 54,156 members reported separately who had completed one or more years of service before terminating). Their contributions totaled \$212,983,848 as of June 30, 2013. There were also 7,246 terminated vested members with annual deferred pension benefits of \$29,094,575. Included in the "Retiree" numbers in the above table are 9,117 re-employed retirees with account balances of \$70,594,639 (including employer contributions and interest), 396 re-retirees receiving only an annuity from their contributions and their employers' matching contributions, and 445 re-retirees receiving such annuities in addition to their regular pension benefits. The sum of the annuity payments attributable to these re-retirees is \$3,118,368.





### SECTION III – ASSETS

1. As of June 30, 2013 the total market value of assets amounted to \$11,679,663,055. All figures include the combined Pension Trust Fund, Medicare B Fund, Death Benefit Fund and Health Care Fund but exclude the QEBA Fund.

| Asset Summary Based on Market Value |  |    |                 |
|-------------------------------------|--|----|-----------------|
| (1)                                 | Assets at June 30, 2012                          | \$ | 10,686,768,799  |
| (2)                                 | Contributions and Misc. Revenue                  |    | 854,005,112     |
| (3)                                 | Investment Gain (Loss)                           |    | 1,308,025,940   |
| (4)                                 | Benefit Payments                                 |    | (1,169,136,796) |
| (5)                                 | Assets at June 30, 2013<br>(1) + (2) + (3) + (4) | \$ | 11,679,663,055  |
| (6)                                 | Annualized Rate of Return*                       |    | 12.4 %          |

2. The four-year smoothed market related actuarial value of assets used for the current valuation was \$11,125,960,356. Schedule B shows the development of the actuarial value of assets as of June 30, 2013. Again all figures include the combined Pension Trust Fund, Medicare B Fund, Death Benefit Fund and Health Care Fund but exclude the QEBA Fund.

| Asset Summary Based on Actuarial Value |   |    |                 |
|--|---|----|-----------------|
| (1)                                    | Assets at June 30, 2012   | \$ | 10,752,023,254  |
| (2)                                    | Contributions and Misc. Revenue   |    | 854,005,112     |
| (3)                                    | Investment Gain (Loss)  |    | 1,068,249,812   |
| (4)                                    | Benefit Payments  |    | (1,169,136,796) |
| (5)                                    | Assets at June 30, 2013 Before Application of Corridor<br>(1) + (2) + (3) + (4) | \$ | 11,505,141,382  |
| (6)                                    | Annualized Rate of Return*  |    | 10.1 %          |

\*Based on the approximation formula:  $I/[0.5 \times (A + B - I)]$ , where

- I = Investment Gain (Loss)
- A = Beginning of year asset value
- B = End of year asset value



#### **SECTION IV - COMMENTS ON VALUATION**

Schedule A of this report contains the valuation balance sheet which shows the present and prospective assets and liabilities of the System as of June 30, 2013.

1. The total valuation balance sheet on account of retirement benefits shows that the System has total prospective retirement benefit liabilities of \$19,898,450,245, of which \$9,498,497,493 is for the prospective benefits payable on account of present retired members and beneficiaries of deceased members, \$578,661,862 is for the prospective benefits payable on account of present inactive members, and \$9,821,290,890 is for the prospective benefits payable on account of present active members. Against these retirement benefit liabilities the System has a total present actuarial value of assets of \$11,125,960,356 as of June 30, 2013. The difference of \$8,772,489,889 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of retirement benefits. Of this amount, \$2,408,904,452 is the present value of future contributions expected to be made by members, and the balance of \$6,363,585,437 represents the present value of future contributions payable by the employers.
2. The employers' contributions to the System on account of retirement benefits consist of normal contributions, accrued liability contributions and contributions for administrative expenses. The valuation indicates that employer normal contributions at the rate of 1.07% of payroll for basic pension benefits, 0.02% of payroll for post-retirement death benefits, and 0.21% of payroll for Medicare Part B benefits are required to provide the benefits of the System for the average member of SERS. Prospective employer normal contributions on account of retirement benefits at the above rates have a present value of \$242,384,715.
3. For pension benefits, it is recommended that the unfunded accrued liability contribution rate payable by the employers on account of retirement benefits be set at 11.98% of payroll. For post-retirement death benefits, it is recommended that the unfunded accrued liability contribution rate payable by the employers on account of retirement benefits be set at 0.03% of payroll. Finally for Medicare Part B benefits, it is recommended that the unfunded accrued liability contribution rate payable by the employers on account of retirement benefits be set at 0.55% of payroll. These rates are sufficient to amortize the unfunded accrued liability of \$6,121,200,722 over 29 years based on the assumption that the aggregate payroll for SERS members will increase by 4.00% each year.
4. The present value of the total future contributions to be made by the employers for basic benefits is the sum of the future employer normal contributions and the unfunded accrued liability contributions and equals \$6,363,585,437.



## SECTION V – DERIVATION OF EXPERIENCE GAINS AND LOSSES

Actual experience will never (except by coincidence) match exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain (loss) for the year ended June 30, 2013 is shown below (\$ millions).

### Experience Gain/(Loss)

| (1)  | UAAL as of 6/30/12  | \$ 6,357.7  |
|------|---|-------------|
| (2)  | Normal cost from last valuation   | 311.9       |
| (3)  | Contributions   | 695.1       |
| (4)  | Interest accrual:<br>[(1) + (2) - (3)*.5] x .0775                           | 490.0       |
| (5)  | Expected UAAL before changes:<br>(1) + (2) - (3) + (4)                      | \$ 6,464.5  |
| (6)  | Change due to plan amendments   | (27.8)      |
| (7)  | Change due to new actuarial<br>assumption or methods                        | 0.0         |
| (8)  | Expected UAAL after changes:<br>(5) + (6) + (7)                             | \$ 6,436.7  |
| (9)  | Actual UAAL as of 6/30/13   | \$ 6,121.2  |
| (10) | Gain/(loss): (8) - (9)  | \$ 315.5    |
| (11) | Accrued liabilities as of 6/30/13   | \$ 17,247.2 |
| (12) | Gain/(loss) as percent of actuarial<br>accrued liabilities at start of year | 1.8%        |



## ANALYSIS OF FINANCIAL EXPERIENCE

### Gains & Losses in Accrued Liabilities Resulting from Difference Between Assumed Experience & Actual Experience (\$ Millions)

| Type of Activity  | \$ Gain (or Loss) For<br>Year Ending 6/30/13 |
|---|--|
| <b>Age &amp; Service Retirements.</b> If members retire at older ages, there is a gain. If younger ages, a loss.                                    | \$ (121.9)                                   |
| <b>Disability Retirements.</b> If disability claims are less than assumed, there is a gain. If more claims, a loss.                                 | (53.6)                                       |
| <b>Death-in Service Benefits.</b> If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.                       | 0.0  |
| <b>Withdrawal From Employment.</b> If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.      | 61.1   |
| <b>Pay Increases.</b> If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.                               | 219.2  |
| <b>New Members.</b> Additional accrued liability attributable to members who entered the plan since the last valuation.                             | (35.1)                                       |
| <b>Investment Income.</b> If there is a greater investment income than assumed, there is a gain. If less income, a loss.                            | 241.0  |
| <b>Death After Retirement.</b> If retired members live longer than assumed, there is a loss. If not as long, a gain.                                | 2.9  |
| <b>Other.</b> Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, etc. | <u>1.9</u>                                   |
| <b>Gain (or Loss) During Year From Financial Experience</b>   | \$ 315.5                                     |
| <b>Non-Recurring Items.</b> Adjustments for plan amendments, assumption changes and method changes  | 27.8   |
| <b>Composite Gain (or Loss) During Year</b>   | <u>\$ 343.3</u>                              |



## SECTION VI – REQUIRED CONTRIBUTION RATES

The valuation balance sheet gives the basis for determining the percentage rates for contributions to be made by employers to the Retirement System. The following tables show the rates of contribution payable by employers.

### Required Contribution Rates

| Contribution for   | Benefits    | Retirement<br>Death Benefits | Medicare<br>Part B | Total  |
|--|-------------|------------------------------|--------------------|--------|
| A. Normal Cost:  |             |                              |                    |        |
| (1) Service retirement benefits                          | 6.70%       |                              |                    |        |
| (2) Disability benefits                                  | 0.77        |                              |                    |        |
| (3) Survivor benefits                                    | 0.16        |                              |                    |        |
| (4) Refunds  | <u>3.44</u> |                              |                    |        |
| (5) Total  | 11.07%      | 0.02%                        | 0.21%              | 11.30% |
| B. Member Contributions                                  | 10.00%      | 0.00%                        | 0.00%              | 10.00% |
| C. Employer Normal Cost: [A(5) - B]                      | 1.07%       | 0.02%                        | 0.21%              | 1.30%  |
| D. Unfunded Actuarial Accrued<br>Liability Contributions | 11.98%      | 0.03%                        | 0.55%              | 12.56% |
| E. Total Recommended Employer<br>Contribution Rate:[C+D] | 13.05%      | 0.05%                        | 0.76%              | 13.86% |



**SECTION VII - ACCOUNTING INFORMATION**

Governmental Accounting Standards Board Statements 25 and 27 set forth certain items of required supplementary information to be disclosed in the financial statements of the System and the employer. One such item is a distribution of the number of employees by type of membership, as follows:

**NUMBER OF ACTIVE AND RETIRED MEMBERS  
AS OF JUNE 30, 2013**

| <b>GROUP</b>   | <b>Total</b>   |
|--|----------------|
| Retirees and beneficiaries currently receiving benefits                  | 70,771         |
| Terminated employees entitled to benefits but not yet receiving benefits | 7,246          |
| Active Members   | <u>121,642</u> |
| Total  | 199,659        |

Another such item is the Schedule of Funding Progress for pension, post-retirement death and Medicare Part B benefits separately as shown in the following table.



**SCHEDULE OF FUNDING PROGRESS**  
(\$ In Millions)

| Actuarial Valuation Date              | Value of Plan Assets (a) | Actuarial Accrued 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) |
|---------------------------------------|--------------------------|---|-----------------------------|----------------------|---------------------|---|
| <b>Basic Benefits</b>                 |                          |   |                             |                      |                     |   |
| 6/30/2008                             | \$ 11,218                | \$ 13,674                                       | \$ 2,456                    | 82.0%                | \$ 2,873            | 85.5%   |
| 6/30/2009                             | 9,704                    | 14,190  | 4,486                       | 68.4                 | 2,787               | 161.0   |
| 6/30/2010                             | 10,766                   | 14,823  | 4,057                       | 72.6                 | 2,843               | 142.7   |
| 6/30/2011                             | 10,378                   | 15,910  | 5,532                       | 65.2                 | 2,852               | 194.0   |
| 6/30/2012                             | 10,266                   | 16,338  | 6,072                       | 62.8                 | 2,788               | 217.8   |
| 6/30/2013                             | 10,988                   | 16,826  | 5,838                       | 65.3                 | 2,747               | 212.5   |
| <b>Medicare Part B</b>                |                          |   |                             |                      |                     |   |
| 6/30/2008                             | \$ 131                   | \$ 358  | \$ 227                      | 36.7%                | \$ 2,873            | 7.9%  |
| 6/30/2009                             | 113                      | 361   | 248                         | 31.3                 | 2,787               | 8.9   |
| 6/30/2010                             | 122                      | 367   | 244                         | 33.3                 | 2,843               | 8.6   |
| 6/30/2011                             | 116                      | 382   | 266                         | 30.3                 | 2,852               | 9.3   |
| 6/30/2012                             | 113                      | 383   | 270                         | 29.5                 | 2,788               | 9.7   |
| 6/30/2013                             | 119                      | 387   | 268                         | 30.6                 | 2,747               | 9.8   |
| <b>Post-Retirement Death Benefits</b> |                          |   |                             |                      |                     |   |
| 6/30/2008                             | \$ 23                    | \$ 30   | \$ 7                        | 76.7%                | \$ 2,873            | 0.2%  |
| 6/30/2009                             | 19                       | 31  | 12                          | 61.3                 | 2,787               | 0.4   |
| 6/30/2010                             | 21                       | 32  | 11                          | 65.6                 | 2,843               | 0.4   |
| 6/30/2011                             | 19                       | 33  | 14                          | 57.6                 | 2,852               | 0.5   |
| 6/30/2012                             | 18                       | 34  | 16                          | 52.9                 | 2,788               | 0.6   |
| 6/30/2013                             | 19                       | 34  | 15                          | 55.9                 | 2,747               | 0.5   |



The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2013. Additional information as of the latest actuarial valuation follows.

|                               |                        |
|-------------------------------|------------------------|
| Valuation date                | 6/30/2013              |
| Actuarial cost method         | Entry Age              |
| Amortization                  | Level Percent Closed   |
| Remaining amortization period | 29 years               |
| Asset valuation method        | 4 Year Smoothed Market |
| Actuarial assumptions         |                        |
| Investment rate of return*    | 7.75%                  |
| * Includes price inflation at | 3.25%                  |
| Projected salary increases^   | 4.00% - 22.00%         |
| ^ Includes wage inflation at  | 4.00%                  |
| Cost-of-living adjustment     | 3.00%                  |





### Schedule of Employer Contributions

| Year Ended                            | Annual Required Contribution | Percentage Contributed |
|---------------------------------------|------------------------------|------------------------|
| <b>Basic Benefits</b>                 |                              |                        |
| June 30, 2008                         | 242,314,851                  | 100.0%                 |
| June 30, 2009                         | 268,645,839                  | 100.0                  |
| June 30, 2010                         | 378,201,685                  | 100.0                  |
| June 30, 2011                         | 355,959,304                  | 100.0                  |
| June 30, 2012                         | 376,816,938                  | 100.0                  |
| June 30, 2013                         | 380,083,642                  | 100.0                  |
| <b>Medicare Part B</b>                |                              |                        |
| June 30, 2008                         | 17,519,556                   | 100.0%                 |
| June 30, 2009                         | 21,688,294                   | 100.0                  |
| June 30, 2010                         | 22,619,935                   | 100.0                  |
| June 30, 2011                         | 22,172,922                   | 100.0                  |
| June 30, 2012                         | 21,450,368                   | 100.0                  |
| June 30, 2013                         | 20,672,040                   | 100.0                  |
| <b>Post-Retirement Death Benefits</b> |                              |                        |
| June 30, 2008                         | \$ 835,348                   | 100.0                  |
| June 30, 2009                         | 734,970                      | 100.0                  |
| June 30, 2010                         | 1,225,772                    | 100.0                  |
| June 30, 2011                         | 1,166,996                    | 100.0                  |
| June 30, 2012                         | 1,454,763                    | 100.0                  |
| June 30, 2013                         | 1,398,442                    | 100.0                  |



## SCHEDULE A

### Valuation Balance Sheet and Solvency Test

The following valuation balance sheet shows the assets and liabilities of the retirement system as of the current valuation date of June 30, 2013 and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2012. The items shown in the balance sheet are present values actuarially determined as of the relevant valuation date.

#### VALUATION BALANCE SHEETS SHOWING THE ASSETS AND LIABILITIES OF THE SCHOOL EMPLOYEES RETIREMENT SYSTEM OF OHIO

|   | June 30, 2013            | June 30, 2012            |
|---|--------------------------|--------------------------|
| <b>ASSETS</b>   |                          |                          |
| Current actuarial value of assets   | \$ 11,125,960,356        | \$ 10,396,912,847        |
| Prospective contributions   |                          |                          |
| Member contributions  | \$ 2,408,904,452         | \$ 2,454,180,160         |
| Employer normal contributions   | 242,384,715              | 235,800,553              |
| Unfunded accrued liability contributions  | <u>6,121,200,722</u>     | <u>6,357,653,176</u>     |
| Total prospective contributions   | <u>\$ 8,772,489,889</u>  | <u>\$ 9,047,633,889</u>  |
| Total assets  | <u>\$ 19,898,450,245</u> | <u>\$ 19,444,546,736</u> |
| <b>LIABILITIES</b>  |                          |                          |
| Present value of benefits payable on account of present retired members and beneficiaries | \$ 9,498,497,493         | \$ 8,874,437,367         |
| Present value of benefits payable on account of active members                            | 9,821,290,890            | 9,977,458,785            |
| Present value of benefits payable on account of inactive and deferred vested members      | <u>578,661,862</u>       | <u>592,650,584</u>       |
| Total liabilities   | <u>\$ 19,898,450,245</u> | <u>\$ 19,444,546,736</u> |



The following tables provide the solvency test for SERS members.

**Solvency Test<sup>1</sup>**  
(\$ in Millions)

| Valuation Date                        | Aggregate Accrued Liabilities For  |  |   |                           | Portion of Accrued Liabilities Covered by Reported Asset |        |       |
|---------------------------------------|------------------------------------|--|---|---------------------------|--|--------|-------|
|                                       | (1)<br>Active Member Contributions | (2)<br>Retired Members & Beneficiaries | (3)<br>Active Members (Employer Financed Portion) | Actuarial Value of Assets | (1)  | (2)    | (3)   |
| <b>Basic Benefits</b>                 |                                    |  |   |                           |  |        |       |
| 6/30/2008                             | \$ 2,291                           | \$ 7,079                               | \$ 4,334  | \$ 11,241                 | 100.0%   | 100.0% | 43.2% |
| 6/30/2009                             | 2,470                              | 7,496                                  | 4,224   | 9,704                     | 100.0  | 96.5   | 0.0   |
| 6/30/2010                             | 2,569                              | 7,850                                  | 4,404   | 10,766                    | 100.0  | 100.0  | 7.9   |
| 6/30/2011                             | 2,749                              | 8,525                                  | 4,636   | 10,378                    | 100.0  | 89.5   | 0.0   |
| 6/30/2012                             | 2,826                              | 9,190                                  | 4,322   | 10,266                    | 100.0  | 81.0   | 0.0   |
| 6/30/2013                             | 2,860                              | 9,796                                  | 4,196   | 10,988                    | 100.0  | 83.0   | 0.0   |
| <b>Medicare Part-B</b>                |                                    |  |   |                           |  |        |       |
| 6/30/2009                             | \$ 0                               | \$ 239                                 | \$ 121  | \$ 113                    | 100.0%   | 47.1%  | 0.0%  |
| 6/30/2010                             | 0                                  | 239                                    | 128   | 122                       | 100.0  | 51.1   | 0.0   |
| 6/30/2011                             | 0                                  | 245                                    | 138   | 116                       | 100.0  | 47.3   | 0.0   |
| 6/30/2012                             | 0                                  | 251                                    | 132   | 113                       | 100.0  | 45.1   | 0.0   |
| 6/30/2013                             | 0                                  | 255                                    | 132   | 119                       | 100.0  | 46.5   | 0.0   |
| <b>Post-Retirement Death Benefits</b> |                                    |  |   |                           |  |        |       |
| 6/30/2009                             | \$ 0                               | \$ 24                                  | \$ 7  | \$ 19                     | 100.0%   | 79.2%  | 0.0%  |
| 6/30/2010                             | 0                                  | 25                                     | 7   | 21                        | 100.0  | 84.0   | 0.0   |
| 6/30/2011                             | 0                                  | 26                                     | 7   | 19                        | 100.0  | 74.0   | 0.0   |
| 6/30/2012                             | 0                                  | 26                                     | 8   | 18                        | 100.0  | 69.7   | 0.0   |
| 6/30/2013                             | 0                                  | 27                                     | 7   | 19                        | 100.0  | 72.6   | 0.0   |

<sup>1</sup>Solvency Test combined for Pension, Death After Retirement Benefits and Medicare Part B Benefits for valuations performed prior to 6/30/2009

**SCHEDULE B**

**Development of Actuarial Value of Assets**



| Valuation date June 30:                         | 2012                 | 2013                | 2014               | 2015                 | 2016               |
|---|----------------------|---------------------|--------------------|----------------------|--------------------|
| A. Actuarial Value Beginning of Year            | \$ 10,868,822,602    | \$ 10,752,023,254   |                    |                      |                    |
| B. Market Value End of Year                     | 10,686,768,799       | 11,679,663,055      |                    |                      |                    |
| C. Market Value Beginning of Year               | 10,974,881,045       | 10,686,768,799      |                    |                      |                    |
| D. Cash Flow                                    |                      |                     |                    |                      |                    |
| D1. Contributions                               | \$ 753,172,445       | \$ 740,601,623      |                    |                      |                    |
| D2. Other Revenue                               | 154,832,793          | 135,705,046         |                    |                      |                    |
| D3. Benefit Payments                            | (1,131,594,174)      | (1,169,136,796)     |                    |                      |                    |
| D4. Net Transfers                               | <u>(4,976,841)</u>   | <u>(22,301,557)</u> |                    |                      |                    |
| D5. Net   | \$ (228,565,777)     | \$ (315,131,684)    |                    |                      |                    |
| E. Investment Income                            |                      |                     |                    |                      |                    |
| E1. Market Total: B.-C.-D5.                     | \$ (59,546,469)      | \$ 1,308,025,940    |                    |                      |                    |
| E2. Assumed Rate (Net of Expenses)              | 7.75%                | 7.75%               |                    |                      |                    |
| E3. Amount for Immediate Recognition            | 841,696,357          | 816,013,229         |                    |                      |                    |
| E4. Amount for Phased-In Recognition            | (901,242,826)        | 492,012,711         |                    |                      |                    |
| F. Phased-In Recognition of Investment Income   |                      |                     |                    |                      |                    |
| F1. Current Year: 0.25 * E4.                    | \$ (225,310,707)     | \$ 123,003,178      | \$ 0               | \$ 0                 | \$ 0               |
| F2. First Prior Year                            | 256,133,554          | (225,310,707)       | 123,003,178        | 0                    | 0                  |
| F3. Second Prior Year                           | 98,410,558           | 256,133,554         | (225,310,707)      | 123,003,178          | 0                  |
| F4. Third Prior Year                            | <u>(859,163,333)</u> | <u>98,410,558</u>   | <u>256,133,554</u> | <u>(225,310,707)</u> | <u>123,003,177</u> |
| F5. Total Recognized Investment Gain/(Loss)     | \$ (729,929,928)     | \$ 252,236,583      | \$ 153,826,025     | \$ (102,307,529)     | \$ 123,003,177     |
| G. Preliminary Actuarial Value End of Year:     |                      |                     |                    |                      |                    |
| A.+D5.+E3.+F5.                                  | \$ 10,752,023,254    | \$ 11,505,141,382   |                    |                      |                    |
| H. Corridor                                     |                      |                     |                    |                      |                    |
| H1. 80% of Market Value                         | \$ 8,549,415,039     | \$ 9,343,730,444    |                    |                      |                    |
| H2. 120% of Market Value                        | \$ 12,824,122,559    | \$ 14,015,595,666   |                    |                      |                    |
| I. Actuarial Value End of Year:                 |                      |                     |                    |                      |                    |
| G. Not Less than H1. or Not Greater than H2     | \$ 10,752,023,254    | \$ 11,505,141,382   |                    |                      |                    |
| J. Difference Between Market & Actuarial Values | \$ (65,254,455)      | \$ 174,521,673      | \$ 20,695,648      | \$ 123,003,177       | \$ 0               |
| K. Health Care Valuation Assets                 | \$ 355,110,407       | \$ 379,181,026      |                    |                      |                    |
| L. Basic Benefits Valuation Assets              | \$ 10,396,912,847    | \$ 11,125,960,356   |                    |                      |                    |

The Actuarial Valuation of Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 4 year period. During periods when investment performance exceeds the assumed rate, Actuarial Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Actuarial Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, actuarial value will become equal to market value.



**SCHEDULE C**

**STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS**

The actuarial assumptions used in the valuation were adopted by the Board in April, 2011.

INTEREST RATE: 7.75% per annum, compounded annually (net after all System expenses).

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed rates of separation from active service are as follows:

| Service | Annual Rates of Withdrawal |
|---------|----------------------------|
| 0       | 45.00%                     |
| 1       | 31.00                      |
| 2       | 23.00                      |
| 3       | 17.00                      |
| 4       | 13.00                      |
| 5       | 9.00                       |
| 10      | 4.00                       |
| 15      | 2.00                       |
| 20      | 2.00                       |
| 25      | 1.50                       |

| Age | Annual Rates of |        |            |        |
|-----|-----------------|--------|------------|--------|
|     | Death           |        | Disability |        |
|     | Male            | Female | Male       | Female |
| 20  | .013%           | .007%  | .020%      | .020%  |
| 25  | .017            | .007   | .038       | .020   |
| 30  | .020            | .009   | .068       | .026   |
| 35  | .021            | .012   | .122       | .054   |
| 40  | .027            | .018   | .210       | .100   |
| 45  | .040            | .024   | .310       | .168   |
| 50  | .065            | .036   | .410       | .260   |
| 55  | .111            | .057   | .510       | .360   |
| 60  | .199            | .111   | .550       | .400   |
| 65  | .363            | .216   | .550       | .400   |
| 70  | .593            | .343   | .550       | .400   |
| 74  | .851            | .510   | .550       | .400   |



| Annual Rates of Normal Retirements |       |        |
|------------------------------------|-------|--------|
| Age                                | Male  | Female |
| 50                                 | 28.0% | 25.0%  |
| 55                                 | 20.0  | 21.0   |
| 60                                 | 18.0  | 17.0   |
| 62                                 | 20.0  | 20.0   |
| 65                                 | 25.0  | 25.0   |
| 70                                 | 14.0  | 14.0   |
| 75                                 | 100.0 | 100.0  |

For members who are not eligible to retire prior to August 1, 2017, the assumed rates of retirement in the first year of eligibility for a normal retirement and upon completing 30 years of service are 28%. The assumed rates of early retirement for members who retire prior to August 1, 2017 are 14% for males and 13% for females aged 55 to 59 and 8.5% for males and 9.5% for females aged 60 to 64.

**SALARY INCREASES:** Representative values of the assumed annual rates of salary increases are as follows:

| Service   | Annual Rates of   |                |                    |
|-----------|-------------------|----------------|--------------------|
|           | Merit & Seniority | Base (Economy) | Increase Next Year |
| 0         | 18.00%            | 4.00%          | 22.00%             |
| 1         | 8.00              | 4.00           | 12.00              |
| 2         | 5.50              | 4.00           | 9.50               |
| 3         | 4.00              | 4.00           | 8.00               |
| 4         | 3.00              | 4.00           | 7.00               |
| 5         | 2.00              | 4.00           | 6.00               |
| 6         | 1.25              | 4.00           | 5.25               |
| 7         | 1.00              | 4.00           | 5.00               |
| 8         | 0.50              | 4.00           | 4.50               |
| 9         | 0.25              | 4.00           | 4.25               |
| 10-14     | 0.00              | 4.00           | 4.00               |
| 15 & over | 0.00              | 4.00           | 4.00               |

**PAYROLL GROWTH:** 4.00% per annum, compounded annually.

**PRICE INFLATION:** 3.25% per annum, compounded annually.

**DEATH AFTER RETIREMENT:** The mortality table, for post-retirement mortality, used in evaluating allowances to be paid is the 1994 Group Annuity Mortality Table, set back one year for both men and women. Special tables are used for the period after disability retirement. This assumption is used to measure the probabilities of each benefit payment being made after retirement. There is sufficient margin



in the current mortality tables for possible future improvement in mortality rates and that margin will be reviewed again when the next experience investigation is conducted.

MARRIAGE ASSUMPTION: 80% married with the husband three years older than his wife.

VALUATION METHOD: Entry age normal cost method. Entry age is established on an individual basis.

ASSET VALUATION METHOD: Actuarial value, as developed in Schedule A. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the assumed valuation rate of return. The amount recognized each year is 25% of the difference between market value and expected market value. The actuarial value of assets cannot be less than 80% or more than 120% of market value.



## SCHEDULE D

### SCHOOL EMPLOYEES RETIREMENT SYSTEM OF OHIO Summary of Benefit and Contribution Provisions

|   |  |
|---|--|
| <b>Contributions for Basic Benefits</b>   | Members contribute 10% of pay and employers contribute 14% of pay. Employer contributions not required to finance basic benefits are allocated to the health care program.   |
| <b>Final Average Salary</b>   | Average annual salary over the member's three highest years of service.  |
| <b>Normal Retirement</b>  |  |
| Condition for Retirement  |  |
| <i>Retire before August 1, 2017<br/>        or have 25 years of service or<br/>        more on or before August 1,<br/>        2017</i> | Attainment of age 65 with at least five years of creditable service, or completion of 30 years of creditable service, regardless of age.   |
| <i>Members attaining 25<br/>        years of service after<br/>        August 1, 2017</i>   | Attainment of age 67 with at least ten years of creditable service, or attainment of age 57 with at least 30 years of creditable service. Buy-up option available.   |
| Amount of Allowance   | The annual retirement allowance payable shall not be greater than 100% of final average salary, and is the greater of: <ol style="list-style-type: none"><li>1. Money Purchase - the greater of:<br/>The sum of:<ol style="list-style-type: none"><li>a. An annuity based on the value of the member's accumulated contributions at retirement</li><li>b. A pension equal to the annuity</li><li>c. For members who have 10 or more years of service credit prior to 10/1/1956, an annual benefit of \$180.</li></ol></li><li>2. Defined Benefit - the greater of:<br/>The sum of:<ol style="list-style-type: none"><li>a. 2.2% of final average salary multiplied by the member's years of service up to 30,</li><li>b. 2.5% of final average salary multiplied by the member's years of service in excess of 30,</li></ol>or:<ol style="list-style-type: none"><li>c. \$86 multiplied by the years of service.</li></ol></li></ol> |





## Early Retirement

### Condition for Early Retirement

*Retire before August 1, 2017 or have 25 years of service or more on or before August 1, 2017*

Not eligible for unreduced service retirement but has attained age 55 with at least 25 years of service, or age 60 with five years of service.

*Members attaining 25 years of service after August 1, 2017*

Attainment of age 62 with at least ten years of creditable service, or attainment of age 60 with at least 25 years of creditable service.

### Amount of Allowance

*Retire before August 1, 2017 or have 25 years of service or more on or before August 1, 2017*

Normal retirement allowance accrued to the date of early retirement. The Defined Benefit amount determined above is adjusted by the following percentages based on attained age or years of service:

| <u>Attained Age</u> | <u>Years of Ohio Service Credit</u> | <u>Percentage</u> |
|---------------------|-------------------------------------|-------------------|
| 58                  | 25                                  | 75%               |
| 59                  | 26                                  | 80                |
| 60                  | 27                                  | 85                |
| 61                  |                                     | 88                |
|                     | 28                                  | 90                |
| 62                  |                                     | 91                |
| 63                  |                                     | 94                |
|                     | 29                                  | 95                |
| 64                  |                                     | 97                |

*Members attaining 25 years of service after August 1, 2017*

Actuarial equivalent of the normal retirement allowance accrued to the date of early retirement. The Defined Benefit amount determined above is actuarially adjusted for the years before age 65 (age 67 if after August 1, 2017) or 30 years of service, whichever is shorter, but in no event is the adjusted benefit less than the following percentages of the Defined Benefit amount based on years of service:

| <u>Years of Ohio Service Credit</u> | <u>Percentage</u> |
|-------------------------------------|-------------------|
| 25                                  | 75%               |
| 26                                  | 80                |
| 27                                  | 85                |
| 28                                  | 90                |
| 29                                  | 95                |

## Disability Retirement

### Condition for Retirement

An allowance is paid upon becoming permanently disabled after completion of at least 5 years of total service credit.

### Amount of Allowance

1. For those who were active members prior to July 29, 1992 and did not elect the benefit structure outlined below, an allowance based on service to date of



disablement, plus, if the age at disablement is less than 60, continuous service to age 60. The allowance is computed in the same manner as the defined benefit service retirement allowance, subject to a minimum of 30% of FAS and a maximum of 75% of FAS. It is payable for life, unless terminated.

2. For those who became active members after July 28, 1992, and for those who were active members prior to July 29, 1992 who so elected, an allowance equal to the greater of (i) 45% of FAS, or (ii) the lesser of 60% of FAS, or the allowance computed in the same manner as the defined benefit service retirement allowance. The allowance will continue until:
  - a. The date the member is granted a service retirement benefit, or
  - b. The date the allowance is terminated, or
  - c. The later of the date the member attains age 65 or the date the disability allowance has been paid for the minimum duration in accordance with the following schedule:

| <u>Age at Disability</u> | <u>Minimum Duration<br/>In Months</u> |
|--------------------------|---------------------------------------|
| 60 and earlier           | 60                                    |
| 61                       | 60                                    |
| 62                       | 48                                    |
| 63                       | 48                                    |
| 64                       | 36                                    |
| 65                       | 36                                    |
| 66                       | 24                                    |
| 67                       | 24                                    |
| 68                       | 24                                    |
| 69 and older             | 12                                    |

**Death Benefits Prior to Retirement**

**Death While Eligible to Retire**

If a member dies in service after becoming eligible to retire with a service allowance and leaves a surviving spouse or other sole dependent beneficiary, the survivor may elect to receive the same amount that would have been paid had the member retired the last day of the month of death and elected the 100% joint and survivor form of payment.

**Survivor (Death-in-Service) Allowances**

**Condition for Benefit**

Upon the death of a member with at least 1½ years of Ohio service credit and with at least ¼ year of Ohio contributing service credit within 2½ years prior to the date of death, the survivor allowances are payable as follows:

1. **Qualified Spouse:** A monthly allowance commencing at age 62, except that the benefit is payable immediately if: (1) the qualified deceased member had 10 or more years of Ohio service credit; or (2) is caring for a surviving child, or (3) is incompetent.
2. **Qualified Child:** For allowances that commenced before January 7 2013, an allowance is payable to the qualified



child of a deceased member who has never been married and is under age 18, under age 22 and in school, or adjudged incompetent prior to the member's death and the child attaining age 18 or age 22 if attending school. For allowances that commence on or after January 7, 2013 an allowance is payable to the qualified child of a deceased member who has never been married and is under age 19, or adjudged incompetent prior to the member's death and prior to the child attaining age 19.

3. **Qualified Parent's Allowance:** A monthly allowance is payable to a dependent parent age 65 or more.

**Amount of Allowances**

Except when survived by a qualified child(ren), upon the death of a member prior to retirement, the accumulated contributions of the member without interest is payable. Alternatively, the beneficiary may elect the following amounts, payable monthly while eligible:

| <b><u>Number of Qualified Survivors</u></b> | <b><u>Annual Benefit as Percent of Member's FAS</u></b> | <b><u>Minimum Monthly Allowance</u></b> |
|---|---|---|
| 1   | 25%   | \$96                                    |
| 2   | 40  | 186                                     |
| 3   | 50  | 236                                     |
| 4   | 55  | 236                                     |
| 5 or more                                   | 60  | 236                                     |

If the deceased member had attained at least 20 years of service, the total benefits payable to all qualified survivors are not less than:

| <b><u>Years of Service</u></b> | <b><u>Annual Benefit as Percent of Member's FAS</u></b> |
|--------------------------------|---|
| 20                             | 29%   |
| 21                             | 33  |
| 22                             | 37  |
| 23                             | 41  |
| 24                             | 45  |
| 25                             | 48  |
| 26                             | 51  |
| 27                             | 54  |
| 28                             | 57  |
| 29 or more                     | 60  |

**Termination Benefits**

Refund of Members' Accumulated Contributions

In the event a member leaves service before any monthly benefits are payable on his behalf, his accumulated contributions, without interest, may be refunded.

Deferred Benefits

Members who retire prior to August 1, 2017 must have at least 5 years of service credit and those members who retire on and after August 1, 2017 must have at least 10 years of service credit and are eligible to draw the benefit the first of the month following their 62<sup>nd</sup> birthday.



**Normal Form of Benefit**

Single Life Annuity

**Optional Forms of Benefit**

A member upon retirement may elect to receive his allowance in one of the following forms that are computed to be actuarially equivalent to the applicable retirement allowance:

Upon the death of a retiree, 50%, 100%, or some other percentage of his reduced retirement allowance shall be continued throughout the life of, and paid to, a designated beneficiary.

A reduced retirement allowance shall be continued throughout the life of the pensioner, but with the further guarantee of payment to the pensioner, his beneficiary or his estate for a specified number of years certain.

A member can select a partial lump-sum option at retirement. Under this option, the partial lump-sum shall not be less than 6 times and not more than 36 times the unreduced monthly benefit, and the monthly benefit will be actuarially reduced. In addition, the monthly benefit payable cannot be less than 50% of the unreduced amount.

**Post-Retirement Death Benefit**

Regardless of the form of benefit selected, a lump sum benefit of \$1,000 is paid at the death of the retiree.

**Post-Retirement Increases**

On each anniversary of the initial date of retirement, the allowances of all retirees and survivors are increased by 3% of the base benefit.

**Medicare Part B**

Each recipient of a service retirement benefit, a disability benefit or a survivor benefit who was credited with at least 10 years of service and is covered under Medicare Part B and has chosen the health care option, is reimbursed \$45.50 per month for premiums for that coverage.

**Re-Employed Retirants**

Eligibility Effective

July 1, 1991, service retirees of SERS, or service or disability retirees of one of the other four Ohio retirement systems who are employed in a SERS covered position are required to contribute to a money purchase annuity, a type of defined contribution plan.

Amount of Allowance

Upon termination of employment, a re-employed retirant who has attained age 65 is eligible to receive an annuity based on the amount of his/her accumulated contributions, and an equal amount of employer contributions, plus interest to the effective date of retirement. Effective July 1, 2006 the amount of employer contributions will be determined by the Board. Interest is granted on the reemployed retirant's prior fiscal year account balance, calculated using a rate determined by the SERS Board, compounded annually. The benefit is payable as a lump sum or as an annuity if the amount of such annuity is at least \$25. Upon termination of employment, a re-employed retirant who has not attained age 65 may request a lump sum



refund of his/her own contributions; there is no payment of employer contributions or interest.

**Benefits Payable Upon Death**

If a re-employed retirant dies while employed, a lump sum payment of the monthly annuity, discounted to the present value using the current actuarial assumption rate of interest, will be paid to his beneficiary.

If a re-employed retirant dies while receiving a monthly annuity, a lump sum payment will be made to a beneficiary in an amount equal to the excess, if any, of the lump sum payment the re-employed retirant would have received at the effective date of retirement over the sum of the annuity payments received by the re-employed retirant to the date of death.

**Member Contributions**

Each re-employed retirant is required to contribute 10% of his pay by payroll deductions.

**Employer Contributions**

Employer contributions are expressed as percents of member covered payroll. Employers are required to contribute 14% of payroll.

**Other Benefits**

Re-employed retirants of SERS are not eligible to receive any of the other benefits provided to SERS members.

**Member Contributions**

10% of salary.



**SCHEDULE E**

**DETAILED TABULATIONS OF THE DATA**

**Schedule of Retired Members Added to and Removed From Rolls  
Last Six Fiscal Years**

| <b>Year Ending June 30</b> | <b>2008</b>    | <b>2009</b>    | <b>2010</b>                                | <b>2011</b>    | <b>2012</b>    | <b>2013</b>    |
|----------------------------|----------------|----------------|--|----------------|----------------|----------------|
|                            |                |                | <b><u>Number</u></b>                       |                |                |                |
| Beginning of Year          | 63,529         | 64,818         | 65,757                                     | 66,127         | 67,221         | 69,038         |
| Added                      | 3,448          | 3,103          | 2,694                                      | 3,472          | 4,137          | 4,197          |
| Removed                    | 2,159          | 2,164          | 2,324                                      | 2,378          | 2,320          | 2,464          |
| End of Year                | 64,818         | 65,757         | 66,127                                     | 67,221         | 69,038         | 70,771         |
|                            |                |                | <b><u>Annual Retirement Allowances</u></b> |                |                |                |
| Beginning of Year          | \$ 607,386,140 | \$ 652,373,571 | \$ 693,838,994                             | \$ 729,859,717 | \$ 777,910,918 | \$ 838,076,567 |
| Added                      | 46,243,749     | 41,970,065     | 37,351,889                                 | 49,577,810     | 61,519,329     | 62,841,820     |
| Removed                    | 1,256,318      | 504,642        | 1,331,166                                  | 1,526,603      | 1,353,680      | 2,650,786      |
| End of Year                | \$ 652,373,571 | \$ 693,838,994 | \$ 729,859,717                             | \$ 777,910,918 | \$ 838,076,567 | \$ 898,267,601 |
| <br>                       |                |                |  |                |                |                |
| % Increase in Allowances   | 7.41%          | 6.36%          | 5.19%                                      | 6.58%          | 7.73%          | 7.18%          |
| <br>                       |                |                |  |                |                |                |
| Average Annual Allowance   | \$ 10,065      | \$ 10,552      | \$ 11,037                                  | \$ 11,572      | \$ 12,139      | \$ 12,693      |



**Annuity and Pension Reserve Fund  
Retired Information June 30, 2013  
Retired Members By Type of Benefit**

| Amount of<br>Monthly Benefit |       | Total        | Service      | Disability | Survivor   |
|------------------------------|-------|--------------|--------------|------------|------------|
| \$ 1 - \$                    | 250   | 11,633       | 10,513       | 108        | 1,012      |
| 251 -                        | 500   | 11,824       | 9,944        | 602        | 1,278      |
| 501 -                        | 750   | 10,525       | 8,838        | 845        | 842        |
| 751 -                        | 1,000 | 8,368        | 6,992        | 856        | 520        |
| 1,001 -                      | 1,500 | 11,570       | 9,853        | 1,304      | 413        |
| 1,501 -                      | 2,000 | 6,621        | 5,644        | 810        | 167        |
| Over                         | 2,000 | <u>9,834</u> | <u>8,764</u> | <u>913</u> | <u>157</u> |
|                              |       | 70,375       | 60,548       | 5,438      | 4,389      |

Average Monthly Benefit  
Average Age

\$ 1,072      \$ 1,294      \$ 644  
74.4            64.9            71.5



**Annuity and Pension Reserve Fund  
Retired Information June 30, 2013  
Tabulated by Attained Ages**

| Attained Age | Retirement |                 | Disability Retirement |                 | Total  |                 |
|--------------|------------|-----------------|-----------------------|-----------------|--------|-----------------|
|              | No.        | Annual Benefits | No.                   | Annual Benefits | No.    | Annual Benefits |
| Under 45     | 0          | \$ -            | 96                    | \$ 1,425,727    | 96     | \$ 1,425,727    |
| 45-49        | 41         | \$ 1,535,635    | 198                   | \$ 3,350,120    | 239    | \$ 4,885,755    |
| 50-54        | 522        | \$ 17,697,699   | 551                   | \$ 10,644,241   | 1,073  | \$ 28,341,940   |
| 55-59        | 1,751      | \$ 53,011,385   | 982                   | \$ 18,703,435   | 2,733  | \$ 71,714,820   |
| 60-64        | 6,399      | \$ 108,136,815  | 1217                  | \$ 21,281,607   | 7,616  | \$ 129,418,422  |
| 65-69        | 10,598     | \$ 154,261,469  | 818                   | \$ 12,755,978   | 11,416 | \$ 167,017,447  |
| 70-74        | 11,058     | \$ 147,364,254  | 606                   | \$ 7,878,758    | 11,664 | \$ 155,243,012  |
| 75-79        | 9,813      | \$ 118,621,311  | 448                   | \$ 4,575,273    | 10,261 | \$ 123,196,584  |
| 80-84        | 7,457      | \$ 77,123,820   | 315                   | \$ 2,621,091    | 7,772  | \$ 79,744,911   |
| 85-89        | 5,081      | \$ 42,662,974   | 150                   | \$ 956,868      | 5,231  | \$ 43,619,842   |
| 90 & Over    | 3,054      | \$ 19,978,425   | 57                    | \$ 259,779      | 3,111  | \$ 20,238,204   |
| Totals       | 55,774     | \$ 740,393,787  | 5,438                 | \$ 84,452,877   | 61,212 | \$ 824,846,664  |





**Annuity and Pension Reserve Fund  
Survivors of Annuitants Information June 30, 2013  
Tabulated by Attained Ages**

| Attained Age | Life Annuities |                 | Periods Certain |                 | Total |                 |
|--------------|----------------|-----------------|-----------------|-----------------|-------|-----------------|
|              | No.            | Annual Benefits | No.             | Annual Benefits | No.   | Annual Benefits |
| Under 45     | 37             | \$ 153,292      | 7               | \$ 57,226       | 44    | \$ 210,518      |
| 45-49        | 22             | \$ 114,512      | 4               | \$ 59,406       | 26    | \$ 173,918      |
| 50-54        | 52             | \$ 284,520      | 4               | \$ 39,086       | 56    | \$ 323,606      |
| 55-59        | 110            | \$ 1,267,684    | 4               | \$ 39,035       | 114   | \$ 1,306,719    |
| 60-64        | 150            | \$ 1,523,694    | 2               | \$ 39,739       | 152   | \$ 1,563,433    |
| 65-69        | 318            | \$ 3,335,956    | 9               | \$ 67,593       | 327   | \$ 3,403,548    |
| 70-74        | 570            | \$ 4,832,979    | 8               | \$ 78,097       | 578   | \$ 4,911,076    |
| 75-79        | 908            | \$ 7,465,527    | 8               | \$ 46,576       | 916   | \$ 7,512,102    |
| 80-84        | 1,120          | \$ 8,821,113    | 2               | \$ 6,742        | 1,122 | \$ 8,827,855    |
| 85-89        | 1,085          | \$ 7,376,359    | 0               | \$ -            | 1,085 | \$ 7,376,359    |
| 90 & Over    | 750            | \$ 3,899,372    | 0               | \$ -            | 750   | \$ 3,899,372    |
| Totals       | 5,122          | \$ 39,075,008   | 48              | \$ 433,499      | 5,170 | \$ 39,508,508   |



**All Benefit Recipients  
Male and Female Demographic Breakdown  
June 30, 2013**

| Attained<br>Age | Number of     |               | Total<br>Number |
|-----------------|---------------|---------------|-----------------|
|                 | Males         | Females       |                 |
| Under 20        | 26            | 23            | 49              |
| 20-24           | 7             | 19            | 26              |
| 25-29           | 4             | 4             | 8               |
| 30-34           | 6             | 11            | 17              |
| 35-39           | 15            | 19            | 34              |
| 40-44           | 42            | 76            | 118             |
| 45-49           | 141           | 219           | 360             |
| 50-54           | 591           | 703           | 1,294           |
| 55-59           | 1,321         | 1,809         | 3,130           |
| 60-64           | 2,349         | 5,862         | 8,211           |
| 65-69           | 3,231         | 9,196         | 12,427          |
| 70-74           | 3,310         | 9,611         | 12,921          |
| 75-79           | 3,067         | 8,797         | 11,864          |
| 80-84           | 2,304         | 7,161         | 9,465           |
| 85-89           | 1,446         | 5,292         | 6,738           |
| 90-94           | 590           | 2,649         | 3,239           |
| 95-99           | 119           | 660           | 779             |
| 100             | 6             | 33            | 39              |
| 101             | 4             | 22            | 26              |
| 102             | 1             | 10            | 11              |
| 103             | 0             | 6             | 6               |
| 104             | 1             | 2             | 3               |
| 105 & Over      |               | 6             | 6               |
| <b>Total</b>    | <b>18,581</b> | <b>52,190</b> | <b>70,771</b>   |



**Survivor Benefit Fund  
Survivors of Deceased Active Member Information June 30, 2013  
Tabulated by Attained Ages**

| <b>Attained Age</b> | <b>No.</b> | <b>Annual Benefits</b> |
|---------------------|------------|------------------------|
| Under 45            | 112        | \$ 1,184,574           |
| 45-49               | 95         | \$ 1,104,744           |
| 50-54               | 165        | \$ 1,872,304           |
| 55-59               | 283        | \$ 3,062,025           |
| 60-64               | 443        | \$ 4,194,204           |
| 65-69               | 684        | \$ 5,799,899           |
| 70-74               | 679        | \$ 5,046,055           |
| 75-79               | 687        | \$ 4,792,117           |
| 80-84               | 571        | \$ 3,617,543           |
| 85-89               | 422        | \$ 2,088,095           |
| 90 & Over           | 248        | \$ 1,150,870           |
| Totals              | 4,389      | \$ 33,912,429          |



**Total Active Members as of June 30, 2013  
Tabulated by Attained Ages and Years of Service**

| Attained Age   | Years of Service to Valuation Date |                 |                 |                 |                 |                 |                 | Totals          |
|----------------|------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                | 0-4                                | 5 - 9           | 10 - 14         | 15 - 19         | 20 - 24         | 25 - 29         | 30+             |                 |
| Under 20       | 727                                |                 |                 |                 |                 |                 |                 | 727             |
| Avg Pay        | \$5,577                            |                 |                 |                 |                 |                 |                 | \$4,054,759     |
| 20-24          | 5,231                              | 106             | 1               |                 |                 |                 |                 | 5,338           |
| Avg Pay        | \$7,888                            | \$19,608        | \$43,525        |                 |                 |                 |                 | \$43,385,534    |
| 25-29          | 5,172                              | 815             | 48              |                 |                 |                 |                 | 6,035           |
| Avg Pay        | \$12,313                           | \$26,664        | \$36,422        |                 |                 |                 |                 | \$87,163,155    |
| 30-34          | 4,577                              | 1,652           | 584             | 53              |                 |                 |                 | 6,866           |
| Avg Pay        | \$14,167                           | \$27,888        | \$35,697        | \$35,759        |                 |                 |                 | \$133,656,277   |
| 35-39          | 4,919                              | 2,137           | 1,179           | 366             | 29              |                 |                 | 8,630           |
| Avg Pay        | \$13,234                           | \$25,089        | \$35,651        | \$38,206        | \$42,811        |                 |                 | \$175,969,331   |
| 40-44          | 6,255                              | 3,663           | 2,400           | 964             | 295             | 33              |                 | 13,610          |
| Avg Pay        | \$12,339                           | \$22,341        | \$30,437        | \$39,320        | \$43,347        | \$49,032        |                 | \$284,377,255   |
| 44-49          | 5,750                              | 4,579           | 4,192           | 2,090           | 798             | 473             | 71              | 17,953          |
| Avg Pay        | \$12,954                           | \$21,294        | \$26,910        | \$33,014        | \$41,967        | \$44,346        | \$45,914        | \$411,525,145   |
| 50-54          | 4,671                              | 4,373           | 5,379           | 4,086           | 1,845           | 1,111           | 443             | 21,908          |
| Avg Pay        | \$13,521                           | \$21,906        | \$26,506        | \$29,156        | \$35,924        | \$43,411        | \$46,381        | \$555,711,233   |
| 55-59          | 3,577                              | 3,044           | 4,119           | 4,174           | 2,989           | 1,745           | 752             | 20,400          |
| Avg Pay        | \$14,133                           | \$22,519        | \$27,330        | \$28,524        | \$31,625        | \$36,799        | \$44,306        | \$542,793,552   |
| 60-64          | 2,028                              | 1,816           | 2,084           | 2,035           | 2,136           | 1,862           | 737             | 12,698          |
| Avg Pay        | \$13,447                           | \$22,316        | \$26,689        | \$29,778        | \$31,260        | \$34,194        | \$37,470        | \$342,072,028   |
| 65-69          | 966                                | 780             | 773             | 533             | 612             | 733             | 564             | 4,961           |
| Avg Pay        | \$9,699                            | \$18,885        | \$25,606        | \$29,133        | \$30,736        | \$31,068        | \$31,428        | \$118,729,335   |
| 70 & over      | 548                                | 500             | 398             | 233             | 174             | 227             | 436             | 2,516           |
| Avg Pay        | \$8,455                            | \$12,828        | \$19,504        | \$24,058        | \$25,930        | \$26,568        | \$28,513        | \$47,389,931    |
| <b>Totals</b>  | <b>44,421</b>                      | <b>23,465</b>   | <b>21,157</b>   | <b>14,534</b>   | <b>8,878</b>    | <b>6,184</b>    | <b>3,003</b>    | <b>121,642</b>  |
| <b>Avg Pay</b> | <b>\$12,282</b>                    | <b>\$22,538</b> | <b>\$27,833</b> | <b>\$30,460</b> | <b>\$33,613</b> | <b>\$36,790</b> | <b>\$38,261</b> | <b>\$22,581</b> |

Averages:  
Age: 48.6  
Service: 10.0  
Annual Pay: \$22,581



**Male Active Members as of June 30, 2013  
Tabulated by Attained Ages and Years of Service**

| Attained Age   | Years of Service to Valuation Date |                 |                 |                 |                 |                 |                 | Totals          |
|----------------|------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                | 0-4                                | 5 - 9           | 10 - 14         | 15 - 19         | 20 - 24         | 25 - 29         | 30+             |                 |
| Under 20       | 421                                |                 |                 |                 |                 |                 |                 | 421             |
| Avg Pay        | \$5,845                            |                 |                 |                 |                 |                 |                 | \$2,460,796     |
| 20-24          | 2,555                              | 48              | 1               |                 |                 |                 |                 | 2,604           |
| Avg Pay        | \$8,070                            | \$26,497        | \$43,525        |                 |                 |                 |                 | \$21,934,876    |
| 25-29          | 2,380                              | 424             | 34              |                 |                 |                 |                 | 2,838           |
| Avg Pay        | \$12,257                           | \$29,806        | \$40,657        |                 |                 |                 |                 | \$43,190,565    |
| 30-34          | 1,897                              | 698             | 284             | 22              |                 |                 |                 | 2,901           |
| Avg Pay        | \$15,033                           | \$32,788        | \$42,362        | \$42,088        |                 |                 |                 | \$64,360,056    |
| 35-39          | 1,758                              | 603             | 417             | 171             | 16              |                 |                 | 2,965           |
| Avg Pay        | \$14,011                           | \$32,506        | \$46,769        | \$44,592        | \$45,084        |                 |                 | \$72,081,085    |
| 40-44          | 1,965                              | 768             | 515             | 348             | 137             | 14              |                 | 3,747           |
| Avg Pay        | \$13,341                           | \$30,647        | \$44,543        | \$50,747        | \$47,450        | \$54,663        |                 | \$97,617,617    |
| 44-49          | 1,988                              | 883             | 655             | 451             | 302             | 220             | 36              | 4,535           |
| Avg Pay        | \$13,565                           | \$29,981        | \$40,312        | \$48,388        | \$51,771        | \$49,262        | \$48,425        | \$129,883,969   |
| 50-54          | 1,750                              | 997             | 836             | 551             | 390             | 447             | 227             | 5,198           |
| Avg Pay        | \$14,450                           | \$29,310        | \$39,417        | \$45,163        | \$49,916        | \$51,305        | \$49,701        | \$166,030,252   |
| 55-59          | 1,607                              | 951             | 890             | 576             | 447             | 420             | 332             | 5,223           |
| Avg Pay        | \$15,463                           | \$28,171        | \$37,667        | \$42,134        | \$45,406        | \$47,694        | \$49,794        | \$166,291,582   |
| 60-64          | 1,036                              | 753             | 607             | 387             | 338             | 326             | 190             | 3,637           |
| Avg Pay        | \$14,537                           | \$25,986        | \$34,200        | \$41,513        | \$44,678        | \$47,866        | \$50,482        | \$111,749,389   |
| 65-69          | 513                                | 434             | 349             | 164             | 114             | 104             | 72              | 1,750           |
| Avg Pay        | \$11,367                           | \$21,663        | \$30,054        | \$37,603        | \$41,007        | \$41,461        | \$43,113        | \$43,979,910    |
| 70 & over      | 278                                | 255             | 228             | 97              | 41              | 41              | 38              | 978             |
| Avg Pay        | \$10,120                           | \$15,792        | \$22,335        | \$30,319        | \$32,118        | \$35,705        | \$43,001        | \$19,288,426    |
| <b>Totals</b>  | <b>18,148</b>                      | <b>6,814</b>    | <b>4,816</b>    | <b>2,767</b>    | <b>1,785</b>    | <b>1,572</b>    | <b>895</b>      | <b>36,797</b>   |
| <b>Avg Pay</b> | <b>\$12,807</b>                    | <b>\$28,679</b> | <b>\$38,439</b> | <b>\$44,222</b> | <b>\$46,898</b> | <b>\$48,313</b> | <b>\$49,036</b> | <b>\$25,515</b> |

Averages:  
Age: 46.7  
Service: 8.1  
Annual Pay: \$25,515

**Female Active Members as of June 30, 2013  
Tabulated by Attained Ages and Years of Service**



| Attained Age   | Years of Service to Valuation Date |                 |                 |                 |                 |                 |                 | Totals          |
|----------------|------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                | 0-4                                | 5 - 9           | 10 - 14         | 15 - 19         | 20 - 24         | 25 - 29         | 30+             |                 |
| Under 20       | 306                                |                 |                 |                 |                 |                 |                 | 306             |
| Avg Pay        | \$5,209                            |                 |                 |                 |                 |                 |                 | \$1,593,963     |
| 20-24          | 2,676                              | 58              |                 |                 |                 |                 |                 | 2,734           |
| Avg Pay        | \$7,715                            | \$13,906        |                 |                 |                 |                 |                 | \$21,450,658    |
| 25-29          | 2,792                              | 391             | 14              |                 |                 |                 |                 | 3,197           |
| Avg Pay        | \$12,362                           | \$23,256        | \$26,138        |                 |                 |                 |                 | \$43,972,591    |
| 30-34          | 2,680                              | 954             | 300             | 31              |                 |                 |                 | 3,965           |
| Avg Pay        | \$13,554                           | \$24,304        | \$29,386        | \$31,268        |                 |                 |                 | \$69,296,221    |
| 35-39          | 3,161                              | 1,534           | 762             | 195             | 13              |                 |                 | 5,665           |
| Avg Pay        | \$12,801                           | \$22,174        | \$29,567        | \$32,607        | \$40,013        |                 |                 | \$103,888,246   |
| 40-44          | 4,290                              | 2,895           | 1,885           | 616             | 158             | 19              |                 | 9,863           |
| Avg Pay        | \$11,880                           | \$20,138        | \$26,584        | \$32,864        | \$39,789        | \$44,882        |                 | \$186,759,639   |
| 44-49          | 3,762                              | 3,696           | 3,537           | 1,639           | 496             | 253             | 35              | 13,418          |
| Avg Pay        | \$12,632                           | \$19,218        | \$24,429        | \$28,783        | \$35,998        | \$40,072        | \$43,332        | \$281,641,175   |
| 50-54          | 2,921                              | 3,376           | 4,543           | 3,535           | 1,455           | 664             | 216             | 16,710          |
| Avg Pay        | \$12,964                           | \$19,719        | \$24,130        | \$26,661        | \$32,173        | \$38,098        | \$42,892        | \$389,680,980   |
| 55-59          | 1,970                              | 2,093           | 3,229           | 3,598           | 2,542           | 1,325           | 420             | 15,177          |
| Avg Pay        | \$13,048                           | \$19,951        | \$24,481        | \$26,346        | \$29,201        | \$33,346        | \$39,967        | \$376,501,970   |
| 60-64          | 992                                | 1,063           | 1,477           | 1,648           | 1,798           | 1,536           | 547             | 9,061           |
| Avg Pay        | \$12,309                           | \$19,717        | \$23,602        | \$27,023        | \$28,738        | \$31,292        | \$32,950        | \$230,322,639   |
| 65-69          | 453                                | 346             | 424             | 369             | 498             | 629             | 492             | 3,211           |
| Avg Pay        | \$7,809                            | \$15,401        | \$21,944        | \$25,369        | \$28,384        | \$29,350        | \$29,718        | \$74,749,425    |
| 70 & over      | 270                                | 245             | 170             | 136             | 133             | 186             | 398             | 1,538           |
| Avg Pay        | \$6,740                            | \$9,743         | \$15,708        | \$19,593        | \$24,022        | \$24,554        | \$27,130        | \$28,101,505    |
| <b>Totals</b>  | <b>26,273</b>                      | <b>16,651</b>   | <b>16,341</b>   | <b>11,767</b>   | <b>7,093</b>    | <b>4,612</b>    | <b>2,108</b>    | <b>84,845</b>   |
| <b>Avg Pay</b> | <b>\$11,920</b>                    | <b>\$20,025</b> | <b>\$24,707</b> | <b>\$27,224</b> | <b>\$30,270</b> | <b>\$32,863</b> | <b>\$33,686</b> | <b>\$21,309</b> |

Averages:  
Age: 49.5  
Service: 10.9  
Annual Pay: \$21,309

Active Members as of June 30, 2013



By Annual Pay

| Annual Pay        | Number of Active Members |               |                | Portion of Total Number |            |
|-------------------|--------------------------|---------------|----------------|-------------------------|------------|
|                   | Men                      | Women         | Totals         | Group                   | Cumulative |
| Less than \$1,000 | 210                      | 251           | 461            | 0.4%                    | 0.4%       |
| \$1,000 - 1,999   | 1,222                    | 1,230         | 2,452          | 2.0%                    | 2.4%       |
| 2,000 - 2,999     | 2,201                    | 2,102         | 4,303          | 3.5%                    | 5.9%       |
| 3,000 - 3,999     | 2,243                    | 2,250         | 4,493          | 3.7%                    | 9.6%       |
| 4,000 - 4,999     | 1,788                    | 2,365         | 4,153          | 3.4%                    | 13.0%      |
| 5,000 - 5,999     | 1,341                    | 2,212         | 3,553          | 2.9%                    | 16.0%      |
| 6,000 - 6,999     | 990                      | 2,212         | 3,202          | 2.6%                    | 18.6%      |
| 7,000 - 7,999     | 854                      | 2,139         | 2,993          | 2.5%                    | 21.1%      |
| 8,000 - 8,999     | 767                      | 2,268         | 3,035          | 2.5%                    | 23.5%      |
| 9,000 - 9,999     | 633                      | 2,289         | 2,922          | 2.4%                    | 26.0%      |
| 10,000 - 11,999   | 1,320                    | 4,400         | 5,720          | 4.7%                    | 30.7%      |
| 12,000 - 13,999   | 1,175                    | 4,536         | 5,711          | 4.7%                    | 35.3%      |
| 14,000 - 15,999   | 1,189                    | 5,327         | 6,516          | 5.4%                    | 40.7%      |
| 16,000 - 17,999   | 1,209                    | 6,448         | 7,657          | 6.3%                    | 47.0%      |
| 18,000 - 19,999   | 1,164                    | 6,281         | 7,445          | 6.1%                    | 53.1%      |
| 20,000 - 24,999   | 2,344                    | 12,103        | 14,447         | 11.9%                   | 65.0%      |
| 25,000 - 29,999   | 2,051                    | 7,890         | 9,941          | 8.2%                    | 73.2%      |
| 30,000 - 35,999   | 3,103                    | 6,862         | 9,965          | 8.2%                    | 81.4%      |
| 36,000 and over   | 10,993                   | 11,680        | 22,673         | 18.6%                   | 100.0%     |
| <b>Totals</b>     | <b>36,797</b>            | <b>84,845</b> | <b>121,642</b> |                         |            |



## **SCHEDULE F**

### **GAIN/LOSS ANALYSIS DETAILS**

#### **COMMENTS**

Regular actuarial valuations measure the Retirement System's present financial position and contributions adequacy by calculating and financing the liabilities created by the present benefit program. This process involves discounting to present values the future benefit payments on behalf of present active and retired members and their survivors. However, valuations do not produce information regarding the amount of increases or decreases in unfunded actuarial accrued liabilities (UAAL) -- gain/loss analyses do.

The overall gain/loss to the Retirement System is the difference between the actual UAAL and the expected UAAL. A gain/loss analysis shows the breakdown of the overall system gain/loss by economic and non-economic risk areas. The economic risk areas are investment return and pay increases. The non-economic risk areas are service retirement, disability retirement, death in active service, termination (vested and non-vested), retiree mortality, and new members. Gains and losses resulting from data adjustments, timing of financial transactions, etc. are included separately as a miscellaneous item.

It is expected that actual experience will not coincide with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Changes in actuarial assumptions should be made for risk areas when the differences between actual and expected experience are consistently sizable over a period of years. Differences over a relatively short period of time may or may not be indicative of long-term trends, which are the basis of actuarial assumptions.

The actuarial assumptions used in this analysis were adopted by the Board in April 2011.

Any historical information and data shown in the report with a valuation date prior to June 30, 2008 were obtained from the previous actuary's report.





**School Employees Retirement System of Ohio**  
**Experience Gains & Losses By Risk Area**  
**Comparative Schedule**  
**(\$ Millions)**

| Year Ending<br>June 30 | Gain (Loss) by Risk Area |            |                                |              |                        |            |                |                  |                    | \$        | % of AAL |
|------------------------|--------------------------|------------|--------------------------------|--------------|------------------------|------------|----------------|------------------|--------------------|-----------|----------|
|                        | Economic                 |            |                                | Non-Economic |                        |            |                |                  |                    |           |          |
|                        | Pay<br>Increases         | Investment | Age &<br>Service<br>Retirement | Disability   | Death<br>In<br>Service | Withdrawal | New<br>Members | Retired<br>Lives | Other <sup>+</sup> |           |          |
| 2004*                  | \$ 83.6                  | \$ (763.8) | \$ (45.2)                      | \$ 0.0       | \$ 0.5                 | \$ 56.6    | \$ (48.6)      | \$ 23.3          | \$ (0.4)           | (694.0)   | (6.5)    |
| 2005*                  | 101.6                    | (397.4)    | (82.6)                         | 2.1          | (0.7)                  | 52.7       | (42.7)         | 12.4             | (81.7)             | (436.3)   | (3.9)    |
| 2006*                  | 76.4                     | 44.7       | 37.9                           | 1.2          | 0.2                    | (52.9)     | (36.7)         | 15.8             | (145.4)            | (58.8)    | (0.5)    |
| 2007*                  | 121.0                    | 504.3      | 13.4                           | 0.9          | (0.3)                  | (73.2)     | (37.2)         | (10.2)           | (1.1)              | 517.6     | 4.1      |
| 2008                   | 95.8                     | (6.6)      | (96.1)                         | (3.5)        | (0.6)                  | 8.1        | (51.3)         | 72.4             | 81.2               | 99.4      | 6.1      |
| 2009                   | 107.5                    | (2,265.2)  | (50.8)                         | (28.7)       | (0.6)                  | (11.9)     | (50.4)         | 51.8             | 200.1              | (2,048.2) | (14.0)   |
| 2010                   | 182.5                    | 390.5      | (40.6)                         | (23.4)       | (0.5)                  | 11.0       | (38.1)         | 46.5             | (29.6)             | 498.3     | 3.4      |
| 2011                   | 198.4                    | (1,082.9)  | (59.2)                         | (28.1)       | (0.7)                  | 15.4       | (36.4)         | (1.0)            | (10.0)             | (1,004.5) | (6.2)    |
| 2012                   | 178.7                    | (692.0)    | (154.8)                        | (47.7)       | (0.2)                  | 46.5       | (29.8)         | 51.9             | (6.2)              | (653.6)   | (3.9)    |
| 2013                   | 219.2                    | 241.0      | (121.9)                        | (53.6)       | 0.0                    | 61.1       | (35.1)         | 2.9              | 1.9                | 315.5     | 1.8      |

\* Reported by a prior actuary

<sup>+</sup> Includes effect of changes in data, timing of financial transactions, etc.



The market related actuarial value of assets is based on a four-year average of adjusted market value returns. The difference between the actual returns at market value for the year and expected returns is determined. Twenty-five percent (25%) of that difference is added to the expected value along with corresponding amounts from each of the prior three years.

The actuarial value of assets for the basic benefits as of June 30, 2013 was \$11,125,960,356. The value for the previous year was \$10,396,912,847.

**School Employees Retirement System of Ohio  
Development of Gain (Loss) for Basic Benefits  
From Investment Return  
For the Year Ended June 30, 2013  
(\$ millions)**

|   | <u>\$ Millions</u> |
|---|--------------------|
| 1. Actuarial value of assets as of June 30, 2012  | \$ 10,396.9        |
| 2. Actuarial value of assets as of June 30, 2013  |                    |
| a. Actual   | 11,126.0           |
| b. If 7.75% assumed investment return was achieved for all phased-in years recognized in the asset method | 10,885.0           |
| 3. Gain (Loss): 2a minus 2b   | <u>\$ 241.0</u>    |



**Pay Increases During the 2012- 2013 Valuation Year  
To Members Active at Beginning and End of Year**

| Central<br>Age Group<br>Beginning<br>of Year | Number  | Pay Increases |          |
|--|---------|---------------|----------|
|  |         | Actual        | Expected |
| Under 25                                     | 1,950   | (0.33)%       | 17.69%   |
| 25   | 3,657   | 6.03          | 12.63    |
| 30   | 4,817   | 3.94          | 9.45     |
| 35   | 6,399   | 3.52          | 7.86     |
| 40   | 10,817  | 3.33          | 6.89     |
| 45   | 15,278  | 2.67          | 6.00     |
| 50   | 19,974  | 1.86          | 5.26     |
| 55   | 19,495  | 1.21          | 4.98     |
| 60   | 12,876  | 0.75          | 4.86     |
| 65 & Over                                    | 7,926   | 0.3           | 4.89     |
| Total  | 103,189 | 1.96          | 5.94     |



**Members Who Became Age & Service Retirees During the 2012- 2013 Valuation Year  
(Retirement With Allowance Beginning Immediately)**

| Attained Age  | Years of Service to Valuation Date |            |            |            |            |            |            | Total        |
|---------------|------------------------------------|------------|------------|------------|------------|------------|------------|--------------|
|               | 0-4                                | 5-9        | 10-14      | 15-19      | 20-24      | 25-29      | 30 plus    |              |
| Under 50      |                                    |            |            |            |            |            |            | 0            |
| 50            |                                    |            |            |            |            |            |            | 0            |
| 51            |                                    |            |            |            |            |            |            | 0            |
| 52            |                                    |            |            |            |            |            |            | 0            |
| 53            |                                    |            |            |            |            |            | 1          | 1            |
| 54            |                                    |            |            |            |            |            |            | 0            |
| 55            |                                    |            |            |            |            | 56         | 191        | 247          |
| 56            |                                    |            |            |            |            | 28         | 29         | 57           |
| 57            |                                    |            |            |            |            | 23         | 37         | 60           |
| 58            |                                    |            |            |            |            | 25         | 18         | 43           |
| 59            |                                    |            |            |            |            | 45         | 26         | 71           |
| 60            |                                    | 30         | 58         | 44         | 71         | 38         | 39         | 280          |
| 61            |                                    | 23         | 37         | 36         | 38         | 47         | 31         | 212          |
| 62            |                                    | 37         | 58         | 38         | 46         | 74         | 36         | 289          |
| 63            |                                    | 22         | 35         | 25         | 35         | 55         | 47         | 219          |
| 64            |                                    | 23         | 38         | 34         | 55         | 61         | 39         | 250          |
| 65            |                                    | 25         | 64         | 50         | 81         | 93         | 69         | 382          |
| 66            |                                    | 33         | 37         | 26         | 51         | 55         | 32         | 234          |
| 67            |                                    | 17         | 30         | 23         | 26         | 34         | 34         | 164          |
| 68            |                                    | 16         | 21         | 17         | 13         | 20         | 19         | 106          |
| 69            |                                    | 9          | 14         | 12         | 18         | 11         | 22         | 86           |
| 70 & Over     |                                    | 58         | 86         | 49         | 56         | 66         | 126        | 441          |
| <b>Totals</b> | <b>0</b>                           | <b>293</b> | <b>478</b> | <b>354</b> | <b>490</b> | <b>731</b> | <b>796</b> | <b>3,142</b> |

Average Age: 63.7  
Average Service: 22.6



**Members Who Died in 2012- 2013 Valuation Year  
With a Death-in-Service Allowance Payable**

| Central Age Group Beginning of Year | Number |
|-------------------------------------|--------|
| Under 25                            |        |
| 25                                  | 0      |
| 30                                  | 0      |
| 35                                  | 0      |
| 40                                  | 0      |
| 45                                  | 2      |
| 50                                  | 8      |
| 55                                  | 16     |
| 60                                  | 10     |
| 65                                  | 8      |
| 70 & Over                           | 10     |
| Total                               | 54     |

Average Age: 59.0  
Average Service: 16.7



**Members Who Died in 2012- 2013 Valuation Year  
and Received a Refund of Contributions**

| Central Age Group Beginning of Year | Number |
|-------------------------------------|--------|
| Under 25                            |        |
| 25                                  | 0      |
| 30                                  | 0      |
| 35                                  | 0      |
| 40                                  | 0      |
| 45                                  | 0      |
| 50                                  | 2      |
| 55                                  | 0      |
| 60                                  | 1      |
| 65                                  | 1      |
| 70 & Over                           | 2      |
| Total                               | 6      |

Average Age: 64.1  
Average Service: 3.2



**Members Who Became Disability Retirees  
During the 2012- 2013 Valuation Year**

| Central Age Group Beginning of Year | Number |
|-------------------------------------|--------|
| Under 25                            |        |
| 25                                  |        |
| 30                                  | 1      |
| 35                                  | 2      |
| 40                                  | 9      |
| 45                                  | 26     |
| 50                                  | 58     |
| 55                                  | 105    |
| 60                                  | 90     |
| 65                                  | 19     |
| 70 & Over                           | 3      |
| Total                               | 313    |

Average Age: 54.6  
Average Service: 16.3



**Members Receiving a Refund of Contributions  
or Becoming Inactive Without a Refund in  
the 2012- 2013 Valuation Year  
(Non-vested Terminations)**

| Central Age Group Beginning of Year | Number |
|-------------------------------------|--------|
| Under 25                            | 1,283  |
| 25                                  | 2,501  |
| 30                                  | 1,615  |
| 35                                  | 1,291  |
| 40                                  | 1,611  |
| 45                                  | 1,690  |
| 50                                  | 1,652  |
| 55                                  | 1,374  |
| 60                                  | 833    |
| 65                                  | 455    |
| 70 & Over                           | 254    |
| Total                               | 14,559 |

Average Age: 39.8  
Average Service: 3.0





**Members Who Became Inactive  
in the 2012- 2013 Valuation Year  
with a Deferred Allowance  
(Vested Terminations)**

| Central Age Group Beginning of Year | Number |
|-------------------------------------|--------|
| Under 25                            | 0      |
| 25                                  | 0      |
| 30                                  | 3      |
| 35                                  | 23     |
| 40                                  | 34     |
| 45                                  | 66     |
| 50                                  | 101    |
| 55                                  | 153    |
| 60                                  | 110    |
| 65                                  | 28     |
| 70 & Over                           | 18     |
| Total                               | 536    |

Average Age: 53.0  
Average Service: 12.6



## **SCHEDULE G**

### **GLOSSARY**

**Actuarial Accrued Liability.** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability".

**Accrued Service.** The service credited under the plan which was rendered before the date of the actuarial valuation.

**Actuarial Assumptions.** Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

**Actuarial Cost Method.** A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method".

**Actuarial Equivalent.** A series of payments is called an actuarial equivalent of another series of payments if the two series have the same actuarial present value.

**Actuarial Present Value.** The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

**Amortization.** Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

**Experience Gain (Loss).** A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

**Normal Cost.** The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost". Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

**Plan Termination Liability.** The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a "going concern" basis and is not normally determined in a routine actuarial valuation.

**Reserve Account.** An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

**Unfunded Actuarial Accrued Liability.** The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability".

**Valuation Assets.** The value of current plan assets recognized for valuation purposes. Generally based on book value plus a portion of unrealized appreciation or depreciation.



**APPENDIX A**

**ACTUARIAL ACCRUED LIABILITIES  
AS OF JUNE 30, 2013**

| <b>Present Value of:</b>                          | <b>Basic Benefits</b>    | <b>Medicare Part B</b> | <b>Death Benefit</b> | <b>Total</b>             |
|---|--------------------------|------------------------|----------------------|--------------------------|
| Future benefits to present retirees and survivors | \$ 9,229,737,359         | \$ 243,514,633         | \$ 25,245,501        | \$ 9,498,497,493         |
| Benefits and refunds to present inactive members  | 565,788,389              | 11,601,965             | 1,271,508            | 578,661,862              |
| Allowances to present active members              |                          |                        |                      |                          |
| Service   | 6,870,957,976            | 118,070,627            | 7,092,944            | 6,996,121,547            |
| Disability  | 270,826,372              | 4,608,543              | 404,800              | 275,839,715              |
| Survivor benefits                                 | 93,779,397               | 1,678,810              | -                    | 95,458,207               |
| Withdrawal  | (204,729,947)            | 7,297,927              | 14,274               | (197,417,746)            |
| Total Active AAL                                  | 7,030,833,798            | 131,655,907            | 7,512,018            | 7,170,001,723            |
| Total AAL   | <u>\$ 16,826,359,546</u> | <u>\$ 386,772,505</u>  | <u>\$ 34,029,027</u> | <u>\$ 17,247,161,078</u> |



**APPENDIX B**

**BREAKDOWN OF TOTAL AND ACCRUED LIABILITIES  
AS OF JUNE 30, 2013**

|                                      | Total Liability    | Accrued Liability     |
|--------------------------------------|--------------------|-----------------------|
| Active Members                       |                    |                       |
| Retirement                           | \$8,430,993,548    | \$6,870,957,976       |
| Death                                | 130,364,615        | 93,779,397            |
| Disability                           | 456,508,087        | 270,826,372           |
| Termination                          | 619,099,338        | (204,729,947)         |
| Medicare Part B                      | 172,886,151        | 131,655,907           |
| Death after Retirement               | <u>11,439,151</u>  | <u>7,512,018</u>      |
| Total                                | \$9,821,290,890    | \$7,170,001,723       |
| Retirees                             |                    |                       |
| Retirement/Survivor/Disability       | \$9,229,737,359    | \$9,229,737,359       |
| Medicare Part B                      | 243,514,633        | 243,514,633           |
| Death after Retirement               | <u>25,245,501</u>  | <u>25,245,501</u>     |
| Total                                | \$9,498,497,493    | \$9,498,497,493       |
| Deferred Vested Members              | 294,512,074        | 294,512,074           |
| Inactive Members                     | <u>284,149,788</u> | <u>284,149,788</u>    |
| Total Actuarial Values               | \$19,898,450,245   | \$17,247,161,078      |
| Actuarial Value of Assets            |                    | <u>11,125,960,356</u> |
| Unfunded Actuarial Accrued Liability |                    | \$6,121,200,722       |



**APPENDIX C**

**COMPARATIVE SCHEDULE  
AS OF JUNE 30, 2013**

| Valuation<br>Date<br>June 30 | Active Members |                        |                |            | Retired Lives |                     |                 |              | Accrued<br>Liability | Valuation<br>Assets<br>\$ Millions | UAAL    |
|------------------------------|----------------|------------------------|----------------|------------|---------------|---------------------|-----------------|--------------|----------------------|------------------------------------|---------|
|                              | Number         | Payroll<br>\$ Millions | Average Salary |            | Number        |                     | Annual Benefits |              |                      |                                    |         |
|                              |                |                        | \$             | % Increase | Retired       | Active /<br>Retired | \$ Millions     | % of Payroll |                      |                                    |         |
|                              |                |                        |                |            |               |                     |                 |              |                      |                                    |         |
| 2004                         | 123,139        | 2,394                  | 19,442         | 3.3        | 60,569        | 2.0                 | 491.6           | 20.5         | 11,251               | 8,667                              | 2,584   |
| 2005                         | 122,855        | 2,453                  | 19,963         | 2.7        | 61,433        | 2.0                 | 527.9           | 21.5         | 11,961               | 8,893                              | 3,137 * |
| 2006                         | 123,266        | 2,553                  | 20,714         | 3.8        | 62,521        | 2.0                 | 566.8           | 22.2         | 12,627               | 9,542                              | 3,155 * |
| 2007                         | 123,013        | 2,603                  | 21,163         | 2.2        | 63,529        | 1.9                 | 607.4           | 23.3         | 13,303               | 10,640                             | 2,734 * |
| 2008                         | 124,370        | 2,652                  | 21,322         | 0.8        | 64,818        | 1.9                 | 652.4           | 24.6         | 14,062               | 11,372                             | 2,689   |
| 2009                         | 125,465        | 2,787                  | 22,216         | 4.2        | 65,757        | 1.9                 | 693.8           | 24.9         | 14,582               | 9,836                              | 4,746   |
| 2010                         | 126,015        | 2,843                  | 22,558         | 1.5        | 66,127        | 1.9                 | 729.9           | 25.7         | 15,222               | 10,909                             | 4,312   |
| 2011                         | 125,337        | 2,852                  | 22,758         | 0.9        | 67,221        | 1.9                 | 777.9           | 27.3         | 16,325               | 10,513                             | 5,812   |
| 2012                         | 121,811        | 2,788                  | 22,889         | 0.6        | 69,038        | 1.8                 | 838.1           | 30.1         | 16,755               | 10,397                             | 6,358   |
| 2013                         | 121,642        | 2,747                  | 22,581         | -1.3       | 70,771        | 1.7                 | 898.3           | 32.7         | 17,247               | 11,126                             | 6,121   |

\* after the adjustment to reflect health care asset restatement