



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

**Prepared as of June 30, 2012**



# Cavanaugh Macdonald

CONSULTING, LLC

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November 15, 2012

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, 2012.

The date of the valuation was June 30, 2012.

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. Please note that the changes to the Retirement System pertaining to Senate Bill 341 signed by the Governor on September 26, 2012 were reflected in the development of the results shown in the report as of June 30, 2012.

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.

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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

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## **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
<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
<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, 2012**

**SECTION I – SUMMARY OF PRINCIPAL RESULTS**

1. This report, prepared as of June 30, 2012, 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, 2012	June 30, 2011
<b>Active members included in valuation</b>		
Number	121,811	125,337
Annual Compensation	\$2,788,153,585	\$2,852,378,614
<b>Retirees</b>		
Number	69,038	67,221
Annual allowances	\$838,076,567	\$777,910,918
<b>Deferred Vesteds</b>		
Number	12,610	12,410
Annual deferred allowances	\$43,439,531	\$42,362,452
<b>Assets (net of Health Care Assets)</b>		
Market related actuarial value	\$10,396,912,847	\$10,513,116,858
Market value	\$10,331,658,392	\$10,619,175,301
<b>Unfunded Accrued Liability</b>	\$6,357,653,176	\$5,811,887,401
<b>Funded Ratio (MVA/AAL)</b>		
Basic Benefits	62.83%	65.23%
Medicare Part B	29.48%	30.27%
Post-retirement Death Benefits	52.94%	57.58%
<b>Employer Contribution Rate</b>		
Normal	1.23%	1.72%
Accrued liability	<u>12.61</u>	<u>11.73</u>
Total	13.84%	13.45%
Accrued liability amortization period (years)	30	28



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. The valuation balance sheet showing the results of the valuation is given in Schedule A.
4. Comments on the valuation results are given in Section IV, comments on the experience and actuarial gains during the valuation year are given in Section V, and the rates of contribution payable by employers are given in Section VI.
5. Since the previous valuation, Senate Bill 341 was signed on September 26, 2012 which changes Early and Normal Retirement eligibilities for members not meeting current Early or Normal Retirement eligibilities on or before August 1, 2017. Shown below are contribution rates calculated before and after the application of changes to Early and Normal Retirement eligibilities resulting from Senate Bill 341 before extending the amortization period of the unfunded liability from 27 to 30 years.

	Before SB 341 (6/30/2012) (a) As % of Pay	After SB 341 (6/30/2012) (b) As % of Pay	Difference (b)– (a) As % of Pay
Employer Normal Contribution Rate	1.78%	1.23%	(0.55)%
UAL Amortization Rate	<u>13.81%</u>	<u>13.40%</u>	<u>(0.47)%</u>
Total Employer Rate	15.59%	14.63%	(0.96)%

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.
8. In order to continue to amortize the unfunded accrued liability of the System over a closed period, the required employer contribution must be 14.63% of compensation. Since this rate exceeds the statutory employer contribution of 14.00%, resetting the amortization period from 27 to 30 years will reduce the employer contribution to 13.84% which is less than the current statutory employer rate.



**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, 2012 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
121,811	\$2,788,153,585	\$22,889	48.7	10.1

The total number of active members includes 78,102 vested members and 43,709 non-vested members. Vested members are those hired prior to May 14, 2008 with at least five years of service and members hired on or after May 14, 2008 with at least ten years of service.

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
6/30/2007	123,013	\$2,603,300,211	\$21,163	2.2%
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



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	59,286	\$724,407,604	\$12,219	75.0
Disability	5,340	80,653,543	15,104	64.8
Survivors	4,412	33,015,420	7,483	71.2
Total in SERS	69,038	\$838,076,567	\$12,139	74.0

This valuation also includes 110,588 inactive members eligible for a contribution refund only (including 50,971 members reported separately who had completed one or more years of service before terminating). Their contributions totaled \$150,773,857 as of June 30, 2012. There were also 12,610 terminated vested members with annual deferred pension benefits of \$43,439,531. Included in the "Retiree" numbers in the above table are 8,278 re-employed retirees with account balances of \$65,501,808 (including employer contributions and interest), 348 re-retirees receiving only an annuity from their contributions and their employers' matching contributions, and 395 re-retirees receiving such annuities in addition to their regular pension benefits. The sum of the annuity payments attributable to these re-retirees is \$2,570,628.





### SECTION III – ASSETS

1. As of June 30, 2012 the total market value of assets amounted to \$10,686,768,799. 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, 2011	\$	10,974,881,045
(2)	Contributions and Misc. Revenue		903,028,397
(3)	Investment Gain (Loss)		(59,546,469)
(4)	Benefit Payments		(1,131,594,174)
(5)	Assets at June 30, 2012 (1) + (2) + (3) + (4)	\$	10,686,768,799
(6)	Annualized Rate of Return*		(0.5) %

2. The four-year smoothed market related actuarial value of assets used for the current valuation was \$10,396,912,847. Schedule B shows the development of the actuarial value of assets as of June 30, 2012. 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, 2011	\$	10,868,822,602
(2)	Contributions and Misc. Revenue		903,028,397
(3)	Investment Gain (Loss)		111,766,429
(4)	Benefit Payments		(1,131,594,174)
(5)	Assets at June 30, 2012 Before Application of Corridor (1) + (2) + (3) + (4)	\$	10,752,023,254
(6)	Annualized Rate of Return*		1.0 %

\*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, 2012.

1. The total valuation balance sheet on account of retirement benefits shows that the System has total prospective retirement benefit liabilities of \$19,444,546,736, of which \$8,874,437,367 is for the prospective benefits payable on account of present retired members and beneficiaries of deceased members, \$592,650,584 is for the prospective benefits payable on account of present inactive members, and \$9,977,458,785 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 \$10,396,912,847 as of June 30, 2012. The difference of \$9,047,633,889 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, \$2,454,180,160 is the present value of future contributions expected to be made by members, and the balance of \$6,593,453,729 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 1.01% of payroll for basic pension benefits, 0.02% of payroll for post-retirement death benefits, and 0.20% of payroll for Medicare Part B benefits are required to provide the benefits of the System for the average member of SERS.
3. Prospective employer normal contributions on account of retirement benefits at the above rates have a present value of \$235,800,553. When this amount is subtracted from \$6,593,453,729, which is the present value of the total future contributions to be made by the employers, there remains \$6,357,653,176 as the amount of future accrued liability contributions.
4. For pension benefits, it is recommended that the accrued liability contribution rate payable by the Employer on account of retirement benefits be set at 12.04% of payroll. For post-retirement death benefits, it is recommended that the 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 accrued liability contribution rate payable by the employers on account of retirement benefits be set at 0.54% of payroll. These rates are sufficient to amortize the unfunded accrued liability of \$6,357,653,176 over 30 years based on the assumption that the aggregate payroll for SERS members will increase by 4.00% each year.



## 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, 2012 is shown below (\$ millions).

### Experience Gain/(Loss)

(1)	UAAL as of 6/30/11	\$	5,811.9
(2)	Normal cost from last valuation		334.3
(3)	Contributions		696.7
(4)	Interest accrual: [(1) + (2) - (3)*.5] x .0775		449.3
(5)	Expected UAAL before changes: (1) + (2) - (3) + (4)	\$	5,898.8
(6)	Change due to plan amendments		(194.7)
(7)	Change due to new actuarial assumption or methods		0.0
(8)	Expected UAAL after changes: (5) + (6) + (7)	\$	5,704.1
(9)	Actual UAAL as of 6/30/12	\$	6,357.7
(10)	Gain/(loss): (8) - (9)	\$	(653.6)
(11)	Accrued liabilities as of 6/30/12	\$	16,754.6
(12)	Gain/(loss) as percent of actuarial accrued liabilities at start of year		(3.9%)



## 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 Year Ending 6/30/12
<b>Age &amp; Service Retirements.</b> If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (154.8)
<b>Disability Retirements.</b> If disability claims are less than assumed, there is a gain. If more claims, a loss.	(47.7)
<b>Death-in Service Benefits.</b> If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(0.2)
<b>Withdrawal From Employment.</b> If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	46.5
<b>Pay Increases.</b> If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	178.7
<b>New Members.</b> Additional accrued liability will be reflected as a loss.	(29.8)
<b>Investment Income.</b> If there is a greater investment income than assumed, there is a gain. If less income, a loss.	(692.0)
<b>Death After Retirement.</b> If retired members live longer than assumed, there is a loss. If not as long, a gain.	51.9
<b>Other.</b> Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, etc.	<u>(6.2)</u>
<b>Gain (or Loss) During Year From Financial Experience</b>	\$ (653.6)
<b>Non-Recurring Items.</b> Adjustments for plan amendments, assumption changes and method changes	<u>194.7</u>
<b>Composite Gain (or Loss) During Year</b>	\$ (458.9)



## 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 Death Benefits	Medicare Part B	Total
A. Normal Cost:				
(1) Service retirement benefits	6.71%			
(2) Disability benefits	0.76			
(3) Survivor benefits	0.16			
(4) Refunds	3.38			
(5) Total	11.01%	0.02%	0.20%	11.23%
B. Member Contributions	10.00%	0.00%	0.00%	10.00%
C. Employer Normal Cost: [A(5) - B]	1.01%	0.02%	0.20%	1.23%
D. Unfunded Actuarial Accrued Liability Contributions	12.04%	0.03%	0.54%	12.61%
E. Total Recommended Employer Contribution Rate:[C+D]	13.05%	0.05%	0.74%	13.84%



**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, 2012**

<b>GROUP</b>	<b>Total</b>
Retirees and beneficiaries currently receiving benefits	69,038
Terminated employees entitled to benefits but not yet receiving benefits	12,610
Active Members	<u>121,811</u>
Total	203,459

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 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>						
6/30/2007 <sup>#</sup>	\$ 10,513	\$ 13,004	\$ 2,562 <sup>^</sup>	80.8%	\$ 2,603	98.4%
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
<b>Medicare Part B</b>						
6/30/2007	\$ 127	\$ 299	\$ 172 <sup>^</sup>	42.5%	\$ 2,603	6.6%
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
<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

<sup>^</sup> After change in calculation methods of health care assets, resulting in a \$70 million future liability due to Pension plans by the Health Care Fund

<sup>#</sup> Includes Post-Retirement Death benefits



The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2012. Additional information as of the latest actuarial valuation follows.

Valuation date	6/30/2012
Actuarial cost method	Entry Age
Amortization	Level Percent Closed
Remaining amortization period	30 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, 2007 #	\$ 260,779,627	90.0%
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
<b>Medicare Part B</b>		
June 30, 2007	\$ 17,729,746	104.0%
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
<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

#Includes Post-Retirement Death Benefits



## 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, 2012 and, for comparison purposes, as of the immediately preceding valuation date of June 30, 2011. 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, 2012	June 30, 2011
<b>ASSETS</b>		
Current actuarial value of assets	\$ 10,396,912,847	\$ 10,513,116,858
Prospective contributions		
Member contributions	\$ 2,454,180,160	\$ 2,413,223,995
Employer normal contributions	235,800,553	364,592,587
Unfunded accrued liability contributions	<u>6,357,653,176</u>	<u>5,811,887,401</u>
Total prospective contributions	<u>\$ 9,047,633,889</u>	<u>\$ 8,589,703,983</u>
Total assets	<u><u>\$ 19,444,546,736</u></u>	<u><u>\$ 19,102,820,841</u></u>
<b>LIABILITIES</b>		
Present value of benefits payable on account of present retired members and beneficiaries	\$ 8,874,437,367	\$ 8,239,749,439
Present value of benefits payable on account of active members	9,977,458,785	10,307,914,854
Present value of benefits payable on account of inactive and deferred vested members	<u>592,650,584</u>	<u>555,156,548</u>
Total liabilities	<u><u>\$ 19,444,546,736</u></u>	<u><u>\$ 19,102,820,841</u></u>

Included in the retiree liability shown above is the liability attributable to re-retiree annual annuity payments. Such liability amounts to \$20,898,439 for 2012 and \$17,513,720 for 2011.



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) Active Member Contributions	(2) Retired Members & Beneficiaries	(3) Active Members (Employer Financed Portion)	Actuarial Value of Assets	(1)	(2)	(3)
<b>Basic Benefits</b>							
6/30/2007	\$ 2,180	\$ 6,413	\$ 4,557	\$ 9,542	100.0%	100.0%	20.8%
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
<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
<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

<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:	2011	2012	2013	2014	2015
A. Actuarial Value Beginning of Year	\$ 11,234,123,610	\$ 10,868,822,602			
B. Market Value End of Year	10,974,881,045	10,686,768,799			
C. Market Value Beginning of Year	9,396,935,181	10,974,881,045			
D. Cash Flow					
D1. Contributions	\$ 769,321,763	\$ 753,172,445			
D2. Other Revenue	122,232,090	154,832,793			
D3. Benefit Payments	(1,075,874,361)	(1,131,594,174)			
D4. Net Transfers	<u>(6,394,075)</u>	<u>(4,976,841)</u>			
D5. Net	\$ (190,714,583)	\$ (228,565,777)			
E. Investment Income					
E1. Market Total: B.-C.-D5.	\$ 1,768,660,447	\$ (59,546,469)			
E2. Assumed Rate (Net of Expenses)	8.00%	7.75%			
E3. Amount for Immediate Recognition	744,126,231	841,696,357			
E4. Amount for Phased-In Recognition	1,024,534,216	(901,242,826)			
F. Phased-In Recognition of Investment Income					
F1. Current Year: 0.25 * E4.	\$ 256,133,554	\$ (225,310,707)	\$ 0	\$ 0	\$ 0
F2. First Prior Year	98,410,558	256,133,554	(225,310,707)	0	0
F3. Second Prior Year	(859,163,333)	98,410,558	256,133,554	(225,310,707)	0
F4. Third Prior Year	<u>(414,093,435)</u>	<u>(859,163,333)</u>	<u>98,410,558</u>	<u>256,133,554</u>	<u>(225,310,707)</u>
F5. Total Recognized Investment Gain/(Loss)	\$ (918,712,656)	\$ (729,929,928)	\$ 129,233,405	\$ 30,822,847	\$ (225,310,707)
G. Preliminary Actuarial Value End of Year:					
A.+D5.+E3.+F5.	\$ 10,868,822,602	\$ 10,752,023,254			
H. Corridor					
H1. 80% of Market Value	\$ 8,779,904,836	\$ 8,549,415,039			
H2. 120% of Market Value	\$ 13,169,857,254	\$ 12,824,122,559			
I. Actuarial Value End of Year:					
G. Not Less than H1. or Not Greater than H2	\$ 10,868,822,602	\$ 10,752,023,254			
J. Difference Between Market & Actuarial Values	\$ 106,058,443	\$ (65,254,455)	\$ (194,487,860)	\$ (225,310,707)	\$ 0
K. Health Care Valuation Assets	\$ 355,705,744	\$ 355,110,407			
L. Basic Benefits Valuation Assets	\$ 10,513,116,858	\$ 10,396,912,847			

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 Service 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 retiring after August 1, 2017, the rates of retirement in the first year of eligibility is assumed to increase to 28% at age 67.

**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>Hired prior to May 14, 2008</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>Hired after May 13, 2008</i>	Attainment of age 65 with at least ten years of creditable service, or attainment of age 55 with at least 30 years of creditable service.
<i>Retirement after 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.
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: 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 prior to May 14, 2008, \$40 multiplied by the member's years of service prior to 9/1/1937.</li></ol>or:<ol style="list-style-type: none"><li>d. 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: 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 Retirement  
*Members prior to May 14, 2008* 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 after May 13, 2008* 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  
*Members prior to May 14, 2008* 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 after May 13, 2008* 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

- 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 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 prior to May 14, 2008*

If a member with at least 5 years of contributing service credit leaves service before being eligible for an immediate monthly allowance and does not withdraw any part of his accumulated contributions, he will be entitled to a deferred allowance at age 60. The amount of the allowance is based on his credited service and final average salary at termination of employment.

*Members after May 14, 2008*

If a member with at least 10 years of contributing service credit leaves service before being eligible for an immediate monthly



allowance and does not withdraw any part of his accumulated contributions, he will be entitled to a deferred allowance at age 62. The amount of the allowance is based on his credited service and final average salary at termination of employment.

**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 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>2007*</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
			<b><u>Number</u></b>			
Beginning of Year	62,521	63,529	64,818	65,757	66,127	67,221
Added	3,596	3,448	3,103	2,694	3,472	4,137
Removed	2,588	2,159	2,164	2,324	2,378	2,320
End of Year	63,529	64,818	65,757	66,127	67,221	69,038
			<b><u>Annual Retirement Allowances</u></b>			
Beginning of Year	\$ 566,770,892	\$ 607,386,140	\$ 652,373,571	\$ 693,838,994	\$ 729,859,717	\$ 777,910,918
Added	44,864,781	46,243,749	41,970,065	37,351,889	49,577,810	61,519,329
Removed	4,249,533	1,256,318	504,642	1,331,166	1,526,603	1,353,680
End of Year	\$ 607,386,140	\$ 652,373,571	\$ 693,838,994	\$ 729,859,717	\$ 777,910,918	\$ 838,076,567
% Increase in Allowances	7.17%	7.41%	6.36%	5.19%	6.58%	7.73%
Average Annual Allowance	\$ 9,561	\$ 10,065	\$ 10,552	\$ 11,037	\$ 11,572	\$ 12,139

\*Reported by prior actuarial firm.



**Annuity and Pension Reserve Fund**  
**Retired Information June 30, 2012**  
**Retired Members By Type of Benefit**

Amount of Monthly Benefit		Total	Service	Disability	Survivor
\$ 1 - \$	250	12,060	10,862	121	1,077
251 -	500	12,027	10,093	645	1,289
501 -	750	10,440	8,746	855	839
751 -	1,000	8,148	6,811	828	509
1,001 -	1,500	11,125	9,449	1,275	401
1,501 -	2,000	6,155	5,231	774	150
Over	2,000	<u>8,739</u>	<u>7,750</u>	<u>842</u>	<u>147</u>
		68,694	58,942	5,340	4,412

Average Monthly Benefit  
 Average Age

\$ 1,023	\$ 1,259	\$ 624
74.5	64.8	71.2



**Annuity and Pension Reserve Fund  
Retired Information June 30, 2012  
Tabulated by Attained Ages**

Attained Age	Retirement		Disability Retirement		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 45	0	\$ -	85	\$ 1,219,756	85	\$ 1,219,756
45-49	50	\$ 1,603,792	225	\$ 4,046,197	275	\$ 5,649,989
50-54	537	\$ 17,699,910	531	\$ 10,253,159	1,068	\$ 27,953,069
55-59	1,662	\$ 48,804,244	972	\$ 18,145,900	2,634	\$ 66,950,144
60-64	6,063	\$ 99,504,097	1165	\$ 19,724,062	7,228	\$ 119,228,159
65-69	10,187	\$ 141,871,939	819	\$ 12,063,118	11,006	\$ 153,935,057
70-74	10,699	\$ 136,725,730	608	\$ 7,478,272	11,307	\$ 144,204,002
75-79	9,428	\$ 108,780,839	444	\$ 4,159,920	9,872	\$ 112,940,759
80-84	7,514	\$ 73,708,508	288	\$ 2,385,100	7,802	\$ 76,093,608
85-89	5,027	\$ 39,847,818	159	\$ 979,551	5,186	\$ 40,827,369
90 & Over	2,985	\$ 17,931,712	44	\$ 198,509	3,029	\$ 18,130,221
Totals	54,152	\$ 686,478,589	5,340	\$ 80,653,544	59,492	\$ 767,132,133





**Annuity and Pension Reserve Fund**  
**Survivors of Annuitants Information June 30, 2012**  
**Tabulated by Attained Ages**

Attained Age	Life Annuities		Periods Certain		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 45	41	\$ 191,020	9	\$ 65,162	50	\$ 256,182
45-49	15	\$ 86,017	5	\$ 67,763	20	\$ 153,781
50-54	54	\$ 343,183	4	\$ 53,337	58	\$ 396,519
55-59	104	\$ 1,198,765	4	\$ 34,011	108	\$ 1,232,776
60-64	156	\$ 1,429,240	4	\$ 50,238	160	\$ 1,479,479
65-69	314	\$ 3,055,436	11	\$ 68,697	325	\$ 3,124,134
70-74	582	\$ 4,848,972	8	\$ 75,748	590	\$ 4,924,720
75-79	880	\$ 7,127,429	5	\$ 21,609	885	\$ 7,149,037
80-84	1,160	\$ 8,720,958	0	\$ -	1,160	\$ 8,720,958
85-89	1,057	\$ 6,894,497	0	\$ -	1,057	\$ 6,894,497
90 & Over	721	\$ 3,596,934	0	\$ -	721	\$ 3,596,934
Totals	5,084	\$ 37,492,452	50	\$ 436,564	5,134	\$ 37,929,016



**All Benefit Recipients  
Male and Female Demographic Breakdown  
June 30, 2012**

Attained Age	Number of		Total Number
	Males	Females	
Under 20	30	24	54
20-24	10	20	30
25-29	1	4	5
30-34	9	9	18
35-39	15	24	39
40-44	40	75	115
45-49	172	223	395
50-54	625	679	1,304
55-59	1,271	1,759	3,030
60-64	2,204	5,642	7,846
65-69	3,092	8,905	11,997
70-74	3,181	9,393	12,574
75-79	2,927	8,524	11,451
80-84	2,328	7,215	9,543
85-89	1,458	5,195	6,653
90-94	592	2,605	3,197
95-99	98	613	711
100	5	32	37
101	1	18	19
102	0	10	10
103	1	5	6
104	0	6	6
105 & Over		2	2
<b>Total</b>	<b>18,060</b>	<b>50,982</b>	<b>69,042</b>



**Survivor Benefit Fund**  
**Survivors of Deceased Active Member Information June 30, 2012**  
**Tabulated by Attained Ages**

Attained Age	No.	Annual Benefits
Under 45	126	\$ 1,308,493
45-49	100	\$ 1,145,752
50-54	178	\$ 1,858,423
55-59	288	\$ 2,996,221
60-64	458	\$ 4,496,335
65-69	666	\$ 5,201,439
70-74	676	\$ 4,901,025
75-79	692	\$ 4,630,195
80-84	580	\$ 3,432,595
85-89	410	\$ 1,984,190
90 & Over	238	\$ 1,060,753
Totals	4,412	\$ 33,015,420



**Total Active Members as of June 30, 2012  
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 Avg Pay	614 \$5,146							\$3,159,653
20-24 Avg Pay	4,945 \$7,815	102 \$20,300						\$40,717,020
25-29 Avg Pay	5,003 \$12,511	830 \$27,351	54 \$34,215					\$87,139,925
30-34 Avg Pay	4,386 \$14,190	1,628 \$28,015	655 \$34,819	38 \$40,563				\$132,192,383
35-39 Avg Pay	4,800 \$13,471	2,192 \$24,912	1,263 \$34,677	357 \$39,058	24 \$43,190			\$178,048,608
40-44 Avg Pay	6,330 \$12,891	3,735 \$22,495	2,658 \$30,006	901 \$39,079	329 \$44,914	38 \$51,217		\$297,306,412
44-49 Avg Pay	5,896 \$13,038	4,781 \$21,861	4,735 \$27,148	2,048 \$33,093	909 \$41,283	544 \$45,618	75 \$47,802	\$443,641,405
50-54 Avg Pay	4,736 \$14,108	4,425 \$22,273	5,836 \$26,206	3,926 \$29,175	1,978 \$35,346	1,124 \$43,401	513 \$48,187	\$576,269,715
55-59 Avg Pay	3,383 \$14,420	2,894 \$23,172	4,154 \$27,313	3,813 \$28,834	2,983 \$32,106	1,695 \$37,084	693 \$44,658	\$528,818,937
60-64 Avg Pay	2,146 \$13,798	1,736 \$22,919	2,055 \$27,748	1,839 \$30,110	2,159 \$31,467	1,793 \$33,645	799 \$37,830	\$340,278,699
65-69 Avg Pay	940 \$10,042	769 \$17,899	772 \$24,824	508 \$28,481	610 \$30,570	700 \$31,369	553 \$31,466	\$114,842,582
70 & over Avg Pay	524 \$8,396	448 \$13,080	364 \$19,368	212 \$24,295	193 \$25,583	230 \$26,622	438 \$27,894	\$45,738,246
<b>Totals</b> Avg Pay	<b>43,703</b> \$12,558	<b>23,540</b> \$22,878	<b>22,546</b> \$27,783	<b>13,642</b> \$30,637	<b>9,185</b> \$33,810	<b>6,124</b> \$37,036	<b>3,071</b> \$38,781	<b>121,811</b> \$22,889

Averages:  
Age: 48.7  
Service: 10.1  
Annual Pay: \$22,889



**Male Active Members as of June 30, 2012  
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	335							
Avg Pay	\$5,243							\$1,756,405
20-24	2,446	61						
Avg Pay	\$7,843	\$21,441						\$20,491,587
25-29	2,412	427	30					
Avg Pay	\$12,283	\$30,657	\$40,156					\$43,923,118
30-34	1,862	667	316	15				
Avg Pay	\$14,847	\$33,067	\$42,129	\$49,776				\$63,760,092
35-39	1,685	601	412	167	11			
Avg Pay	\$14,957	\$32,629	\$45,861	\$44,305	\$42,239			\$71,570,280
40-44	1,930	749	559	335	160	15		
Avg Pay	\$14,022	\$32,032	\$43,450	\$50,920	\$49,779	\$53,207		\$101,164,254
44-49	1,962	909	729	426	345	277	41	
Avg Pay	\$13,730	\$30,990	\$40,819	\$48,234	\$49,454	\$49,894	\$49,854	\$138,339,683
50-54	1,737	1,027	871	513	423	477	266	
Avg Pay	\$15,008	\$29,977	\$39,165	\$44,488	\$48,741	\$51,301	\$52,162	\$172,753,621
55-59	1,551	953	859	552	474	419	323	
Avg Pay	\$15,959	\$29,193	\$37,691	\$42,203	\$45,338	\$48,929	\$50,457	\$166,535,269
60-64	1,110	708	600	372	344	294	183	
Avg Pay	\$14,887	\$27,314	\$35,617	\$40,931	\$45,994	\$46,231	\$49,824	\$110,991,057
65-69	503	433	331	156	116	109	65	
Avg Pay	\$11,721	\$19,806	\$28,631	\$36,632	\$42,028	\$43,270	\$43,462	\$42,079,646
70 & over	268	234	203	96	51	46	35	
Avg Pay	\$10,303	\$15,682	\$23,572	\$30,087	\$32,120	\$36,755	\$42,867	\$18,933,478
<b>Totals</b>	<b>17,801</b>	<b>6,769</b>	<b>4,910</b>	<b>2,632</b>	<b>1,924</b>	<b>1,637</b>	<b>913</b>	<b>36,586</b>
<b>Avg Pay</b>	<b>\$13,113</b>	<b>\$29,313</b>	<b>\$38,611</b>	<b>\$43,959</b>	<b>\$46,743</b>	<b>\$48,619</b>	<b>\$50,011</b>	<b>\$26,029</b>

Averages:  
Age: 46.8  
Service: 8.3  
Annual Pay: \$26,029

**Female Active Members as of June 30, 2012  
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 Avg Pay	279 \$5,030							\$1,403,248
20-24 Avg Pay	2,499 \$7,788	41 \$18,602						\$20,225,433
25-29 Avg Pay	2,591 \$12,722	403 \$23,847	24 \$26,790					\$43,216,807
30-34 Avg Pay	2,524 \$13,705	961 \$24,508	339 \$28,006	23 \$34,554				\$68,432,291
35-39 Avg Pay	3,115 \$12,668	1,591 \$21,997	851 \$29,263	190 \$34,446	13 \$43,995			\$106,478,328
40-44 Avg Pay	4,400 \$12,395	2,986 \$20,102	2,099 \$26,425	566 \$32,071	169 \$40,309	23 \$49,918		\$196,142,158
44-49 Avg Pay	3,934 \$12,693	3,872 \$19,718	4,006 \$24,661	1,622 \$29,117	564 \$36,285	267 \$41,181	34 \$45,328	\$305,301,722
50-54 Avg Pay	2,999 \$13,587	3,398 \$19,944	4,965 \$23,933	3,413 \$26,873	1,555 \$31,702	647 \$37,577	247 \$43,907	\$403,516,094
55-59 Avg Pay	1,832 \$13,117	1,941 \$20,216	3,295 \$24,607	3,261 \$26,570	2,509 \$29,606	1,276 \$33,194	370 \$39,595	\$362,283,668
60-64 Avg Pay	1,036 \$12,631	1,028 \$19,891	1,455 \$24,503	1,467 \$27,366	1,815 \$28,713	1,499 \$31,177	616 \$34,267	\$229,287,642
65-69 Avg Pay	437 \$8,110	336 \$15,441	441 \$21,966	352 \$24,869	494 \$27,880	591 \$29,174	488 \$29,868	\$72,762,936
70 & over Avg Pay	256 \$6,400	214 \$10,236	161 \$14,066	116 \$19,502	142 \$23,235	184 \$24,089	403 \$26,594	\$26,804,768
<b>Totals Avg Pay</b>	<b>25,902 \$12,177</b>	<b>16,771 \$20,281</b>	<b>17,636 \$24,768</b>	<b>11,010 \$27,452</b>	<b>7,261 \$30,383</b>	<b>4,487 \$32,810</b>	<b>2,158 \$34,030</b>	<b>85,225 \$21,541</b>

Averages:  
Age: 49.5  
Service: 10.9  
Annual Pay: \$21,541

Active Members as of June 30, 2012



By Annual Pay

Annual Pay	Number of Active Members			Portion of Total Number	
	Men	Women	Totals	Group	Cumulative
Less than \$1,000	189	243	432	0.4%	0.4%
\$1,000 - 1,999	1,199	1,238	2,437	2.0%	2.4%
2,000 - 2,999	2,150	2,022	4,172	3.4%	5.8%
3,000 - 3,999	2,240	2,202	4,442	3.6%	9.4%
4,000 - 4,999	1,752	2,337	4,089	3.4%	12.8%
5,000 - 5,999	1,261	2,085	3,346	2.7%	15.5%
6,000 - 6,999	1,021	2,062	3,083	2.5%	18.1%
7,000 - 7,999	780	2,177	2,957	2.4%	20.5%
8,000 - 8,999	668	2,266	2,934	2.4%	22.9%
9,000 - 9,999	584	2,116	2,700	2.2%	25.1%
10,000 - 11,999	1,296	4,309	5,605	4.6%	29.7%
12,000 - 13,999	1,169	4,485	5,654	4.6%	34.4%
14,000 - 15,999	1,129	5,575	6,704	5.5%	39.9%
16,000 - 17,999	1,167	6,458	7,625	6.3%	46.1%
18,000 - 19,999	1,110	6,185	7,295	6.0%	52.1%
20,000 - 24,999	2,383	12,472	14,855	12.2%	64.3%
25,000 - 29,999	2,001	7,984	9,985	8.2%	72.5%
30,000 - 35,999	3,177	6,959	10,136	8.3%	80.8%
36,000 and over	11,310	12,050	23,360	19.2%	100.0%
<b>Totals</b>	<b>36,586</b>	<b>85,225</b>	<b>121,811</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 June 30	Gain (Loss) by Risk Area									\$	% of AAL
	Economic			Non-Economic							
	Pay Increases	Investment	Age & Service Retirement	Disability	Death In Service	Withdrawal	New Members	Retired Lives	Other <sup>+</sup>		
2003*	\$ 28.0	\$ (781.4)	\$ (29.7)	\$ (0.3)	\$ (0.3)	\$ 38.8	\$ (37.1)	\$ 30.0	\$ (24.7)	(776.7)	(7.8)
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)

\* 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, 2012 was \$10,396,912,847. The value for the previous year was \$10,513,116,858.

**School Employees Retirement System of Ohio**  
**Development of Gain (Loss) for Basic Benefits**  
**From Investment Return**  
**For the Year Ended June 30, 2012**  
**(\$ millions)**

	<u>\$ Millions</u>
1. Actuarial value of assets as of June 30, 2011	\$ 10,513.1
2. Actuarial value of assets as of June 30, 2012	
a. Actual	10,396.9
b. If 7.75% assumed investment return was achieved for all phased-in years recognized in the asset method	11,088.9
3. Gain (Loss): 2a minus 2b	<u>\$ (692.0)</u>



**Pay Increases During the 2011- 2012 Valuation Year  
To Members Active at Beginning and End of Year**

Central Age Group Beginning of Year	Number	Pay Increases	
		Actual	Expected
Under 25	2,078	0.20%	17.07%
25	3,820	3.76	12.31
30	4,931	4.28	9.12
35	6,683	3.85	7.85
40	11,630	3.87	6.93
45	16,562	2.99	5.92
50	20,866	2.5	5.27
55	19,182	1.92	4.97
60	12,660	1.56	4.9
65 & Over	7,785	1.18	4.88
Total	106,197	2.54	5.94



**Members Who Became Age & Service Retirees During the 2011- 2012 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							44	44
50							21	21
51							34	34
52							28	28
53							42	42
54							49	49
55						105	37	142
56						26	38	64
57						28	32	60
58						37	29	66
59						51	31	82
60		19	52	51	60	52	40	274
61		18	24	30	61	47	43	223
62		39	34	37	43	47	41	241
63		22	30	41	50	44	37	224
64		23	23	34	39	50	47	216
65		26	53	38	44	59	62	282
66		23	30	26	37	30	31	177
67		15	24	20	18	32	35	144
68		18	30	15	17	19	30	129
69		18	21	22	17	21	23	122
70 & Over		55	94	64	50	50	156	469
<b>Totals</b>	<b>0</b>	<b>276</b>	<b>415</b>	<b>378</b>	<b>436</b>	<b>698</b>	<b>930</b>	<b>3,133</b>

Average Age: 63.6  
Average Service: 22.9



**Members Who Died in 2011- 2012 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	2
45	6
50	9
55	18
60	28
65	13
70 & Over	4
Total	80

Average Age: 58.0  
Average Service: 17.1



**Members Who Died in 2011- 2012 Valuation Year  
and Received a Refund of Contributions**

Central Age Group Beginning of Year	Number
Under 25	
25	0
30	0
35	0
40	2
45	2
50	2
55	0
60	1
65	1
70 & Over	1
Total	9

Average Age: 41.7  
Average Service: 3.0



**Members Who Became Disability Retirees  
During the 2011- 2012 Valuation Year**

Central Age Group Beginning of Year	Number
Under 25	
25	
30	
35	2
40	8
45	29
50	52
55	107
60	76
65	23
70 & Over	6
Total	303

Average Age: 54.9  
Average Service: 16.0



**Members Receiving a Refund of Contributions  
or Becoming Inactive Without a Refund in  
the 2011- 2012 Valuation Year  
(Non-vested Terminations)**

<b>Central Age Group Beginning of Year</b>	<b>Number</b>
Under 25	1,396
25	2,399
30	1,603
35	1,323
40	1,639
45	1,785
50	1,620
55	1,283
60	805
65	463
70 & Over	339
<b>Total</b>	<b>14,655</b>

Average Age: 39.8  
Average Service: 3.0





**Members Who Became Inactive  
in the 2011- 2012 Valuation Year  
with a Deferred Allowance  
(Vested Terminations)**

Central Age Group Beginning of Year	Number
Under 25	0
25	14
30	45
35	65
40	109
45	127
50	184
55	187
60	93
65	30
70 & Over	15
Total	869

Average Age: 46.6  
Average Service: 9.4



## **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, 2012**

<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	\$ 8,610,108,869	\$ 239,675,724	\$ 24,652,774	\$ 8,874,437,367
Benefits and refunds to present inactive members	580,061,485	10,848,056	1,741,043	592,650,584
Allowances to present active members				
Service	6,980,269,022	118,577,396	7,137,088	7,105,983,506
Disability	277,031,812	4,602,803	408,775	282,043,390
Survivor benefits	93,683,921	1,654,141	-	95,338,062
Withdrawal	<u>(203,485,476)</u>	<u>7,583,114</u>	<u>15,476</u>	<u>(195,886,886)</u>
Total Active AAL	7,147,499,279	132,417,454	7,561,339	7,287,478,072
Total AAL	<u>\$ 16,337,669,633</u>	<u>\$ 382,941,234</u>	<u>\$ 33,955,156</u>	<u>\$ 16,754,566,023</u>



**APPENDIX B**

**BREAKDOWN OF TOTAL AND ACCRUED LIABILITIES  
AS OF JUNE 30, 2012**

	Total Liability	Accrued Liability
Active Members		
Retirement	\$8,574,136,476	\$6,980,269,022
Death	130,297,089	93,683,921
Disability	464,477,839	277,031,812
Termination	623,025,477	(203,485,476)
Medicare Part B	174,020,274	132,417,454
Death after Retirement	<u>11,501,630</u>	<u>7,561,339</u>
Total	\$9,977,458,785	\$7,287,478,072
Retirees		
Retirement/Survivor/Disability	\$8,610,108,869	\$8,610,108,869
Medicare Part B	239,675,724	239,675,724
Death after Retirement	<u>24,652,774</u>	<u>24,652,774</u>
Total	\$8,874,437,367	\$8,874,437,367
Deferred Vested Members	375,848,370	375,848,370
Inactive Members	<u>216,802,214</u>	<u>216,802,214</u>
Total Actuarial Values	\$19,444,546,736	\$16,754,566,023
Actuarial Value of Assets		<u>10,396,912,847</u>
Unfunded Actuarial Accrued Liability		\$6,357,653,176



**APPENDIX C**  
**COMPARATIVE SCHEDULE**  
**AS OF JUNE 30, 2012**

Valuation Date	Active Members				Retired Lives				Accrued Liability	Valuation Assets	UAAL
					Number		Annual Benefits				
	Payroll	Average Salary		Retired	Active / Retired	\$ Millions	% of Payroll	\$ Millions			
	Number	\$ Millions	\$						% Increase		
June 30											
2003	122,315	2,302	18,823	4.0	59,999	2.0	461.2	20.0	10,635	8,772	1,863
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

\*After the adjustment to reflect health care asset restatement

\* after the adjustment to reflect health care asset restatement