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PUBLIC SCHOOL RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS, MISSOURI

Actuarial Valuation Report

Plan Year *January 1, 2013 – December 31, 2013*

July 2013

buckconsultants A Xerox Company

July 2013

Mr. Andrew Clark
Executive Director
PSRS of the City of St. Louis
3641 Olive Street, Suite 300
St. Louis, MO 63108-3601

Dear Members of The Public School Retirement System of the City of St. Louis Board:

Actuarial Certification

The annual actuarial valuation required for the Public School Retirement System of the City of St. Louis has been prepared as of January 1, 2013 by Buck Consultants. The purposes of the report are to:

(1) determine the required annual contributions from the board of education, the retirement system, and the charter schools;

(2) present the valuation results of the System as of January 1, 2013;

(3) develop information used for reporting and disclosure information for financial statements, governmental agencies, and other interested parties.

This report is submitted in accordance with Section 169.450-16 Revised Statutes of Missouri (R.S. Mo.). The required contribution to the System from the board of education, the retirement system, and the charter schools is computed in accordance with Section 169.490 R.S. Mo. The amount of the required contribution is stated in Section 1.3 of this report.

In preparing this valuation, we have employed generally accepted actuarial methods and assumptions, in conjunction with employee data and financial information provided to us by the System, to determine a sound value for the System liability. The employee data has not been audited, but it has been reviewed and found to be consistent, both internally and with prior years' data.

This actuarial valuation is based on the same actuarial assumptions and methods as those used in the prior actuarial valuation, except for those noted in Section 4.8 under Changes from the Prior Valuation. A summary of all assumptions and methods is presented in Section 4.8 of this report. All assumptions used in this valuation are as adopted by the Board. The assumptions fairly represent past and anticipated future experience of the System. The assumptions used are individually reasonable and reasonable in the aggregate.

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Future contribution requirements may differ from those determined in the valuation because of:

(1) differences between actual experience and anticipated experience based on the assumptions;

(2) changes in actuarial assumptions or methods;

(3) changes in statutory provisions;

(4) differences between actuarially required contributions and actual contributions.

The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein, and are available to answer questions regarding this report.

We believe that the assumptions and methods used for funding purposes and for the disclosures presented in this report satisfy the parameter requirements set forth in the Government Accounting Standards Board (GASB) Statement No. 25. We believe that this report conforms with the requirements of the Missouri statutes, and where applicable, other federal and accounting laws, regulations and rules, as well as generally accepted actuarial principles and practices.

Sincerely,

Stephen B. Siepman, FSA, EA, MAAA
Principal, Consulting Actuary

Troy Jaros, FSA, EA, MAAA
Consultant, Retirement Actuary

Contents

Report Highlights

This report has been prepared by Buck Consultants to:

- Present the results of a valuation of the Public School Retirement System of the City of St. Louis as of January 1, 2013;
- Determine the required contribution rate for 2014;
- Provide reporting and disclosure information for financial statements, governmental agencies, and other interested parties.

This report is divided into four sections. Section 1 contains the results of the valuation. It includes the experience of the System during the 2012 plan year, the actuarially required costs, and funded levels.

Section 2 contains asset information. It includes market value of assets, the calculation of actuarial value of assets, the contingency reserve, and asset returns.

Section 3 provides reporting and disclosure information for financial statements, governmental agencies and other interested parties.

Section 4 describes the basis of the valuation. It summarizes the System provisions, provides information relating to the System members, and describes the funding methods and actuarial assumptions used in determining liabilities and costs. Also included is historical information about the Sytem.

Experience Gains and losses

Under the actuarial funding method used to determine the contribution, actuarial gains (or losses) result in a decrease (or increase) in the normal cost rate. Actuarial gains (or losses) result from differences between the actual experience of the System and the expected experience based upon the actuarial assumptions. Annual gains (or losses) should be expected because short-term deviations from expected long-term average experience are common.

For 2013, actuarial losses due to plan experience were $18.0 million. Roughly $17.4 million of the loss is attributable to the System's actuarial rate of return on assets which was 6.5%, 1.5 percentage points less than the assumed rate of return of 8.0%. By comparison, the rate of return on the market value of assets was 11.7%. The difference in these returns is because the actuarial value of assets has not yet fully recognized the asset losses that occurred during recent years. At January 1, 2013, the actuarial value of assets at $914 million remains above market value of assets (excluding the expense and contingency reserve) by approximately $47 million. About $0.6 million of the loss is attributable to demographic changes.

Assumption Changes

For the 2013 valuation, the mortality assumption was changed. A detailed description of the changes appears in section 4.8. In total, the assumption changes increased actuarial liability by almost $1.6 million.

Normal cost rate

The normal cost is determined annually and equals the product of the normal cost rate times covered payroll. For 2013, the annual normal cost due December 31, 2013 is $20,814,732, as compared to $19,702,945 for 2012, an increase primarily due to the aforementioned actuarial loss and change of assumptions. The annual normal cost rate increased from 8.07% to 8.86% due to the experience losses and the changes in the actuarial assumptions. Covered payroll decreased from $234.8 million to $225.9 million.

Accrued liability amortization

The actuarial accrued liability contribution is determined as the amount necessary to amortize the remaining Unfunded Frozen Actuarial Accrued Liability (UFAAL) over a period of 30 years from January 1, 2006, when the Board of Trustees acted to redetermine the UFAAL. This portion of the contribution only changes to reflect changes in benefits, changes in actuarial assumptions and methods, and variations in the remaining UFAAL due to deviations between actual and expected contributions. Employer contributions for 2012 were $3.6 million more than the annual required contribution, which reduced the UFAAL more than expected. However, the changes in actuarial assumptions from the previous valuation increased the UFAAL by $1.6 million. As a result, the amortization payment is increased from $15,664,653 to $16,452,546. The amortization payment component of the contribution rate increased from 6.7% to 7.3% of covered payroll.

Required contribution and timing

In 2001, the Board of Education agreed to institute a one-year lag for future years. Therefore, this actuarial valuation is used to determine the actual contribution rate for 2014. The dollar amount of the actual contribution increased to $37,267,278 for 2014 from $35,367,598 for 2013. As a percentage of covered payroll, the contribution rate for 2014 increased to 16.50% from 15.07% for 2013.

Summary and Comparison of Principal Valuation Results

Annual Required Contribution

	Board of Education	Retirement System	Charter Schools	Total
2013				
Normal cost contribution	$ 17,624,667	$ 47,804	$ 3,142,261	$ 20,814,732
Actuarial accrued liability contribution	13,931,029	37,786	2,483,731	$ 16,452,546
Annual required contribution (ARC)	31,555,696	85,590	5,625,992	$ 37,267,278
Covered payroll	191,273,081	518,799	34,101,634	$ 225,893,514
ARC as % of covered payroll	16.50%	16.50%	16.50%	16.50%
2012				
Normal cost contribution	$ 15,577,622	$ 50,896	$ 4,07,427	$ 19,702,945
Actuarial accrued liability contribution	12,384,850	40,465	3,239,338	$ 15,664,653
Annual required contribution	27,962,472	91,361	7,313,765	$ 35,367,598
Covered payroll	185,606,968	606,427	48,546,696	$ 234,760,091
ARC as % of covered payroll	15.07%	15.07%	15.07%	15.07%

	January 1, 2013	January 1, 2012
System Assets		
Expense and contingency reserve	$ 29,181,897	$ 29,564,563
Market value, excluding expense & contingency reserve	867,360,276	838,521,455
Actuarial value	914,494,335	925,389,359
System liabilities		
Unfunded actuarial accrued liability	$ 170,630,323	$ 164,929,347
Projected benefit obligation	$1,160,322,263	$1,155,851,532
PBO Funding Ratio		
Actuarial value funding ratio	78.8%	80.1%
Market value funding ratio	74.8%	72.5%

Analysis of the Valuation

(1) Investment Experience

Our actuarial calculations were based upon the assumption that the System's assets earn 8.00%. The approximate market value rate of return during 2012 was 11.7%. The approximate actuarial value rate of return was 6.5%.

(2) Demographic Experience

The number of active members increased from 4,784 to 4,786 for the period. The average age of active members increased by 0.03 years, the average service increased by 0.02 years, and the average annual salary decreased $1,861. There were small changes in the inactive statistics as well. The membership statistics are found in Sections 4.3 through 4.6 of this report. In addition, a new exhibit in Section 4.7 shows the Schedule of Retirees and Beneficiaries Added/Removed from Rolls.

(3) Salary Increases

The average annual salary decreased 3.8% between January 1, 2012 and January 1, 2013.
Total annual covered payroll decreased 3.8% between January 1, 2012 and January 1, 2013.

(4) Changes in Methods from the Prior Valuation

There have been no changes in methods since the prior valuation.

(5) Changes in Assumptions from the Prior Valuation

Assumptions that were changed were the mortality tables. Details of these assumption changes can be found in Section 4.7. The net effect of changes was to increase the actuarially required employer contribution by 0.07% of covered payroll.

(6) Changes in Benefit Provisions from the Prior Valuation

There have been no changes in benefit provisions since the prior valuation.

(7) Other Changes

There have been no other changes since the prior valuation.

(8) Summary

The overall effect of experience during the period, along with the changes in assumptions, resulted in a decrease in the funding ratio from 80.1% to 78.8%. The total contribution rate increased from 15.07% to 16.50% of covered payroll.

Section 1

Valuation Results

This section sets forth the results of the actuarial valuation.

Section 1.1	Develops the actuarial accrued liability contribution
Section 1.2	Develops the normal cost contribution
Section 1.3	Develops the required annual contribution
Section 1.4	Actuarial balance sheet as of January 1, 2013
Section 1.5	Projected benefit obligation funding ratios
Section 1.6	Projected benefit obligation funded status
Section 1.7	Prioritized solvency test

Section 1 *(continued)*

1.1 Determination of the Unfunded Frozen Actuarial Accrued Liability

1.	Unfunded frozen actuarial accrued liability as of January 1, 2012	$ 164,929,347
2.	Normal cost due January 1, 2012	18,945,139
3.	Interest on (1) and (2) at 8.0% to December 31, 2012	14,709,959
4.	Employer contributions for 2012	29,551,964
5.	Interest on (4) at 8.0% to December 31, 2012	0
6.	Supplement for changes in actuarial assumptions or benefits	1,597,842
7.	Unfunded frozen actuarial accrued liability as of January 1, 2013, (1) + (2) + (3) – (4) – (5) + (6)	170,630,323
8.	Actuarial accrued liability contribution for 2013	16,452,546

Section 1 *(continued)*

1.2 Determination of Normal Cost Contribution

1.	Actuarial present value of future benefits		
	a. Active participants		
	i. Retirement benefits	$ 404,623,218	
	ii. Vested withdrawal benefits	39,723,393	
	iii. Refund of contributions	3,777,550	
	iv. Survivor benefits	5,560,756	
	v. Disability benefits	10,398,190	
	Total		$ 464,083,107
	b. Retired participants and beneficiaries		828,656,539
	c. Inactive participants		
	i. Vested participants	16,791,553	
	ii. Nonvested participants	3,964,473	
	Total		20,756,026
	d. Total actuarial present value of future benefits		$ 1,313,495,672
2.	Unfunded frozen actuarial accrued liability as of January 1, 2013		170,630,323
3.	Actuarial value of assets as of December 31, 2012		914,494,335
4.	Actuarial present value of future participant contributions		82,391,181
5.	Actuarial present value of future employer normal costs, (1)(d) – (2) – (3) – (4), not less than $0		145,979,833
6.	Actuarial present value of future covered payroll of current participants		1,647,823,622
7.	Employer normal cost rate, (5) / (6)		8.86%
8.	Total covered payroll		225,893,514
9.	Normal cost for 2013, (7) x (8)		20,014,165
10.	Normal cost contribution due by December 31, 2013, (9) x [1 + (0.08 x 0.5)]		20,814,732

Section 1 *(continued)*

1.3 Required Annual Contribution

	Board of Education	Retirement System	Charter Schools	Total
Normal cost contribution	$ 17,624,667	$ 47,804	$ 3,142,261	$ 20,814,732
Actuarial accrued liability contribution	13,931,029	37,786	2,483,731	$ 16,452,546
Annual required contribution (ARC)	31,555,696	85,590	5,625,992	$ 37,267,278
Covered payroll	191,273,081	518,799	34,101,634	$ 225,893,514
ARC as % of covered payroll	16.50%	16.50%	16.50%	16.50%

Section 1 *(continued)*

1.4 Actuarial Balance Sheet as of January 1, 2013

Actuarial assets		
Actuarial value of present assets		$ 914,494,335
Actuarial present value of future participant contributions		82,391,181
Actuarial present value of future employer contributions for:		
Normal costs		145,979,833
Unfunded actuarial accrued liability		170,630,323
Total present and future assets		$ 1,313,495,672
Actuarial liabilities		
Actuarial present value of benefits now payable		$ 828,656,539
Actuarial present value of benefits payable in the future:		
Active participants	$ 464,083,107	
Terminated vested participants	16,791,553	
Terminated non-vested participants	3,964,473	
Total payable in the future		484,839,133
Total liabilities for benefits		$ 1,313,495,672
Surplus / (deficit)		0

Section 1 *(continued)*

1.5 Projected Benefit Obligation Funding Ratios

The funding objective of the System is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percentage of covered payroll.

Funding ratios provide a measure of how much progress has been made towards achieving this objective. For this purpose, the System's liabilities are determined using the projected benefit obligation cost method. Under this method, liabilities are determined for each participant using only service already performed, but anticipating the impact of future salary growth on the benefits attributable to current active participants.

Section 1.6 provides a comparison of this liability measure to the value of assets to produce a snapshot measure of the System's funding ratio.

Another way to check the funding progress of the System is through a prioritized solvency test. Section 1.7 illustrates the history of the System's funding progress under this test.

In a prioritized solvency test, the plan's present assets (cash and investments) are sequentially allocated and compared three priorities of liabilities as follows:

- Liability 1: Active participant contributions, accumulated with interest;
- Liability 2: The liabilities for future benefits to current inactive participants and beneficiaries; and
- Liability 3: The liabilities for future benefits to current active participants for prior service.

Ideally, progress in funding of these liability groups will normally be exhibited with Liability 1 attaining 100% coverage first, then Liability 2, and finally Liability 3. Note that 100% funding of Liability 3 does not mean that the System has completed its funding of benefits since additional benefits typically are expected to be earned in the future.

Section 1 *(continued)*

1.6 Projected Benefit Obligation Funded Status

As of January 1, 2013 the projected benefit obligation was:

1.	Retired members and beneficiaries currently receiving benefits and terminated members not yet receiving benefits	$ 849,412,565
	a. Current active participants	
	i. Accumulated member contributions, including interest	120,355,959
	ii. Employer-financed benefits	190,553,739
	Total projected benefit obligation	$ 1,160,322,263

As of January 1, 2013 the projected benefit obligation was funded as follows:

2.	Net assets available for benefits at actuarial value	$ 914,494,335
3.	Unfunded projected benefit obligation	245,827,928
4.	Actuarial value funding ratio, (2) / (1)	78.8%
5.	Net assets available for benefits at market value	$ 867,360,276
6.	Unfunded projected benefit obligation	292,961,987
7.	Market value funding ratio, (5) / (1)	74.8%

Section 1 *(continued)*

1.7 Prioritized Solvency Test

Valuation date January 1	Active participants' accumulated contributions	Retirees, beneficiaries and inactive participants	Active participants (employer-financed)	Valuation assets	Percent covered by valuation assets		
	(1)	(2)	(3)		(1)	(2)	(3)
1997	118,041,749	272,393,748	251,827,653	598,638,356	100%	100%	83%
1998	122,227,173	296,455,647	252,445,749	644,429,672	100%	100%	89%
1999	130,705,014	276,290,128	303,953,494	694,250,672	100%	100%	95%
2000	129,398,364	353,852,977	288,213,016	770,090,498	100%	100%	100%
2001	127,086,325	414,052,293	269,590,438	828,097,298	100%	100%	100%
2002	116,506,785	476,104,516	372,221,726	861,128,076	100%	100%	72%
2003	115,570,837	492,633,382	361,818,972	873,260,102	100%	100%	73%
2004	106,021,476	528,287,121	364,459,284	901,996,455	100%	100%	73%
2005	89,710,662	518,880,414	368,306,240	935,328,638	100%	100%	89%
2006	90,001,111	661,353,685	319,920,373	983,828,243	100%	100%	73%
2007	96,223,413	712,467,372	305,409,824	1,003,428,983	100%	100%	64%
2008	98,112,123	781,006,957	249,244,208	1,014,923,381	100%	100%	54%
2009	104,576,264	801,995,237	187,035,147	963,851,408	100%	100%	31%
2010	110,054,510	805,831,292	195,185,151	950,709,944	100%	100%	18%
2011	103,178,297	842,643,351	169,510,764	944,356,735	100%	100%	0%
2012	116,268,566	850,498,527	189,084,439	925,389,359	100%	95%	0%
2013	120,355,959	849,412,565	190,553,739	914,494,335	100%	93%	0%

Section 2

Valuation of the System's Assets

This section of the report shows the development of the actuarial value of the assets of the System and provides information regarding the expense and contingency reserve, investment results and the various assets of the System.

The amount of assets used in the actuarial valuation is known as the "actuarial value of assets." The method is discussed in the summary of methods and assumptions, section 4.8. The development of the actuarial value of assets is shown in section 2.1. An important element in the development of the actuarial value of assets is the expense and contingency reserve. The amount of the reserve is determined pursuant to a policy adopted by the Board of Trustees. The history of the reserve is presented in section 2.2.

As shown in section 2.3, the fund had a rate of return of 6.54% on an actuarial value basis, which is 1.46% below the assumed rate of return of 8.00%. Normally, in accordance with Rule X, amounts would have been transferred from the investment contingency portion of the reserve, because the preliminary actuarial rate of return would have been less than the assumed rate of return by more than 1%. However, the contingency reserve was exhausted at January 1, 2009, so no additional amounts are available.

The rate of return on an actuarial value basis is intended to be a more stable rate of return and fluctuate less than rates of return on a market value basis. Thus, the rate of return on an actuarial basis is not always a fair measure of the annual investment performance of the fund. Another indicator of actual performance during the year is the rate of return on a market value basis of 11.72%, also presented in section 2.3.

Section 2 *(continued)*

2.1 Development of the Actuarial Value of Assets

1.	Actuarial value of assets as of January 1, 2012	$ 925,389,359
2.	Participant contributions	12,147,663
3.	Employer contributions	29,551,964
4.	Benefit payments and expenses	110,892,492
5.	Investment increment at 8.0%, 8% x {(1) + .5 x [(2) – (4)]}	70,081,356
6.	Expected actuarial value on January 1, 2013, (1) + (2) + (3) – (4) + (5)	926,277,850
7.	Market value of assets on January 1, 2013	896,542,173
8.	Expense and contingency reserve on January 1, 2013, prior to adjustment	29,181,897
9.	Adjustment to the investment contingency reserve	0
10.	Excess of market value over expected actuarial value, (7) – (6) – (8) – (9)	(58,917,574)
11.	Market value adjustment, 20% x (10)	(11,783,515)
12.	Actuarial value of assets as of January 1, 2013, (6) + (11)	914,494,335

Section 2 *(continued)*

2.2 The Expense and Contingency Reserve

Effective January 1, 1996, the Board of Trustees revised Rule X, which governs the determination of the amount of the expense and contingency reserve. The expense portion of the reserve is the sum of:

1. The estimated annual operating expenses for the ensuing year:
2. An amount equal to the liability for non-insurance supplements;
3. An amount equal to the liability for insurance supplements for those participants participating in the program on January 1; and
4. The estimated amount of insurance supplements to be paid for participants expected to retire and participate in the program during the ensuing year.

The investment contingency portion of the reserve is intended to help cover significant shortfalls in the actuarial rate of return. When a shortfall of more than 1% occurs, a portion of the reserve is released equal to one half of the amount of the shortfall up to 2% plus any remaining shortfall. When the rate of return exceeds the assumed rate of return by more than 1%, the reserve is increased subject to a maximum reserve of 5% of the market value of the Retirement Fund. The addition equals one half of the amount of the excess up to 2% plus any remaining excess.

Since the actuarial return on assets was less than 7% during 2012, a portion of the reserve would normally be released. However, since the entire contingency reserve was released in 2009, nothing further is available to be released.

Below is a history of the expense and contingency reserve:

January 1	Expense reserve	Investment contingency reserve	Total expense and contingency reserve
1996	$33,702,346	$ 0	$33,702,346
1997	25,403,190	5,220,821	30,624,011
1998	30,891,555	24,100,041	54,991,596
1999	22,142,759	45,972,067	68,114,826
2000	27,992,032	50,003,862	77,995,894
2001	29,837,776	50,003,743	79,841,519
2002	23,527,529	50,003,743	73,531,272
2003	24,952,255	37,759,976	62,712,231
2004	26,028,780	37,759,976	63,788,756
2005	27,170,188	45,115,876	72,286,064
2006	32,534,770	45,115,876	77,650,646
2007	29,864,946	50,732,410	80,597,356
2008	31,987,370	57,234,574	89,221,944
2009	30,555,388	0	30,555,388
2010	29,903,107	0	29,903,107
2011	29,480,465	0	29,480,465
2012	29,564,563	0	29,564,563
2013	29,181,897	0	29,181,897

Section 2 *(continued)*

2.3 Investment Performance

There are several different methods of approximating the rates of return on investments of the trust fund. Following is a brief comparison of the actuarial assumed rate of return as compared with rates of return on market and actuarial value bases:

a. Market Value Basis

The rate of return on a market value basis is the ratio of the appreciation (or depreciation) of assets less contributions plus disbursements to the market value at the beginning of the year plus the average of the receipts and disbursements made during the year. This may be approximated as follows:

i.	A = Market value of assets as of January 1, 2012	$ 868,086,018
ii.	B = Market value of assets as of January 1, 2013	896,542,173
iii.	C = Contributions during the period	41,699,627
iv.	D = Disbursements during the period	110,892,492
v.	Rate of return: $\frac{B - A + D - C}{A + \frac{1}{2}(C - D)}$	11.72%
vi.	Actuarial assumed rate of return for 2012	8.00%
vii.	Difference between actual and assumed rates of return, (v) – (vi)	3.72%

b. Actuarial Value Basis

The rate of return on an actuarial value basis is approximated using the same method:

i.	A = Actuarial value of assets as of January 1, 2012	$ 925,389,359
ii.	B = Actuarial value of assets as of January 1, 2013	914,494,335
iii.	C = Contributions during the period	41,699,627
iv.	D = Disbursements during the period	110,892,492
v.	Rate of return: $\frac{B - A + D - C}{A + \frac{1}{2}(C - D)}$	6.54%
vi.	Actuarial assumed rate of return for 2012	8.00%
vii.	Difference between actual and assumed rates of return, (v) – (vi)	-1.46%

Section 3

Information Required by GASB No. 25

This section contains supplementary information on retirement benefits that is required to be disclosed in financial statements to comply with Statements No. 25 of the Governmental Accounting Standards Board (GASB No. 25).

Section 3.1 Shows the schedule of employer contributions.

Section 3.2 Shows the schedule of funding progress.

Section 3.3 Shows the actuarial assumptions, methods and additional information.

Section 3 *(continued)*

3.1 Schedule of Employer Contributions

The following information is required to satisfy the reporting requirements of the Governmental Accounting Standards Board Statement No. 25 on Financial Reporting for Deferred Benefit Plans.

The following table develops the percentage of the employer's annual required contribution that was actually made.

Fiscal Year Ending December 31	Annual Required Contribution (ARC)	Actual Contribution	Percentage of ARC Contributed
1993	$ 14,098,562	$ N/A	98.4%
1994	$ 15,441,488	$ N/A	99.2%
1995	$ 15,087,519	$ N/A	99.6%
1996	$ 16,619,187	$ N/A	100.1%
1997	$ 16,876,759	$ N/A	100.2%
1998	$ 15,328,067	$ N/A	111.1%
1999	$ 13,906,270	$ N/A	124.5%
2000	$ 15,543,984	$ N/A	112.3%
2001	$ 18,168,580	$ N/A	100.2%
2002	$ 19,076,442	$ N/A	100.6%
2003	$ 19,517,288	$ N/A	101.2%
2004	$ 19,210,506	$ N/A	132.0%
2005	$ 19,364,705	$ N/A	121.4%
2006	$ 14,414,133	$ N/A	114.9%
2007	$ 17,311,658	$ 22,445,608	129.7%
2008	$ 21,021,316	$ 27,853,996	132.5%
2009	$ 21,406,949	$ 28,598,502	133.6%
2010	$ 19,407,722	$ 26,075,146	134.4%
2011	$ 24,264,182	$ 28,720,193	118.4%
2012	$ 25,928,658	$ 29,551,964	114.0%
2013	$ 35,367,598	$ *	*
2014	$ 37,267,278	$ *	*

*To be determined at the end of the year.

Section 3 *(continued)*

3.2 Schedule of Funding Progress

The following information is required to satisfy the reporting requirements of the Governmental Accounting Standards Board Statement No. 25 on Financial Reporting for Deferred Benefit Plans.

The exhibit below calculated the unfunded accrued liability as a percentage of payroll.

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liabilities (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / c)
1/1/1993	$ 458,279,727	$ 530,766,832	$ 72,487,105	86.3%	$ 194,555,489	37.3%
1/1/1994	$ 487,385,302	$ 557,941,103	$ 70,555,801	87.4%	$ 202,384,485	34.9%
1/1/1995	$ 519,088,399	$ 588,157,615	$ 69,069,216	88.3%	$ 207,113,839	33.3%
1/1/1996	$ 562,177,274	$ 664,807,425	$ 102,630,151	84.6%	$ 206,935,682	49.6%
1/1/1997	$ 598,638,356	$ 716,727,527	$ 118,089,171	83.5%	$ 210,228,288	56.2%
1/1/1998	$ 644,429,672	$ 759,687,878	$ 115,258,206	84.8%	$ 210,843,186	54.7%
1/1/1999	$ 694,250,672	$ 846,891,006	$ 152,640,334	82.0%	$ 215,602,351	70.8%
1/1/2000	$ 770,090,498	$ 937,669,100	$ 167,578,602	82.1%	$ 216,699,483	77.3%
1/1/2001	$ 828,097,298	$ 1,022,042,819	$ 193,945,521	81.0%	$ 235,087,151	82.5%
1/1/2002	$ 861,128,076	$ 1,069,789,813	$ 208,661,737	80.5%	$ 243,880,038	85.6%
1/1/2003	$ 873,260,102	$ 1,063,209,205	$ 189,949,103	82.1%	$ 283,935,810	66.9%
1/1/2004	$ 901,996,455	$ 1,074,259,628	$ 172,263,173	84.0%	$ 255,317,974	67.5%
1/1/2005	$ 935,328,638	$ 1,084,409,302	$ 149,080,664	86.3%	$ 240,185,055	62.1%
1/1/2006	$ 983,828,243	$ 1,122,583,775	$ 138,755,532	87.6%	$ 227,035,801	61.1%
1/1/2007	$ 1,003,428,983	$ 1,150,263,339	$ 146,834,356	87.2%	$ 222,387,289	66.0%
1/1/2008	$ 1,014,923,381	$ 1,158,921,113	$ 143,997,732	87.6%	$ 225,190,968	63.9%
1/1/2009	$ 963,851,408	$ 1,099,891,716	$ 136,040,308	87.6%	$ 234,582,326	58.0%
1/1/2010	$ 950,709,944	$ 1,076,002,070	$ 125,292,126	88.4%	$ 241,958,133	51.8%
1/1/2011	$ 944,356,735	$ 1,066,270,852	$ 121,914,117	88.6%	$ 218,308,239	55.8%
1/1/2012	$ 925,389,359	$ 1,090,318,706	$ 164,929,347	84.9%	$ 234,760,091	70.3%
1/1/2013	$ 914,494,335	$ 1,085,124,658	$ 170,630,323	84.3%	$ 225,893,514	75.5%

Section 3 *(continued)*

3.3 Actuarial Assumptions, Methods and Additional Information

Valuation Date	January 1, 2013
Actuarial Cost Method	Frozen Entry Age
Amortization Method	Level Dollar, Closed Period
Equivalent Single Amortization Period	23 years
Asset Valuation Method	Assumed Yield Method
Actuarial Assumptions:	
Investment rate of return*	8.00%
Participant account crediting rate	5.00%
Projected salary increases	4.50%
*Includes inflation at	3.50%
Cost-of-living adjustment	0.00%

Section 4

Basis of the Valuation

In this section, the basis of the valuation is presented and described. This information – the provisions of the System and the census of members – is the foundation of the valuation, since these are the present facts upon which benefit payments will depend.

A summary of the System's provisions is provided in Section 4.1, the legislative history of the System is provided in Section 4.2, and member census information is shown in Section 4.3 to Section 4.7.

The valuation is based upon the premise that the System will continue in existence, so that future events must also be considered. These future events are assumed to occur in accordance with the actuarial assumptions and concern such events as the earnings of the fund; the number of members who will retire, die or terminate their services; their ages at such termination and their expected benefits.

The actuarial assumptions and the actuarial cost method, or funding method, which have been adopted to guide the sponsor in funding the System in a reasonable and acceptable manner, are described in Section 4.8.

A guide to actuarial terminology used in this report is included as Section 4.9.

Section 4 *(continued)*

4.1 Summary of Plan Provisions

Participants

All persons regularly employed by the board of education, charter schools, and employees of the board of trustees are in the System.

Retirement age

Normal

Age 65 or any age if age plus the years of credited service equals or exceeds 85 (Rule of 85)

Early

Age 60 with 5 years of service

Service retirement allowance

a. 2% (1-1/4% if terminated prior to July 1, 1999) times years of credited service, subject to a maximum of 60%
b. Times average final compensation (AFC)
c. Subject to a maximum of 60% of AFC.
    i. AFC is the highest average compensation for any three consecutive years of the last 10 years of service.
    ii. Compensation is the regular wages plus what your employer pays towards your health and welfare benefits.
    iii. Minimum monthly benefit is $10.00 for each year of credited service, up to 15 years, retirement age 65 and over.
    iv. Unused sick leave is added to a participant's credited service and age.

Early retirement benefit

Service retirement allowance reduced five-ninths of one percent for each month of commencement prior to age 65 or the age at which the Rule of 85 would have been satisfied had the employee continued working until that age, if earlier.

Disability benefit

Service retirement allowance using actual service, or 25% of AFC if larger, provided that in no case will the benefit exceed that payable if service had continued to age 65.

a. Disability must be incurred while an employee as determined by the medical board and approved by the board of trustees.
b. The participant must have a minimum of five years of credited service and not be eligible for normal retirement.

Continued disability is subject to routine verification.

Withdrawal benefit

Accumulated contributions of participant with interest credited to the participant's account.

Section 4 *(continued)*

4.1 Summary of Plan Provisions

Vested benefit

Full vesting on termination of employment after at least five years of service is provided if contributions are left with the System. The full accrued benefit is payable at age 65 or a reduced early retirement benefit prior to age 65.

Retirement options

In lieu of the benefit paid only over the lifetime of the participant, a reduced benefit payable for life of participant with:

Option 1	Same retirement allowance continued after death to the beneficiary.
Option 2	One-half of the retirement allowance continued after death to the beneficiary.
Option 3	Same retirement allowance continued after death to the beneficiary. If the beneficiary predeceases the participant, the retirement allowance is adjusted back to the unreduced allowance.
Option 4	One-half of retirement allowance continued after death to the beneficiary. If the beneficiary predeceases the participant, the retirement allowance is adjusted back to the unreduced allowance.
Option 5	Increased retirement allowance is provided up to age 62, such that benefit provided prior to age 62 is approximately equal to the sum of the reduced retirement allowance paid after age 62 and Social Security.
Option 6	Options 1 and 5 combined.
Option 7	Options 2 and 5 combined.

Survivor benefits

If an active participant dies after completing 18 months of service, leaving a surviving spouse or other dependent beneficiaries, survivor benefits are payable. The widow or dependent beneficiary may elect to receive either a refund of accumulated contributions, or:

a. A survivor who is the widow at least age 62 and married to a participant for at least one year receives $60 a month.
b. A widow with dependent, unmarried children under age 22 receives $60 a month plus $60 per dependent child, not to exceed $180 per month. The benefit ceases when youngest child is age 22 and resumes again under (a) at age 62.
c. If no benefits are payable under (a) or (b), minor children may receive a benefit of $60 per child or $180 divided among them if more than three children.
d. If no benefits are payable under (a), (b) or (c), a dependent parent or parents may receive or share $60 per month upon attaining age 62.

If an active participant dies after completing 5 years of service, the widow or dependent beneficiary may elect to receive either a refund of accumulated contributions or:

a. If the survivor is the widow, a survivor benefit calculated as if the participant had been age 60 at death and elected Option 1, plus $60 per dependent child not to exceed $180 per month.
b. If there is no widow, a survivor benefit calculated as if the participant had been age 60 at death and elected Option 1.

Section 4 *(continued)*

4.1 Summary of Plan Provisions

Return of contributions upon death

If after the death of a participant, no further monthly are payable to a beneficiary under an optional form of payment, or under the survivor benefit provisions, the participant's beneficiary shall be paid the excess, if any, of the participant's accumulated contributions over all payments made to or on behalf of the deceased participant.

DROP

Effective July 1, 2001, active participants may elect to enter the deferred retirement option plan (DROP) for up to four years. Upon entering the DROP, the participant's retirement benefit is frozen and credited to the participant's DROP account. At the end of the DROP, or upon earlier termination of employment, the DROP account is paid in a lump sum or installments, at the participant's option. During the DROP, the participant continues as an active participant, but does not pay contributions. To enter the DROP the participant must be age 65 or meet the Rule of 85. The DROP program is no longer available, ending June 30, 2008.

Contributions by participants

Participants contribute 5% of compensation. Accumulated contributions are credited at the rate of interest established by the board of trustees. The current crediting rate is 5%.

Contributions by employers

As needed to keep the System actuarially sound.

Expenses

Administrative expenses paid out of investment income.

Section 4 *(continued)*

4.2 Legislative History of the Retirement System

On and after January 1, 1944, all persons employed by the board of education on a full-time permanent basis are participants of the System as a condition of employment. In 1961, provisions regarding benefits and employee contribution levels were revised for all future employees of the board of education. Participants of the System at that time were granted the right to remain under the "old plan" and have their membership governed by the provisions of the law in effect prior to 1961. These old plan participants have both benefits and contributions based on a $3,000 maximum annual compensation. Old plan participants have been given the option to transfer into the revised plan at various times since 1961.

Effective October 13, 1969, legislation permitted the reinstatement of credited service lost during the years 1944 to 1947 inclusive when the married women teachers rule was in effect.

Effective August 31, 1972, legislation resulted in the following changes:

- Purchase of past service credit by paying contributions for service claimed plus interest.
- Service as extended substitute teacher.
- Service of re-employed participants lost on prior terminations.
- Service out-state Missouri and outside the state of Missouri.
- Service lost by those who elected to stay out of the retirement plan either temporarily or to date.
- Old plan participants who wished to become new plan participants could do so by paying the differential in participant contributions under the new and old plans, plus interest.
- Dependent beneficiary on death of participant before retirement but after age 60 or age 55 with 30 years service may receive option 1 benefit as if participant had retired under such option.
- A participant with five or more years of service and prior to age 65 may be retired with a disability benefit if the medical board certifies that such participant is mentally or physically totally incapacitated for further performance of duty.
- Minimum retirement benefit at age 65 or after 10 years service is $50.00 per month.

On February 10, 1975, the Missouri Supreme Court handed down a decision supporting HB 613 (Section 169.585 of state statutes), which granted increased benefits to retired teachers. The increases apply to those teachers who retired after June 30, 1957, and prior to January 1, 1971. Technically, those retirees are retained as "advisors and supervisor" and receive a "salary" of $5 per month for each year of service, with a maximum of $75. This salary plus the regular retirement benefit cannot exceed $150 per month. To the extent that assets are depleted because of this law, future district contributions will increase. Because these benefits are paid as "salaries," coming out of investment income along with other expenses of operation, there will be less money available for crediting of interest to the various funds at the end of the year.

Section 4 *(continued)*

4.2 Legislative History of the Retirement System

Effective August 13, 1978 legislation resulted in the following changes:

- The service retirement allowance and projected service retirement allowance was changed to 1-1/4% of average final compensation per year of credited service. The participant's allowance plus his Social Security primary insurance amount could not exceed 80% of his average final compensation. Participants born before 1917 receive the larger of the allowances calculated under the new formula and the formula in effect immediately before it.
- Credited service no longer limited to a maximum of 35 years.
- Two new joint and survivor optional forms of payment were added which provide for the participant's pension to be adjusted back to his unreduced pension in the event his spouse predeceases him.
- Contributions from participants shall be 3% of compensation.
- End of period for purchasing prior service or outside service extended from December 31, 1973 to December 31, 1980. Deleted requirement of electing to purchase out-state or outside the state of Missouri service within one year of completing five years of credited service.
- Gives board of trustees the power to establish regulations, methods and factors that may be needed to calculate primary Social Security benefits.
- Dependent beneficiary on death of participant before retirement with five or more years of credited service may receive option 1 benefit as if the participant had retired under that option as of the date of his death.
- Allow retired educational secretaries to serve as part-time or temporary substitute educational secretary up to a maximum of 360 hours per school year without a reduction in the retired employee's retirement allowance or requiring the retired employees to contribute to the retirement system.

Effective September 28, 1979, legislation resulted in the following changes:

- Accumulated and unused days of sick leave shall be included in computing a participant's age and credited service at retirement.
- Participants who have attained age 62 and who have 30 or more years of credited service may retire and receive a service retirement allowance without reduction for early retirement. The early retirement reduction for participants who retire with 30 or more years of credited service but who have not attained age 62 on their retirement date shall be determined on the basis of the number of months by which their age at retirement is less than age 62.
- Benefits to survivors of a participant who dies while an employee and after having at least 18 months of credited service are as follows:
  - (a) Surviving spouse age 62 or over: $60 per month.
  - (b) Surviving spouse with unmarried dependent children under age 22: $60 per month, plus $30 per month for each eligible child, with a maximum of $150 per month.
  - (c) Unmarried dependent children under age 22: $60 per month for each eligible child, with a maximum of $120 per month. This benefit is payable if the benefit in (b) is not payable.
  - (d) Dependent parent(s): $60 per month, provided no benefits are payable under (a), (b) or (c) above.

Section 4 *(continued)*

4.2 Legislative History of the Retirement System

Effective September 28, 1981, legislation resulted in the following changes:

- The provision limiting service retirement and projected service retirement allowances to 80% of average final compensation less Social Security was removed for future retirees.
- The minimum monthly benefit payable to participants retiring on or after age 65 with 10 or more years of service was increased to $75.
- Old plan participants were extended the option to transfer into the current System by paying the difference in participant contributions plus interest. Such election to be made on or before December 31, 1984. Retired participants who retired prior to January 1, 1955, may be consultants" at a "salary" equal to $4 for each year of retirement prior to January 1, 1982. Total "salaries" as a "school consultant" and "special school advisor and supervisor" are limited to $250 per month.
- The retirement system may contribute as part of its administrative expenses toward health, life and similar insurance for retirees.
- The actuarial cost method was changed from the "entry age cost method" to the "frozen entry age cost method." The period for amortizing "supplements" to the unfunded actuarial accrued liability was set at 50 years from the time the "supplement" is created.
- Several changes were made dealing with the administration and operation of the System.
- Investment powers were broadened.

Effective September 28, 1984, legislation resulted in the following changes:

- Dependent beneficiary on death of employed, active participant before retirement with five or more years of service may receive option 1 benefit as if the participant had attained age 55 (if less than 55 at his death) and had retired under option 1 as of the date of his death.
- In addition to the option 1 death benefit, a surviving spouse may receive $30 per month for each unmarried dependent child, provided that the total benefit does not exceed the greater of $150 or the option 1 benefit.
- Surviving spouse benefits do not cease on remarriage.
- Dependent children's benefits do not require that the child remain a full-time student.
- Participants retired on disability may elect to receive an actuarial equivalent benefit under options 1 through 4.
- Retired participants who retired on or after January 1, 1976, may be employed as school consultants and receive a salary and insurance benefits provided other retirants.

Section 4 *(continued)*

4.2 Legislative History of the Retirement System

Effective August 13, 1986, legislation resulted in the following changes:

- A participant with 30 years of credited service who is between the ages of 55 and 62, upon certification by the board of education, is eligible for a supplemental early retirement benefit payable to age 62. This provision remains in effect until December 31, 1991.
- Benefits to a surviving spouse for dependent children are increased from $30 to $60 per month, with a maximum of $240 per month, including the $60 for the surviving spouse.
- Supplemental pay to retired participants employed as "school consultants" is increased by $2 per month for each year between the participant's date of retirement and December 31, 1986

Effective June 19, 1987, legislation resulted in the following changes:

- Reinstated the option for "old plan" participants to elect "new plan" membership by paying the difference in contributions accumulated with interest.
- Increased the minimum benefit for participants retiring on or after age 65 to $10 per month for each year of credited service, up to a maximum of 15 years.
- Several changes were made dealing with the accounting, administration, and operation of the System.

Effective August 13, 1988, legislation resulted in the following changes:

- Made provisions for children's benefits uniform, providing $60 per month per child, up to a maximum of $180 per month, under both subsections 169.460(13) and (15) survivor benefits.
- Supplemental pay to retired participants of $2 per month for each year of retirement up to December 31, 1988.

Effective June 14, 1989, legislation resulted in the following changes:

- The maximum on compensation was removed.
- Average final compensation is based on the highest three consecutive years, rather than the highest five consecutive years.
- Participants may retire with unreduced benefits at any age, if their age plus credited service equals or exceeds 85 (the "Rule of 85").

Effective May 31, 1990, legislation resulted in the following change:

- Supplemental pay of $2 per month for each year of retirement up to December 31, 1990.

Effective August 28, 1993, legislation resulted in the following change:

- Supplemental pay of $3 per month for each year of retirement up to December 31, 1993.

Section 4 *(continued)*

4.2 Legislative History of the Retirement System

Effective August 28, 1996, legislation resulted in the following changes:

- Provision was added for the purchase of service for certain periods of layoff.
- The investment trustee position was eliminated and the position of school administrator trustee was added.
- Cost-of-living increases for participants who retired prior to August 28, 1996, with at least 15 years of credited service. The cost-of-living increases are up to 3% in one year, with a cumulative maximum of 10%.
- The board of education is authorized to increase retirement benefits and the participant contribution rate, subject to several conditions.

Effective August 28, 1997, legislation resulted in the following change:

- Cost-of-living increases extended to participants who retired prior to August 28, 1997, with at least 15 years of credited service. The cost-of-living increases are up to 3% in one year, with a cumulative maximum of 10%.

In accordance with the statutory authority granted the board of education in 1996, the board of education made the following changes:

- Participant contributions were increased to 4.5%, effective July 1, 1998; to 5.0%, effective July 1, 1999; and, if necessary to 5.5%, effective July 1, 2000.
- The service retirement allowance was changed to 2.00% of average final compensation per year of credited service, subject to a maximum of 60% of average final compensation, effective for participants who retired after June 29, 1999.
- A "catch-up" cost-of-living adjustment (COLA) is provided for participants who retired prior to June 30, 1999, and survivors of participants who retired or died prior to June 30, 1999. The amount of the "catch-up" COLA is equal to 65% of the amount by which the participant's original benefit would have increased due to increases in the CPI, in excess of any supplements or COLA increases being received by the participant. The "catch-up" COLA is effective July 1, 2000.
- The board of education agreed to contribute 8.03% of covered payroll for 1998, 1999, and 2000, in order to fund the benefit increase and the "catch-up" COLA.

In accordance with the statutory authority granted the board of education in 1996, the board of education made the following changes:

- Effective January 1, 2001, all participants who retired prior to January 1, 2000, received a 3% cost-of-living increase.
- Effective July 1, 2001, a DROP was made available until June 30, 2005, at which time the program will be evaluated to determine whether or not it should be extended. Eligible participants may elect to enter the DROP for up to four years.
- In conjunction with the DROP, employers will contribute at 8.00% of covered payroll for 2001. The contribution rate for subsequent years will be based on the rate determined by the actuarial valuation for the January 1 of the year preceding the year the contribution is due.

Section 4 *(continued)*

4.2 Legislative History of the Retirement System

Effective August 28, 2002, legislation resulted in the following changes:

- Purchase of service rules were updated.
- The System may accept qualified transfers of funds for the purchase of service.
- Clarified provisions relating to charter school participation in the System.
- Option 5, the level income option is added.
- Replaced the specific actuarial cost method in the statutes with a provision that the method adopted by the board of trustees may be any method in accordance with generally accepted actuarial standards. The amortization period for the UAAL may not exceed 30 years.

Note: There have been no changes to the System's plan provisions since 2002.

Section 4 *(continued)*

4.3 Changes in System Participation

	Active	Retirees	Beneficiaries	Disabled	**Total In Pay Status**	Deferred Vested	Nonvested w/ Balance	**Total Terminated Records**	Total
Total as of January 1, 2012	**4,784**	3,966	299	275	**4,540**	438	1,520	**1,958**	11,282
New Entrants	**718**		16		**16**		26	**26**	760
Rehires/Transfers	**90**	(3)			**(3)**	(14)	(56)	**(70)**	17
Retirements	**(105)**	130			**130**	(23)	(2)	**(25)**	0
Disablements	**(12)**			14	**14**	(2)		**(2)**	0
Beneficiaries									0
Deaths	**(1)**	(141)	(20)	(24)	**(185)**		(1)	**(1)**	(187)
Deferred Vested	**(42)**					42		**42**	0
Nonvested Terminations - Account Balance	**(234)**						234	**234**	0
Refunds Paid in 2012	**(408)**					(60)	(450)	**(510)**	(918)
Data Adjustments *	**(4)**	3		1	**4**	(1)	(8)	**(9)**	(9)
Total as of January 1, 2013	**4,786**	3,955	295	266	**4,516**	380	1,263	**1,643**	10,945

Note on Data:
PSRS cleaned the data this year and found a large number of members that have actually taken a refund and were taken off of the data. We believe that some of these refunds may have been paid prior to 2012.
There were also a handful of nonvested Inactive members that were found to be vested.

* Note on Data Adjustments:
1 Retired record we identified to be Disabled Retired record this year.

Section 4 *(continued)*

4.4 Member Census Information

As of January 1	2012	2013
Active Members		
Number	4,784	4,786
Average Age	44.61	44.69
Average Service	8.90	8.92
Average Annual Base Pay	$ 49,060	$ 47,199
Vested Terminated Members		
Number	438	380
Average Account Balance	$ 27,287	$ 29,459
Non-vested Terminated Members		
Number	1,520	1,263
Average Account Balance	$ 3,267	$ 3,139
Benefit Recipients		
Number	4,540	4,516
Average Age	72.82	73.10
Average Monthly Benefit	$ 1,813	$ 1,838

Section 4 *(continued)*

4.5 Distributions of Active Members

Years of Service By Age
Charter Schools

Age	Years of Service 0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	Total
Under 25	70	0	0	0	0	0	0	0	0	70
25 - 29	248	10	0	0	0	0	0	0	0	258
30 - 34	126	37	3	0	0	0	0	0	0	166
35 - 39	79	31	13	0	0	0	0	0	0	123
40 - 44	81	14	4	0	0	0	0	0	0	99
45 - 49	45	10	0	2	1	0	0	0	0	58
50 - 54	80	12	4	0	0	0	0	0	0	96
55 - 59	30	17	0	0	0	0	0	0	0	47
60 - 64	19	1	1	0	0	0	0	0	0	22
65 - 69	5	2	1	0	0	0	0	0	0	8
70 & Up	2	1	0	0	0	0	0	0	0	3
Total	785	135	26	2	1	0	0	0	0	950

Years of Service By Age
School District

Age	Years of Service 0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	Total
Under 25	156	0	0	0	0	0	0	0	0	156
25 - 29	276	36	0	0	0	0	0	0	0	312
30 - 34	234	129	22	0	0	0	0	0	0	385
35 - 39	148	111	117	16	0	0	0	0	0	392
40 - 44	163	101	112	60	5	0	0	0	0	441
45 - 49	116	78	102	49	28	6	0	0	0	379
50 - 54	129	76	98	82	77	68	11	0	0	541
55 - 59	128	79	121	87	68	116	51	14	0	664
60 - 64	64	55	84	64	74	65	15	29	3	453
65 - 69	13	12	28	15	9	6	3	0	2	88
70 & Up	4	4	5	2	1	1	0	0	1	18
Total	1,431	681	689	375	262	262	80	43	6	3,829

Section 4 *(continued)*

4.5 Distributions of Active Members

Years of Service By Age
Total

	Years of Service									
Age	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	Total
Under 25	226	0	0	0	0	0	0	0	0	226
25 - 29	524	47	0	0	0	0	0	0	0	571
30 - 34	360	166	25	0	0	0	0	0	0	551
35 - 39	227	142	130	16	0	0	0	0	0	515
40 - 44	244	115	116	60	5	0	0	0	0	540
45 - 49	162	89	102	51	29	6	0	0	0	439
50 - 54	209	90	102	82	77	68	11	0	0	639
55 - 59	158	97	121	87	68	116	51	14	0	712
60 - 64	83	57	85	64	74	65	15	30	3	476
65 - 69	18	14	29	15	9	6	3	0	2	96
70 & Up	6	5	5	2	1	1	0	0	1	21
Total	2,217	822	715	377	263	262	80	44	6	4,786

Section 4 *(continued)*

4.6 Distributions of Inactive Members

Deferred Vested and Nonvested

Account Balance	Vested	Non-vested	Total
0-1,000	0	389	389
1,000-5,000	7	601	608
5,000-10,000	21	207	228
10,000-25,000	176	66	242
25,000-50,000	126	0	126
50,000-75,000	38	0	38
75,000-100,000	8	0	8
100,000+	4	0	4
Total	380	1,263	1,643

Retirees, Beneficiaries and Disabled

Option	Service benefit	Disability benefit	Survivor benefit	All
0	3,335	216	295	3,846
1	150	14	0	164
2	85	5	0	90
3	179	13	0	192
4	177	8	0	185
5	18	4	0	22
6	10	6	0	16
7	1	0	0	1
Total	3,955	266	295	4,516

Annual benefit

Option	Service benefit	Disability benefit	Survivor benefit	All
0	$79,443,989	$2,741,985	$3,130,339	$85,316,313
1	2,699,981	188,364	0	2,888,345
2	1,967,724	124,270	0	2,091,994
3	3,664,770	168,756	0	3,833,526
4	4,574,499	155,353	0	4,729,852
5	434,729	42,869	0	477,598
6	210,093	50,744	0	260,837
7	30,849	0	0	30,849
Total	$93,026,634	$3,472,341	$3,130,339	$99,629,314

Section 4 *(continued)*

4.7 Schedule of Retirees and Beneficiaries Added/Removed From Rolls

Schedule of Retirees and Beneficiaries Added to and Removed from Rolls (Last Six Years)

	Added to Payroll		Removed from Payroll		Payroll Year-End			
Plan Year	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances	% Increase in Annual Allowances	Average Annual Allowance
2008	N/A		N/A		N/A		N/A	N/A
2009	N/A		N/A		N/A		N/A	N/A
2010	N/A		N/A		4,370		N/A	N/A
2011	373		156		4,587	$ 98,927,501	N/A	$ 21,567
2012	135	$ 2,606,505	182	$ 2,793,752	4,540	$ 98,768,933	-0.16%	$ 21,755
2013	164	$ 3,544,756	188	$ 2,699,920	4,516	$ 99,629,314	0.87%	$ 22,061

Section 4 *(continued)*

4.8 Summary of Methods and Assumptions

Interest

8.0% per annum.

Participant account interest crediting rate

5.0% per annum.

Expenses

The rate of interest assumed is net of expenses.

Mortality

Mortality tables mandated by the Pension Protection Act as specified in IRS Regulation 1.430(h)(3)-1, applied on a static basis, projected 7 years from the valuation date for annuitants and 15 years for non-annuitants. Rates are shown for pre-commencement in Table 1 and post-commencement in Table 2.

Disability Mortality

The RP-2000 Disability Mortality Table is used for disabled participants. Rates are shown in Table 6.

Withdrawal

Withdrawals are assumed to occur at rates based on actual experience of the retirement system. During the first five years of membership, withdrawals are assumed to occur at the following rates:

Year of Membership	Non-charter school employees	Charter school employees
1st	25.0%	30.0%
2nd	20.0%	25.0%
3rd	15.0%	20.0%
4th	12.5%	15.0%
5th	10.0%	10.0%

The rates used after the first five years of membership are shown in Table 3.

Salary scale

Salaries are assumed to increase at the rate of 4.5% per year.

Disability

Disabilities are assumed to occur at rates based on the actual experience of the retirement system. The rates used are shown in Table 5.

Section 4 *(continued)*

4.8 Summary of Methods and Assumptions

Retirement

Retirements occur at rates based on the actual experience of the retirement system. The age-related rates used are shown in Table 4. Unless the age-related rate is greater, for those eligible to retire under the Rule of 85, it is assumed that 25% will retire when first eligible for unreduced benefits with at least 30 years of credited service.

Family Structure

The probability of a participant being married and the probable number of children are based on a table constructed by the Social Security Administration, modified to reflect the experience of the retirement system. The rates used are shown in Table 6. For married participants, husbands are assumed to be 3 years older than their wives.

Usage of Cash-out Option

Participants terminating in vested status are given the option of taking a refund of their accumulated participant contributions instead of a deferred retirement benefit. Active members who terminate in the future with a vested benefit are assumed to take a deferred vested annuity, unless a refund of contributions and interest is greater than the actuarial present value of their vested deferred benefit.

Future Benefit Increases or Additional Benefits

When funding is adequate, the Board may authorize cost of living adjustments (COLAs), as noted in the summary of plan provisions. In the past, the Board has also sometimes granted an additional monthly payment to retirees (13th check.) This valuation assumes that no future COLAs and no future 13th checks will be awarded.

Actuarial Method – Frozen Entry Age

The actuarial cost method used by the System is the "frozen entry age actuarial cost method." Under this method, on the initial actuarial valuation date for which the cost method is used, the annual cost accruals (individual normal costs for each participant) are determined as a level percentage of pay for each year from entry age until retirement or termination. The UFAAL was originally determined as of January 1, 1981. Entry age is determined at the date each participant would have entered the System. The sum of these individual normal costs for all active participants whose attained ages are under the assumed retirement age is the normal cost for the initial plan year. The excess of all normal costs falling due prior to the initial actuarial valuation date, accumulated with interest, over the plan assets establishes the initial Unfunded Frozen Actuarial Accrued Liability (UFAAL).

The UFAAL is only frozen in that it is not adjusted due to experience gains and losses. Instead, gains and losses are reflected through changes in the normal cost accrual rate. The UFAAL does change, increasing due to interest and additional normal costs, and decreasing due to contributions. Any changes to plan provisions or actuarial assumptions results in a change to the UFAAL. The amount of the change is determined by computing the impact in the actuarial accrued liability as of the valuation date coincident with or next following the change.

Section 4 *(continued)*

4.8 Summary of Methods and Assumptions

Normal costs are calculated as the level percentage of pay required to fund the excess of the actuarial present value of future benefits over the sum of the actuarial value of current assets and the remaining UFAAL.

Effective January 1, 2006, UFAAL was reestablished to better reflect an appropriate relationship between the normal cost and the actuarial accrued liability.

The funding requirement for each plan year is the sum of the "normal cost contribution" (equal to the normal cost for that year), plus the "actuarial accrued liability contribution." The "actuarial accrued liability contribution" is the payment required to amortize the UFAAL over 30 years, from January 1, 2006, the date that it was reestablished.

Valuation of Assets

The actuarial value of assets is determined using the assumed yield method of valuing assets. Under the assumed yield asset valuation method, the prior year's actuarial value is increased at the assumed rate of return with appropriate adjustments for contributions and disbursements to produce an expected actuarial value of assets at the end of the year. The expected actuarial value is compared to the market value of assets less the expense and contingency reserve, and 20% of the difference is added to the expected actuarial value. The actuarial value of assets was "fresh-started" as of January 1, 2006 and set equal to the market value of assets as of that date.

Changes from the Prior Valuation

The mortality table for non-disabled members was updated to the IRS Static Mortality Table mandated for use by private pension plans for the 2013 plan year. This uses a separate table for pre-commencement and post-commencement.

Section 4 *(continued)*

4.8 Summary of Methods and Assumptions

Table 1
Mortality Rates for Pre-Commencement
Annual Rates Per 1,000 Members

	Rate			Rate	
Age	**Male**	**Female**	**Age**	**Male**	**Female**
20	0.202	0.122	60	3.105	3.416
21	0.215	0.119	61	3.525	3.724
22	0.226	0.120	62	3.876	4.046
23	0.244	0.125	63	4.361	4.379
24	0.261	0.132	64	4.736	4.718
25	0.284	0.139	65	5.103	5.059
26	0.319	0.153	66	5.615	5.394
27	0.332	0.159	67	5.960	5.721
28	0.342	0.168	68	6.111	6.036
29	0.358	0.177	69	6.408	6.335
30	0.386	0.199	70	6.499	6.616
31	0.434	0.245	71	7.338	7.221
32	0.488	0.280	72	9.016	8.430
33	0.548	0.306	73	11.533	10.244
34	0.610	0.328	74	14.889	12.662
35	0.672	0.348	75	19.084	15.685
36	0.731	0.367	76	24.118	19.312
37	0.786	0.384	77	29.991	23.544
38	0.815	0.403	78	36.703	28.380
39	0.839	0.424	79	44.254	33.821
40	0.862	0.462	80	52.647	39.866
41	0.887	0.507	81	60.125	44.124
42	0.917	0.558	82	68.542	48.916
43	0.953	0.614	83	76.403	54.313
44	0.996	0.674	84	86.701	60.405
45	1.045	0.716	85	96.240	68.664
46	1.089	0.757	86	106.702	78.137
47	1.136	0.797	87	120.616	88.916
48	1.184	0.862	88	136.225	99.037
49	1.234	0.932	89	150.545	112.205
50	1.286	1.037	90	169.280	124.002
51	1.337	1.155	91	184.380	136.171
52	1.390	1.325	92	203.973	148.426
53	1.489	1.523	93	220.035	163.744
54	1.597	1.752	94	236.072	175.624
55	1.770	2.017	95	256.992	186.875
56	1.988	2.329	96	272.762	197.318
57	2.245	2.616	97	288.083	210.976
58	2.544	2.860	98	309.050	219.510
59	2.810	3.128	99	323.665	226.803

Section 4 *(continued)*

4.8 Summary of Methods and Assumptions

Table 2
Mortality Rates for Post-Commencement
Annual Rates Per 1,000 Members

	Rate			Rate	
Age	Male	Female	Age	Male	Female
20	0.202	0.122	60	5.936	5.609
21	0.215	0.119	61	6.653	6.259
22	0.226	0.120	62	7.329	6.956
23	0.244	0.125	63	8.260	7.697
24	0.261	0.132	64	9.140	8.499
25	0.284	0.139	65	10.122	9.375
26	0.319	0.153	66	11.444	10.324
27	0.332	0.159	67	12.670	11.344
28	0.342	0.168	68	13.728	12.457
29	0.358	0.177	69	15.165	13.708
30	0.386	0.199	70	16.413	15.145
31	0.434	0.245	71	18.161	16.472
32	0.488	0.280	72	20.164	18.322
33	0.548	0.306	73	22.460	19.959
34	0.610	0.328	74	25.057	22.121
35	0.672	0.348	75	28.538	23.935
36	0.731	0.367	76	31.808	26.371
37	0.786	0.384	77	36.105	29.635
38	0.815	0.403	78	40.942	32.667
39	0.839	0.424	79	46.431	36.066
40	0.862	0.462	80	52.647	39.866
41	0.914	0.507	81	60.125	44.124
42	1.018	0.558	82	68.542	48.916
43	1.174	0.614	83	76.403	54.313
44	1.382	0.674	84	86.701	60.405
45	1.642	0.721	85	96.240	68.664
46	1.954	0.815	86	106.702	78.137
47	2.317	0.956	87	120.616	88.916
48	2.732	1.145	88	136.225	99.037
49	3.199	1.381	89	150.545	112.205
50	3.718	1.664	90	169.280	124.002
51	3.767	1.781	91	184.380	136.171
52	3.768	1.997	92	203.973	148.426
53	3.820	2.274	93	220.035	163.744
54	3.870	2.609	94	236.072	175.624
55	4.023	3.007	95	256.992	186.875
56	4.259	3.480	96	272.762	197.318
57	4.573	3.967	97	288.083	210.976
58	4.994	4.452	98	309.050	219.510
59	5.421	5.003	99	323.665	226.803

Section 4 *(continued)*

4.8 Summary of Methods and Assumptions

Table 3
Withdrawal Rates
Annual Rates Per 1,000 Members

Age	Rate	Age	Rate
20	185.0	45	40.0
21	179.0	46	37.0
22	173.0	47	34.0
23	167.0	48	31.0
24	161.0	49	28.0
25	155.0	50	25.0
26	146.0	51	24.0
27	137.0	52	23.0
28	128.0	53	22.0
29	119.0	54	21.0
30	110.0	55	20.0
31	106.0	56	19.0
32	102.0	57	18.0
33	98.0	58	17.0
34	94.0	59	16.0
35	90.0	60	15.0
36	87.0	61	0.0
37	84.0	62	0.0
38	81.0	63	0.0
39	78.0	64	0.0
40	75.0		
41	68.0		
42	61.0		
43	54.0		
44	47.0		

Section 4 *(continued)*

4.8 Summary of Methods and Assumptions

Table 4
Retirement Rates
Annual Rates Per 1,000 Members

Age	Rule of 85 Rate	Not Rule of 85 Rate
< 60	200.0	N/A
60	200.0	100.0
61	200.0	150.0
62	250.0	200.0
63	250.0	175.0
64	250.0	200.0
65	350.0	350.0
66	200.0	200.0
67	200.0	200.0
68	200.0	200.0
69	200.0	200.0
70 - 71	300.0	300.0
72	1,000.0	1000.0

Section 4 *(continued)*

4.8 Summary of Methods and Assumptions

Table 5
Disability Rates
Annual Rates Per 1,000 Members

	Rate			Rate	
Age	Males	Females	Age	Males	Females
20	0.00	0.00	45	1.50	1.00
21	0.00	0.00	46	1.60	1.10
22	0.00	0.00	47	1.70	1.20
23	0.00	0.00	48	1.80	1.30
24	0.00	0.00	49	1.90	1.40
25	0.00	0.00	50	2.00	1.50
26	0.00	0.00	51	2.50	1.70
27	0.00	0.00	52	3.00	1.90
28	0.00	0.00	53	3.50	2.10
29	0.00	0.00	54	4.00	2.30
30	0.40	0.40	55	4.50	2.50
31	0.40	0.40	56	4.70	2.60
32	0.40	0.40	57	4.90	2.75
33	0.40	0.40	58	5.10	2.85
34	0.40	0.40	59	5.30	3.00
35	0.40	0.40	60	5.50	3.25
36	0.45	0.45	61	6.00	3.50
37	0.50	0.50	62	6.50	3.50
38	0.60	0.60	63	7.00	3.50
39	0.70	0.70	64	7.50	3.50
40	0.80	0.75	65	0.00	0.00
41	0.95	0.80			
42	1.10	0.85			
43	1.25	0.90			
44	1.40	0.95			

Section 4 *(continued)*

4.8 Summary of Methods and Assumptions

Table 6
Post-Disability Mortality Rates
Annual Rates Per 1,000 Members

	Rate			Rate	
Age	**Male**	**Female**	**Age**	**Male**	**Female**
20	0.000	0.000	60	42.042	21.839
21	22.571	7.450	61	43.474	22.936
22	22.571	7.450	62	44.981	24.080
23	22.571	7.450	63	46.584	25.293
24	22.571	7.450	64	48.307	26.600
25	22.571	7.450	65	50.174	28.026
26	22.571	7.450	66	52.213	29.594
27	22.571	7.450	67	54.450	31.325
28	22.571	7.450	68	56.909	33.234
29	22.571	7.450	69	59.613	35.335
30	22.571	7.450	70	62.583	37.635
31	22.571	7.450	71	65.841	40.140
32	22.571	7.450	72	69.405	42.851
33	22.571	7.450	73	73.292	45.769
34	22.571	7.450	74	77.512	48.895
35	22.571	7.450	75	82.067	52.230
36	22.571	7.450	76	86.951	55.777
37	22.571	7.450	77	92.149	59.545
38	22.571	7.450	78	97.640	63.545
39	22.571	7.450	79	103.392	67.793
40	22.571	7.450	80	109.372	72.312
41	22.571	7.450	81	115.544	77.135
42	22.571	7.450	82	121.877	82.298
43	22.571	7.450	83	128.343	87.838
44	22.571	7.450	84	134.923	93.794
45	22.571	7.450	85	141.603	100.203
46	23.847	8.184	86	148.374	107.099
47	25.124	8.959	87	155.235	114.512
48	26.404	9.775	88	162.186	122.464
49	27.687	10.634	89	169.233	130.972
50	28.975	11.535	90	183.408	140.049
51	30.268	12.477	91	199.769	149.698
52	31.563	13.456	92	216.605	159.924
53	32.859	14.465	93	233.662	170.433
54	34.152	15.497	94	250.693	182.799
55	35.442	16.544	95	267.491	194.509
56	36.732	17.598	96	283.905	205.379
57	38.026	18.654	97	299.852	215.240
58	39.334	19.710	98	315.296	223.941
59	40.668	20.768	99	330.207	231.387

Section 4 *(continued)*

4.8 Summary of Methods and Assumptions

Table 7
Family Structure

Age		Age of youngest child	Average number of children	Probability of being married	Probability of children if married
Male	Female				
20	17	2	.90	.30	.50
21	18	2	.90	.35	.50
22	19	2	.98	.40	.50
23	20	2	.98	.46	.53
24	21	3	1.05	.53	.56
25	22	3	1.13	.60	.59
26	23	4	1.20	.67	.62
27	24	4	1.28	.74	.65
28	25	4	1.35	.76	.67
29	26	5	1.43	.78	.69
30	27	5	1.50	.80	.71
31	28	6	1.58	.82	.73
32	29	6	1.65	.84	.75
33	30	7	1.80	.85	.76
34	31	7	1.95	.86	.77
35	32	8	2.10	.87	.78
36	33	8	2.10	.87	.79
37	34	9	2.10	.87	.80
38	35	9	2.30	.87	.79
39	36	10	1.95	.87	.78
40	37	10	1.88	.87	.77
41	38	11	1.80	.87	.76
42	39	11	1.73	.87	.75
43	40	11	1.73	.87	.72
44	41	12	1.65	.87	.69
45	42	12	1.65	.86	.66
46	43	12	1.58	.86	.63
47	44	12	1.58	.86	.60
48	45	12	1.50	.85	.56
49	46	12	1.43	.85	.52
50	47	13	1.43	.85	.48
51	48	13	1.35	.85	.44
52	49	13	1.35	.85	.40
53	50	13	1.35	.85	.37
54	51	13	1.35	.84	.34

Section 4 *(continued)*

4.8 Summary of Methods and Assumptions

Table 7
Family Structure
(continued)

Age		Age of youngest child	Average number of children	Probability of being married	Probability of children if married
Male	Female				
55	52	13	1.28	.84	.31
56	53	13	1.28	.83	.28
57	54	13	1.28	.83	.25
58	55	13	1.28	.83	.23
59	56	13	1.20	.82	.21
60	57	13	1.20	.81	.19
61	58	13	1.20	.80	.17
62	59	13	1.20	.79	.15
63	60	13	1.20	.78	.13
64	61	13	1.20	.77	.11
65	62	13	1.13	.76	.09
66	63	13	1.13	.75	.07
67	64	13	1.13	.74	.05
68	65	13	1.13	.73	.04
69	66	13	1.05	.72	.03
70	67	13	1.05	.71	.02
71	68	13	1.05	.70	.01

Section 4 *(continued)*

4.9 Definition of Actuarial Terms

Accrued benefit

The benefit earned by a participant as of the date at which the determination is made payable in the form of an annual benefit commencing at normal retirement age. The accrued benefit is payable for the member's lifetime only, however if the total monthly payments at the member's death are less than contributions accumulated with interest, the remaining employee contribution balance will be paid to the member's beneficiary.

Accumulated plan benefits

The accrued benefits and any other benefits, whether vested or not, that have been earned by the participants covered by the plan as of the date at which the determination is made. These other benefits include any death, early retirement or disability benefits provided under the plan.

Actuarial accrued liability

Equal to the actuarial present value of future benefits less the present value of future annual normal costs

Actuarial cost method

The method for allocating the actuarial present value of a pension plan's benefits and expenses to various time periods. An actuarial cost method is also referred to as a funding method.

Actuarial gain/(loss)

The difference between the plan's actual experience and that expected based upon a set of actuarial assumptions. A gain occurs when the experience of the plan is more favorable (in terms of cost) than the assumptions projected; a loss occurs when experience is less favorable. May also be referred to as experience gains/(losses).

Actuarial present value

See present value.

Actuarial valuation

The determination, as of a valuation date, of the annual normal cost, actuarial accrued liability, actuarial value of assets and related actuarial present values for a pension plan.

Actuarial value of assets

The value of cash, investments and other property belonging to a pension plan determined by the actuary for the purpose of an actuarial valuation. Actuarial asset methods are generally designed

Amortization

The spreading of a present value or a cost over a period of years. A plan's unfunded actuarial accrued liability is amortized over a period of years.

Section 4 *(continued)*

4.9 Definition of Actuarial Terms

Fiscal year

The year on which the plan sponsor maintains its financial records.

Funded

Provided by plan assets. A liability is fully funded when assets exceed or equal the liability.

Normal cost

That portion of the actuarial present value of pension plan benefits and expenses which is allocated to a valuation year by the actuarial cost method.

Normal retirement age

An age defined in the plan for purposes of establishing when a terminated participant is entitled to an accrued benefit.

Normal retirement benefit

The benefit payable when it commences at the normal retirement age.

Participant

A person covered by a pension plan in accordance with its terms including active participants, retired participants and beneficiaries, vested terminations and vested transfers.

Plan year

The year on which the plan maintains its financial records.

Present value

The value of an amount or series of amounts payable at various times, determined as of a given date by the application based on a particular set of actuarial assumptions. It is a single sum which reflects the time value of money and the probabilities of payment.

Rate of return

The actual or expected investment income as a percentage of a plan's average assets.

System

Public School Retirement System of the City of St. Louis, Missouri.

Unfunded actuarial accrued liability

The excess of the actuarial accrued liability over the actuarial value of assets.

Vested benefit

A benefit that is not forfeited if the participant terminates employment.