



**Employees Retirement System
of the
City of St. Louis**

**Actuarial Valuation
as of
October 1, 2011**

Produced by [Cheiron](#)

January 24, 2012

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LETTER OF TRANSMITTAL

January 24, 2012

Board of Pension Trustees
 Employees Retirement System of the City of St. Louis
 1114 Market Street, Suite 900
 St. Louis, Missouri 63101

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of the Employees Retirement System of the City of St. Louis as of October 1, 2011. The valuation is organized as follows:

- In Section I **Board Summary**, we describe the purpose of an actuarial valuation and summarize the key results found in this valuation.
- The **Main Body** of the report presents details on the System's:
 - Section II - Assets
 - Section III - Liabilities
 - Section IV - Contributions
 - Section V - Required Accounting Disclosures (GASB)
- In the **Appendices**, we conclude our report with detailed information describing the System's membership (Appendix A), actuarial assumptions and methods employed (Appendix B), and a summary of pertinent plan provisions (Appendix C).

The results of this report rely on future System experience conforming to the underlying assumptions. To the extent that actual System experience deviates from the underlying assumptions, the results would vary accordingly.

In preparing our report, we relied without audit, on information supplied by the Employees Retirement System of the City of St. Louis staff. This information includes, but is not limited to, plan provisions, employee data, and financial information. In addition, we certify that, to the best of our knowledge, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice as set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This report was prepared solely for the Employees Retirement System of the City of St. Louis for the purposes described herein, except that the plan auditor may rely on this report



Board of Pension Trustees

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solely for the purpose of completing an audit related to the matters herein. This valuation report is not intended to benefit third party, and Cheiron assumes no duty or liability to any such party.

Sincerely,
Cheiron



Stephen McElhaney, FCA, FSA, MAAA
Principal Consulting Actuary



Mike Noble, FCA, FSA, MAAA
Consulting Actuary

EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS
OCTOBER 1, 2011 ACTUARIAL VALUATION REPORT

SECTION I
BOARD SUMMARY

The primary purpose of the actuarial valuation and this report is to measure, describe and identify as of the valuation date:

- The financial condition of the System,
- Past and expected trends in the financial progress of the System,
- The City's contributions for Fiscal Year ending 2012, and
- Information required by the Governmental Accounting Standards Board (GASB).

In the balance of this Board Summary we present (A) the basis upon which this year's valuation was completed, (B) the key findings of this valuation including a summary of all key financial results, (C) an examination of the historical trends, and (D) the projected financial outlook for the System.

A. Valuation Basis

This October 1, 2011 valuation represents Cheiron's second valuation performed for the Employees Retirement System of the City of St. Louis. There were no changes since the October 1, 2010 valuation in the actuarial assumptions or methods used.

B. Key Findings of this Valuation

The key results of the October 1, 2011 actuarial valuation are as follows:

- The actuarially determined City contribution rate as a percent of total compensation increased from 12.69% as of October 1, 2010 to 14.27% as of October 1, 2011.
- The unfunded actuarial liability for the Employees Retirement System (ERS) increased from \$149 million on October 1, 2010 to \$180 million on October 1, 2011.
- The System's funding ratio, the ratio of actuarial asset value over liabilities decreased from 81.8% as of October 1, 2010 to 78.6% as of October 1, 2011.
- The primary factor in the decline of the System's funded status was an overall experience loss of \$18.1 million.
 - During the year ended September 30, 2011, the System's assets earned 1.79% on a market value basis and the return on the actuarial asset value was 1.25% (as compared to 8.00% assumed). This resulted in an actuarial loss on investments of \$30.1 million.
 - On the liability side, the System experienced a total gain of \$12.7 million. The largest individual component of this gain is from a \$6.6 million gain due to salary increases being less than expected for continuing active participants. An additional gain of \$ \$4.2 million from inactive mortality being lower than expected and participants not receiving the expected COLA and a \$1.9 million gain from data composition and miscellaneous changes in the data.

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Following is Table I-1 which summarizes all the key results of the valuation with respect to the System's membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior plan year.

Valuation as of:	October 1, 2010	October 1, 2011	% Change
TABLE I-1 Employees Retirement System of the City of St. Louis Summary of Principal Results			
<u>Participant Counts</u>			
Active Participants*	5,545	5,293	(4.54%)
Disabled Participants	183	193	5.46%
Retirees and Beneficiaries	3,818	3,903	2.23%
Terminated Vested Participants	2,369	2,408	1.65%
Total	11,915	11,797	(0.99%)
Annual Salaries of Active Members	\$ 232,451,661	\$ 223,060,719	(4.04%)
Annual Retirement Allowances for Retired Members and Beneficiaries	\$ 40,586,809	\$ 41,840,104	3.09%
<u>Assets and Liabilities</u>			
Actuarial Liability (AL)	\$ 820,669,640	\$ 841,763,321	2.57%
Actuarial Value of Assets (AVA)	671,608,995	661,932,240	(1.44%)
Unfunded Actuarial Liability (UAL)	\$ 149,060,645	\$ 179,831,081	20.64%
Funded Ratio	81.8%	78.6%	
<u>Contributions as a Percentage of Payroll</u>			
	Fiscal Year 2011	Fiscal Year 2012	
Normal Cost Rate	7.20%	7.36%	
Unfunded Actuarial Liability Rate	5.49%	6.91%	
Total City Contribution Rate	12.69%	14.27%	
Annual Required Contribution (GASB)	\$ 29,498,116	\$ 31,839,522	7.94%

* Includes 451 DROP participants as of October 1, 2010 and 442 DROP participants as of October 1, 2011

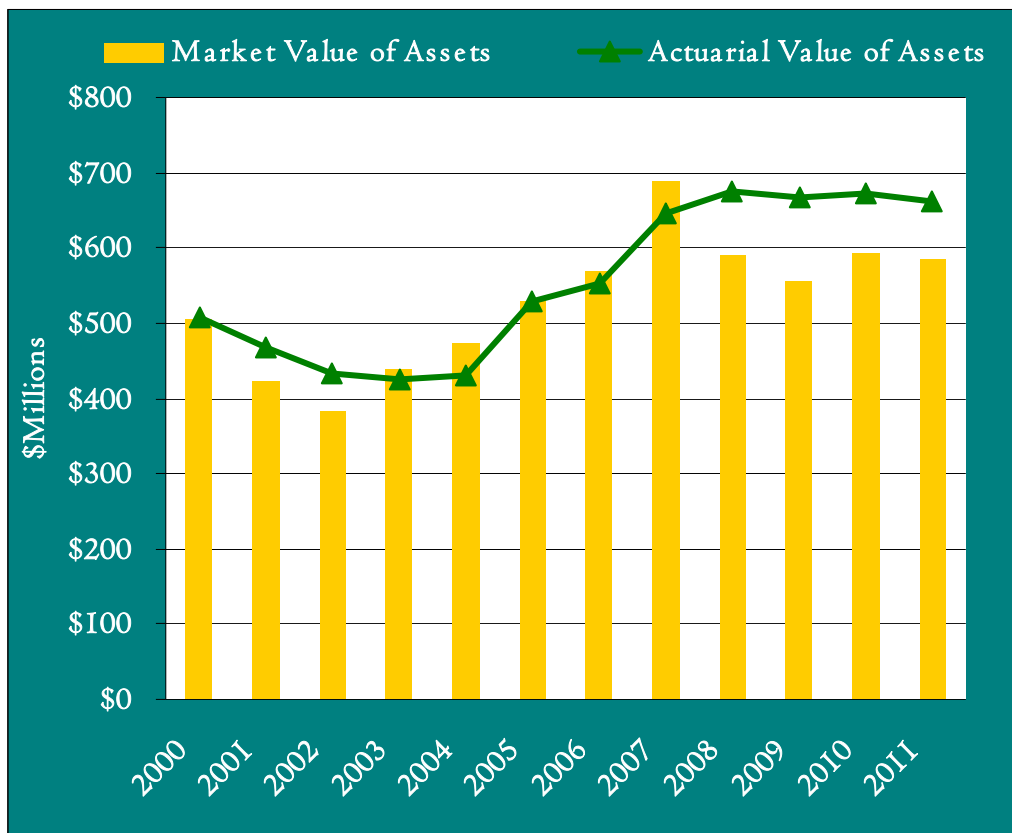
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BOARD SUMMARY

C. Historical Trends

Despite the fact that for most retirement systems the greatest attention is given to the current valuation results and in particular the size of the current unfunded actuarial liability and the City's contribution, it is important to remember that each valuation is merely a snapshot in the long-term progress of a pension fund. It is more important to judge a current year's valuation result relative to historical trends, as well as trends expected into the future.

System Assets

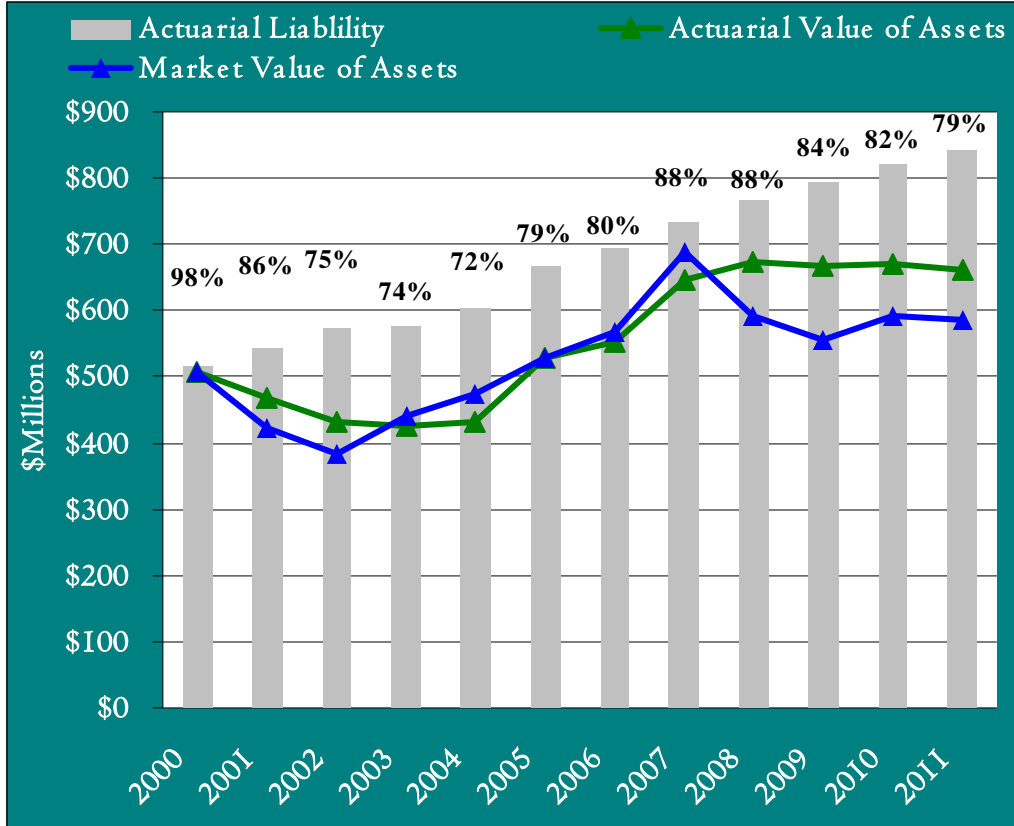


There was a market value of assets (MVA) loss on investments in 2011, returning 1.79%, decreasing from \$593 million to \$586 million. With the asset smoothing method in place, the actuarial value of assets has tracked a slightly smoother path through the volatility of the market value of assets. As can be seen in the graph, the actuarial value of assets (AVA) also decreased from 2010 to 2011 returning 1.25% due to recent market losses.

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**SECTION I
BOARD SUMMARY**

Assets and Liabilities



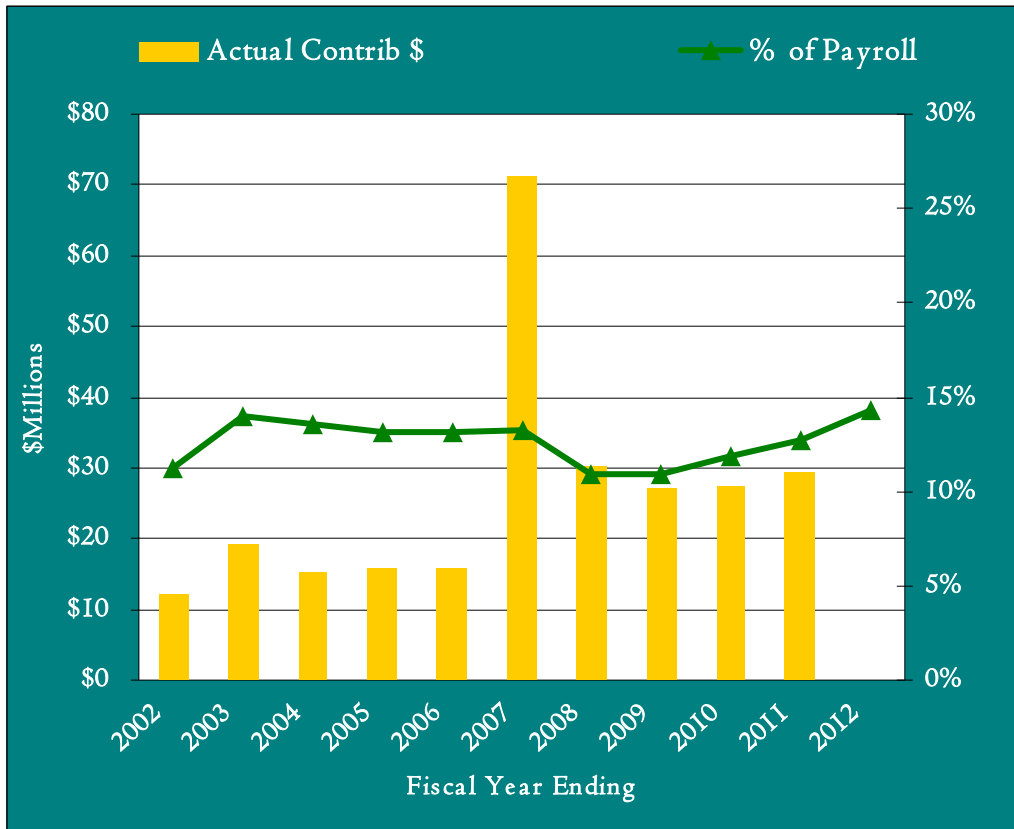
The above chart compares the actuarial value of assets to the actuarial liabilities and shows the funded ratio, which is a comparison of the Actuarial Value of Assets and Actuarial Liability. This chart shows that the funded ratio has decreased for the last three valuations primarily due to continued recognition of the 2008/2009 market losses. The funded ratio had increased each year during the period from 2004 to 2007.

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SECTION I
BOARD SUMMARY

Contribution Rates

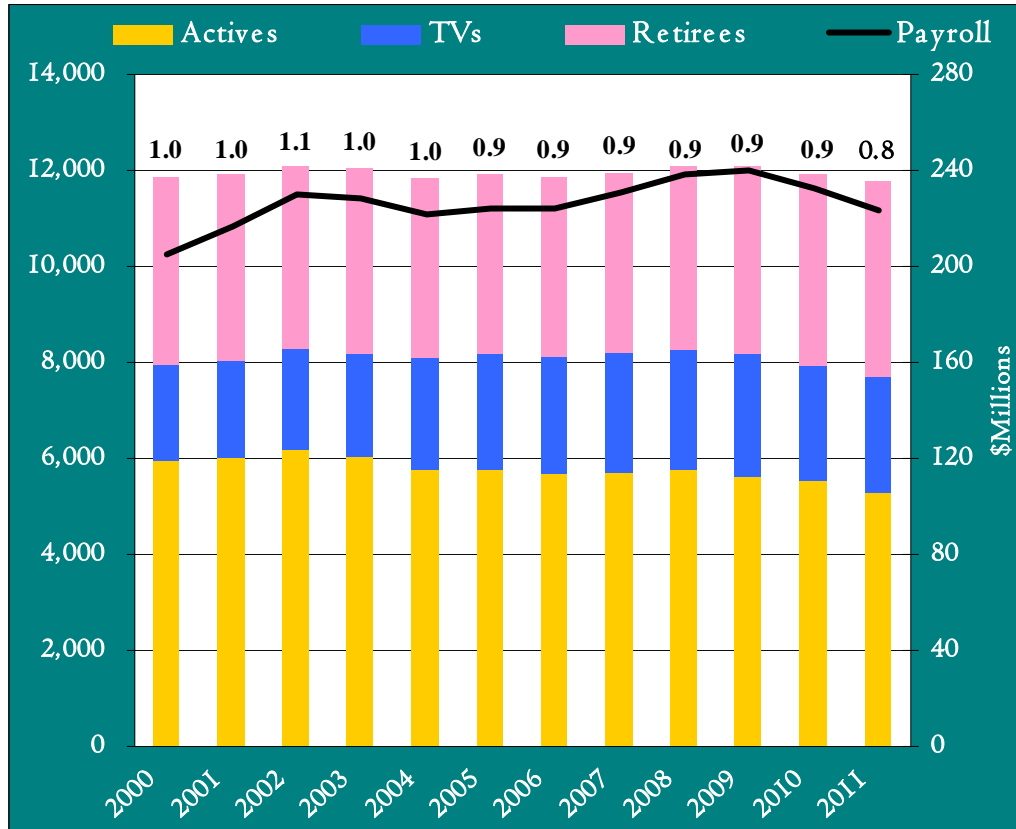
The yellow bars in this graph show the dollar amount of contributions made by the System (depicted on the left hand scale) since Fiscal Year Ending 2002. The green line shows the City's actuarial contribution rate as a percent of payroll (depicted on the right hand scale). Members do not make contributions to the System. The actuarial contribution rate increased from 12.69% of payroll in 2010 to 14.27% of payroll in 2011 due to the actuarial loss on plan assets and decrease in total payroll.



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Participant Trends



The above chart provides a measure for the maturity in the System, by comparing the ratio of active members to inactive members (retirees and terminated-vesteds). The active-to-inactive ratio has declined since 2000 from 1.0 active supporting each inactive member to 0.8 actives supporting each inactive member today.

D. Future Expected Financial Trends

The analysis of projected financial trends is perhaps the most important component of this valuation. In this Section, we present the implications of the October 1, 2011 valuation results in terms of (1) the projected City’s contributions, and (2) projected System’s funded status (ratio of assets over liabilities). For each projection set we assume three future different investment return scenarios: baseline returns of 8.00%, optimistic returns of 9.50%, and pessimistic returns of 6.50%. The projections assume there will be no future gains or losses on the liability.

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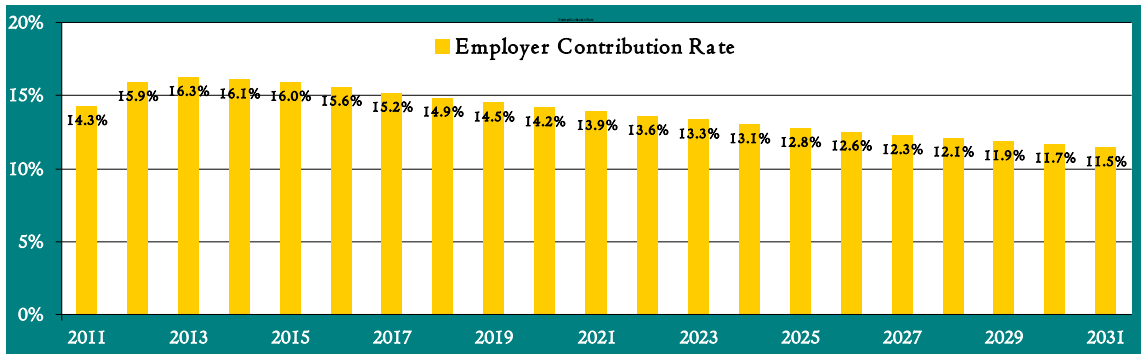
SECTION I
BOARD SUMMARY

1. Contribution Rate Projections

The first set of charts show the City's projected actuarially determined contribution rates (gold bars). The years shown in the charts are plan years beginning October 1st.

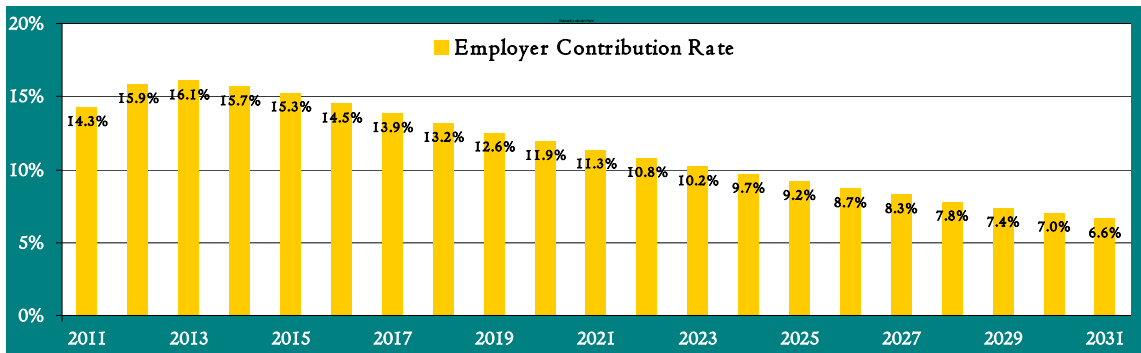
Baseline returns of 8.00%

The chart below shows that the actuarially determined contribution rate will increase from 14.2% to 16.2% of pay by 2013 due to the continued phase-in of prior investment losses. After that point, it will begin decreasing reaching a level of 11.4% of pay by 2031. These projections assume that the System earns the assumed investment rate of 8.00% on market value.



Optimistic returns of 9.50%

If the System earns 1.50% greater than the assumed rate in each year of the projection, the actuarially determined contribution rate will decrease to about 6.6% in 20 years, after an increase in the rate over the next few years.

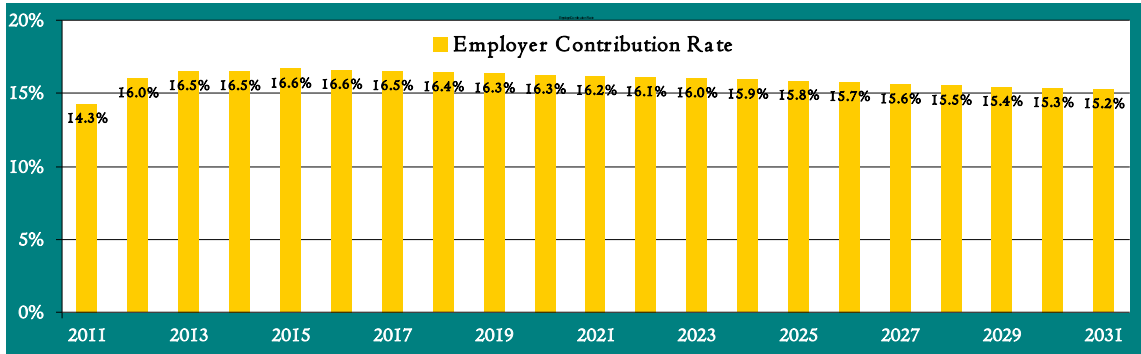


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Pessimistic returns 6.50%

If the System earns 1.50% less than the assumed rate in each year of the projection, the actuarially determined contribution rate after 20 years will be 15.2%.

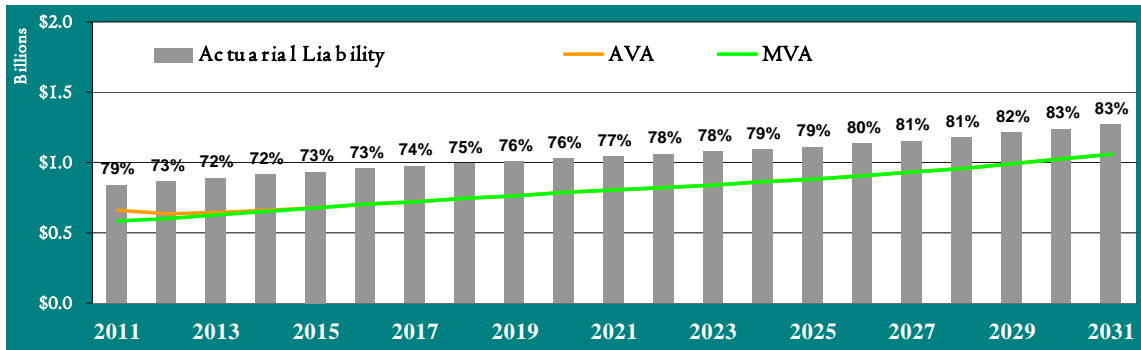


2. Asset and Liability Projections

This next set of projection charts compare the market value of assets (green line) and the actuarial or smoothed value of assets (gold line) to the System’s actuarial liabilities (gray bars). In addition at the top of each chart, we show the System’s funded ratio (ratio of actuarial value of assets to actuarial liabilities). The projections assume that the actuarially determined contributions, as shown in the previous charts, are made each year. The years shown in the chart signify the valuation date as of October 1st.

Baseline 8.00% return

Assuming that the System earns the assumed investment rate of 8.00%, the funded ratio will decrease to 72% over the next three years before steadily increasing for the remainder of the 20 year period.

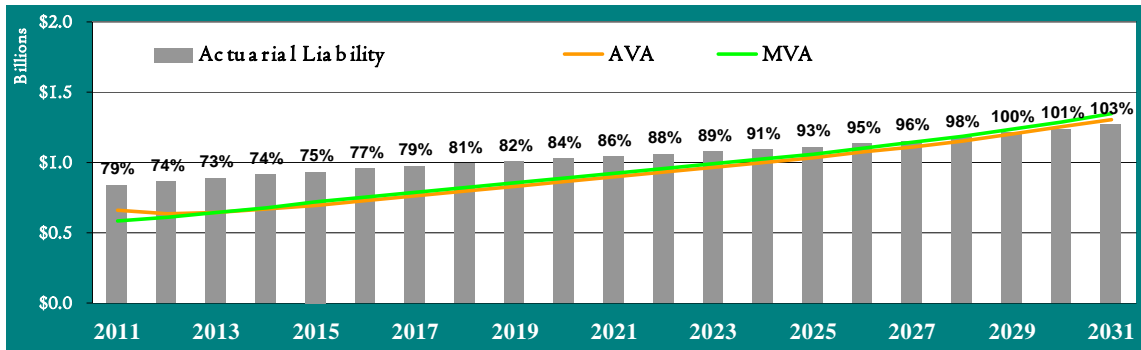


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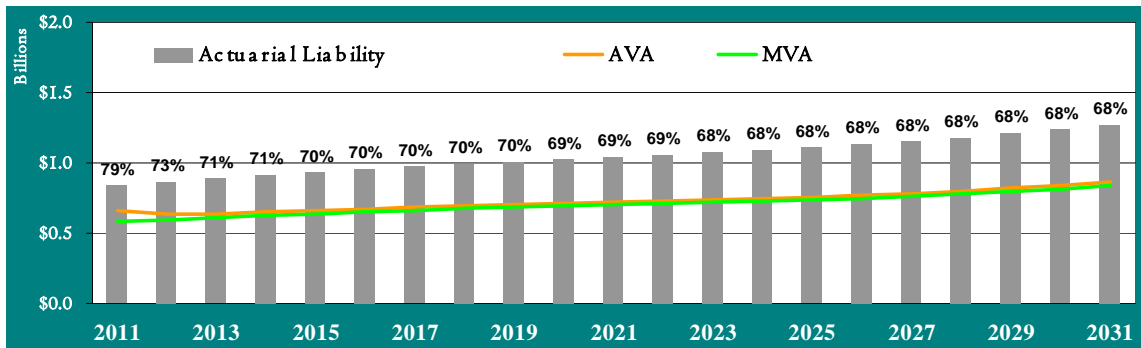
Optimistic Returns of 9.50%

If the System earns 1.50% greater than the assumed rate of return in each year of the projection, the funded ratio will increase to 103% by 2031.



Pessimistic Returns of 6.50%

If the System earns 1.50% less than the assumed rate of return in each year of the projection, the funded ratio will decrease to 68% by the end of the 20 year period.



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**SECTION II
ASSETS**

Pension Plan assets play a key role in the financial operation of the System and in the decisions the Trustees may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, City contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on the System assets including:

- **Disclosure** of the System assets as of October 1, 2010 and October 1, 2011;
- Statement of the **changes** in market values during the year;
- Development of the **Actuarial Value of Assets**;
- An assessment of **investment performance**; and
- A projection of the System's expected **cash flows** for the next ten years.

Disclosure

There are two types of asset values disclosed in this valuation, the market value of assets and the actuarial value of assets. The market value represents a "snap-shot" or "cash-out" value which provides the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not as suitable for long-range planning as are the actuarial value of assets which reflect smoothing of annual investment returns.

Table II-1 below discloses and compares each asset value as of September 30, 2010 and 2011.

TABLE II-1			
Statement of Assets at Market Value as of September 30,			
Assets	2010	2011	% Change
Cash	\$ 120,963	\$ 167,436	38.42%
Receivables	1,132,982	2,281,580	101.38%
Temporary cash investments	11,571,742	8,857,470	(23.46%)
Bonds	87,864,936	91,810,265	4.49%
Common stock	233,499,672	178,213,858	(23.68%)
Managed international equity funds	148,015,438	165,281,685	11.67%
Real estate funds	50,650,587	59,981,104	18.42%
Domestic bond funds	53,803,531	57,716,899	7.27%
Managed hedge fund of funds	6,901,986	21,804,429	215.92%
Securities lending collateral	0	0	0.00%
Securities lending collateral liability	0	0	0.00%
Payable under forward foreign currency exchange contracts	0	0	0.00%
Accounts Payable	(454,741)	(527,998)	16.11%
Market Value of Assets	\$ 593,107,096	\$ 585,586,728	(1.27%)

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS
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**SECTION II
ASSETS**

Changes in Market Value

Table II-2 below shows the components of change between the market value of assets as of September 30, 2010 and September 30, 2011.

TABLE II-2 Changes in Market Values		
Value of Assets – September 30, 2010		\$ 593,107,096
<u>Additions</u>		
Payments from Members	\$ 102,978	
Employer Contributions	29,293,854	
Interest and Dividends	8,980,997	
Investment Return	4,969,414	
Total Additions	\$ 43,347,243	
<u>Deductions</u>		
Investment Expenses	\$ 2,827,404	
Benefit Payments	47,360,626	
Administrative Expenses	679,581	
Total Deductions	\$ 50,867,611	
Value of Assets – September 30, 2011		\$ 585,586,728

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**SECTION II
ASSETS**

Actuarial Value of Assets

The next table, Table II-3 shows how the actuarial value of assets is developed. The actuarial value of assets method was initialized at market value as of October 1, 2005.

The actuarial value of assets represents a “smoothed” value developed by the actuary to reduce, or eliminate, erratic results which could develop from short-term fluctuations in the market value of assets. For this System, the actuarial value has been calculated by taking the market value of assets less 80% of the investment gain (loss) during the preceding year, less 60% of the investment gain (loss) during the second preceding year, less 40% of the investment gain (loss) during the third preceding year, and less 20% of the investment gain (loss) in the fourth preceding year. If the actuarial value of assets is less than 80% or more than 120% of the market value, an adjustment is made to the actuarial value to bring the value within this corridor. The tables below illustrate the calculation of actuarial value of assets for the October 1, 2011 valuation.

Table II-3 Development of Actuarial Value of Assets		
Market value of assets at September 30, 2010		\$ 593,107,096
Employer Contributions		29,293,854
Payments from Members		102,978
Benefit payments		(47,360,626)
Expected return at 8.00%		<u>46,743,839</u>
Expected Value at September 30, 2011		\$ 621,887,141
Actual Value at September 30, 2011		<u>585,586,728</u>
Investment (gain)/ loss		\$ 36,300,413
	Total	
	Gain/(Loss)	Excluded Portion
Exclude 0% of 2007 gain/(loss)	\$ 38,933,065	\$ 0
Exclude 20% of 2008 gain/(loss)	(141,799,294)	(28,359,859)
Exclude 40% of 2009 gain/(loss)	(64,625,469)	(25,850,188)
Exclude 60% of 2010 gain/(loss)	11,508,109	6,904,865
Exclude 80% of 2011 gain/(loss)	(36,300,413)	<u>(29,040,330)</u>
Total excluded gain/(loss) for AVA calculation		\$ (76,345,512)
Market value of assets at September 30, 2011		\$ 585,586,728
Total gain/(loss) excluded		<u>(76,345,512)</u>
Actuarial value of assets at September 30, 2011		\$ 661,932,240

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**SECTION II
ASSETS**

Investment Performance

The market value of assets (MVA) returned 1.79% during plan year ending September 30, 2011, which is less than the assumed 8.00% return. A return of 1.25% was experienced on the actuarial value of assets (AVA), resulting in an actuarial loss for the year. Below we show additional historical returns.

TABLE II-4 Historical Returns		
	MVA	AVA
2007	14.65%	10.17%
2008	-12.76%	5.85%
2009	-3.09%	1.52%
2010	10.11%	3.42%
2011	1.79%	1.25%

Projection of System's Future Cash Flows

TABLE II-5 Projection of System's Expected Cash Flows			
Year Beginning October 1,	Benefit Payments	Contributions	Net Cash Flow
2011	58,744,176	31,839,522	(26,904,654)
2012	59,856,244	36,766,511	(23,089,733)
2013	63,521,500	38,896,822	(24,624,678)
2014	67,266,823	39,790,234	(27,476,589)
2015	70,556,030	40,866,340	(29,689,690)
2016	73,651,605	41,281,311	(32,370,293)
2017	77,115,121	41,720,846	(35,394,274)
2018	79,795,746	42,185,705	(37,610,042)
2019	82,832,445	42,676,674	(40,155,771)
2020	85,086,689	43,194,573	(41,892,117)

Expected contributions assume contribution rates as shown in the top graph on page 7 and that payroll will increase at the actuarially assumed rate of 3.5% per year. Expected benefit payments are projected for the closed group valued at October 1, 2011. Projecting any farther than ten years using a closed-group would not yield reliable predictions due to the omission of new hires.

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**SECTION III
LIABILITIES**

In this section, we present detailed information on the System liabilities including:

- **Disclosure** of the System liabilities as of October 1, 2010 and October 1, 2011, and
- Statement of **changes** in these liabilities during the year.

Disclosure

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them.

- **Present Value of All Future Benefits:** Used for measuring all future System obligations, represents the amount of money needed today to fully pay off all benefits of the System both earned as of the valuation date and those to be earned in the future by current plan participants, under the current plan provisions.
- **Actuarial Liability:** Calculated as of valuation date as the present value of benefits allocated to service prior to that date.

Table III-1, which follows, discloses each of these liabilities for the current and prior valuations. With respect to each disclosure, a subtraction of the appropriate value of plan assets yields, for each respective type, a **net surplus** or an **unfunded liability**.

TABLE III-1		
Liabilities/Net (Surplus)/Unfunded		
	October 1, 2010	October 1, 2011
<u>Present Value of Future Benefits</u>		
Active Participant Benefits	\$ 514,843,972	\$ 508,929,965
Participants currently receiving payments	370,123,528	389,611,964
Participants with a deferred vested benefit	<u>49,594,274</u>	<u>51,908,591</u>
Present Value of Future Benefits (PVB)	\$ 934,561,774	\$ 950,450,520
<u>Actuarial Liability</u>		
Active Participant Benefits	\$ 400,951,838	\$ 400,242,766
Participants currently receiving payments	370,123,528	389,611,964
Participants with a deferred vested benefit	<u>49,594,274</u>	<u>51,908,591</u>
Actuarial Liability (AL)	\$ 820,669,640	\$ 841,763,321
Actuarial Value of Assets (AVA)	\$ 671,608,995	\$ 661,932,240
Net (Surplus)/Unfunded (AL – AVA)	\$ 149,060,645	\$ 179,831,081

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**SECTION III
LIABILITIES**

Changes in Liabilities

Each of the Liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- System amendments increasing benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

Unfunded liabilities will change because of all of the above, and also due to changes in plan assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure plan assets

In each valuation, we report on those elements of change which are of particular significance, potentially affecting the long-term financial outlook of the System. Below, we present key changes in liabilities since the last valuation.

In the table that follows, we show the components of change in the actuarial liability between October 1, 2010 and October 1, 2011.

TABLE III-2	
	Actuarial Liability
Liabilities October 1, 2010	\$ 820,669,640
Liabilities October 1, 2011	841,763,321
Liability Increase (Decrease)	21,093,681
Change Due to:	
Plan Amendments	0
Assumption Changes	0
Experience (Gain)/Loss	(12,671,467)
Benefits Accumulated and Other Sources	33,765,148

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**SECTION III
LIABILITIES**

In addition, we breakdown the change in actuarial liability further by showing the total actuarial (gain)/loss by source, as shown in Table III-3 below.

TABLE III-3 (Gain)/Loss by Source as of October 1, 2011	
Inactive participant mortality and COLA	\$ (4,167,284)
Salary increase less than expected for continuing actives	(6,560,602)
Data composition and miscellaneous changes	<u>(1,943,581)</u>
Experience (Gain)/Loss	\$ (12,671,467)

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**SECTION IV
CONTRIBUTIONS**

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the System. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

For this System, the funding method employed is the **Projected Unit Credit Actuarial Cost Method**. The objective under this method is to allocate the total pension benefit to which each participant is expected to become entitled at retirement to the participant's past and future service. This allocation is accomplished by applying the plan's accrual formula to projected final salary at retirement. The difference between the Projected Unit Credit actuarial liability and the actuarial value of assets is the unfunded actuarial liability.

The unfunded actuarial liability is amortized under over a 30-year period as a level dollar amount for all years. The amortization payment is recalculated each year to reflect the entire unfunded actuarial liability as of the valuation date.

Table IV-1 below presents and compares the employer contribution rates for the System for this valuation and the prior one.

TABLE IV-1		
Employer Contribution Rate		
	Fiscal Year Ending 2011	Fiscal Year Ending 2012
Projected Unit Credit Normal Cost Rate	7.20%	7.36%
Amortization Payment	5.49%	6.91%
Actuarially Determined Contribution	12.69%	14.27%

The Unfunded Actuarial Liability is reamortized each year over a 30 year period. As of October 1, 2011, the Unfunded Actuarial Liability is \$179,831,081 . This results in an amortization payment of \$ 15,416,515 . The Unfunded Actuarial liability as of October 1, 2010 was \$149,060,645 with an amortization payment of \$ 12,778,635 .

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**SECTION V
ACCOUNTING STATEMENT INFORMATION**

Statement No. 25 of the Governmental Accounting Standards Board (GASB) establishes standards for disclosure of pension information by public employee retirement systems (PERS) and governmental employers in notes to financial statements and supplementary information.

The GASB-25 actuarial liability is the same as the actuarial liability amount calculated for funding purposes.

The actuarial liability (GASB-25) is determined assuming that the System is on-going and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions. Liabilities are discounted at the assumed valuation interest rate of 8.00% per annum.

GASB Statement No. 25 requires the actuarial liability be compared with the actuarial value of assets for funding purposes. The relevant amounts as of October 1, 2011 are exhibited in Table V-1.

Tables V-2 through V-4 are exhibits to be used with the CAFR report. Table V-2 is the Note to Required Supplementary Information, Table V-3 is a history of gains and losses in actuarial liability, and Table V-4 is the Solvency Test which shows the portion of actuarial liability covered by assets.

Finally, Tables V-5 and V-6 are additional GASB supplemental exhibits. Table V-5 shows historical GASB Annual Required Contribution information, compared to what the City actually contributed. Table V-6 shows historical unfunded actuarial liability (UAL) information, funding ratios, and the UAL as a percent of payroll.

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**SECTION V
ACCOUNTING STATEMENT INFORMATION**

Table V-1		
Accounting Statement Information		
	October 1, 2010	October 1, 2011
GASB No. 25 Basis		
1. Actuarial Liabilities for retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	\$ 419,717,802	\$ 441,520,555
2. Actuarial Liabilities for current employees	<u>400,951,838</u>	<u>400,242,766</u>
3. Total Actuarial Liability (1 + 2)	\$ 820,669,640	\$ 841,763,321
4. Net Actuarial Assets available for benefits	<u>671,608,995</u>	<u>661,932,240</u>
5. Unfunded Actuarial Liability (3 - 4)	\$ 149,060,645	\$ 179,831,081

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS
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ACCOUNTING STATEMENT INFORMATION**

**Table V-2
NOTE TO REQUIRED SUPPLEMENTARY INFORMATION**

The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the date indicated. Additional information as of the latest actuarial valuation follows.

Valuation date	October 1, 2011
Actuarial cost method	Projected Unit Credit
Amortization method	Level dollar open amortization period
Remaining amortization period for the UAL	30 years
Asset valuation method	5-year smoothed market
Actuarial assumptions:	
Investment rate of return	8.00%
Projected salary increases	Varies by age from 3.50% to 7.017%
Cost-of-living adjustments	3.125% simple with a 25% lifetime cap
Inflation	3.125%

The actuarial assumptions used have been based upon recommendations by the actuary and adopted by the System's Board of Trustees.

The rate of employer contributions to the System is composed of the normal cost and an amortization of the unfunded actuarial liability. The normal cost is the portion of each participant's projected benefit liability attributable to service to be earned during the current plan year. The actuarial liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs. The difference between this liability and the actuarial value of assets as of the same date is the unfunded actuarial liability.

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS
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**SECTION V
ACCOUNTING STATEMENT INFORMATION**

**Table V-3
ANALYSIS OF FINANCIAL EXPERIENCE
Gain and Loss in Unfunded Actuarial Liability During Years Ended September 30
Resulting from Differences Between Assumed Experience and Actual Experience**

Type of Activity	<i>Gain (or Loss) for Year ending September 30,</i>	
	2010	2011
Investment Income	\$ (30,170,089)	\$ (44,736,952)
Combined Liability Experience	<u>12,023,759</u>	<u>12,671,467</u>
Gain (or Loss) During Year from Financial Experience	\$ (18,146,330)	\$ (32,065,485)
Non-Recurring Gain (or Loss) Items	<u>(3,960,992)</u>	<u>0</u>
Composite Gain (or Loss) During Year	\$ (22,107,322)	\$ (32,065,485)

**Table V-4
SOLVENCY TEST¹
Aggregate Actuarial Liabilities for**

Valuation Date October 1	Active Member Contributions	Retirees & Beneficiaries	Active Member Employer Financed Contributions	Actuarial Value of Reported Assets	Portion of Actuarial Liabilities Covered by Reported Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
2010	0	419,717,802	400,951,838	671,608,995	100%	100%	55%
2011	0	441,520,555	400,242,766	661,932,240	100%	100%	63%

¹ We will build to the required 10 years of disclosure information.

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ACCOUNTING STATEMENT INFORMATION**

Table V-5 Supplementary Information Required by GASB – Schedule of City Contributions			
Plan Year Ended September 30	Annual Required Contributions	Actual Contributions	Percentage Contributed
2002	\$24,269,937	\$12,106,532	49.9%
2003	\$32,186,050	\$19,115,679	59.4%
2004	\$30,926,604	\$15,158,997	49.0%
2005	\$29,243,453	\$15,752,497	53.9%
2006	\$29,478,032	\$15,756,456	53.5%
2007	\$29,599,091	\$71,301,428	240.9%
2008	\$25,297,801	\$30,350,011	120.0%
2009	\$26,072,575	\$27,252,035	104.5%
2010	\$28,498,534	\$27,116,763	95.2%
2011	\$29,498,116	\$29,293,854	99.3%
2012	\$31,839,522	--	--

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**SECTION V
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Table V-6 Supplementary Information Required by GASB – Schedule of Funding Progress						
Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Liability (b)	Unfunded Actuarial Liability (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	Percentage of Covered Payroll* [(b) - (a)] / (c)
10/1/2001	\$466,630,792	\$542,547,374	\$75,916,582	86.01%	\$216,527,124	35.06%
10/1/2002	\$432,590,313	\$574,817,702	\$142,227,389	75.26%	\$230,184,836	61.79%
10/1/2003	\$424,917,296	\$576,127,904	\$151,210,608	73.75%	\$228,550,406	66.16%
10/1/2004	\$431,853,406	\$602,795,470	\$170,942,064	71.64%	\$221,768,791	77.08%
10/1/2005	\$527,733,171	\$666,182,075	\$138,448,904	79.22%	\$223,837,003	61.85%
10/1/2006	\$554,065,539	\$695,889,716	\$141,824,177	79.62%	\$224,120,314	63.28%
10/1/2007	\$646,569,478	\$732,576,024	\$86,006,546	88.26%	\$231,029,237	37.23%
10/1/2008	\$674,016,719	\$765,842,026	\$91,825,307	88.01%	\$238,701,628	38.47%
10/1/2009	\$667,667,205	\$794,686,379	\$127,019,174	84.02%	\$240,409,390	52.83%
10/1/2010	\$671,608,995	\$820,669,640	\$149,060,645	81.84%	\$232,451,661	64.13%
10/1/2011	\$661,932,240	\$841,763,321	\$179,831,081	78.64%	\$223,060,719	80.62%

*Not less than zero

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**APPENDIX A
MEMBERSHIP INFORMATION**

Employees Retirement System of the City of St. Louis			
Table of Plan Coverage			
	10/1/2010	10/1/2011	% change
Active Members in Valuation			
Count	5,545	5,293	-4.5%
Average Age	47.3	47.9	1.3%
Average Service	12.3	12.9	4.8%
Total Payroll	\$ 232,451,661	\$ 223,060,719	-4.0%
Average Anticipated Payroll	\$ 41,921	\$ 42,143	0.5%
Total Active Vested Members	3,809	3,800	-0.2%
DROP Members in Valuation (included in Active Members)			
Count	451	442	-2.0%
Average Age	59.7	59.7	-0.1%
Average Service	26.7	26.8	0.4%
Total DROP Account Balances	\$ 16,741,288	\$ 18,659,401	11.5%
Average DROP Account Balances	\$ 37,120	\$ 42,216	13.7%
Vested Terminated Members	2,369	2,408	1.6%
Pensioners			
Number in Pay Status			
Retirees	3,396	3,470	2.2%
Disabled Retirees	<u>183</u>	<u>193</u>	5.5%
Total	3,579	3,663	2.3%
Average Age	72.66	72.64	0.0%
Average Monthly Benefit	\$ 859	\$ 863	0.5%
Beneficiaries in Pay Status	422	433	2.6%

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**APPENDIX A
MEMBERSHIP INFORMATION**

Employees Retirement System of the City of St. Louis Inactive Participants by Type and Monthly Benefit Amount					
Monthly Amount	Total	Retirees	Terminated Vested	Disability	Beneficiaries
Total	6,504	3,470	2,408	193	433
Under \$500	3,907	1,631	1,992	71	213
\$500-1,000	1,285	749	338	88	110
\$1,000-1,500	664	518	62	27	57
\$1,500-2,000	326	277	15	6	28
\$2,000-2,500	124	112	1	0	11
\$2,500-3,000	63	55	0	1	7
\$3,000-3,500	49	46	0	0	3
\$3,500-4,000	31	30	0	0	1
\$4,000-4,500	29	27	0	0	2
\$4,500-5,000	11	10	0	0	1
\$5,000 & over	15	15	0	0	0

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS
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**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

A. Actuarial Assumptions and Actuarial Cost Method

1. Mortality Rates:

Healthy: 1994 Group Annuity Mortality Table

Disabled: 1983 Railroad Retirement Board Disabled Life Mortality Table

Mortality improvement: During the period of the last experience study (2005-2009), actual rates of mortality were consistently higher than the rates within these tables, thus the current tables include a component for mortality improvement.

2. Mortality and Disability Rates before Retirement:

Age	Mortality (%)		Disability (%)	
	Male	Female	Male	Female
20	0.05	0.03	0.00	0.00
25	0.07	0.03	0.00	0.00
30	0.08	0.04	0.00	0.00
35	0.09	0.05	0.00	0.00
40	0.11	0.07	0.11	0.05
45	0.16	0.10	0.17	0.10
50	0.26	0.14	0.50	0.24
55	0.44	0.23	0.62	0.34
60	0.80	0.44	0.39	0.24

3. Withdrawal Rates before Retirement:

Creditable Service	With Less Than Four Years of Creditable Service		Age	With Four or More Years of Creditable Service	
	Male	Female		Male	Female
0	22.0	16.0	20	25.00	13.90
1	16.0	14.0	25	17.20	10.96
2	12.0	10.0	30	10.80	8.40
3	10.0	8.0	35	8.44	7.10
			40	5.90	5.60
			45	4.30	4.40
			50	3.60	3.52
			55	3.10	2.60

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4. Retirement Rates:

Age	Retirement Rate (%)	Age	Retirement Rate (%)
55	5.0	63	20.0
56	5.0	64	20.0
57 – 58	8.0	65	25.0
59	10.0	66	25.0
60	10.0	67-69	25.0
61	10.0	70	100.0
62	20.0		

In addition, in the first year that a participant satisfies the requirements under the “Rule of 85,” the retirement rate is assumed to be 75% if the age in the first year of eligibility is 55 or less and 60% if the age in the first year of eligibility is older than 55 (100% at age 70).

5. Retirement Age for Inactive Vested Participants

For members who terminate employment with 30 or more years of creditable service or are eligible for a Rule of 85 pension, immediate commencement of benefits is assumed. All others are assumed to retire at age 61.

6. DROP Participants

Participants in the DROP are assumed to remain in the DROP for 5 years. The standard retirement rates are assumed. Interest to the DROP account is assumed to be creditable at 6% for those participants who enter the DROP after January 21, 2003. The liability and normal cost associated with the retirement decrement has been increased by 3% to account for the additional cost associated with the resumption of active participants.

7. Unknown Data for Participants

Same as those exhibited by participants with similar known characteristics. For inactive vested participants with unknown benefit amounts, \$250 per month is assumed.

8. Rehires

A 0.4% load on active accrued liability and normal cost has been added to reflect the cost of rehires.

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**APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS**

9. Sick Leave

Sick leave may be used to increase either Final Average Compensation, Creditable Service, or both. Starting with the October 1, 2010 valuation, the actual unused credited sick leave hours on file were used in the valuation. Effective in July 2010, the accumulation of unused sick leave hours, that can be used for benefit purposes, was frozen.

10. Percent Married

1960 US census varies by sex and age.

Age	Married (%)	
	Male	Female
20-24	56.7	77.3
25-29	77.2	86.2
30-34	85.6	88.7
35-39	88.3	88.2
40-44	89.2	85.9
45-49	88.4	82.5
50-54	86.9	77.1
55-59	84.8	70.0
60-64	82.8	61.4
65-69	79.4	51.3
70+	72.8	39.0

11. Age of Spouse

Females (or males) are three years younger (or older) than their spouses.

12. Net Investment Return

8.00% per year, net of expenses.

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ACTUARIAL ASSUMPTIONS AND METHODS

13. Salary Increases

Varies by age, ranging from 3.500% to 7.017%.

Age	Salary Increase (%)
20	7.0174
25	6.2040
30	5.1790
35	4.4515
40	3.6589
45	3.5000
50	3.5000
55	3.5000
60	3.5000
65	3.5000
70+	0.0000

14. Increases in Social Security Table Wage Base

3.5% per year.

15. Cost-of-Living Adjustment

3.125% per year for 8 years and 0% thereafter.

16. Increase in Section 415 and Section 401(a)(17) limits

4.5% per year.

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B. Actuarial Methods

1. Actuarial Value of Assets

The market value of assets less unrecognized returns in each of the last five years, but no earlier than October 1, 2005. Initial unrecognized return is equal to the difference between the actual market return and expected market return, and is recognized over a five-year period. The actuarial value is further adjusted, if necessary, to be within 20% of the market value. The actuarial asset value was initialized at the market value as of October 1, 2005.

2. Actuarial Cost Method

The cost method for valuation of liabilities used for this valuation is the Projected Unit Credit method. This is one of a family of valuation methods known as accrued benefit methods. The chief characteristic of accrued benefit methods is that the funding pattern follows the pattern of benefit accrual. Under the Projected Unit Credit Actuarial Cost method, the normal cost is determined as that portion of each participant's projected benefit attributable to service expected to be earned in the upcoming plan year. The actuarial liability, which is determined for each participant as of each valuation date, represents the actuarial present value of the portion of each participant's projected benefit attributable to service earned prior to the valuation date.

One of the significant effects of this funding method is that, depending on the demographics of the population, the Projected Unit Credit method tends to produce lower costs in the early years. There is a possibility that as the population ages the annual cost could increase over time. Given a stable population, however, this method can produce a steady contribution as a percentage of payroll.

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APPENDIX C
SUMMARY OF PLAN PROVISIONS

1. Plan Year

October 1 through September 30.

2. Final Average Compensation

One-half the sum of:

(a) The total compensation earned during the last two highest consecutive years of Creditable Service prior to termination (subject to the Section 401(a)(17) limit); and

(b) The balance of sick leave pay as of the date of retirement less sick leave hours paid upon termination and less sick leave hours considered as Creditable Service. Said balance cannot exceed 25% of a member's total sick leave pay as of the date of retirement.

3. Benefit Compensation Base

Amount of annual compensation with respect to which old age and survivor's insurance benefits would be provided to the member under the Social Security Act in effect on the date the Benefit Compensation Base is determined calculated when the member terminates employment.

4. Normal Retirement

Age Requirement: 65.

Service Requirement: Five years of Creditable Service.

Amount: The product of:

(a) 1.30% of Final Average Compensation up to the Benefit Compensation Base, plus 2.05% of Final Average Compensation in excess of the Benefit Compensation Base, and

(b) Creditable Service.

Minimum \$200 per month for retirees with 12 or more years of creditable service.

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APPENDIX C
SUMMARY OF PLAN PROVISIONS

5. Rule of 85 Retirement

Age/Service Requirement:	Sum of Age and Creditable Service at date of termination equals or exceeds 85.
Amount:	The product of: (a) 1.30% of Final Average Compensation up to the Benefit Compensation Base, plus 2.05% of Final Average Compensation in excess of the Benefit Compensation Base, and (b) Creditable Service.

6. Early Retirement

Age/Service Requirement:	Age 60 with five years of Creditable Service; or age 55 with 20 years of Creditable Service; or any age with 30 years of Creditable Service.
Amount:	Normal retirement amount reduced by 1/3% for each month benefit begins before age 65.

7. Disability

Age Requirement	None.
Service Requirement	Five years of Creditable Service and an active employee at disablement.
Amount	Normal retirement amount based on Creditable Service and Final Average Compensation at disability, payable immediately

8. DROP (Deferred Retirement Option Plan)

Members who have achieved eligibility for retirement can continue active employment and defer receipt of their retirement allowance for a period not to exceed five years. During the DROP period, the member's retirement allowance will be paid directly into a separate account.

Service during the DROP period shall not be counted as Creditable Service, nor shall it count toward determination of retirement allowance. A member's DROP account shall not be adjusted for any cost-of-living increases during participation in the DROP. No member returning to non-DROP status shall make any withdrawal from his/her DROP account until after termination of employment.

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SUMMARY OF PLAN PROVISIONS

The account balance is credited with interest annually. In no event does the total account balance exceed the accumulated value of five-years-payments with interest.

The annuity awarded upon full termination and subsequent benefit receipt reflects the unused sick-leave conversion to Creditable Service and/or Final Average compensation. During participation in the DROP, the annual deposit to the account does NOT reflect any conversion of unused sick leave as each participant continues to accrue sick leave hours. The unused credited sick leave hours was frozen as of July 17, 2010.

9. Vesting

Age Requirement: None.

Service Requirement: Five years of Creditable Service.

Amount: Normal or early service retirement amount.

10. Spouse Pre-Retirement Death Benefit

Service less than five years

Age Requirement: None.

Service Requirement: Five years of Creditable and an active employee.

Amount: If married, 100% of the benefit the employee would have received had he or she retired the day before he or she died and elected the joint and 100% survivor option. If the employee died prior to eligibility for early service retirement, the spouse's benefit is deferred to the employee's earliest retirement date.

Death benefits may also be payable to members who have terminated employment. The costs of those benefits are paid for by the reduction of the accrued benefit payable to the inactive vested participant.

11. Post-Retirement Death Benefit

If married, the employee and spouse may elect to have pension benefits paid in the form of a 100% joint and survivor annuity. A member may also elect a ten year certain and life equivalent form of benefit. If any one of these options is elected, the benefit amount otherwise payable is reduced to reflect the coverage. If not elected, benefits are payable for the life of the employee without reduction.

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SUMMARY OF PLAN PROVISIONS

12. Cost-of-Living Adjustment (COLA)

Based on the change in the Consumer Price Index (CPI) for the fiscal year, subject to a maximum increase of 3.125% per year (3.0% for retirements between March 21, 1972 and March 26, 1974; none for retirements prior to March 21, 1972), with a cumulative percentage increase (equal to the sum of the annual percentage increases) limited to 25%. If the increase in CPI is less than 1.0%, no adjustment is made. If the change is a decrease, the cost-of-living adjustment shall be zero unless the decrease is 3.125% or more. Adjustments begin on the second January 1 after payments begin.

13. Creditable Service

Number of years and completed months of service during which the member receives compensation after April 1, 1960. Creditable Service for employment prior to April 1, 1960 is granted only if the member was an employee of an employer of the System on April 1, 1960. Unused credited sick leave shall be considered as Creditable Service provided the member does not receive payment for the sick leave. The amount of credited sick leave was frozen on July 17, 2010.

14. Membership

Immediate upon employment.

15. Section 415 limit

\$200,000, effective January 1, 2012.

16. Section 401(a)(17) limit

\$250,000, effective January 1, 2012.

17. Changes Since Last Valuation

None.