



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

**GASB 67/68 Report  
as of September 30, 2016**

**Produced by Cheiron**

**March 2017**

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## LETTER OF TRANSMITTAL

March 9, 2017

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:

The purpose of this report is to provide accounting and financial reporting information under GASB 67 for the Employees Retirement System of the City of St. Louis and under GASB 68 for participating employers. This information includes:

- Determination of the discount rate as of September 30, 2016,
- Note disclosures and required supplementary information under GASB 67 for the System,
- Determination of collective amounts under GASB 68, and
- Schedules for the financial reporting of participating employers under GASB 68.

If you have any questions about the report or would like additional information, please let us know.

Sincerely,  
Cheiron



Stephen T. McElhaney, FSA, FCA, MAAA  
Principal Consulting Actuary



Michael J. Noble, FSA, FCA, MAAA  
Principal Consulting Actuary



**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS  
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2016 MEASUREMENT DATE**

**SECTION I - BOARD SUMMARY**

The purpose of this report is to provide accounting and financial disclosure information under Government Accounting Standards Board Statements 67 and 68 for the Employees Retirement System of the City of St. Louis and the participating employers. This information includes:

- Determination of the discount rate as of September 30, 2016,
- Note disclosures and required supplementary information under GASB 67 for the System,
- Determination of collective amounts under GASB 68, and
- Schedules for the financial reporting of participating employers under GASB 68.

**Highlights**

The measurement date for the Employees Retirement System of the City of St. Louis is September 30, 2016. Measurements are based on the fair value of assets as of September 30, 2016 and the Total Pension Liability as of the valuation date, September 30, 2016. There were no significant events during the year for which adjustments to either the assets or liabilities were needed.

The table below provides a summary of the key collective results during this measurement period.

	Measurement Date	
	9/30/2016	9/30/2015
Net Pension Liability	\$ 209,242,006	\$ 227,123,508
Deferred Outflows	(39,304,370)	(65,433,596)
Deferred Inflows	<u>5,920,046</u>	<u>7,037,993</u>
Net Impact on Statement of Net Position	\$ 175,857,682	\$ 168,727,905
Pension Expense (\$ Amount)	\$ 39,257,368	\$ 37,388,747
Pension Expense (% of Payroll)	16.54%	15.68%

The Net Pension Liability (NPL) decreased approximately \$17.9 million since the prior measurement date due to experience and investment gains. The investment gains are recognized over five years, and the experience gains are recognized over the average remaining service life, which is three years. Unrecognized amounts are reported as deferred inflows and deferred outflows. As of the end of the reporting year, the System and its participating employers would report a Net Pension Liability of \$209,242,006, Deferred Inflows of \$5,920,046, and Deferred Outflows of \$39,304,370. Consequently, the net impact on the aggregate of participating employers' Statements of Net Position due to the Employees Retirement System of the City of

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS  
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**SECTION I - BOARD SUMMARY**

St. Louis would be \$175,857,682 at the end of the measurement year. In addition, any contributions between the measurement date and each individual employer's reporting date would be reported as deferred outflows to offset the cash outflow reported.

For the measurement year ending September 30, 2016, the collective annual pension expense is \$39,257,368 or 16.54% of covered-employee payroll. This amount is not related to participating employers' contributions to the System (\$32,127,591), but instead represents the change in the net impact on participating employer's Statements of Net Position plus employer contributions (\$175,857,682 – \$168,727,905 + \$32,127,591). The collective pension expense is larger than the collective expense for the prior year. Volatility in pension expense from year to year is to be expected. It will largely be driven by investment gains or losses, but other changes can also have a significant impact. A breakdown of the components of the net pension expense is shown in the report.

In accordance with paragraph 5 of GASB No. 82, the definition of covered payroll has been changed to be "the payroll on which contributions to a pension plan are based" for GASB No. 67. A similar change is made by paragraph 6 of GASB No. 82 relating to GASB No. 68. Paragraph 12 of GASB No. 82 requires these changes to be implemented retroactively, where practicable, so for the schedules of required supplementary information (and the resulting ratios) presented in this report, we have restated the payroll amounts to agree with this revised basis.

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

The purpose of this report is to provide accounting and financial reporting information under GASB 67 for the Employees Retirement System of the City of St. Louis and under GASB 68 for the employers that participate in the System. This report is for the use of the System, the participating employers and their auditors in preparing financial reports in accordance with applicable law and accounting requirements. This report is not appropriate for other purposes, including the measurement of funding requirements for the Employees Retirement System of the City of St. Louis and estimating the price to settle the System's obligations.

In preparing our report, we relied on information (some oral and some written) supplied by the Employees Retirement System of the City of St. Louis. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

Future actuarial measurements may differ significantly from the current measurements due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law.

To the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice 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 for the Employees Retirement System of the City of St. Louis for the purposes described herein and for the use by the plan auditor in completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.



Stephen T. McElhane, FSA, FCA, MAAA  
Principal Consulting Actuary



Michael J. Noble, FSA, FCA, MAAA  
Principal Consulting Actuary

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS  
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**SECTION III - DETERMINATION OF DISCOUNT RATE**

The discount rate used to measure the Total Pension Liability was 7.50%. This discount rate is intended to be used for accounting and financial reporting, but is not appropriate for estimating the price to settle the plan's liability.

The System's Fiduciary Net Position is projected, based on the methods outlined in paragraphs 41-43 of GASB 67, to be sufficient to make all projected benefit payments for the current members when due. Therefore, the long-term expected rate of return on the System's investments (i.e., 7.50%) was applied to all periods of projected benefit payments to determine the Total Pension Liability (TPL). Details of this determination can be found in Appendix D.

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS  
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**SECTION IV – GASB 67 REPORTING INFORMATION**

**Note Disclosures**

The table below shows the changes in the Total Pension Liability, the Plan Fiduciary Net Position (i.e., fair value of system assets), and the Net Pension Liability during the measurement year.

<b>Table IV-1 Change in Collective Net Pension Liability</b>			
	<b>Increase (Decrease)</b>		
	<b>Total Pension Liability</b>	<b>Plan Fiduciary Net Position</b>	<b>Net Pension Liability</b>
	<b>(a)</b>	<b>(b)</b>	<b>(a) - (b)</b>
<b>Balances at 9/30/2015</b>	\$ 955,120,641	\$ 727,997,133	\$ 227,123,508
<b>Changes for the year:</b>			
Service cost	13,703,072		13,703,072
Interest	69,893,488		69,893,488
Changes of benefits	0		0
Differences between expected and actual experience	(3,601,576)		(3,601,576)
Changes of assumptions	0		0
Contributions - employer		32,127,591	(32,127,591)
Contributions - member		10,093	(10,093)
Net investment income		66,460,934	(66,460,934)
Benefit payments	(60,972,546)	(60,972,546)	0
Administrative expense		(722,132)	722,132
<b>Net changes</b>	<u>19,022,438</u>	<u>36,903,940</u>	<u>(17,881,502)</u>
<b>Balances at 9/30/2016</b>	<u>\$ 974,143,079</u>	<u>\$ 764,901,073</u>	<u>\$ 209,242,006</u>

During the measurement year, the collective NPL decreased by approximately \$17.9 million. The service cost and interest cost increased the collective NPL by approximately \$83.6 million while contributions plus investment gains offset by administrative expenses decreased the collective NPL by approximately \$97.9 million. There was an actuarial experience gain of \$3.6 million.

There were no changes in benefits or assumptions during the year.



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**SECTION IV – GASB 67 REPORTING INFORMATION**

Changes in the discount rate affect the measurement of the TPL. Lower discount rates produce a higher TPL and higher discount rates produce a lower TPL. Because the discount rate does not affect the measurement of assets, the percentage change in the NPL can be very significant for a relatively small change in the discount rate. The table below page shows the sensitivity of the collective NPL to the discount rate.

<b>Table IV-2</b>			
<b>Sensitivity of Collective Net Pension Liability to Changes in Discount Rate</b>			
	<b>1% Decrease 6.50%</b>	<b>Discount Rate 7.50%</b>	<b>1% Increase 8.50%</b>
Total Pension Liability	\$ 1,072,734,454	\$ 974,143,079	\$ 889,872,709
Plan Fiduciary Net Position	<u>764,901,073</u>	<u>764,901,073</u>	<u>764,901,073</u>
Collective Net Pension Liability	<u>\$ 307,833,381</u>	<u>\$ 209,242,006</u>	<u>\$ 124,971,636</u>
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	71.3%	78.5%	86.0%

A one percent decrease in the discount rate increases the TPL by approximately 10% and increases the collective NPL by approximately 47%. A one percent increase in the discount rate decreases the TPL by approximately 9% and decreases the collective NPL by approximately 40%.

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**SECTION IV – GASB 67 REPORTING INFORMATION**

**Required Supplementary Information**

The schedules of Required Supplementary Information generally start with information as of the implementation of GASB 67, and eventually will build up to 10 years of information. The schedule below shows the changes in collective NPL and related ratios required by GASB for the three years since implementation.

<b>Table IV-3</b>			
<b>Schedule of Changes in Collective Net Pension Liability and Related Ratios</b>			
	<b>FYE 2016</b>	<b>FYE 2015</b>	<b>FYE 2014</b>
<b><u>Total Pension Liability</u></b>			
Service cost (MOY)	\$ 13,703,072	\$ 13,067,553	\$ 10,591,910
Interest (includes interest on service cost)	69,893,488	73,825,307	72,012,146
Changes of benefit terms	0	0	0
Differences between expected and actual experience	(3,601,576)	(2,701,109)	(3,664,735)
Changes of assumptions	0	(5,107,330)	0
Benefit payments, including refunds of member contributions	(60,972,546)	(59,065,812)	(56,317,073)
<b>Net change in total pension liability</b>	<b>\$ 19,022,438</b>	<b>\$ 20,018,609</b>	<b>\$ 22,622,248</b>
<b>Total pension liability - beginning</b>	<b>955,120,641</b>	<b>935,102,032</b>	<b>912,479,784</b>
<b>Total pension liability - ending</b>	<b>\$ 974,143,079</b>	<b>\$ 955,120,641</b>	<b>\$ 935,102,032</b>
<b><u>Plan fiduciary net position</u></b>			
Contributions - employer	\$ 32,127,591	\$ 35,436,141	\$ 36,788,260
Contributions - member	10,093	289,810	129,164
Net investment income	66,460,934	(28,435,882)	70,076,027
Benefit payments, including refunds of member contributions	(60,972,546)	(59,065,812)	(56,317,073)
Administrative expense	(722,132)	(722,758)	(670,957)
<b>Net change in plan fiduciary net position</b>	<b>\$ 36,903,940</b>	<b>\$ (52,498,501)</b>	<b>\$ 50,005,421</b>
<b>Plan fiduciary net position - beginning</b>	<b>727,997,133</b>	<b>780,495,634</b>	<b>730,490,213</b>
<b>Plan fiduciary net position - ending</b>	<b>\$ 764,901,073</b>	<b>\$ 727,997,133</b>	<b>\$ 780,495,634</b>
<b>Net pension liability - ending</b>	<b>\$ 209,242,006</b>	<b>\$ 227,123,508</b>	<b>\$ 154,606,398</b>
<b>Plan fiduciary net position as a percentage of the total pension liability</b>	<b>78.52%</b>	<b>76.22%</b>	<b>83.47%</b>
<b>Covered employee payroll</b>	<b>\$ 237,354,364</b>	<b>\$ 238,385,100</b>	<b>\$ 237,794,875</b>
<b>Net pension liability as a percentage of covered employee payroll</b>	<b>88.16%</b>	<b>95.28%</b>	<b>65.02%</b>

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS  
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**SECTION IV – GASB 67 REPORTING INFORMATION**

Because an Actuarially Determined Contribution (ADC) has been calculated, the following schedule is required.

<b>Table IV-4</b>			
<b>Schedule of Collective Employer Contributions</b>			
	<b>FYE 2016</b>	<b>FYE 2015</b>	<b>FYE 2014</b>
Actuarially Determined Contribution	\$ 28,534,042	\$ 31,605,493	\$ 34,060,798
Contributions in Relation to the Actuarially Determined Contribution	<u>32,127,591</u>	<u>35,436,141</u>	<u>36,788,260</u>
Contribution Deficiency/(Excess)	<u>\$ (3,593,549)</u>	<u>\$ (3,830,648)</u>	<u>\$ (2,727,462)</u>
Covered-Employee Payroll	\$ 237,354,364	\$ 238,385,100	\$ 237,794,875
Contributions as a Percentage of Covered-Employee Payroll	13.54%	14.87%	15.47%

The notes below summarize the key methods and assumptions used to determine the ADC for FYE 2016.

**Notes to Schedule**

Valuation Date	October 1, 2015
Timing	Actuarially determined contribution rates are calculated based on the actuarial valuation one year prior to the beginning of the plan year

**Key Methods and Assumptions Used to Determine Contribution Rates:**

Actuarial cost method	Entry Age Normal Cost Method
Asset valuation method	Five year smoothing
Amortization method	Fixed 20 year period as of October 1, 2015 as a level percentage of payroll. Future gains and losses and changes in actuarial assumptions will be amortized in layers over separate 20 year periods.
Discount rate	7.50%
Amortization growth rate	3.00%
Price inflation	2.50%
Salary increases	3.00% plus merit component based on years of service
Mortality	RP-2000 Healthy Mortality with 3 year set-forward with generational projections using Scale AA

A complete description of the methods and assumptions used to determine contribution rates for the year ending September 30, 2016 can be found in the October 1, 2015 actuarial valuation report.

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS  
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**SECTION V – GASB 68 COLLECTIVE AMOUNTS**

The participating employers were not required to implement GASB 68 until their reporting dates for their first fiscal year that ends after June 15, 2015. We understand that employers with fiscal years ending June 30 or September 30 based their initial disclosures on the September 30, 2014 measurement date. However, employers with fiscal years ending December 31 based their initial disclosures on the September 30, 2015 measurement date. The schedules in this section will be used by employers for fiscal years ending December 31, 2016, June 30, 2017, and September 30, 2017.

Because the Employees Retirement System of the City of St. Louis is a cost-sharing multiple-employer pension plan, each employer participating in the System must reflect a portion of the collective Net Pension Liability, Pension Expense, and Deferred Outflows and Inflows in their financial statements. This section develops the collective amounts that are allocated to participating employers.

The impact of experience gains or losses and assumption changes on the TPL are recognized in expense over the average expected remaining service life of all active and inactive members of the System. As of the measurement date, this recognition period was three years.

During the year, there was an experience gain of approximately \$3.6 million. Approximately \$1.2 million of that gain was recognized as a reduction in collective pension expense in the current year and an identical amount will be recognized in each of the next two years, resulting in a collective deferred inflow of resources as of September 30, 2016 of approximately \$2.4 million. Unrecognized experience gains from prior periods were approximately \$3.6 million of which \$1.8 million was recognized as a decrease in collective pension expense in the current year. The combination of unrecognized experience gains this year and unrecognized experience gains from prior periods results in a collective deferred outflow of resources as of September 30, 2016 to be approximately \$4.2 million.

Unrecognized gains from assumption changes were approximately \$3.4 million of which \$1.7 million was recognized as a decrease in collective pension expense in the current year leaving a deferred inflow of resources as of September 30, 2016 of approximately \$1.7 million.

The impact of investment gains or losses is recognized over a period of five years. During the measurement year, there was an investment gain of approximately \$12.9 million. Approximately \$2.6 million of that gain was recognized in the current year and an identical amount will be recognized in each of the next four years. Unrecognized investment losses from prior periods were approximately \$65.4 million of which \$15.8 million was recognized as an increase in collective pension expense in the current year. The combination of unrecognized investment gains this year and unrecognized net investment losses from prior periods results in a collective deferred outflow of resources as of September 30, 2016 to be approximately \$39.3 million.

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**SECTION V – GASB 68 COLLECTIVE AMOUNTS**

The table below summarizes the current balances of collective deferred outflows and deferred inflows of resources along with the net recognition over the next five years.

<b>Table V-1</b>														
<b>Schedule of Collective Deferred Inflows and Outflows of Resources</b>														
	<b>Deferred Outflows of Resources</b>	<b>Deferred Inflows of Resources</b>												
Differences between expected and actual experience	\$ 0	\$ 4,217,603												
Changes in assumptions	0	1,702,443												
Net difference between projected and actual earnings on pension plan investments	<u>39,304,370</u>	<u>0</u>												
<b>Total</b>	<b><u>\$ 39,304,370</u></b>	<b><u>\$ 5,920,046</u></b>												
<p>Amounts reported as deferred outflows and deferred inflows of resources will be recognized in pension expense as follows:</p> <p style="text-align: center;"><b>Measurement year ended June 30:</b></p> <table> <tr> <td style="text-align: right;">2017</td> <td style="text-align: right;">8,460,208</td> </tr> <tr> <td style="text-align: right;">2018</td> <td style="text-align: right;">11,979,201</td> </tr> <tr> <td style="text-align: right;">2019</td> <td style="text-align: right;">15,534,814</td> </tr> <tr> <td style="text-align: right;">2020</td> <td style="text-align: right;">(2,589,899)</td> </tr> <tr> <td style="text-align: right;">2021</td> <td style="text-align: right;">0</td> </tr> <tr> <td style="text-align: right;">Thereafter</td> <td style="text-align: right;">\$ 0</td> </tr> </table>			2017	8,460,208	2018	11,979,201	2019	15,534,814	2020	(2,589,899)	2021	0	Thereafter	\$ 0
2017	8,460,208													
2018	11,979,201													
2019	15,534,814													
2020	(2,589,899)													
2021	0													
Thereafter	\$ 0													

The collective annual pension expense recognized by the participating employers can be calculated two different ways. First, it is the change in the amounts reported on the participating employers' Statements of Net Position that relate to the System and are not attributable to employer contributions. That is, it is the change in collective NPL plus the changes in collective deferred outflows and inflows plus participating employer contributions.

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**SECTION V – GASB 68 COLLECTIVE AMOUNTS**

Alternatively, annual pension expense can be calculated by its individual components. While GASB does not require or suggest the organization of the individual components shown in the table below, we believe it helps to understand the level and volatility of the collective pension expense.

<b>Table V-2 Calculation of Collective Pension Expense</b>		
	<b>Measurement Year Ending</b>	
	<b>2016</b>	<b>2015</b>
Change in Net Pension Liability	\$ (17,881,502)	\$ 72,517,110
Change in Deferred Outflows	26,129,226	(65,433,596)
Change in Deferred Inflows	(1,117,947)	(5,130,908)
Employer Contributions	<u>32,127,591</u>	<u>35,436,141</u>
<b>Pension Expense</b>	<b>\$ 39,257,368</b>	<b>\$ 37,388,747</b>
<b>Pension Expense as % of Payroll</b>	<b>16.54%</b>	<b>15.68%</b>
<b>Operating Expenses</b>		
Service cost	\$ 13,703,072	\$ 13,067,553
Employee contributions	(10,093)	(289,810)
Administrative expenses	<u>722,132</u>	<u>722,758</u>
Total	\$ 14,415,111	\$ 13,500,501
<b>Financing Expenses</b>		
Interest cost	\$ 69,893,488	\$ 73,825,307
Expected return on assets	<u>(53,511,435)</u>	<u>(62,187,691)</u>
Total	\$ 16,382,053	\$ 11,637,616
<b>Changes</b>		
Benefit changes	\$ 0	\$ 0
Recognition of assumption changes	(1,702,444)	(1,702,443)
Recognition of liability gains and losses	(3,017,079)	(1,816,554)
Recognition of investment gains and losses	<u>13,179,727</u>	<u>15,769,627</u>
Total	\$ 8,460,204	\$ 12,250,630
<b>Pension Expense</b>	<b>\$ 39,257,368</b>	<b>\$ 37,388,747</b>

First, there are components referred to as operating expenses. These are items directly attributable to the operation of the plan during the measurement year. Service cost less employee contributions represents the increase in employer-provided benefits attributable to the year, and administrative expenses are the cost of operating the System for the year.

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**SECTION V – GASB 68 COLLECTIVE AMOUNTS**

Second, there are the financing expenses: the interest on the Total Pension Liability less the expected return on assets. Since the discount rate is equal to the long-term expected return on assets, the financing expense is just the interest on the Net Pension Liability.

The final category is changes. This category will drive most of the volatility in pension expense from year to year. It includes any changes in benefits made during the year and the recognized amounts due to assumption changes, gains or losses on the TPL, and investment gains or losses. The total collective pension expense increased by about \$2 million. There were no changes to either benefits or assumptions for the year.

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**SECTION VI – GASB 68 REPORTING INFORMATION FOR EMPLOYERS**

**Proportionate Shares**

GASB 68 requires that the proportionate share for each employer be determined based on the “employer’s projected long-term contribution effort to the pension ... as compared to the total projected long-term contribution effort of all employers ...” Although not required as part of the System’s GASB 67 reporting requirements, the System is following the advice of the AICPA<sup>1</sup> and making a determination of each employer’s proportionate share, which will be reviewed by the System’s auditor.

Proportionate shares for each participating employer are determined based on the ratio of each participating employer’s actual contribution to the System during the measurement year to the sum of the actual contributions for all participating employers. The table below shows the actual employer contributions and proportionate shares for each participating employer for the current and prior measurement years.

<b>Table VI-1 Determination of Employers' Proportionate Share</b>					
<b>Employer</b>	<b>September 30, 2016</b>		<b>September 30, 2015</b>		
	<b>Employer Contribution</b>	<b>Proportionate Share</b>	<b>Employer Contribution</b>	<b>Proportionate Share</b>	
CITY	\$ 21,453,443	66.77576%	\$ 23,822,685	67.22709%	
FIREMEN'S RETIREMENT SYSTEM	40,662	0.12656%	39,776	0.11225%	
POLICE RETIREMENT SYSTEM	51,217	0.15942%	51,498	0.14533%	
PARKING METERS	486,685	1.51485%	549,543	1.55080%	
AIRPORT	2,869,215	8.93069%	3,152,160	8.89533%	
WATER	1,924,811	5.99115%	2,070,879	5.84397%	
ZOO	2,436,862	7.58495%	2,639,257	7.44792%	
LIBRARY	1,302,759	4.05495%	1,481,869	4.18180%	
ART MUSEUM	1,270,275	3.95384%	1,345,545	3.79710%	
MENTAL HEALTH BOARD	90,277	0.28100%	93,866	0.26489%	
TOWER GROVE PARK	146,870	0.45715%	134,795	0.38039%	
TAXICAB COMMISSION	40,445	0.12589%	43,192	0.12189%	
FIREFIGHTERS' RETIREMENT PLAN	14,070	0.04379%	11,076	0.03126%	
<b>Total</b>	<b>\$ 32,127,591</b>	<b>100.00000%</b>	<b>\$ 35,436,141</b>	<b>100.00000%</b>	

<sup>1</sup>[http://www.aicpa.org/interestareas/governmentauditquality/resources/gasbmatters/downloadabledocuments/aicpalgep\\_cs\\_er\\_reporting\\_whitepaper.pdf](http://www.aicpa.org/interestareas/governmentauditquality/resources/gasbmatters/downloadabledocuments/aicpalgep_cs_er_reporting_whitepaper.pdf)



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The table below shows the proportionate share of the collective NPL (under three discount rates), the collective deferred outflows, the collective deferred inflows, and the collective pension expense allocated to each participating employer as of September 30, 2016.

Table VI-2 Schedule of Employers' Proportionate Share of Collective Amounts at September 30, 2016							
Employer	Proportionate Share	Share of NPL @ 6.50%	Share of NPL @ 7.50%	Share of NPL @ 8.50%	Share of Deferred Outflows	Share of Deferred Inflows	Pension Expense
CITY	66.77576%	\$ 205,558,079	\$ 139,722,939	\$ 83,450,759	\$ 26,245,792	\$ 3,953,156	\$ 26,214,406
FIREMEN'S RETIREMENT SYSTEM	0.12656%	389,607	264,825	158,169	49,745	7,493	49,686
POLICE RETIREMENT SYSTEM	0.15942%	490,740	333,568	199,227	62,658	9,438	62,583
PARKING METERS	1.51485%	4,663,216	3,169,704	1,893,134	595,402	89,680	594,690
AIRPORT	8.93069%	27,491,640	18,686,751	11,160,827	3,510,151	528,701	3,505,953
WATER	5.99115%	18,442,748	12,535,995	7,487,234	2,354,782	354,679	2,351,966
ZOO	7.58495%	23,349,011	15,870,903	9,479,037	2,981,217	449,033	2,977,652
LIBRARY	4.05495%	12,482,502	8,484,667	5,067,542	1,593,774	240,055	1,591,868
ART MUSEUM	3.95384%	12,171,253	8,273,104	4,941,184	1,554,034	234,069	1,552,175
MENTAL HEALTH BOARD	0.28100%	864,997	587,960	351,164	110,443	16,635	110,311
TOWER GROVE PARK	0.45715%	1,407,248	956,541	571,303	179,678	27,063	179,463
TAXICAB COMMISSION	0.12589%	387,527	263,412	157,325	49,480	7,453	49,421
FIREFIGHTERS' RETIREMENT PLAN	0.04379%	134,813	91,636	54,730	17,213	2,593	17,192
<b>Total</b>	<b>100.00000%</b>	<b>\$ 307,833,381</b>	<b>\$ 209,242,006</b>	<b>\$ 124,971,636</b>	<b>\$ 39,304,370</b>	<b>\$ 5,920,046</b>	<b>\$ 39,257,368</b>

The proportionate share allocated to each individual employer will change on each measurement date. The net effect of the change in proportion on the share of the collective NPL, collective deferred outflows and collective deferred inflows allocated to each employer becomes a deferred outflow or inflow for that employer and is recognized over the average future working life of the System's active and inactive members (three years).

Similarly, the difference between each employer's actual contributions and the employer's proportionate share of collective employer contributions becomes a deferred outflow or inflow for that employer and is recognized over the average future working life of the

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System’s active and inactive members (three years). Because proportionate shares are determined based on each employer’s actual contributions, there is no difference between the actual contributions and the proportionate share of collective contributions for each employer.

The table below shows the change in proportion and the impact of that change in proportion on the proportionate share of the collective NPL, collective deferred outflows, and collective deferred inflows. It also shows any contribution differences.

**Table VI-3  
Schedule of Employers' Changes in Proportion and Contribution Differences**

Employer	Proportionate Shares		Impact of Change in Proportion				Contributions		
	9/30/2015	9/30/2016	Net Pension Liability	Deferred Outflows	Deferred Inflows	Net Effect	Actual	Proportionate Share	Difference
CITY	67.22709%	66.77576%	\$ (1,025,069)	\$ (295,318)	\$ 31,764	\$ (761,515)	\$ 21,453,443	\$ 21,453,443	\$ 0
FIREMEN'S RETIREMENT SYSTEM	0.11225%	0.12656%	32,518	9,368	(1,008)	24,158	40,662	40,662	0
POLICE RETIREMENT SYSTEM	0.14533%	0.15942%	32,005	9,220	(992)	23,777	51,217	51,217	0
PARKING METERS	1.55080%	1.51485%	(81,645)	(23,522)	2,530	(60,653)	486,685	486,685	0
AIRPORT	8.89533%	8.93069%	80,318	23,139	(2,489)	59,668	2,869,215	2,869,215	0
WATER	5.84397%	5.99115%	334,262	96,300	(10,358)	248,320	1,924,811	1,924,811	0
ZOO	7.44792%	7.58495%	311,219	89,661	(9,644)	231,202	2,436,862	2,436,862	0
LIBRARY	4.18180%	4.05495%	(288,100)	(83,001)	8,928	(214,027)	1,302,759	1,302,759	0
ART MUSEUM	3.79710%	3.95384%	356,008	102,565	(11,032)	264,475	1,270,275	1,270,275	0
MENTAL HEALTH BOARD	0.26489%	0.28100%	36,584	10,540	(1,134)	27,178	90,277	90,277	0
TOWER GROVE PARK	0.38039%	0.45715%	174,334	50,225	(5,402)	129,511	146,870	146,870	0
TAXICAB COMMISSION	0.12189%	0.12589%	9,089	2,619	(282)	6,752	40,445	40,445	0
FIREFIGHTERS' RETIREMENT PLAN	0.03126%	0.04379%	28,477	8,204	(882)	21,155	14,070	14,070	0
<b>Total</b>	<b>100.00000%</b>	<b>100.00000%</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 32,127,591</b>	<b>\$ 32,127,591</b>	<b>\$ 0</b>

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The table below shows the reconciliation of deferred outflows and inflows due to proportion changes for each participating employer from the prior measurement date to the current measurement date.

Table VI-4 Reconciliation of Deferred Outflows and Inflows Due to Proportion Change								
Employer	Deferred Outflows				Deferred Inflows			
	Current		Recognition	9/30/2016	Current		Recognition	9/30/2016
	9/30/2015	Year Net Effect			9/30/2015	Year Net Effect		
CITY	\$ 0	\$ 0	\$ 0	\$ 0	\$ (1,005,357)	\$ (761,515)	\$ (756,519)	\$ (1,010,353)
FIREMEN'S RETIREMENT SYSTEM	29,343	24,158	22,725	30,776	0	0	0	0
POLICE RETIREMENT SYSTEM	2,146	23,777	8,999	16,924	(6,825)	0	(3,412)	(3,413)
PARKING METERS	355,812	0	177,905	177,907	0	(60,653)	(20,218)	(40,435)
AIRPORT	0	59,668	19,889	39,779	(422,271)	0	(211,136)	(211,135)
WATER	20,091	248,320	92,818	175,593	(37,762)	0	(18,882)	(18,880)
ZOO	395,238	231,202	274,686	351,754	0	0	0	0
LIBRARY	147,775	0	73,888	73,887	(11,007)	(214,027)	(76,846)	(148,188)
ART MUSEUM	419,475	264,475	297,897	386,053	0	0	0	0
MENTAL HEALTH BOARD	59,723	27,178	38,921	47,980	0	0	0	0
TOWER GROVE PARK	4,041	129,511	45,192	88,360	0	0	0	0
TAXICAB COMMISSION	18,457	6,752	11,479	13,730	0	0	0	0
FIREFIGHTERS' RETIREMENT PLAN	31,121	21,155	22,614	29,662	0	0	0	0
<b>Total</b>	<b>\$ 1,483,222</b>	<b>\$ 1,036,195</b>	<b>\$ 1,087,013</b>	<b>\$ 1,432,404</b>	<b>\$(1,483,222)</b>	<b>\$(1,036,195)</b>	<b>\$(1,087,013)</b>	<b>\$(1,432,404)</b>

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The table below summarizes the deferred outflows allocated to each employer for experience, assumption changes, investment returns, proportion changes and contribution differences.

<b>Table VI-5 Schedule of Employers' Deferred Outflows at September 30, 2016</b>						
<b>Employer</b>	<b>Proportionate Shares</b>	<b>Experience</b>	<b>Assumption Changes</b>	<b>Investment Return</b>	<b>Proportion Change</b>	<b>Contribution Difference</b>
CITY	66.77576%	\$ 0	\$ 0	\$ 26,245,792	\$ 0	\$ 0
FIREMEN'S RETIREMENT SYSTEM	0.12656%	0	0	49,745	30,776	0
POLICE RETIREMENT SYSTEM	0.15942%	0	0	62,658	16,924	0
PARKING METERS	1.51485%	0	0	595,402	177,907	0
AIRPORT	8.93069%	0	0	3,510,151	39,779	0
WATER	5.99115%	0	0	2,354,782	175,593	0
ZOO	7.58495%	0	0	2,981,217	351,754	0
LIBRARY	4.05495%	0	0	1,593,774	73,887	0
ART MUSEUM	3.95384%	0	0	1,554,034	386,053	0
MENTAL HEALTH BOARD	0.28100%	0	0	110,443	47,980	0
TOWER GROVE PARK	0.45715%	0	0	179,678	88,360	0
TAXICAB COMMISSION	0.12589%	0	0	49,480	13,730	0
FIREFIGHTERS' RETIREMENT PLAN	0.04379%	0	0	17,213	29,662	0
<b>Total</b>	<b>100.00000%</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$39,304,370</b>	<b>\$ 1,432,404</b>	<b>\$ 0</b>

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The table below summarizes the deferred inflows allocated to each employer for experience, assumption changes, investment returns, proportion changes and contribution differences.

**Table VI-6  
Schedule of Employers' Deferred Inflows at September 30, 2016**

<b>Employer</b>	<b>Proportionate Shares</b>	<b>Experience</b>	<b>Assumption Changes</b>	<b>Investment Return</b>	<b>Proportion Change</b>	<b>Contribution Difference</b>
CITY	66.77576%	\$ 2,816,336	\$ 1,136,819	\$ 0	\$ 1,010,353	\$ 0
FIREMEN'S RETIREMENT SYSTEM	0.12656%	5,338	2,155	0	0	0
POLICE RETIREMENT SYSTEM	0.15942%	6,724	2,714	0	3,413	0
PARKING METERS	1.51485%	63,890	25,789	0	40,435	0
AIRPORT	8.93069%	376,661	152,040	0	211,135	0
WATER	5.99115%	252,683	101,996	0	18,880	0
ZOO	7.58495%	319,903	129,129	0	0	0
LIBRARY	4.05495%	171,022	69,033	0	148,188	0
ART MUSEUM	3.95384%	166,757	67,312	0	0	0
MENTAL HEALTH BOARD	0.28100%	11,851	4,784	0	0	0
TOWER GROVE PARK	0.45715%	19,281	7,783	0	0	0
TAXICAB COMMISSION	0.12589%	5,309	2,143	0	0	0
FIREFIGHTERS' RETIREMENT PLAN	0.04379%	1,847	746	0	0	0
<b>Total</b>	<b>100.00000%</b>	<b>\$ 4,217,603</b>	<b>\$ 1,702,443</b>	<b>\$ 0</b>	<b>\$ 1,432,404</b>	<b>\$ 0</b>

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The table below shows the net amount of deferred outflows and inflows to be recognized by each participating employer in each of the next five years and the total thereafter.

<b>Table VI-7</b>						
<b>Schedule of Employers' Recognition of Deferred Outflows and Inflows at September 30, 2016</b>						
<b>Employer</b>	<b>Recognition for Measurement Year Ending</b>					<b>The reafter</b>
	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	
CITY	\$ 4,892,850	\$ 7,745,363	\$ 10,373,490	\$ (1,729,425)	\$ 0	\$ 0
FIREMEN'S RETIREMENT SYSTEM	33,432	23,213	19,661	(3,278)	0	0
POLICE RETIREMENT SYSTEM	19,073	27,022	24,765	(4,129)	0	0
PARKING METERS	285,849	161,250	235,329	(39,233)	0	0
AIRPORT	564,309	1,089,715	1,387,366	(231,296)	0	0
WATER	580,802	800,465	930,713	(155,165)	0	0
ZOO	916,389	985,684	1,178,308	(196,443)	0	0
LIBRARY	340,100	414,409	629,930	(105,019)	0	0
ART MUSEUM	632,397	561,798	614,222	(102,401)	0	0
MENTAL HEALTH BOARD	62,693	42,721	43,652	(7,277)	0	0
TOWER GROVE PARK	83,865	97,934	71,017	(11,840)	0	0
TAXICAB COMMISSION	22,130	17,330	19,557	(3,260)	0	0
FIREFIGHTERS' RETIREMENT PLAN	26,316	12,298	6,803	(1,134)	0	0
<b>Total</b>	<b>\$ 8,460,204</b>	<b>\$11,979,201</b>	<b>\$15,534,814</b>	<b>\$ (2,589,899)</b>	<b>\$ 0</b>	<b>\$ 0</b>

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**SECTION VI – GASB 68 REPORTING INFORMATION FOR EMPLOYERS**

The table below shows the calculation of the pension expense for each participating employer. The calculation is shown first as the sum of the proportionate share of the collective pension expense and the amounts recognized for proportion changes and contribution differences. The right side of the table shows the calculation as the sum of the changes in NPL and deferred amounts not attributable to contributions.

Table VI-8 Schedule of Employers' Pension Expense for the Measurement Year Ending September 30, 2016									
Employer	Collective			Employer Pension Expense	Change in Employer			Employer Contributions	Employer Pension Expense
	Pension Expense	Change in Proportion	Contribution Difference		Net Pension Liability	Deferred Outflows	Deferred Inflows		
CITY	\$ 26,214,406	\$ (756,519)	\$ 0	\$ 25,457,887	\$ (12,965,577)	\$ 17,743,308	\$ (773,286)	\$ 21,453,443	\$ 25,457,889
FIREMEN'S RETIREMENT SYSTEM	49,686	22,725	0	72,411	9,886	22,269	(407)	40,662	72,410
POLICE RETIREMENT SYSTEM	62,583	5,587	0	68,170	3,498	17,656	(4,202)	51,217	68,169
PARKING METERS	594,690	157,687	0	752,377	(352,523)	597,245	20,970	486,685	752,377
AIRPORT	3,505,953	(191,247)	0	3,314,706	(1,516,623)	2,270,602	(308,488)	2,869,215	3,314,706
WATER	2,351,966	73,936	0	2,425,902	(737,045)	1,313,638	(75,502)	1,924,811	2,425,903
ZOO	2,977,652	274,686	0	3,252,338	(1,045,084)	1,935,712	(75,152)	2,436,862	3,252,338
LIBRARY	1,591,868	(2,958)	0	1,588,910	(1,013,187)	1,216,417	82,921	1,302,759	1,588,910
ART MUSEUM	1,552,175	297,897	0	1,850,072	(350,999)	963,966	(33,170)	1,270,275	1,850,073
MENTAL HEALTH BOARD	110,311	38,921	0	149,232	(13,662)	74,626	(2,008)	90,277	149,232
TOWER GROVE PARK	179,463	45,192	0	224,655	92,590	(15,096)	292	146,870	224,656
TAXICAB COMMISSION	49,421	11,479	0	60,900	(13,422)	35,003	(1,126)	40,445	60,900
FIREFIGHTERS' RETIREMENT PLAN	17,192	22,614	0	39,806	20,645	4,698	393	14,070	39,806
<b>Total</b>	<b>\$ 39,257,368</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 39,257,368</b>	<b>\$(17,881,502)</b>	<b>\$ 26,180,044</b>	<b>\$(1,168,765)</b>	<b>\$ 32,127,591</b>	<b>\$ 39,257,368</b>

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**SECTION VI – GASB 68 REPORTING INFORMATION FOR EMPLOYERS**

The table below summarizes the information needed for each employer’s schedules of required supplementary information.

Table VI-9 Schedule of Employers' RSI Information at September 30, 2016									
Employer	Proportionate Shares	Proportionate Share of NPL	Covered- Employee Payroll	Share of NPL as a % of Payroll	Plan Fiduciary Net Position as % of TPL	Contractually Required Contribution	Actual Contributions	Contribution Deficiency	Contributions as a % of Payroll
CITY	66.77576%	\$ 139,722,939	\$ 158,377,479	88.2%	78.5%	\$ 21,453,443	\$ 21,453,443	\$ 0	13.5%
FIREMEN'S RETIREMENT SYSTEM	0.12656%	264,825	300,217	88.2%	78.5%	40,662	40,662	0	13.5%
POLICE RETIREMENT SYSTEM	0.15942%	333,568	378,373	88.2%	78.5%	51,217	51,217	0	13.5%
PARKING METERS	1.51485%	3,169,704	3,585,706	88.4%	78.5%	486,685	486,685	0	13.6%
AIRPORT	8.93069%	18,686,751	21,163,332	88.3%	78.5%	2,869,215	2,869,215	0	13.6%
WATER	5.99115%	12,535,995	14,195,434	88.3%	78.5%	1,924,811	1,924,811	0	13.6%
ZOO	7.58495%	15,870,903	18,079,385	87.8%	78.5%	2,436,862	2,436,862	0	13.5%
LIBRARY	4.05495%	8,484,667	9,668,172	87.8%	78.5%	1,302,759	1,302,759	0	13.5%
ART MUSEUM	3.95384%	8,273,104	9,429,227	87.7%	78.5%	1,270,275	1,270,275	0	13.5%
MENTAL HEALTH BOARD	0.28100%	587,960	670,441	87.7%	78.5%	90,277	90,277	0	13.5%
TOWER GROVE PARK	0.45715%	956,541	1,100,376	86.9%	78.5%	146,870	146,870	0	13.3%
TAXICAB COMMISSION	0.12589%	263,412	300,203	87.7%	78.5%	40,445	40,445	0	13.5%
FIREFIGHTERS' RETIREMENT PLAN	0.04379%	91,636	106,019	86.4%	78.5%	14,070	14,070	0	13.3%
<b>Total</b>	<b>100.00000%</b>	<b>\$ 209,242,006</b>	<b>\$ 237,354,364</b>	<b>88.2%</b>	<b>78.5%</b>	<b>\$ 32,127,591</b>	<b>\$ 32,127,591</b>	<b>\$ 0</b>	<b>13.5%</b>



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**APPENDIX A - MEMBERSHIP INFORMATION**

<b>ACTIVE MEMBER DATA</b>			
<b>Valuation as of:</b>	<b>September 30, 2015</b>	<b>September 30, 2016</b>	<b>% change</b>
<b><u>Participant Counts</u></b>			
Number	5,359	5,303	-1.0%
Average Current Age	48.4	48.5	0.2%
Average Service	12.5	12.3	-1.0%
Total Annual Salaries of Active Members	228,422,585	226,907,701	-0.7%
Average Annual Salary	42,624	42,789	0.4%
DROP Members (included in Active Members)	404	392	-3.0%
Average Current Age	61.4	61.6	0.3%
Average Service	24.4	24.5	0.2%
Total DROP Account Balances	16,447,751	15,338,710	-6.7%
Average DROP Account Balances	40,712	39,129	-3.9%

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**APPENDIX A - MEMBERSHIP INFORMATION**

Valuation as of:	NON-ACTIVE MEMBER DATA						
	Count			Average Age			
	September 30, 2015	September 30, 2016	% change	September 30, 2015	September 30, 2016	% change	
Disabled Members	201	205	2.0%	64.7	64.9	0.3%	
Retirees	3,740	3,794	1.4%	73.2	73.3	0.2%	
Beneficiaries	467	487	4.3%	71.0	71.1	0.1%	
Terminated Vested Members	2,480	2,516	1.5%	51.7	51.5	-0.4%	
Terminated Non-Vested Members	0	0	N/A	N/A	N/A	N/A	
<b>Total</b>	<b>6,888</b>	<b>7,002</b>	<b>1.7%</b>	<b>65.1</b>	<b>65.1</b>	<b>0.0%</b>	

Valuation as of:	NON-ACTIVE MEMBER DATA						
	Annual Benefit			Average Benefit			
	September 30, 2015	September 30, 2016	% change	September 30, 2015	September 30, 2016	% change	
Disabled Members	1,716,104	1,739,455	1.4%	8,538	8,485	-0.6%	
Retirees	43,497,424	44,735,066	2.8%	11,630	11,791	1.4%	
Beneficiaries	4,853,170	5,227,628	7.7%	10,392	10,734	3.3%	
Terminated Vested Members	8,973,955	9,420,995	5.0%	3,619	3,744	3.5%	
Terminated Non-Vested Members	0	0	N/A	N/A	N/A	N/A	
<b>Total</b>	<b>59,040,653</b>	<b>61,123,144</b>	<b>3.5%</b>	<b>10,221</b>	<b>10,366</b>	<b>1.4%</b>	

Please refer to the October 1, 2016 actuarial valuation report for a more complete summary of the data.

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**APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS**

A summary of the actuarial assumptions and methods used to calculate the Total Pension Liability as of September 30, 2016 is provided below, including any assumptions that differ from those used in the October 1, 2016 Actuarial Valuation. Please refer to the October 1, 2016 Actuarial Valuation Report for a complete description of all other assumptions.

**Key Actuarial Assumptions**

<b>Expected Return on Assets:</b>	7.50% net of investment expenses as of September 30, 2015 7.50% net of investment expenses as of September 30, 2016
<b>Municipal Bond Yield:</b>	3.71% as of September 30, 2015 3.06% as of September 30, 2016 Bond Buyer 20-Bond GO Index, September 24, 2015 and September 29, 2016
<b>Discount Rate:</b>	7.50% as of September 30, 2015 7.50% as of September 30, 2016
<b>Administrative Expenses:</b>	0.30% of payroll

## APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS

### Contribution Allocation Procedure

The contribution allocation procedure primarily consists of an actuarial cost method, an asset smoothing method, and an amortization method as described below.

#### 1. Actuarial Cost Method

The Entry Age actuarial cost method was used for active employees, whereby the normal cost is computed as the level annual percentage of pay required to fund the retirement benefits between each member's date of hire and assumed retirement. The actuarial liability is the difference between the present value of future benefits and the present value of future normal costs. The normal cost and actuarial liability are calculated on an individual basis. The sum of the individual amounts is the normal cost and actuarial liability for the System.

#### 2. Asset Valuation Method

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 initialed at the market value as of October 1, 2005.

#### 3. Amortization Method

The unfunded actuarial liability as of October 1, 2015 is amortized over a fixed 20-year period as a level percentage of payroll. Future gains and losses and changes in actuarial assumptions will be amortized in layers over separate 20-year periods.

To reflect the settlement between the Library, the Board of Trustees and the City of St. Louis, two Unfunded Accrued Liability Amortization rates are calculated. The Library, Zoo, Art Museum, Tower Grove Park, Taxicab Commission and Mental Health Board, collectively called the "Lawsuit Beneficiary Employers", have a reduced UAL Amortization rate to reflect the payments received due to the settlement as of the valuation date. First, the UAL amortization payment is determined for the combined plan (base payment). Second, the value of settlement payments made by the City are set up as gain bases and the Lawsuit Beneficiary Employers have a reduction in the contribution rate determined from the payment on these gain bases and their projected payroll. The City's UAL amortization payment is determined only on the base payment. The Lawsuit Beneficiary Employers' UAL amortization payment is the base payment minus the amortization of the gain bases that result from settlement payments.

#### 4. Contributions

The normal cost for members as of the valuation date is divided by the total salary expected to be paid during the year to determine the total normal cost rate. The unfunded actuarial

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**APPENDIX B - ACTUARIAL ASSUMPTIONS AND METHODS**

liability is amortized over a fixed 20-year period as a level percentage of payroll. Future gains and losses and changes in actuarial assumptions will be amortized in layers over separate 20-year periods. An administrative expense rate of 0.30% of payroll is included in the calculation.

The total employer contribution rate is the sum of the employer normal cost rate, the administrative expense rate, and the UAL rate. The UAL payments are adjusted for interest from the valuation date to the date of expected payment in the following fiscal year.

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**APPENDIX C - SUMMARY OF PLAN PROVISIONS**

The plan provisions are the same as those summarized in the October 1, 2016 actuarial valuation report.

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**APPENDIX D – DETERMINATION OF DISCOUNT RATE**

**Table 1 - Projection of Contributions**

Projections Commence September 30, 2016

\* Total covered-employee payroll increases 3.50% per year

Year	Payroll for Current Employees (a)	Payroll for Future Employees (b)	Total Employee Payroll* (c) = (a) + (b)	EE Rate (d)	ER Rate (e)	AL Rate (f)	Employee Contributions from Current Employees (g) = (a) x (d)	Employer Contributions for Current Employees (h) = (a) x (e)	Contributions Related to Payroll of Future Employees (i) = (b) x (f)	Total Contributions (j) = (g) + (h) + (i)
1	\$ 226,907,701	\$ 0	\$ 226,907,701	0.00%	12.22%	6.11%	\$ 0	\$ 27,685,787	\$ 0	\$ 27,685,787
2	201,376,043	32,338,889	233,714,932	0.00%	12.49%	6.39%	0	25,160,174	2,065,828	27,226,003
3	180,033,450	60,692,930 #	240,726,380	0.00%	12.97%	6.86%	0	23,349,844	4,165,758	27,515,602
4	161,476,711	86,471,460 #	247,948,171	0.00%	13.47%	7.37%	0	21,755,346	6,370,078	28,125,424
5	144,617,631	110,768,985 #	255,386,617	0.00%	13.39%	7.28%	0	19,364,925	8,068,822	27,433,746
6	129,937,473	133,110,742 #	263,048,215	0.00%	13.39%	7.28%	0	17,399,188	9,696,278	27,095,466
7	117,046,362	153,893,299 #	270,939,661	0.00%	13.39%	7.28%	0	15,673,013	11,210,156	26,883,169
8	106,170,251	172,897,600 #	279,067,851	0.00%	13.39%	7.28%	0	14,216,655	12,594,499	26,811,154
9	96,446,943	190,992,943 #	287,439,887	0.00%	13.39%	7.28%	0	12,914,662	13,912,631	26,827,293
10	88,532,153	207,530,931 #	296,063,083	0.00%	13.39%	7.28%	0	11,854,837	15,117,319	26,972,156
11	81,408,477	223,536,499 #	304,944,976	0.00%	13.39%	7.28%	0	10,900,946	16,283,223	27,184,170
12	74,852,764	239,240,562 #	314,093,325	0.00%	13.39%	7.28%	0	10,023,108	17,427,165	27,450,273
13	69,309,545	254,206,580 #	323,516,125	0.00%	13.39%	7.28%	0	9,280,847	18,517,345	27,798,192
14	64,216,449	269,005,160 #	333,221,609	0.00%	13.39%	7.28%	0	8,598,860	19,595,328	28,194,188
15	59,509,486	283,708,771 #	343,218,257	0.00%	13.39%	7.28%	0	7,968,577	20,666,394	28,634,971
16	55,360,763	298,154,042 #	353,514,805	0.00%	13.39%	7.28%	0	7,413,045	21,718,640	29,131,685
17	51,102,530	313,017,719 #	364,120,249	0.00%	13.39%	7.28%	0	6,842,849	22,801,366	29,644,215
18	46,767,501	328,276,355 #	375,043,856	0.00%	13.39%	7.28%	0	6,262,370	23,912,861	30,175,231
19	42,377,764	343,917,408 #	386,295,172	0.00%	13.39%	7.28%	0	5,674,565	25,052,213	30,726,778
20	38,370,803	359,513,224 #	397,884,027	0.00%	7.03%	0.92%	0	2,696,709	3,314,568	6,011,277
21	34,278,589	375,541,959 #	409,820,548	0.00%	7.30%	1.19%	0	2,500,675	4,465,525	6,966,200
22	30,209,671	391,905,494 #	422,115,164	0.00%	7.00%	0.90%	0	2,115,393	3,512,675	5,628,068
23	26,496,557	408,282,062 #	434,778,619	0.00%	6.53%	0.42%	0	1,729,369	1,717,667	3,447,036
24	22,953,181	424,868,797 #	447,821,978	0.00%	6.02%	-0.08%	0	1,382,642	(349,725)	1,032,917
25	19,834,874	441,421,763 #	461,256,637	0.00%	6.11%	0.00%	0	1,211,130	0	1,211,130
26	16,889,809	458,204,527 #	475,094,336	0.00%	6.11%	0.00%	0	1,031,302	0	1,031,302
27	13,787,877	475,559,290 #	489,347,167	0.00%	6.11%	0.00%	0	841,896	0	841,896
28	11,262,989	492,764,593 #	504,027,582	0.00%	6.11%	0.00%	0	687,725	0	687,725
29	8,833,154	510,315,255 #	519,148,409	0.00%	6.11%	0.00%	0	539,358	0	539,358
30	6,534,457	528,188,404 #	534,722,861	0.00%	6.11%	0.00%	0	398,998	0	398,998
31	4,621,479	546,143,068 #	550,764,547	0.00%	6.11%	0.00%	0	282,190	0	282,190
32	3,061,079	564,226,404 #	567,287,483	0.00%	6.11%	0.00%	0	186,911	0	186,911
33	2,025,620	582,280,488 #	584,306,108	0.00%	6.11%	0.00%	0	123,686	0	123,686
34	1,430,011	600,405,280 #	601,835,291	0.00%	6.11%	0.00%	0	87,317	0	87,317
35	1,067,643	618,822,707 #	619,890,350	0.00%	6.11%	0.00%	0	65,191	0	65,191
36	782,612	637,704,449 #	638,487,060	0.00%	6.11%	0.00%	0	47,787	0	47,787
37	575,254	657,066,418 #	657,641,672	0.00%	6.11%	0.00%	0	35,125	0	35,125
38	416,108	676,954,815 #	677,370,922	0.00%	6.11%	0.00%	0	25,408	0	25,408
39	295,631	697,396,419 #	697,692,050	0.00%	6.11%	0.00%	0	18,051	0	18,051
40	205,673	718,417,139 #	718,622,812	0.00%	6.11%	0.00%	0	12,559	0	12,559
41	138,026	740,043,470 #	740,181,496	0.00%	6.11%	0.00%	0	8,428	0	8,428
42	91,259	762,295,682 #	762,386,941	0.00%	6.11%	0.00%	0	5,572	0	5,572
43	59,869	785,198,680 #	785,258,549	0.00%	6.11%	0.00%	0	3,656	0	3,656
44	34,967	808,781,339 #	808,816,306	0.00%	6.11%	0.00%	0	2,135	0	2,135
45	20,913	833,059,881 #	833,080,795	0.00%	6.11%	0.00%	0	1,277	0	1,277
46	10,727	858,062,491 #	858,073,219	0.00%	6.11%	0.00%	0	655	0	655
47	5,638	883,809,777 #	883,815,415	0.00%	6.11%	0.00%	0	344	0	344
48	2,328	910,327,550 #	910,329,878	0.00%	6.11%	0.00%	0	142	0	142
49	819	937,638,955 #	937,639,774	0.00%	6.11%	0.00%	0	50	0	50

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**APPENDIX D – DETERMINATION OF DISCOUNT RATE**

**Table 1 - Projection of Contributions**

Projections Commence September 30, 2016

\* Total covered-employee payroll increases 3.50% per year

Year	Payroll for Current Employees (a)	Payroll for Future Employees (b)	Total Employee Payroll* (c) = (a) + (b)	EE Rate (d)	ER Rate (e)	AL Rate (f)	Employee Contributions from Current Employees (g) = (a) x (d)	Employer Contributions for Current Employees (h) = (a) x (e)	Contributions Related to Payroll of Future Employees (i) = (b) x (f)	Total Contributions (j) = (g) + (h) + (i)
50	143	965,768,824 #	965,768,967	0.00%	6.11%	0.00%	0	9	0	9
51	58	994,741,978 #	994,742,036	0.00%	6.11%	0.00%	0	4	0	4
52	0	1,024,584,297 #	1,024,584,297	0.00%	6.11%	0.00%	0	0	0	0
53	0	1,055,321,826 #	1,055,321,826	0.00%	6.11%	0.00%	0	0	0	0
54	0	1,086,981,481 #	1,086,981,481	0.00%	6.11%	0.00%	0	0	0	0
55	0	1,119,590,925 #	1,119,590,925	0.00%	6.11%	0.00%	0	0	0	0
56	0	1,153,178,653 #	1,153,178,653	0.00%	6.11%	0.00%	0	0	0	0
57	0	1,187,774,013 #	1,187,774,013	0.00%	6.11%	0.00%	0	0	0	0
58	0	1,223,407,233 #	1,223,407,233	0.00%	6.11%	0.00%	0	0	0	0
59	0	1,260,109,450 #	1,260,109,450	0.00%	6.11%	0.00%	0	0	0	0
60	0	1,297,912,734 #	1,297,912,734	0.00%	6.11%	0.00%	0	0	0	0
61	0	1,336,850,116 #	1,336,850,116	0.00%	6.11%	0.00%	0	0	0	0
62	0	1,376,955,619 #	1,376,955,619	0.00%	6.11%	0.00%	0	0	0	0
63	0	1,418,264,288 #	1,418,264,288	0.00%	6.11%	0.00%	0	0	0	0
64	0	1,460,812,216 #	1,460,812,216	0.00%	6.11%	0.00%	0	0	0	0
65	0	1,504,636,583 #	1,504,636,583	0.00%	6.11%	0.00%	0	0	0	0
66	0	1,549,775,680 #	1,549,775,680	0.00%	6.11%	0.00%	0	0	0	0
67	0	1,596,268,951 #	1,596,268,951	0.00%	6.11%	0.00%	0	0	0	0
68	0	1,644,157,019 #	1,644,157,019	0.00%	6.11%	0.00%	0	0	0	0
69	0	1,693,481,730 #	1,693,481,730	0.00%	6.11%	0.00%	0	0	0	0
70	0	1,744,286,182 #	1,744,286,182	0.00%	6.11%	0.00%	0	0	0	0
71	0	1,796,614,767 #	1,796,614,767	0.00%	6.11%	0.00%	0	0	0	0
72	0	1,850,513,210 #	1,850,513,210	0.00%	6.11%	0.00%	0	0	0	0
73	0	1,906,028,606 #	1,906,028,606	0.00%	6.11%	0.00%	0	0	0	0
74	0	1,963,209,465 #	1,963,209,465	0.00%	6.11%	0.00%	0	0	0	0
75	0	2,022,105,748 #	2,022,105,748	0.00%	6.11%	0.00%	0	0	0	0
76	0	2,082,768,921 #	2,082,768,921	0.00%	6.11%	0.00%	0	0	0	0
77	0	2,145,251,989 #	2,145,251,989	0.00%	6.11%	0.00%	0	0	0	0
78	0	2,209,609,548 #	2,209,609,548	0.00%	6.11%	0.00%	0	0	0	0
79	0	2,275,897,835 #	2,275,897,835	0.00%	6.11%	0.00%	0	0	0	0
80	0	2,344,174,770 #	2,344,174,770	0.00%	6.11%	0.00%	0	0	0	0
81	0	2,414,500,013 #	2,414,500,013	0.00%	6.11%	0.00%	0	0	0	0
82	0	2,486,935,013 #	2,486,935,013	0.00%	6.11%	0.00%	0	0	0	0
83	0	2,561,543,064 #	2,561,543,064	0.00%	6.11%	0.00%	0	0	0	0
84	0	2,638,389,355 #	2,638,389,355	0.00%	6.11%	0.00%	0	0	0	0
85	0	2,717,541,036 #	2,717,541,036	0.00%	6.11%	0.00%	0	0	0	0
86	0	2,799,067,267 #	2,799,067,267	0.00%	6.11%	0.00%	0	0	0	0
87	0	2,883,039,285 #	2,883,039,285	0.00%	6.11%	0.00%	0	0	0	0
88	0	2,969,530,464 #	2,969,530,464	0.00%	6.11%	0.00%	0	0	0	0
89	0	3,058,616,378 #	3,058,616,378	0.00%	6.11%	0.00%	0	0	0	0
90	0	3,150,374,869 #	3,150,374,869	0.00%	6.11%	0.00%	0	0	0	0
91	0	3,244,886,115 #	3,244,886,115	0.00%	6.11%	0.00%	0	0	0	0
92	0	3,342,232,699 #	3,342,232,699	0.00%	6.11%	0.00%	0	0	0	0
93	0	3,442,499,679 #	3,442,499,679	0.00%	6.11%	0.00%	0	0	0	0
94	0	3,545,774,670 #	3,545,774,670	0.00%	6.11%	0.00%	0	0	0	0
95	0	3,652,147,910 #	3,652,147,910	0.00%	6.11%	0.00%	0	0	0	0
96	0	3,761,712,347 #	3,761,712,347	0.00%	6.11%	0.00%	0	0	0	0
97	0	3,874,563,718 #	3,874,563,718	0.00%	6.11%	0.00%	0	0	0	0
98	0	3,990,800,629 #	3,990,800,629	0.00%	6.11%	0.00%	0	0	0	0
99	0	4,110,524,648 #	4,110,524,648	0.00%	6.11%	0.00%	0	0	0	0



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**APPENDIX D – DETERMINATION OF DISCOUNT RATE**

**Table 2 - Projection of the Pension Plan's Fiduciary Net Position**

Projections Commence September 30, 2016

\* From Table 1 - Projection of Contributions, column (j)

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions* (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
1	\$ 764,901,073	\$ 27,685,787	\$ 69,859,422	\$ 680,723	\$ 58,022,342	\$ 780,069,058
2	780,069,058	27,226,003	70,422,234	686,207	59,166,103	795,352,721
3	795,352,721	27,515,602	72,527,413	706,721	60,287,965	809,922,155
4	809,922,155	28,125,424	74,455,029	725,504	61,373,233	824,240,280
5	824,240,280	27,433,746	75,047,444	731,276	62,440,687	838,335,993
6	838,335,993	27,095,466	80,452,132	783,940	63,318,366	847,513,753
7	847,513,753	26,883,169	83,760,883	812,819	63,898,384	853,721,603
8	853,721,603	26,811,154	89,638,974	837,204	64,153,965	854,210,545
9	854,210,545	26,827,293	93,956,374	862,320	64,026,542	850,245,685
10	850,245,685	26,972,156	93,518,935	858,305	63,739,720	846,580,321
11	846,580,321	27,184,170	94,666,279	868,835	63,417,626	841,647,002
12	841,647,002	27,450,273	93,729,656	860,239	63,079,181	837,586,562
13	837,586,562	27,798,192	93,523,171	858,344	62,783,755	833,786,995
14	833,786,995	28,194,188	92,062,006	844,933	62,558,972	831,633,215
15	831,633,215	28,634,971	91,667,393	841,312	62,423,084	830,182,566
16	830,182,566	29,131,685	90,531,097	830,883	62,372,824	830,325,096
17	830,325,096	29,644,215	89,479,614	821,233	62,444,162	832,112,627
18	832,112,627	30,175,231	88,513,761	812,368	62,641,211	835,602,940
19	835,602,940	30,726,778	86,992,986	798,411	62,993,293	841,531,614
20	841,531,614	6,011,277	85,175,518	781,730	62,580,110	824,165,753
21	824,165,753	6,966,200	83,810,571	769,203	61,314,829	807,867,008
22	807,867,008	5,628,068	82,156,553	754,022	60,056,196	790,640,697
23	790,640,697	3,447,036	80,648,543	740,182	58,687,318	771,386,326
24	771,386,326	1,032,917	78,758,665	722,837	57,166,080	750,103,821
25	750,103,821	1,211,130	77,359,639	709,997	55,566,893	728,812,208
26	728,812,208	1,031,302	75,081,268	689,086	53,987,254	708,060,410
27	708,060,410	841,896	73,192,327	671,750	52,434,315	687,472,544
28	687,472,544	687,725	71,289,668	654,288	50,896,040	667,112,353
29	667,112,353	539,358	68,712,653	630,636	49,401,789	647,710,211
30	647,710,211	398,998	66,664,882	611,842	47,962,134	628,794,620
31	628,794,620	282,190	64,675,301	593,582	46,559,083	610,367,011
32	610,367,011	186,911	62,084,700	569,805	45,218,130	593,117,547
33	593,117,547	123,686	60,519,879	555,444	43,930,684	576,096,594
34	576,096,594	87,317	58,089,445	533,138	42,695,519	560,256,848
35	560,256,848	65,191	55,791,171	512,044	41,547,929	545,566,752
36	545,566,752	47,787	53,576,668	491,720	40,486,958	532,033,109
37	532,033,109	35,125	50,590,169	464,310	39,546,185	520,559,940
38	520,559,940	25,408	47,611,698	436,974	38,765,931	511,302,607
39	511,302,607	18,051	44,527,319	408,666	38,162,693	504,547,367
40	504,547,367	12,559	41,629,183	382,067	37,747,498	500,296,173
41	500,296,173	8,428	39,041,232	358,315	37,515,690	498,420,744
42	498,420,744	5,572	36,688,745	336,725	37,460,148	498,860,995
43	498,860,995	3,656	34,430,570	315,999	37,581,623	501,699,704
44	501,699,704	2,135	32,252,801	296,012	37,887,088	507,040,113
45	507,040,113	1,277	30,146,749	276,683	38,384,940	515,002,898
46	515,002,898	655	28,104,650	257,941	39,084,877	525,725,839
47	525,725,839	344	26,123,604	239,759	39,997,761	539,360,581
48	539,360,581	142	24,199,050	222,096	41,135,588	556,075,165
49	556,075,165	50	22,333,310	204,972	42,511,375	576,048,307

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS  
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2016 MEASUREMENT DATE**

**APPENDIX D – DETERMINATION OF DISCOUNT RATE**

**Table 2 - Projection of the Pension Plan's Fiduciary Net Position**

Projections Commence September 30, 2016

\* From Table 1 - Projection of Contributions, column (j)

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions* (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
50	576,048,307	9	20,527,820	188,402	44,139,004	599,471,099
51	599,471,099	4	18,788,087	172,435	46,033,169	626,543,749
52	626,543,749	0	17,117,870	157,106	48,209,337	657,478,110
53	657,478,110	0	15,521,826	142,457	50,683,855	692,497,682
54	692,497,682	0	14,000,066	128,491	53,474,151	731,843,276
55	731,843,276	0	12,554,906	115,227	56,598,918	775,772,060
56	775,772,060	0	11,188,338	102,685	60,078,138	824,559,176
57	824,559,176	0	9,902,325	90,882	63,933,198	878,499,166
58	878,499,166	0	8,698,551	79,834	68,187,006	937,907,786
59	937,907,786	0	7,580,928	69,577	72,864,039	1,003,121,321
60	1,003,121,321	0	6,551,736	60,131	77,990,442	1,074,499,896
61	1,074,499,896	0	5,610,600	51,493	83,594,316	1,152,432,119
62	1,152,432,119	0	4,757,649	43,665	89,705,970	1,237,336,774
63	1,237,336,774	0	3,992,876	36,646	96,358,067	1,329,665,320
64	1,329,665,320	0	3,315,715	30,431	103,585,845	1,429,905,019
65	1,429,905,019	0	2,722,442	24,986	111,427,453	1,538,585,044
66	1,538,585,044	0	2,209,066	20,275	119,924,321	1,656,280,025
67	1,656,280,025	0	1,771,866	16,262	129,121,414	1,783,613,311
68	1,783,613,311	0	1,404,062	12,886	139,067,615	1,921,263,977
69	1,921,263,977	0	1,098,777	10,084	149,816,157	2,069,971,272
70	2,069,971,272	0	849,232	7,794	161,424,963	2,230,539,209
71	2,230,539,209	0	647,942	5,947	173,957,035	2,403,842,356
72	2,403,842,356	0	487,828	4,477	187,480,864	2,590,830,915
73	2,590,830,915	0	362,394	3,326	202,070,816	2,792,536,012
74	2,792,536,012	0	265,610	2,438	217,807,551	3,010,075,515
75	3,010,075,515	0	191,956	1,762	234,778,477	3,244,660,274
76	3,244,660,274	0	136,776	1,255	253,078,219	3,497,600,462
77	3,497,600,462	0	96,046	882	272,809,127	3,770,312,661
78	3,770,312,661	0	66,523	611	294,081,818	4,064,327,346
79	4,064,327,346	0	45,426	417	317,015,779	4,381,297,281
80	4,381,297,281	0	30,608	281	341,740,006	4,723,006,398
81	4,723,006,398	0	20,395	187	368,393,711	5,091,379,528
82	5,091,379,528	0	13,454	123	397,127,084	5,488,493,033
83	5,488,493,033	0	8,782	81	428,102,117	5,916,586,288
84	5,916,586,288	0	5,690	52	461,493,511	6,378,074,057
85	6,378,074,057	0	3,658	34	497,489,635	6,875,560,000
86	6,875,560,000	0	2,326	21	536,293,590	7,411,851,243
87	7,411,851,243	0	1,459	13	578,124,341	7,989,974,111
88	7,989,974,111	0	906	8	623,217,946	8,613,191,142
89	8,613,191,142	0	557	5	671,828,888	9,285,019,468
90	9,285,019,468	0	337	3	724,231,506	10,009,250,634
91	10,009,250,634	0	199	2	780,721,542	10,789,971,975
92	10,789,971,975	0	115	1	841,617,810	11,631,589,669
93	11,631,589,669	0	64	1	907,263,992	12,538,853,596
94	12,538,853,596	0	35	0	978,030,579	13,516,884,140
95	13,516,884,140	0	17	0	1,054,316,962	14,571,201,084
96	14,571,201,084	0	9	0	1,136,553,684	15,707,754,759
97	15,707,754,759	0	5	0	1,225,204,871	16,932,959,625
98	16,932,959,625	0	2	0	1,320,770,851	18,253,730,474
99	18,253,730,474	0	1	0	1,423,790,977	19,677,521,450

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS  
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2016 MEASUREMENT DATE**

**APPENDIX D – DETERMINATION OF DISCOUNT RATE**

**Table 3 - Actuarial Present Values of Projected Benefit Payments**

Projections Commence September 30, 2016

\* From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (a)

\*\* From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (c)

Year	Projected Beginning Fiduciary Net Position*	Projected Benefit Payments for current Plan participants**	"Funded" Portion of Benefit Payments (d) = (c) if (b) >= (c)	"Unfunded" Portion of Benefit Payments (e) = (c) - (d)	Present Value of "Funded" Benefit Payments (f) = (d) / (1+7.50%)^(a)	Present Value of "Unfunded" Benefit Payments (g) = (e) / (1+3.06%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) / (1+7.50%)^(a)
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1	\$ 764,901,073	\$ 69,859,422	\$ 69,859,422	\$ 0	\$ 67,378,410	\$ 0	\$ 67,378,410
2	780,069,058	70,422,234	70,422,234	0	63,182,543	0	63,182,543
3	795,352,721	72,527,413	72,527,413	0	60,531,443	0	60,531,443
4	809,922,155	74,455,029	74,455,029	0	57,804,867	0	57,804,867
5	824,240,280	75,047,444	75,047,444	0	54,199,816	0	54,199,816
6	838,335,993	80,452,132	80,452,132	0	54,049,416	0	54,049,416
7	847,513,753	83,760,883	83,760,883	0	52,346,329	0	52,346,329
8	853,721,603	89,638,974	89,638,974	0	52,111,479	0	52,111,479
9	854,210,545	93,956,374	93,956,374	0	50,810,598	0	50,810,598
10	850,245,685	93,518,935	93,518,935	0	47,045,614	0	47,045,614
11	846,580,321	94,666,279	94,666,279	0	44,300,276	0	44,300,276
12	841,647,002	93,729,656	93,729,656	0	40,801,834	0	40,801,834
13	837,586,562	93,523,171	93,523,171	0	37,871,580	0	37,871,580
14	833,786,995	92,062,006	92,062,006	0	34,678,968	0	34,678,968
15	831,633,215	91,667,393	91,667,393	0	32,121,228	0	32,121,228
16	830,182,566	90,531,097	90,531,097	0	29,509,822	0	29,509,822
17	830,325,096	89,479,614	89,479,614	0	27,132,164	0	27,132,164
18	832,112,627	88,513,761	88,513,761	0	24,966,788	0	24,966,788
19	835,602,940	86,992,986	86,992,986	0	22,825,886	0	22,825,886
20	841,531,614	85,175,518	85,175,518	0	20,789,772	0	20,789,772
21	824,165,753	83,810,571	83,810,571	0	19,029,408	0	19,029,408
22	807,867,008	82,156,553	82,156,553	0	17,352,427	0	17,352,427
23	790,640,697	80,648,543	80,648,543	0	15,845,505	0	15,845,505
24	771,386,326	78,758,665	78,758,665	0	14,394,595	0	14,394,595
25	750,103,821	77,359,639	77,359,639	0	13,152,462	0	13,152,462
26	728,812,208	75,081,268	75,081,268	0	11,874,512	0	11,874,512
27	708,060,410	73,192,327	73,192,327	0	10,768,154	0	10,768,154
28	687,472,544	71,289,668	71,289,668	0	9,756,495	0	9,756,495
29	667,112,353	68,712,653	68,712,653	0	8,747,732	0	8,747,732
30	647,710,211	66,664,882	66,664,882	0	7,894,914	0	7,894,914
31	628,794,620	64,675,301	64,675,301	0	7,124,925	0	7,124,925
32	610,367,011	62,084,700	62,084,700	0	6,362,356	0	6,362,356
33	593,117,547	60,519,879	60,519,879	0	5,769,298	0	5,769,298
34	576,096,594	58,089,445	58,089,445	0	5,151,262	0	5,151,262
35	560,256,848	55,791,171	55,791,171	0	4,602,285	0	4,602,285
36	545,566,752	53,576,668	53,576,668	0	4,111,263	0	4,111,263
37	532,033,109	50,590,169	50,590,169	0	3,611,247	0	3,611,247
38	520,559,940	47,611,698	47,611,698	0	3,161,522	0	3,161,522
39	511,302,607	44,527,319	44,527,319	0	2,750,430	0	2,750,430
40	504,547,367	41,629,183	41,629,183	0	2,392,013	0	2,392,013
41	500,296,173	39,041,232	39,041,232	0	2,086,799	0	2,086,799
42	498,420,744	36,688,745	36,688,745	0	1,824,238	0	1,824,238
43	498,860,995	34,430,570	34,430,570	0	1,592,518	0	1,592,518
44	501,699,704	32,252,801	32,252,801	0	1,387,712	0	1,387,712
45	507,040,113	30,146,749	30,146,749	0	1,206,601	0	1,206,601
46	515,002,898	28,104,650	28,104,650	0	1,046,389	0	1,046,389
47	525,725,839	26,123,604	26,123,604	0	904,773	0	904,773
48	539,360,581	24,199,050	24,199,050	0	779,644	0	779,644
49	556,075,165	22,333,310	22,333,310	0	669,334	0	669,334

**EMPLOYEES RETIREMENT SYSTEM OF THE CITY OF ST. LOUIS  
GASB 67 AND 68 REPORTING FOR SEPTEMBER 30, 2016 MEASUREMENT DATE**

**APPENDIX D – DETERMINATION OF DISCOUNT RATE**

**Table 3 - Actuarial Present Values of Projected Benefit Payments**

Projections Commence September 30, 2016

\* From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (a)

\*\* From Table 2 - Projection of the Pension Plan's Fiduciary Net Position, column (c)

Year	Projected Beginning Fiduciary Net Position*	Projected Benefit Payments for current Plan participants**	"Funded" Portion of Benefit Payments (d) = (c) if (b) >= (c)	"Unfunded" Portion of Benefit Payments (e) = (c) - (d)	Present Value of "Funded" Benefit Payments (f) = (d) / (1+7.50%)^(a)	Present Value of "Unfunded" Benefit Payments (g) = (e) / (1+3.06%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) / (1+7.50%)^(a)
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
50	576,048,307	20,527,820	20,527,820	0	572,300	0	572,300
51	599,471,099	18,788,087	18,788,087	0	487,254	0	487,254
52	626,543,749	17,117,870	17,117,870	0	412,966	0	412,966
53	657,478,110	15,521,826	15,521,826	0	348,336	0	348,336
54	692,497,682	14,000,066	14,000,066	0	292,265	0	292,265
55	731,843,276	12,554,906	12,554,906	0	243,810	0	243,810
56	775,772,060	11,188,338	11,188,338	0	202,114	0	202,114
57	824,559,176	9,902,325	9,902,325	0	166,402	0	166,402
58	878,499,166	8,698,551	8,698,551	0	135,975	0	135,975
59	937,907,786	7,580,928	7,580,928	0	110,237	0	110,237
60	1,003,121,321	6,551,736	6,551,736	0	88,624	0	88,624
61	1,074,499,896	5,610,600	5,610,600	0	70,599	0	70,599
62	1,152,432,119	4,757,649	4,757,649	0	55,689	0	55,689
63	1,237,336,774	3,992,876	3,992,876	0	43,477	0	43,477
64	1,329,665,320	3,315,715	3,315,715	0	33,585	0	33,585
65	1,429,905,019	2,722,442	2,722,442	0	25,651	0	25,651
66	1,538,585,044	2,209,066	2,209,066	0	19,362	0	19,362
67	1,656,280,025	1,771,866	1,771,866	0	14,447	0	14,447
68	1,783,613,311	1,404,062	1,404,062	0	10,649	0	10,649
69	1,921,263,977	1,098,777	1,098,777	0	7,752	0	7,752
70	2,069,971,272	849,232	849,232	0	5,574	0	5,574
71	2,230,539,209	647,942	647,942	0	3,956	0	3,956
72	2,403,842,356	487,828	487,828	0	2,771	0	2,771
73	2,590,830,915	362,394	362,394	0	1,915	0	1,915
74	2,792,536,012	265,610	265,610	0	1,305	0	1,305
75	3,010,075,515	191,956	191,956	0	878	0	878
76	3,244,660,274	136,776	136,776	0	582	0	582
77	3,497,600,462	96,046	96,046	0	380	0	380
78	3,770,312,661	66,523	66,523	0	245	0	245
79	4,064,327,346	45,426	45,426	0	156	0	156
80	4,381,297,281	30,608	30,608	0	97	0	97
81	4,723,006,398	20,395	20,395	0	60	0	60
82	5,091,379,528	13,454	13,454	0	37	0	37
83	5,488,493,033	8,782	8,782	0	23	0	23
84	5,916,586,288	5,690	5,690	0	14	0	14
85	6,378,074,057	3,658	3,658	0	8	0	8
86	6,875,560,000	2,326	2,326	0	5	0	5
87	7,411,851,243	1,459	1,459	0	3	0	3
88	7,989,974,111	906	906	0	2	0	2
89	8,613,191,142	557	557	0	1	0	1
90	9,285,019,468	337	337	0	1	0	1
91	10,009,250,634	199	199	0	0	0	0
92	10,789,971,975	115	115	0	0	0	0
93	11,631,589,669	64	64	0	0	0	0
94	12,538,853,596	35	35	0	0	0	0
95	13,516,884,140	17	17	0	0	0	0
96	14,571,201,084	9	9	0	0	0	0
97	15,707,754,759	5	5	0	0	0	0
98	16,932,959,625	2	2	0	0	0	0
99	18,253,730,474	1	1	0	0	0	0
					<b>\$ 1,063,169,151</b>	<b>+ \$ 0</b>	<b>= \$ 1,063,169,151</b>

## APPENDIX E - GLOSSARY OF TERMS

### 1. Actuarially Determined Contribution

A target or recommended contribution for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

### 2. Actuarial Valuation Date

The date as of which an actuarial valuation is performed. This date may be up to 24 months prior to the measurement date and up to 30 months prior to the employer's reporting date.

### 3. Deferred Inflow of Resources

An acquisition of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience gains on the Total Pension Liability, assumption changes reducing the Total Pension Liability, or investment gains that are recognized in future reporting periods.

### 4. Deferred Outflow of Resources

A consumption of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience losses on the Total Pension Liability, assumption changes increasing the Total Pension Liability, or investment losses that are recognized in future reporting periods.

### 5. Entry Age Actuarial Cost Method

The actuarial cost method required for GASB 67 and 68 calculations. Under this method, the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this actuarial present value allocated to a valuation year is called the Service Cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future service costs is called the Total Pension Liability.

### 6. Measurement Date

The date as of which the Total Pension Liability and Plan Fiduciary Net Position are measured. The Total Pension Liability may be projected from the Actuarial Valuation Date to the Measurement Date. The Measurement Date must be the same as the Reporting Date for the plan.

**APPENDIX E - GLOSSARY OF TERMS**

**7. Net Pension Liability**

The liability of employers and nonemployer contributing entities for employees with benefits provided through a defined benefit pension plan. It is calculated as the Total Pension Liability less the Plan Fiduciary Net Position.

**8. Plan Fiduciary Net Position**

The fair or market value of assets.

**9. Reporting Date**

The last day of the plan or employer's fiscal year.

**10. Service Cost**

The portion of the actuarial present value of projected benefit payments that is attributed to the current period of employee service in conformity with the requirements of GASB 67 and 68. The Service Cost is the normal cost calculated under the Entry Age Actuarial Cost Method.

**11. Total Pension Liability**

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of GASB 67 and 68. The Total Pension Liability is the actuarial liability calculated under the Entry Age Actuarial Cost Method. This measurement generally is not appropriate for estimating the cost to settle the Plan's liabilities.



*Classic Values, Innovative Advice*