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# *Public Education Employee Retirement System of Missouri*

Actuarial Valuation as of  
June 30, 2015





October 23, 2015

Board of Trustees  
Public Education Employee Retirement System of Missouri  
3210 W. Truman Blvd.  
Jefferson City, MO 65109

**Re: Certification of the Actuarial Valuation of the Public Education Employee Retirement System of Missouri as of June 30, 2015**

Dear Board of Trustees:

An actuarial valuation is performed annually for the Public Education Employee Retirement System of Missouri ("PEERS") defined benefit pension plan ("Plan"). The results of the latest actuarial valuation were prepared as of June 30, 2015 and are presented herein pursuant to the engagement letter between PEERS and PricewaterhouseCoopers LLP ("PwC"), dated June 9, 2014, and amended April 16, 2015. This report is intended to provide the Board of Trustees ("Board") with information on the funded status of the Plan, development of the actuarially determined contribution rates, and certain financial statement disclosure information.

**Financing Objectives and Funding Policy**

Under Missouri statutes, contribution rates are adopted annually by the Board. The recommended contribution rate presented herein was actuarially determined based on the funding policy, actuarial assumptions, and actuarial methods adopted by the Board and summarized herein.

In setting contribution rates, the principal objectives of the Board's funding policy are:

- To set contribution rates such that the funded ratio will reach 100% over a closed 30-year period ending June 30, 2040.
- To set contribution rates such that they remain stable over time.
- To set contribution rates such that they promote intergenerational equity.
- To provide a reasonable margin for adverse experience to help offset risks.

**Progress Toward Realization of Financing Objectives**

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a Plan's funded status. It should increase over time until it reaches 100% under the funding policy, though adverse experience could prevent this from being achieved. The funded ratio for the Plan increased by 1.3% from the preceding year to 86.4%, primarily due to the recognition of excess returns from prior years in the AVA development, but partially offset by experience losses on the liability.

**Benefit Provisions**

The benefit provisions reflected in the valuation reports are those which were in effect at June 30, 2015, as set forth in the related Missouri statutes. It is our understanding that there were no changes in benefit provisions that would impact the valuation.

**Assets and Member Data**

The valuation was based on asset values of the trust fund and member census data as of June 30, 2015. All asset information and member data were provided by PEERS. While certain checks for reasonableness were performed, the data was used unaudited. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying asset and census information.

**Actuarial Assumptions and Methods**

The majority of the actuarial assumptions used in the June 30, 2015 valuations were adopted by the Board pursuant to an experience study completed in 2011, which reflected the experience period from June 30, 2005 through June 30, 2010, and were first used in the June 30, 2011 valuation. Additional minor assumption changes were made for the June 30, 2012 valuation. For the June 30, 2013 valuation, the retirement assumption was updated to reflect the permanent extension of the Special Early Retirement ("25-and-out") benefit. There were no updates to the actuarial assumptions for the June 30, 2014 or June 30, 2015 valuations. The next experience study is scheduled to be completed prior to the June 30, 2016 valuation.



We believe the actuarial assumptions and methods are reasonable for the purposes of this valuation report and comply with the parameters set forth in Statements No. 67 and No. 68 of the Governmental Accounting Standards Board ("GASB"). Different assumptions and methods may be reasonable for other purposes. As such, the results presented in the valuation reports should only be relied upon for the intended purpose.

#### **Certification**

We certify that the information presented herein is accurate and fairly portrays the actuarial position of the Plan administered by PEERS as of June 30, 2015 based on the underlying census data, asset information and selected assumptions and methods.

This report contains certain accounting information required to be included in the System's Comprehensive Annual Financial Report. This information has been prepared in accordance with our understanding of GASB No.67. This report also contains employer accounting information prepared in accordance with our understanding of GASB No. 68.

To the best of our knowledge this actuarial statement is complete and accurate and has been prepared in accordance with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with our understanding of the requirements of Missouri state law. The undersigned actuaries are members of the Society of Actuaries and other professional organizations, including the American Academy of Actuaries, and meet the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States relating to pension plans. There is no relationship between the PwC practitioners involved in this engagement and PEERS that may impair our objectivity.

The content of this document is limited to the matters specifically addressed herein and does not address any other potential tax consequences, or the potential application of tax penalties, to any matter other than as set forth herein. Our conclusions are not binding upon any taxing authority or the courts and there is no assurance that any relevant taxing authority will not successfully assert a contrary position. In addition, no exceptions (including the reasonable cause exception) are available for any federal or state penalties imposed if any portion of a transaction is determined to lack economic substance or fails to satisfy any similar rule of law, and our advice will not protect you from any such penalties. This document supersedes all prior written or oral advice with respect to the issues addressed in this document and all such prior communications should not be relied upon by any person for any purpose. This document has been prepared pursuant to an engagement letter between PEERS and PwC, and is intended solely for the use and benefits of PEERS and not for reliance by any other person.

Respectfully submitted,

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Ms. Cindy Fraterrigo  
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Fellow of the Society of Actuaries  
Enrolled Actuary (No. 14-06229)

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Mr. Brandon Robertson  
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Enrolled Actuary (No. 14-07568)

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## SECTION I - EXECUTIVE SUMMARY

### **HIGHLIGHTS OF THE ACTUARY'S REPORT**

This report presents the results of the actuarial valuation of the Public Education Employee Retirement System of Missouri ("PEERS") defined benefit plan ("Plan") as of June 30, 2015 and has been prepared to present the current funded status of the Plan, contribution requirements for fiscal year 2017 (July 1, 2016 through June 30, 2017), and certain financial statement disclosure information. The valuation was performed using census data for plan members as of June 30, 2015 provided by PEERS and summarized in Section IV of this report, asset information as of June 30, 2015 provided by PEERS, the actuarial assumptions and methods approved by the Board and summarized in Section V, and the plan provisions effective June 30, 2015 summarized in Section VI.

#### **Contributions**

The Board sets, at its discretion and subject to certain restrictions, the applicable employer and member contribution rates upon considering the results of the actuarial valuation and other analysis as appropriate. A total contribution rate of 13.72% (6.86% for employers and 6.86% for members) is recommended for fiscal year 2017, based on the objectives, assumptions, and methods summarized herein. A contribution rate of 13.72% represents no change from the rate currently in effect for fiscal year 2016. The contribution rate approved by the Board becomes effective on July 1, 2016. Therefore, the dollar cost will depend on the actual payroll during fiscal year 2017.

Members of PEERS pay half of the total contribution rate, currently 6.86% of pay. If a member terminates employment with less than 5 years of service, their accumulated contributions with interest can be withdrawn as a lump sum, or the member may direct PEERS to make a direct rollover of the distribution amount. When a member becomes vested with at least 5 years of service, the member also has the option to leave their contributions in the Plan and select from various retirement annuity options at retirement age.

#### **Funded Status**

The funded status of PEERS is measured as the ratio of assets available for benefits to a benefit liability measure for the System. While there are several such measures that could be appropriately used, the benefit liability measure that ties most closely to the funding strategy is the Actuarial Accrued Liability ("AAL").

Using the Actuarial Value of Assets ("AVA"), a smoothed asset value that recognizes 20% of the total investment gain or loss on the AVA for each of the preceding five (5) years, the PEERS AAL funded ratio increased from 85.1% at June 30, 2014 to 86.8% as of June 30, 2015. The increase is primarily due to the recognition of excess returns from prior years in the AVA development, partially offset by investment returns less than assumed and experience losses on liability during the year ended June 30, 2015.

#### **Investment Experience**

The market value of the assets available for benefits has increased from \$3.85 billion as of June 30, 2014 to \$3.98 billion as of June 30, 2015. The actuarial value of assets increased from \$3.58 billion as of June 30, 2014, to \$3.92 billion as of June 30, 2015. The actuarial value of assets is less than the market value by \$0.07 billion and the difference will be recognized over the next four years.

The assets of the Plan returned 4.3% (net of all expenses) for the year ended June 30, 2015. Based on the Actuarial Value of Assets, the approximate return for the same period was 9.8%. The return on actuarial value is different due to the smoothing of returns greater or less than expected returns over five years. For GASB accounting purposes, the money-weighted return, net of investment expenses only, was 4.3%.

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## SECTION I - EXECUTIVE SUMMARY

### **HIGHLIGHTS OF THE ACTUARY'S REPORT (CONTINUED)**

#### **Funding Policy**

The Board has adopted a formal funding policy with the objective of fully funding the system over a closed 30-year period while adhering to sound financial principles, such as maintaining contribution rate stability and intergenerational equity, and the applicable statutes of the State of Missouri. The policy sets forth certain actions, actuarial assumptions and actuarial methods that are to be utilized in executing the funding strategy. The funding policy is summarized in Section II.

#### **Governmental Accounting Standards**

This report contains certain financial statement information, including notes and required supplemental information, prepared in accordance with our understanding of Governmental Accounting Standards No. 67 and No. 68 ("GASB 67" and "GASB 68"). Information prepared in accordance with GASB 67 is intended to assist PEERS with the preparation of its Comprehensive Annual Financial Report. Information shown in this report prepared in accordance with GASB 68 are the collective amounts for all participating employers in aggregate. Further calculation is required to determine the proportionate share applicable to each participating employer.

#### **Changes in Actuarial Assumptions**

There were no assumption changes for the June 30, 2015 valuation.

However, it is noted that the mortality assumption underlying the results presented in this report was developed during the prior experience study completed in 2011. Since that time, significant new information has become available and new actuarial practices have become prevalent, including the following:

- The Society of Actuaries completed an experience study of mortality for private sector workers, which resulted in the release of several new "RP-2014" mortality tables.
- The Society of Actuaries, the Social Security Administration, and other entities have released mortality improvement scales designed for projecting improvement in the mortality rates of a mortality table on a fully generational basis.
- Computing power and actuarial valuation software improvements have resulted in fully generational mortality projection becoming the norm.

The next experience study is scheduled to be completed in 2016. At that time, the mortality assumption, including the base mortality table and mortality improvement scale, will be reassessed. It is anticipated that new base mortality tables and a fully generational approach to mortality projection will be recommended and if adopted by the Board, will increase the actuarial liabilities and actuarial determined contribution rates computed in future valuations. The actual impact will depend on the assumption ultimately selected, which will be based in part on the recent experience of plan members as well as the information noted above. For illustrative purposes, if the RP-2014 Total Data Set base mortality table with fully generational improvement using the mortality projection inherent in the 2014 Social Security Administration Trustee's Report were adopted, below is the approximate impact (all else equal):

- The Actuarial Accrued Liability would likely increase between 6% and 9%
- The Normal Cost would likely increase between 6% and 9%
- The Actuarially Determined Contribution rate would likely increase between 2% and 4%

The other actuarial assumptions currently used in the annual valuations and summarized herein will also be evaluated and changes to those assumptions may offset or increase the impact of the mortality assumption shown above.

#### **Changes in Plan Provisions**

It is our understanding that there were no changes to the Plan that impacted the pension benefits during the fiscal year.

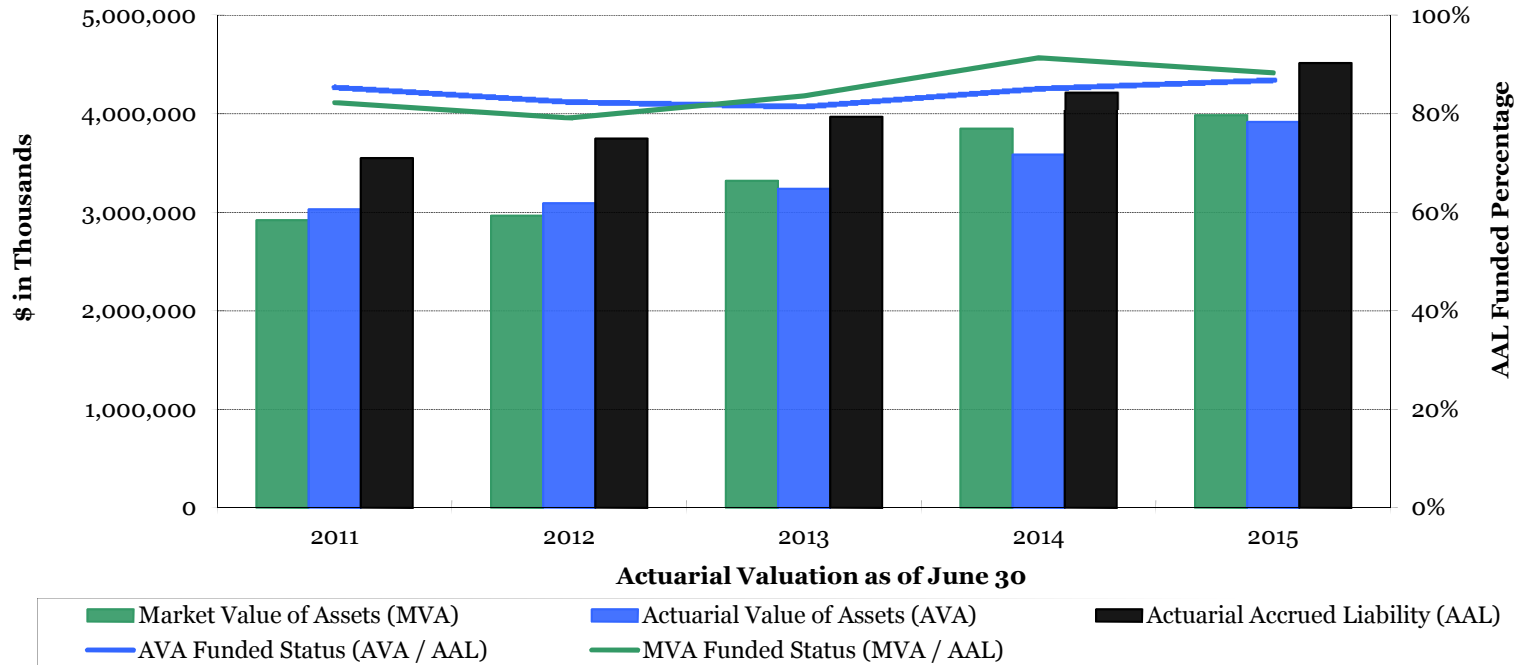
#### **Changes in Actuarial Methods**

There were no changes in the actuarial methods for the June 30, 2015 valuation.

SECTION I - EXECUTIVE SUMMARY

**HISTORICAL SUMMARY**

**PEERS – 5 Year History of Funded Status**



**Actuarial Valuation as of June 30:**

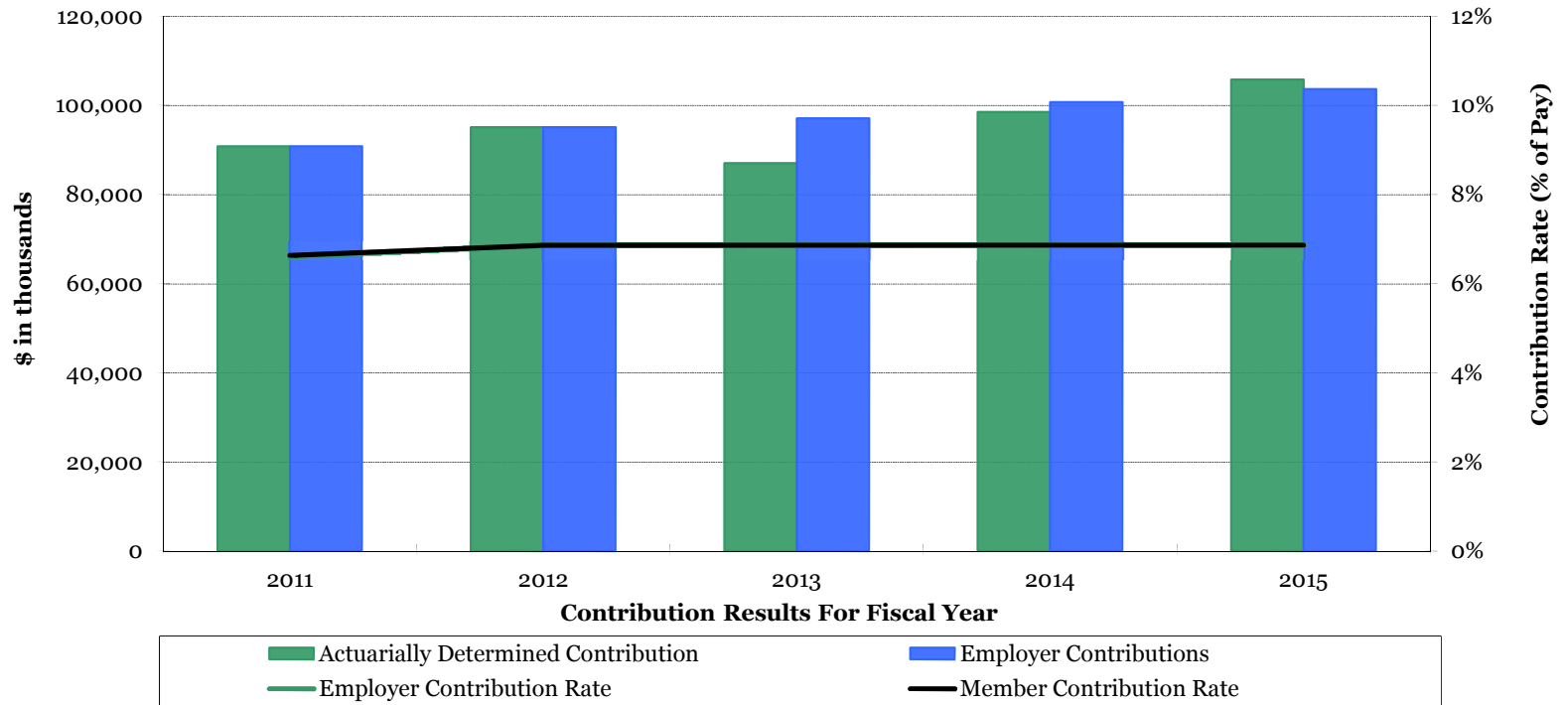
**(\$ in '000's)**

	<b><u>2011</u></b>	<b><u>2012</u></b>	<b><u>2013</u></b>	<b><u>2014</u></b>	<b><u>2015</u></b>
Actuarial Accrued Liability (AAL)	\$3,549,349	\$3,746,347	\$3,967,619	\$4,211,489	\$4,512,317
Actuarial Value of Assets (AVA)	\$3,028,757	\$3,090,880	\$3,237,200	\$3,584,719	\$3,915,199
Market Value of Assets (MVA)	\$2,918,764	\$2,964,557	\$3,316,513	\$3,846,323	\$3,983,411
Unfunded Liability (AAL - AVA)	\$520,591	\$655,467	\$730,419	\$626,770	\$597,118
AVA Funded Status (AVA / AAL)	85.3%	82.5%	81.6%	85.1%	86.8%
MVA Funded Status (MVA / AAL)	82.2%	79.1%	83.6%	91.3%	88.3%

**SECTION I - EXECUTIVE SUMMARY**

**HISTORICAL SUMMARY (CONTINUED)**

**PEERS – 5 Year History of Contributions**



**Contribution Results For Fiscal Year:**

**(\$ in '000's)**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Actuarially Determined Contribution <sup>2</sup>	\$90,816.2	\$95,094.8	\$87,013.8	\$98,497.8	\$105,739.1
Employer Contributions	\$90,816.2	\$95,094.8	\$97,059.3	\$100,699.7	\$103,624.3
ADC % Contributed	100.0%	100.0%	111.5%	100.3%	98.0%
Employer Contribution Rate	6.63%	6.86%	6.86%	6.86%	6.86%
Member Contribution Rate	6.63%	6.86%	6.86%	6.86%	6.86%



SECTION I - EXECUTIVE SUMMARY

**HISTORICAL SUMMARY (CONTINUED)**

**Summary of Valuation Results <sup>1</sup>**

<b><u>Valuation Date</u></b>	<b><u>June 30, 2011</u></b>	<b><u>June 30, 2012</u></b>	<b><u>June 30, 2013</u></b>	<b><u>June 30, 2014</u></b>	<b><u>June 30, 2015</u></b>
Development of Actuarially Determined Contribution Rate:					
1. Anticipated Payroll	\$ 1,414,442,144	\$ 1,437,310,138	\$ 1,470,829,580	\$ 1,442,700,979	\$ 1,469,771,528
2. Total Normal Cost (Mid-Year):					
a. Amount	\$ 152,693,840	\$ 155,067,161	\$ 159,672,364	\$ 156,599,641	\$ 161,391,659
b. Percentage of Payroll	10.80%	10.79%	10.86%	10.85%	10.98%
3. Total Unfunded Actuarial Accrued Liability Annual Amortizations (Mid-Year):					
a. Amount	\$ 31,317,192	\$ 39,970,396	\$ 44,064,744	\$ 38,917,522	\$ 38,075,050
b. Percentage of Payroll	2.21%	2.78%	3.00%	2.70%	2.59%
4. Total Actuarially Determined Contribution Rate:					
a. Percentage of Payroll: (2)(b) + (3)(b)	<b>13.01%</b>	<b>13.57%</b>	<b>13.86%</b>	<b>13.55%</b>	<b>13.57%</b>
b. Effective UAAL Amortization Period		29.1 Years	28.3 Years	26.8 Years	25.6 Years
5. Recommended Total Contribution Rate, Member + Employer:					
a. Percentage of Payroll	<b>13.72%</b>	<b>13.72%</b>	<b>13.72%</b>	<b>13.72%</b>	<b>13.72%</b>
b. Effective UAAL Amortization Period		26.4 Years	31.0 Years	24.1 Years	23.2 Years
c. Effective Date	July 1, 2012	July 1, 2013	July 1, 2014	July 1, 2015	July 1, 2016

<sup>1</sup> The contribution rates shown were developed on a funding basis only and do not reflect accounting requirements.

SECTION I - EXECUTIVE SUMMARY

**HISTORICAL SUMMARY (CONTINUED)**

**Summary of Valuation Results (Continued)**

	<u>June 30, 2011</u>	<u>June 30, 2012</u>	<u>June 30, 2013</u>	<u>June 30, 2014</u>	<u>June 30, 2015</u>
Census Information					
Active					
Number <sup>1</sup>	48,800	48,605	48,709	45,589	46,835
Average Age	47.9	48.1	48.1	48.6	48.4
Average Years of Service	8.3	8.4	8.5	8.9	8.7
Anticipated Payroll of Actives (\$ in 000's) <sup>2</sup>	\$ 1,414,442	\$ 1,437,310	\$ 1,470,830	\$ 1,442,701	\$ 1,469,772
Inactive Members					
Vested					
Number <sup>3</sup>	4,832	4,940	5,140	6,131	6,193
Annual Deferred Annuities	\$ 15,701,678	\$ 16,247,408	\$ 17,446,096	\$ 22,283,846	\$ 23,155,969
Non Vested					
Number	22,294	9,615	9,299	10,084	10,326
Account Balance	\$ 25,772,615	\$ 18,059,443	\$ 18,843,912	\$ 22,208,522	\$ 22,765,714
Former Members					
Entitled to a Deferred Annuity					
Number			41	63	117
Account Balance			186,326	\$ 229,540	\$ 606,562
Entitled to a Refund of Contributions					
Number	3	13,637	14,032	15,122	14,419
Account Balance	\$ 13,331	\$ 10,355,388	\$ 11,122,418	\$ 13,411,695	\$ 13,316,970
Retiree/Beneficiary/Disabled					
Number	21,328	22,562	23,674	25,029	26,298
Annual Benefits Payable (\$ in 000's) <sup>4</sup>	\$ 162,200	\$ 178,933	\$ 174,468	\$ 191,823	\$ 210,547

<sup>1</sup> The number of active members as of June 30, 2015 includes 913 members who retired in July 2015.

<sup>2</sup> Figures shown are the anticipated pay for the one-year period following the valuation date. For the June 30, 2015 valuation, anticipated payroll excludes 913 members who retired in July 2015.

<sup>3</sup> The number of inactive vested members as of June 30, 2015 includes 54 members who retired in July 2015.

<sup>4</sup> The annual benefits payable as of June 30, 2015 does not include 967 members who retired in July 2015.

SECTION I - EXECUTIVE SUMMARY

**HISTORICAL SUMMARY (CONTINUED)**

**Summary of Valuation Results (Continued)**

	<u>June 30, 2011</u>	<u>June 30, 2012</u>	<u>June 30, 2013</u>	<u>June 30, 2014</u>	<u>June 30, 2015</u>
<b>Present Value of Future Benefits</b>					
Member Contribution Balances	\$ 783,112,051	\$ 822,485,255	\$ 862,034,650	\$ 894,649,839	\$ 892,546,847
Retiree/Beneficiary	1,371,779,912	1,511,437,961	1,620,392,250	1,826,696,310	1,987,643,620
Disabled	26,840,462	30,103,316	33,221,037	34,878,711	53,003,458
Inactive	35,864,349	37,758,244	43,351,365	54,693,962	57,572,798
Active	<u>2,544,619,283</u>	<u>2,564,966,424</u>	<u>2,646,723,060</u>	<u>2,606,097,222</u>	<u>2,771,197,529</u>
Total	\$ 4,762,216,057	\$ 4,966,751,200	\$ 5,205,722,362	\$ 5,417,016,044	\$ 5,761,964,252
<b>Actuarial Accrued Liability (AAL)</b>					
Member Contribution Balances	\$ 783,112,051	\$ 822,485,255	\$ 862,034,650	\$ 894,649,839	\$ 892,546,847
Retiree/Beneficiary	1,371,779,912	1,511,437,961	1,620,392,250	1,826,696,310	1,987,643,620
Disabled	26,840,462	30,103,316	33,221,037	34,878,711	53,003,458
Inactive	35,864,349	37,758,244	43,351,365	54,693,962	57,572,798
Active	<u>1,331,751,689</u>	<u>1,344,562,530</u>	<u>1,408,619,450</u>	<u>1,400,570,010</u>	<u>1,521,550,256</u>
Total	\$ 3,549,348,463	\$ 3,746,347,306	\$ 3,967,618,752	\$ 4,211,488,832	\$ 4,512,316,979
<b>Actuarial Value of Assets (AVA)</b>					
Member Contribution Balances	\$ 783,112,051	\$ 822,485,255	\$ 862,034,650	\$ 894,649,839	\$ 892,546,847
Retiree/Beneficiary	1,371,779,912	1,511,437,961	1,620,392,250	1,826,696,310	1,987,643,620
Disabled	26,840,462	30,103,316	33,221,037	34,878,711	53,003,458
Inactive	35,864,349	37,758,244	43,351,365	54,693,962	57,572,798
Active	<u>811,160,397</u>	<u>689,095,192</u>	<u>678,200,253</u>	<u>773,800,411</u>	<u>924,432,390</u>
Total	\$ 3,028,757,171	\$ 3,090,879,968	\$ 3,237,199,555	\$ 3,584,719,233	\$ 3,915,199,113
<b>Unfunded Actuarial Accrued Liability: AAL - AVA</b>					
Member Contribution Balances	\$ -	\$ -	\$ -	\$ -	\$ -
Retiree/Beneficiary	-	-	-	-	-
Disabled	-	-	-	-	-
Inactive	-	-	-	-	-
Active	<u>520,591,292</u>	<u>655,467,338</u>	<u>730,419,197</u>	<u>626,769,599</u>	<u>597,117,866</u>
Total	\$ 520,591,292	\$ 655,467,338	\$ 730,419,197	\$ 626,769,599	\$ 597,117,866
<b>Funded Percentage: AVA / AAL <sup>1</sup></b>					
Member Contribution Balances	100.0%	100.0%	100.0%	100.0%	100.0%
Retiree/Beneficiary	100.0%	100.0%	100.0%	100.0%	100.0%
Disabled	100.0%	100.0%	100.0%	100.0%	100.0%
Inactive	100.0%	100.0%	100.0%	100.0%	100.0%
Active	<u>60.9%</u>	<u>51.3%</u>	<u>48.1%</u>	<u>55.2%</u>	<u>60.8%</u>
Total	85.3%	82.5%	81.6%	85.1%	86.8%
<b>Market Value of Assets</b>	\$ 2,918,763,618	\$ 2,964,557,038	\$ 3,316,512,798	\$ 3,846,322,885	\$ 3,983,410,820
<b>Summary of Assumptions</b>					
Valuation Interest Rate	8.0%	8.0%	8.0%	8.0%	8.0%
Salary Increases	5.0% - 12.0%	5.0% - 12.0%	5.0% - 12.0%	5.0% - 12.0%	5.0% - 12.0%
Cost-of-Living Assumption	2.0%	2.0%	2.0%	2.0%	2.0%

<sup>1</sup> In determining the funded percentage, the assets are allocated first to member contribution balances, then to the retiree/beneficiary/disabled liability, then to the inactive liability, and then to the active liability.

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## SECTION II - FUNDING

### **FUNDING**

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## SECTION II - FUNDING

### **A. Summary of Funding Policy**

#### **Introduction**

The Board of Trustees ("Board") for the Public Education Employee Retirement System of Missouri (PEERS) has adopted a funding policy to record the funding objectives and help ensure the systematic funding of future benefit payments for members of PEERS. The funding policy governs the methods used in performing the actuarial valuation, which is the basis for determining the annual contribution rate for both employers and members. The funding policy shall be updated every five years in conjunction with an experience study. Other changes to the funding policy may be considered between the five-year periods as recommended by the actuary.

The "Funding" results presented in this section of the report were prepared in accordance with the funding policy.

#### **Funding Objective**

The funding objective is to achieve a funded ratio of 100% over a closed 30-year period from fiscal year 2011 through fiscal year 2040. For this purpose, the funded ratio is defined as the Actuarial Value of Assets divided by the Actuarial Accrued Liability determined under the Entry Age Normal Cost Method with Normal Costs calculated as a percentage of payroll using the actuarial assumptions adopted by the Board.

#### **Principles of Funding**

1. Maintain adequate assets so that current plan assets plus future contributions and investment earnings should be sufficient to fund all benefits expected to be paid to members and their beneficiaries.
2. Maintain stability of contribution rates, consistent with other funding objectives.
3. Maintain public policy goals of accountability and transparency. Each policy element is clear in intent and effect, and each should allow an assessment of whether, how and when the funding requirements of the plan will be met.
4. Promote intergenerational equity. Each generation of members and employers should incur the cost of benefits for the employees who provide services to them, rather than deferring those costs to future members and employers.
5. Provide a reasonable margin for adverse experience to help offset risks.
6. Review the investment earning assumption in conjunction with the periodic asset liability study and in consideration of the Board's risk profile.
7. Review demographic and economic assumptions in conjunction with an experience study performed by an actuary.
8. Continue progress of systematic reduction of the Unfunded Actuarial Accrued Liabilities (UAAL) while keeping the member and employer contribution rates at or near those paid during 2010-2011.

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## SECTION II - FUNDING

### **A. Summary of Funding Policy (Continued)**

#### **Annual Actuarial Valuation to Set Contribution Rates**

In accordance with statute, annual actuarial valuations of the System's assets and liabilities shall be performed by an actuary. The contribution rate shall be established based on the results of these valuations. The funding policy requires that the Actuarially Determined Contribution Rate ("ADC") is equal to the sum of the employer normal cost and an amortization of the unfunded actuarial accrued liability (UAAL). The contribution rates shall be approved by the Board no later than December 31st for the upcoming school year.

The Board, at its discretion (to the extent permitted by law), may authorize a change in the member and employer contribution rates from one year to the next should the actuary determine that the target date of full funding by 2040 will not be met. The decision by the Board will be based on the number of years of the divergence from the target date and the likelihood that this divergence is permanent. The contribution rate cannot be increased by more than 0.5% (0.25% for employers and 0.25% for members) per year.

SECTION II - FUNDING

**B. Development of Funded Status**

	<b>June 30, 2014</b>	<b>June 30, 2015</b>
1. Present Value of Future Benefits		
a. Member Contribution Balances	\$ 894,649,839	\$ 892,546,847
b. Retirees, Beneficiaries, and Disableds	1,861,575,021	2,040,647,078
c. Inactives	54,693,962	57,572,798
d. Actives	2,606,097,222	2,771,197,529
e. Total: (1)(a) + (1)(b) + (1)(c) + (1)(d)	\$ 5,417,016,044	\$ 5,761,964,252
2. Actuarial Accrued Liability		
a. Member Contribution Balances	\$ 894,649,839	\$ 892,546,847
b. Retirees, Beneficiaries, and Disableds	1,861,575,021	2,040,647,078
c. Inactives	54,693,962	57,572,798
d. Actives	1,400,570,010	1,521,550,256
e. Total: (2)(a) + (2)(b) + (2)(c) + (2)(d)	\$ 4,211,488,832	\$ 4,512,316,979
3. Actuarial Value of Assets <sup>1</sup>		
a. Member Contribution Balances	\$ 894,649,839	\$ 892,546,847
b. Retirees, Beneficiaries, and Disableds	1,861,575,021	2,040,647,078
c. Inactives	54,693,962	57,572,798
d. Actives	773,800,411	924,432,390
e. Total: (3)(a) + (3)(b) + (3)(c) + (3)(d)	\$ 3,584,719,233	\$ 3,915,199,113
4. Unfunded Actuarial Accrued Liability <sup>1</sup>		
a. Member Contribution Balances: (2)(a) - (3)(a)	\$ -	\$ -
b. Retirees, Beneficiaries, and Disableds: (2)(b) - (3)(b)	-	-
c. Inactives: (2)(c) - (3)(c)	-	-
d. Actives: (2)(d) - (3)(d)	626,769,599	597,117,866
e. Total: (2)(e) - (3)(e)	\$ 626,769,599	\$ 597,117,866
5. Funded Percentage <sup>1</sup>		
a. Member Contribution Balances: (3)(a)/(2)(a)	100.0%	100.0%
b. Retirees, Beneficiaries, and Disableds: (3)(b)/(2)(b)	100.0%	100.0%
c. Inactives: (3)(c)/(2)(c)	100.0%	100.0%
d. Actives: (3)(d)/(2)(d)	55.2%	60.8%
e. Total: (3)(e)/(2)(e)	85.1%	86.8%

<sup>1</sup> In determining the funded percentage, the assets are allocated first to member contribution balances, then to the retiree/beneficiary/disabled liability, then to the inactive liability, and then to the active liability.

SECTION II - FUNDING

**C. Reconciliation of Unfunded Actuarial Accrued Liability**

	<b><u>June 30, 2015</u></b>
1. Unfunded Actuarial Accrued Liability, Prior Year	\$ 626,769,599
2. Changes in Unfunded Actuarial Accrued Liability	
a. Impact of Plan Changes	\$ -
b. Actuarial (Gains) / Losses	
i. Actuarial Value of Assets Experience	\$ (65,544,641)
ii. Actuarial Accrued Liability Experience Other Than Salary Experience <sup>1</sup>	85,931,233
iii. Additional Liability Due to Salary Experience	(40,412,831)
iv. Additional Liability Due to Cost-of-Living Adjustments	-
v. Additional Liability Due to Assumption Changes	-
vi. Total Unfunded Actuarial Accrued Liability (Gain)/Loss	<u>\$ (20,026,239)</u>
c. (Excess) / Shortfall of Contributions <sup>2</sup>	<u>(19,352,712)</u>
d. Total New Amortization Bases: (2)(a) + (2)(b)(vi) + (2)(c)	\$ (39,378,951)
e. Net Change in Existing Bases Due to Prior Year Contributions, Net of Interest	<u>\$9,727,218</u>
f. Total Changes in Unfunded Actuarial Accrued Liability: (2)(d) + (2)(e)	\$ (29,651,733)
3. Unfunded Actuarial Accrued Liability, Current Year: (1) + (2)(f)	\$ 597,117,866

<sup>1</sup> Includes refinements in valuation procedures concerning COLA timing, benefits payable to beneficiaries and dependents of disabled retirees, and members who retired in July 2015.

<sup>2</sup> Includes the net effect of total contributions in excess of the Actuarially Determined Contribution Rate and member contributions for service purchases being less than the resulting increase in liability.



SECTION II - FUNDING

**D. Reconciliation of Actuarial Accrued Liability**

1. June 30, 2014 Actuarial Accrued Liability	\$	4,211,488,832	
2. Normal Cost for 2015 Plan (Mid-Year)		156,599,641	
3. Benefit Payments <sup>1</sup>		235,070,181	
4. Interest of 8% on (1) + (2)/2 - (3)/2		<u>333,780,285</u>	
5. Expected June 30, 2015 Actuarial Accrued Liability: (1) + (2) - (3) + (4)	\$	4,466,798,577	
		<u>Dollar Change</u>	<u>Percent Change</u>
		<u>in Liability</u>	<u>in Liability</u>
6. (Gain)/Loss Components			
a. Census and Experience Other Than Salary Experience <sup>2</sup>	\$	85,931,233	1.9%
b. Salary Experience		(40,412,831)	(0.9%)
c. Cost-of-Living Adjustment		-	0.0%
d. Assumption Changes		-	0.0%
e. Legislative Changes		<u>-</u>	<u>0.0%</u>
f. Total: (6)(a) + (6)(b) + (6)(c) + (6)(d) + (6)(e)	\$	45,518,402	1.0%
7. Actual June 30, 2015 Actuarial Accrued Liability: (5) + (6)(f)	\$	<b>4,512,316,979</b>	

<sup>1</sup> Includes refunds of accumulated member contributions.

<sup>2</sup> Includes refinements in valuation procedures concerning COLA timing, benefits payable to beneficiaries and dependents of disabled retirees, and members who retired in July 2015.

SECTION II - FUNDING

**E. Reconciliation of Market Value of Assets**

	<b>June 30, 2014</b>	<b>June 30, 2015</b>
1. Market Value of Assets, Prior June 30	\$ 3,316,512,798	\$ 3,846,322,885
2. Operating Revenues (Receipts)		
a. Employer Contributions	\$ 100,699,735	\$ 103,624,310
b. Member Contributions	106,420,656	110,443,660
c. Interest	18,112,442	20,036,285
d. Dividends	16,893,754	18,699,592
e. Net Income from Security Lending Activities	373,112	402,754
f. Net Capital Appreciation/(Depreciation)	516,558,020	169,311,476
g. Investment Expenses	(7,783,364)	(44,732,485)
h. Other Income	977	2,075
i. Total Receipts:	\$ 751,275,332	\$ 377,787,667
(2)(a) + (2)(b) + (2)(c) + (2)(d) + (2)(e) + (2)(f)+(2)(g)+(2)(h)		
3. Operating Expenses (Disbursements)		
a. Benefit Payments	\$ 196,744,702	\$ 215,242,490
b. Refunds to Members	19,880,108	19,827,691
c. Administrative Expenses	4,837,920	5,629,203
d. Other Expenses	2,515	348
e. Total Disbursements:	\$ 221,465,245	\$ 240,699,732
(3)(a) + (3)(b) + (3)(c) + (3)(d)		
4. Excess of Revenues over Expenses: (2)(i) - (3)(e)	\$ 529,810,087	\$ 137,087,935
5. Market Value of Assets, Current June 30: (1) + (4)	<b>\$ 3,846,322,885</b>	<b>\$ 3,983,410,820</b>

SECTION II - FUNDING

**F. Development of Actuarial Value of Assets**

1.	Actuarial Value of Assets June 30, 2014		\$	3,584,719,233
2.	Activity for Fiscal Year 2015			
	a. Contributions		\$	214,067,970
	b. Benefit Payments			<u>(235,070,181)</u>
	c. Net Cash Flow		\$	(21,002,211)
3.	Expected Returns <sup>1</sup>		\$	285,937,450
4.	Assets Before Allocation of Gain/Loss: (1) + (2) + (3)		\$	3,849,654,472
5.	Actual Returns for 2015 (Net of Expenses)		\$	158,090,146
6.	Excess Returns for 2015: (5) - (3)		\$	(127,847,304)
7.	Recognized Excess Returns:			
	<u>Year</u>	<u>Excess Return</u>	<u>% Unrecognized</u>	
	2015	(127,847,304)	80%	\$ (25,569,461)
	2014	280,718,719	60%	56,143,744
	2013	106,529,578	40%	21,305,916
	2012	(202,767,564)	20%	(40,553,513)
	2011	271,089,775	0%	<u>54,217,955</u>
	Total		\$	65,544,641
8.	Actuarial Value of Assets, June 30, 2015: (4) + (7)		\$	<b>3,915,199,113</b>

<sup>1</sup> Assumes cash flows occur at mid-year

SECTION II - FUNDING

G. Contribution Rate

<b>Development of Actuarially Determined Contribution Rate:</b>	<u>June 30, 2014</u>	<u>June 30, 2015</u>
1. Anticipated Payroll	\$ 1,442,700,979	\$ 1,469,771,528
2. Normal Cost (Mid-Year)		
a. Amount	\$ 156,599,641	\$ 161,391,660
b. Percentage of Payroll	10.85%	10.98%
3. Unfunded Actuarial Accrued Liability (UAAL) Annual Amortizations (Mid-Year)		
a. Amount	\$ 38,917,522	\$ 38,075,050
b. Percentage of Payroll	2.70%	2.59%
4. Actuarially Determined Contribution Rate		
a. Percentage of Payroll: (2)(b) + (3)(b)	<b>13.55%</b>	<b>13.57%</b>
b. Effective UAAL Amortization Period	26.8 Years	25.6 Years
5. Recommended Total Contribution Rate, Member + Employer		
a. Percentage of Payroll	<b>13.72%</b>	<b>13.72%</b>
b. Effective UAAL Amortization Period	24.1 Years	23.2 Years
c. Effective Date	July 1, 2015	July 1, 2016

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SECTION II - FUNDING

**H. Determination of the Normal Cost Rate**

	<u>Dollar (mid-year) <sup>1</sup></u>	<u>Rate</u>
1. Active Members		
a. Retirement Benefits	\$ 126,371,285	8.60%
b. Termination Benefits	30,398,094	2.07%
c. Death Benefits	3,099,652	0.21%
d. Disability Benefits	<u>1,522,628</u>	<u>0.10%</u>
e. Total Normal Cost	\$ 161,391,659	10.98%
2. Anticipated Member Payroll	\$ 1,469,771,528	

<sup>1</sup> Normal cost amounts include a 1.50% load for anticipated losses on service purchases.

SECTION II - FUNDING

**I. Determination of the Unfunded Actuarial Accrued Liability Amortization Rate**

	Date Base Established	Reason	Remaining Balance <sup>1</sup>	Remaining Period	Amortization Amount (Mid-Year)	Rate
1.	6/30/2007	Plan Amendment	\$ 1,069,542	12	\$ 114,495	0.01%
2.	6/30/2011	UAAL Fresh Start	555,095,527	26	35,064,052	2.39%
3.	6/30/2012	Experience Loss	132,513,870	27	8,195,316	0.55%
4.	6/30/2013	Plan Amendment <sup>2</sup>	1,745,132	18	138,808	0.01%
5.	6/30/2013	Experience Loss	64,641,050	28	3,918,897	0.27%
6.	6/30/2014	Experience Gain	(118,568,304)	29	(7,054,637)	-0.48%
7.	6/30/2015	Experience Gain	(39,378,951)	30	(2,301,881)	-0.16%
	Total		\$ 597,117,866		\$ 38,075,050	2.59%
8.	Anticipated Member Payroll				\$ 1,469,771,528	

<sup>1</sup> Amortized as a level percent of payroll using the 3.75% payroll growth assumption and an 8% discount rate.

<sup>2</sup> Permanent extension of the Special Early Retirement ("25-and-out") benefit.

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SECTION II - FUNDING

**J. History of Contribution Rates <sup>1</sup>**

<u>Valuation Date</u>	<u>Effective Date</u>	<u>Total Contribution Rate</u>
June 30, 2001	July 1, 2002	10.00%
June 30, 2002	July 1, 2003	10.00%
June 30, 2003	July 1, 2004	10.50%
June 30, 2004	July 1, 2005	11.00%
June 30, 2005	July 1, 2006	11.50%
June 30, 2006	July 1, 2007	12.00%
June 30, 2007	July 1, 2008	12.50%
June 30, 2008	July 1, 2009	13.00%
June 30, 2009	July 1, 2010	13.26%
June 30, 2010	July 1, 2011	13.72%
June 30, 2011	July 1, 2012	13.72%
June 30, 2012	July 1, 2013	13.72%
June 30, 2013	July 1, 2014	13.72%
June 30, 2014	July 1, 2015	13.72%

<sup>1</sup> Valuation results prior to June 30, 2009 were calculated by the prior actuary.

SECTION II - FUNDING

**K. Historical Investment Experience**

<u>Year Ending June 30</u>	<u>Rate of Investment Return</u>		<u>Actuarial Assumed</u>
	<u>Market Basis <sup>1</sup></u>	<u>Actuarial Basis <sup>2,3</sup></u>	<u>Interest Rate</u>
2006	9.6%	9.2%	8.00%
2007	16.4%	10.9%	8.00%
2008	(4.4%)	7.9%	8.00%
2009	(18.9%)	2.0%	8.00%
2010	12.5%	2.5%	8.00%
2011	21.2%	4.3%	8.00%
2012	1.4%	1.9%	8.00%
2013	12.1%	4.8%	8.00%
2014	16.7%	11.4%	8.00%
2015	4.3%	9.8%	8.00%

<sup>1</sup> As provided by PEERS. Net of all expenses and fees.

<sup>2</sup> Approximate return net of all expenses and fees and assuming all cash flows occurred at mid-year.

<sup>3</sup> Valuation results prior to June 30, 2009 were calculated by the prior actuary.



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SECTION III - ACCOUNTING

**ACCOUNTING**

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SECTION III - ACCOUNTING

**PLAN FINANCIAL STATEMENTS UNDER GASB #67**

**A. Statement of Fiduciary Net Position under GASB #67 as of June 30, 2015**

1.	Assets		
	a. Cash	\$	13,810,904
	b. Receivables		
	i. Contributions Receivable	\$	23,999,644
	ii. Accrued Interest and Dividends		7,158,024
	iii. Investment Sales		162,514,953
	iv. Due from PSRS		-
	v. Other		16,186
	vi. Total Receivables	\$	193,688,807
	c. Total Investments		
	i. Short-Term Investments	\$	77,421,596
	ii. US Treasuries and TIPS		692,481,487
	iii. US Public Equities		1,219,893,482
	iv. Global Public Equities		608,910,645
	v. Public Debt		250,023,109
	vi. Private Equity		295,911,249
	vii. Private Credit		30,378,161
	viii. Private Real Estate		285,023,647
	ix. Hedged Assets		537,114,758
	x. Total Investments	\$	3,997,158,134
	d. Invested Securities Lending Collateral		42,623,959
	e. Prepaid Expenses		-
	f. Fixed Assets, Net of Depreciation		-
	g. Total Assets: (1)(a) + (1)(b)(vi) + (1)(c)(x) + (1)(d) + (1)(e) + (1)(f)	\$	4,247,281,804
2.	Liabilities		
	a. Accounts Payable	\$	1,840,032
	b. Interest Payable		12,029
	c. Securities Lending Collateral		42,623,606
	d. Investment Purchases		217,909,235
	e. Due to PSRS		103,806
	f. Lease Liability		-
	g. Accrued Medical Claims <sup>1</sup>		-
	h. OPEB Liability for System Employees <sup>1</sup>		646,329
	i. Compensated Absences <sup>1</sup>		735,947
	j. Total Liabilities: (2)(a) + (2)(b) + (2)(c) + (2)(d) + (2)(e) + (2)(f) + (2)(g) + (2)(h) + (2)(i)	\$	263,870,984
3.	Fiduciary Net Position Restricted for Pensions: (1)(g) - (2)(j)	\$	<b>3,983,410,820</b>

<sup>1</sup> Compensation and benefit costs related to System employees and paid from the Trust.

SECTION III - ACCOUNTING

**PLAN FINANCIAL STATEMENTS UNDER GASB #67**

**B. Statement of Changes in Fiduciary Net Position under GASB #67 for the Year Ended June 30, 2015**

1.	Fiduciary Net Position as of June 30, 2014	\$	3,846,322,885
2.	Additions		
a.	Contributions		
i.	Member Contributions	\$	110,443,660
ii.	Employer Contributions		103,624,310 <sup>1</sup>
iii.	Non-Employer Contributing Entity Contributions		-
iv.	Total Contributions	\$	214,067,970
b.	Investment Income/(Loss)		
i.	Net Appreciation/(Depreciation)	\$	169,311,476
ii.	Net Interest and Dividend Income		38,735,877
iii.	Net Income from Security Lending Activities		402,754
iv.	Other Net Investment Income		-
v.	Investment Expenses and Rebates		(44,732,485)
vi.	Total Investment Income/(Loss)	\$	163,717,622
c.	Other Additions		
i.	PEERS Capital Asset Change	\$	-
ii.	Miscellaneous Income		2,075
iii.	Total Other Additions	\$	2,075
d.	Total Revenue (Additions): (2)(a)(iv) + (2)(b)(vi) + (2)(c)(iii)	\$	377,787,667
3.	Deductions		
a.	Monthly Benefits	\$	215,242,490
b.	Refunds of Contributions		19,827,691
c.	Administrative Expenses		5,629,203 <sup>1</sup>
d.	Other Expenses		348
e.	Total Expenses (Deductions): (3)(a) + (3)(b) + (3)(c) + (3)(d)	\$	240,699,732
4.	Net Increase (Decrease) in Fiduciary Net Position: (2)(d) - (3)(e)	\$	137,087,935
5.	Fiduciary Net Position as of June 30, 2015: (1) + (4)	\$	<b>3,983,410,820</b>

<sup>1</sup> Includes \$669,966 of contributions for system employees.

SECTION III - ACCOUNTING

**EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68**

**C. Net Pension Liability under GASB #68 for the Year Ended June 30, 2015**

1.	Total Pension Liability		
	a. Total Pension Liability - Beginning of year	\$	4,211,488,832
	b. Total service cost <sup>1</sup>		156,599,641
	c. Interest cost <sup>2</sup>		333,780,285
	d. Experience (gains)/losses		45,518,402
	e. Assumption changes		-
	f. Plan amendments		-
	g. Benefit payments <sup>3</sup>		(235,070,181)
	h. Total Pension Liability - End of year	\$	<u>4,512,316,979</u>
2.	Plan Fiduciary Net Position		
	a. Plan Fiduciary Net Position - Beginning of year	\$	3,846,322,885
	b. Employer contributions <sup>4</sup>		103,624,310
	c. Member contributions		110,443,660
	d. Non-employer contributing entity contributions		-
	e. Investment return		
	i. Expected investment return <sup>5</sup>	\$	306,865,742
	ii. Investment gain/(loss)		<u>(143,146,045)</u>
	iii. Net investment return		163,719,697
	f. Benefit payments <sup>3</sup>		(235,070,181)
	g. Administrative and Other Expenses <sup>4</sup>		<u>(5,629,551)</u>
	h. Plan Fiduciary Net Position - End of year:	\$	<u>3,983,410,820</u>
3.	Net Pension Liability		
	a. Net Pension Liability: (1)(h) - (2)(h)	\$	<b>528,906,159</b>
	b. Plan Fiduciary Net Position as a Percentage of the Total Pension Liability : (2)(h) / (1)(h)		88.3%

<sup>1</sup> Mid-year

<sup>2</sup> Includes interest of 4.00% on the mid-year service cost and reflects actual benefit payments.

<sup>3</sup> Includes refunds of accumulated member contributions.

<sup>4</sup> Includes \$669,966 of contributions for system employees.

<sup>5</sup> 8.00%, net of investment expenses and assuming cash flows occur at mid-year.

SECTION III - ACCOUNTING

**EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68**

**D. Deferred Inflows and Outflows of Resources under GASB #68 for the Year Ended June 30, 2015 <sup>1</sup>**

Fiscal Year Established	Reason	Remaining Balance At Beginning of Year	Remaining Period <sup>2</sup>	Annual Recognition	Remaining Balance At End of Year
1. Liability experience					
a. Inflows					
2014	Experience gain	\$ 10,860,954	3.15	\$ 3,447,922	\$ 7,413,032
b. Outflows					
2015	Experience loss	\$ (45,518,402)	4.10	\$ (11,102,050)	\$ (34,416,352)
2. Assumption changes					
a. Inflows					
None					
b. Outflows					
None					
3. Investment experience <sup>3</sup>					
a. Inflows					
2014	Investment gain	\$ 217,505,280	4.00	\$ 54,376,320	\$ 163,128,960
b. Outflows					
2015	Investment loss	\$ (143,146,045)	5.00	\$ (28,629,209)	\$ (114,516,836)
4. Total deferred inflows / outflows: (1) + (2) + (3)					
a. Inflows					
	Total	<b>\$ 228,366,234</b>		<b>\$ 57,824,242</b>	<b>\$ 170,541,992</b>
b. Outflows					
	Total	<b>\$ (188,664,447)</b>		<b>\$ (39,731,259)</b>	<b>\$ (148,933,188)</b>

<sup>1</sup> The effort and cost to re-create financial statement information for 10 years was not practical. Information was prepared prospectively from June 30, 2013 for GASB #68 purposes.

<sup>2</sup> The initial amortization period for liability experience gains / losses and assumption change gains / losses is equal to the expected future working lifetime of all members, active and inactive. The initial amortization period for investment gains / losses is five years.

<sup>3</sup> Net of investment expenses.

SECTION III - ACCOUNTING

**EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68**

**D. Deferred Inflows and Outflows of Resources under GASB #68 for the Year Ended June 30, 2015 (Continued) <sup>1</sup>**

Amounts reported as collective deferred inflows / (outflows) of resources to be recognized in pension expense:

Year Ending June 30:

2016	\$	18,092,983
2017	\$	18,092,983
2018	\$	15,162,249
2019	\$	(29,739,411)
2020	\$	-
Thereafter	\$	-

<sup>1</sup> The effort and cost to re-create financial statement information for 10 years was not practical. Information was prepared prospectively from June 30, 2013 for GASB #68 purposes.

SECTION III - ACCOUNTING

**EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68**

**E. Pension Expense under GASB #68 for the Year Ended June 30, 2015**

1. Service cost	
a. Total service cost <sup>1</sup>	\$ 156,599,641
b. Member contributions	(110,443,660)
c. Administrative and other expenses <sup>2</sup>	4,959,585
d. Net employer service cost	<u>\$ 51,115,566</u>
2. Plan amendments	\$ -
3. Interest cost <sup>3</sup>	\$ 333,780,285
4. Expected return on assets <sup>4</sup>	\$ (306,865,742)
5. Recognition of deferred (inflows) / outflows of resources related to:	
a. Liability experience (gains) / losses	\$ 7,654,128
b. Assumption changes (gains) / losses	-
c. Investment (gains) / losses	(25,747,111)
d. Total: (5)(a) + (5)(b) + (5)(c)	<u>\$ (18,092,983)</u>
6. Total collective pension expense: (1)(d) + (2) + (3) + (4) + (5)(d)	<b>\$ 59,937,126</b>

<sup>1</sup> Mid-year.

<sup>2</sup> Excludes \$669,966 of contributions for system employees.

<sup>3</sup> Includes interest of 4.00% on the total mid-year service cost.

<sup>4</sup> 8.00% net of investment expenses and assuming cash flows occur at mid-year. Includes interest of 4.00% on member contributions and administrative expenses.





SECTION III - ACCOUNTING

**NOTES TO THE FINANCIAL STATEMENTS UNDER GASB #67 AND #68**

**F. Selected Notes to the Financial Statements under GASB #67 and #68 (Continued)**

- Experience Study (Continued)                      Since the most recent experience study, significant new information has become available and new actuarial practices have become prevalent with regard to the mortality assumption. During the next experience study the mortality assumption, including the base mortality table and mortality improvement scale, will be reassessed. It is anticipated that new base mortality tables and a fully generational approach to mortality projection will be recommended and if adopted by the Board, will increase the actuarial liabilities and actuarial determined contribution rates computed in future valuations. The actual impact will depend on the assumption ultimately selected, which will be based in part on the recent experience of plan members as well as other publicly available mortality information. The other actuarial assumptions will also be evaluated and changes to those assumptions may offset or increase the impact.

- Discount Rate    The discount rate used to measure the total pension liability was 8.00% as of June, 30, 2015, and is equal to the long-term expected return on plan investments. The projection of cash flows used to determine the discount rate assumed that employer contributions would be made at the actuarially calculated rate computed in accordance with assumptions and methods stated in the funding policy adopted by the Board, which requires payment of the normal cost and amortization of the unfunded actuarially accrued liability in level percent of employee payroll installments over 30 years utilizing a closed period, layered approach. Based on this assumption, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members.

- Discount Rate Sensitivity	<u>1% Decrease (7.00%)</u>	<u>Current Rate (8.00%)</u>	<u>1% Increase (9.00%)</u>
Net Pension Liability	\$ 1,067,774,408	\$ 528,906,159	\$ 73,339,657

3. Classes of plan members covered:

- Retired members, beneficiaries and disabled members receiving benefits:	26,298
- Inactive members (vested and non-vested):	16,519
- Former members:	14,536
- Active Plan Members:	<u>46,835</u>
- Total membership:	104,188

4. Money-weighted rate of return:  
The money-weighted rate of return equals the investment performance, net of pension plan investment expenses, and adjusted for the changing amounts actually invested. For the fiscal year ending June 30, 2015, the money-weighted return on the plan assets is 4.3%.

5. The components of the Net Pension Liability for the Public Education Employee Retirement System of Missouri as of June 30, 2015, are as follows:

- Total Pension Liability	\$ 4,512,316,979
- Plan Fiduciary Net Position	<u>3,983,410,820</u>
- Net Pension Liability	\$ 528,906,159
- Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	88.3%

SECTION III - ACCOUNTING

**REQUIRED SUPPLEMENTARY INFORMATION UNDER GASB #67 AND #68**

**G. Schedule of Changes in the Net Pension Liability and Plan Fiduciary Net Position under GASB #67 and #68 <sup>1</sup>**

Year Ending June 30:	<b>2014</b>	<b>2015</b>
1. Total Pension Liability		
a. Total Pension Liability - Beginning of year	\$ 3,967,618,752	\$ 4,211,488,832
b. Service cost <sup>2</sup>	159,672,364	156,599,641
c. Interest cost <sup>3</sup>	315,131,402	333,780,285
d. Experience (gains)/losses	(14,308,876)	45,518,402
e. Assumption changes	-	-
f. Plan amendments	-	-
g. Benefit payments <sup>4</sup>	(216,624,810)	(235,070,181)
h. Total Pension Liability - End of year:	\$ 4,211,488,832	\$ 4,512,316,979
2. Plan Fiduciary Net Position		
a. Plan Fiduciary Net Position - Beginning of year	\$ 3,316,512,798	\$ 3,846,322,885
b. Employer contributions <sup>5</sup>	100,699,735	103,624,310
c. Member contributions	106,420,656	110,443,660
d. Non-employer contributing entity contributions	-	-
e. Net investment return	544,154,941	163,719,697
f. Benefit payments <sup>4</sup>	(216,624,810)	(235,070,181)
g. Administrative and Other Expenses <sup>5</sup>	(4,840,435)	(5,629,551)
h. Plan Fiduciary Net Position - End of year:	\$ 3,846,322,885	\$ 3,983,410,820

<sup>1</sup> The effort and cost to re-create financial statement information for 10-years was not practical. Information was prepared prospectively from June 30, 2013 for GASB #67 and GASB #68 purposes.

<sup>2</sup> Mid-year.

<sup>3</sup> Includes interest of 4.00% on the mid-year service cost.

<sup>4</sup> Includes refunds of accumulated member contributions and other interfund transfers.

<sup>5</sup> Includes \$669,966 contributions for system employees.

SECTION III - ACCOUNTING

**REQUIRED SUPPLEMENTARY INFORMATION UNDER GASB #67 AND #68**

**H. Schedule of Net Pension Liability and Related Ratios under GASB #67 and #68** <sup>1</sup>

1.  Year Ending	2.  Total Pension Liability	3.  Plan Fiduciary Net Position	4.  Net Pension Liability  (2) - (3)	5.  Fiduciary Net Position as a Percentage of Total Pension Liability  (3) / (2)	6.  Anticipated Covered Employee Payroll <sup>2</sup>	7.  Net Pension Liability as a Percentage of Covered Payroll  (4) / (6)
6/30/2014	\$ 4,211,488,832	\$ 3,846,322,885	\$ 365,165,947	91.3%	\$ 1,442,700,979	25.3%
6/30/2015	\$ 4,512,316,979	\$ 3,983,410,820	\$ 528,906,159	88.3%	\$ 1,469,771,528	36.0%

<sup>1</sup> The effort and cost to re-create financial statement information for 10-years was not practical. Information was prepared prospectively from June 30, 2013 for GASB #67 and GASB #68 purposes.

<sup>2</sup> Pensionable pay as provided by PEERS. Gross member compensation, which may include components of compensation not included in pensionable compensation was not made available to PwC.

SECTION III - ACCOUNTING

**REQUIRED SUPPLEMENTARY INFORMATION UNDER GASB #67 AND #68**

**I. Schedule of Contributions under GASB #67 and #68**<sup>1</sup>

1.  Year Ending	2.  Actuarially Determined Contribution <sup>1,2</sup>	3.  Actual Employer Contributions	4.  Contribution Excess / (Deficiency) (Deficiency)  (3) - (2)	5.  Actual Covered Member Payroll	6.  Contributions as a Percentage of Covered Payroll  (3) / (5)
6/30/2006	\$ 79,707,834	\$ 61,745,505	\$ (17,962,329)	\$ 1,122,645,545	5.50%
6/30/2007	89,945,503	69,235,160	(20,710,343)	1,204,089,739	5.75%
6/30/2008	90,727,016	77,988,839	(12,738,177)	1,299,813,983	6.00%
6/30/2009	96,775,289	85,915,562	(10,859,727)	1,374,648,992	6.25%
6/30/2010	95,560,084	91,478,725	(4,081,359)	1,407,365,000	6.50%
6/30/2011	90,816,155	90,816,155	-	1,369,776,094	6.63%
6/30/2012	95,094,785	95,094,785	-	1,386,221,356	6.86%
6/30/2013	87,013,816	97,059,313	10,045,497	1,414,858,790	6.86%
6/30/2014	98,497,846	100,699,735	2,201,889	1,467,926,166	6.86%
6/30/2015	105,739,092	103,624,310	(2,114,782)	1,510,558,455	6.86%

<sup>1</sup> Valuation results prior to June 30, 2009 were computed by the prior actuary.

<sup>2</sup> Employer portion of the Actuarial Determined Contribution, net of member contributions.

SECTION III - ACCOUNTING

**REQUIRED SUPPLEMENTARY INFORMATION UNDER GASB #67 AND #68**

**J. Schedule of Money-Weighted Returns under GASB #67 and #68**<sup>1</sup>

1.	2.
<u>Year Ending</u>	<u>Money-Weighted Rate of Return</u>
6/30/2014	16.7%
6/30/2015	4.3%

<sup>1</sup> The effort and cost to re-create financial statement information for 10-years was not practical. Information was prepared prospectively from June 30, 2013 for GASB #67 and GASB #68 purposes.

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## SECTION IV - CENSUS DATA

### **CENSUS DATA**

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SECTION IV - CENSUS DATA

**A. Reconciliation of Member Counts**

	Actives <sup>1</sup>	Former Members <sup>2</sup>	Inactive Members <sup>3</sup>	Disabled Retirements	Service Retirements	Beneficiary	Total
Total as of June 30, 2014	45,589	15,185	16,215	735	22,756	1,538	102,018
New Memberships	6,579	0	1,243	0	0	0	7,822
Terminated Members Reinstated	424	0	(424)	0	0	0	0
Refunds	(1,519)	(2,120)	(1,208)	0	0	0	(4,847)
Other Terminations	(2,601)	138	2,513	0	0	0	50
Service Retirements	(1,499)	0	(367)	0	1,866	0	0
Disabled Retirements	(40)	0	(17)	57	0	0	0
Death with Beneficiary	(17)	(7)	(4)	(15)	(116)	159	0
Death without Beneficiary	(48)	(47)	(27)	(10)	(606)	(66)	(804)
Voided memberships	(33)	(2)	(17)	0	0	0	(52)
Refund Pending	0	1,388	(1,388)	0	0	0	0
Data Adjustments	0	1	0	0	0	0	1
Total as of June 30, 2015	46,835	14,536	16,519	767	23,900	1,631	104,188

<sup>1</sup> The number of active members as of June 30, 2015 includes 913 members who retired in July 2015.

<sup>2</sup> Includes terminated and deceased former members whose contributions had yet to be distributed as of the valuation date.

<sup>3</sup> The number of inactive members as of June 30, 2015 includes 54 members who retired in July 2015.

SECTION IV - CENSUS DATA

**B. Member Census Statistics as of June 30, 2015**

	<u>Male</u>	<u>Female</u>	<u>Total</u>
1. Active			
Number <sup>1</sup>	12,273	34,562	46,835
Average Age	48.7	48.3	48.4
Average Years of Service	7.7	9.0	8.7
Anticipated Payroll of Actives <sup>2</sup>	\$ 461,016,850	\$ 1,008,754,678	\$ 1,469,771,528
2. Inactive			
Vested			
Number <sup>3</sup>	930	5,263	6,193
Annual Deferred Annuities	\$ 4,916,374	\$ 18,239,595	\$ 23,155,969
Non Vested			
Number <sup>4</sup>	2,914	7,412	10,326
Account Balance	\$ 6,929,608	\$ 15,836,106	\$ 22,765,714
Former Members Entitled to a Deferred Annuity			
Number	34	83	117
Annual Deferred Annuities	\$ 270,718	\$ 335,844	\$ 606,562
Former Members Entitled to a Refund of Contributions			
Number	5,194	9,225	14,419
Account Balance	\$ 3,584,799	\$ 9,732,171	\$ 13,316,970
3. Retiree/Beneficiary/Disabled			
Number <sup>5</sup>	6,409	19,889	26,298
Annual Benefits Payable <sup>6</sup>	\$ 60,129,715	\$ 150,417,155	\$ 210,546,870

<sup>1</sup> Includes 913 members who retired in July 2015.

<sup>2</sup> Figures shown are the anticipated pay for the one-year period following the valuation date; excludes 913 members who retired in July 2015.

<sup>3</sup> Includes 54 members who retired in July 2015.

<sup>4</sup> Fifteen (15) non vested inactive members missing gender are assumed to be female.

<sup>5</sup> Fifteen (15) beneficiaries missing gender are assumed to be female.

<sup>6</sup> Does not include 967 members who retired in July 2015.



SECTION IV - CENSUS DATA

**C. History of Active Member Average Pay, Age, and Service**<sup>1</sup>

1. Valuation Date	2. Active Members	3. Covered Payroll (\$ in Thousands)	4. Average Pay (3) / (2)	5. Annual Percent Change	Average Attained Age	Average Years of Service
6/30/1995	32,598	\$ 495,449	\$ 15,199	3.0%	45.3	7.3
6/30/1996	34,153	538,022	15,753	3.6%	45.2	7.2
6/30/1997	35,982	556,534	15,467	-1.8%	45.1	7.1
6/30/1998	38,672	616,303	15,937	3.0%	44.8	6.7
6/30/1999	41,599	685,272	16,473	3.4%	44.6	6.5
6/30/2000	43,533	735,400	16,893	2.5%	44.5	6.4
6/30/2001	45,517	814,158	17,887	5.9%	44.6	6.3
6/30/2002	46,728	895,420	19,162	7.1%	44.8	6.4
6/30/2003	46,863	971,177	20,724	8.2%	45.3	6.6
6/30/2004	45,880	984,866	21,466	3.6%	46.2	7.0
6/30/2005	46,598	1,055,204	22,645	5.5%	46.6	7.1
6/30/2006	48,188	1,190,994	24,716	9.1%	46.4	7.1
6/30/2007	49,281	1,275,199	25,876	4.7%	46.6	7.2
6/30/2008	50,865	1,377,506	27,082	4.7%	46.8	7.3
6/30/2009	51,234	1,417,485	27,667	2.2%	47.1	7.5
6/30/2010	50,363	1,433,691	28,467	2.9%	47.5	8.0
6/30/2011	48,800	1,414,442	28,984	1.8%	47.9	8.3
6/30/2012	48,605	1,437,310	29,571	2.0%	48.1	8.4
6/30/2013	48,709	1,470,830	30,196	2.1%	48.1	8.5
6/30/2014	45,589	1,442,701	31,646	4.8%	48.6	8.9
6/30/2015 <sup>2</sup>	46,835	1,469,772	32,006	1.1%	48.4	8.7

<sup>1</sup> Valuation results prior to June 30, 2009 were computed by the prior actuary.

<sup>2</sup> Covered payroll and average pay excludes 913 members who retired in July 2015.

SECTION IV - CENSUS DATA

**D. Distribution of Active Members by Salary**<sup>1</sup>

Annual Salary	Number	Percent
Under \$5,000	1,088	2.37%
\$5,000 - 9,999	2,111	4.60%
\$10,000 - 14,999	3,550	7.73%
\$15,000 - 19,999	5,422	11.81%
\$20,000 - 24,999	6,979	15.20%
\$25,000 - 29,999	6,566	14.30%
\$30,000 - 34,999	5,328	11.60%
\$35,000 - 39,999	4,036	8.79%
\$40,000 - 44,999	3,329	7.25%
\$45,000 - 49,999	2,419	5.27%
\$50,000 - 54,999	1,611	3.51%
\$55,000 - 59,999	1,046	2.28%
\$60,000 - 64,999	686	1.49%
\$65,000 - 69,999	478	1.04%
\$70,000 - 74,000	355	0.77%
\$75,000 & Over	918	2.00%
Total	45,922	100.00%

<sup>1</sup> Excludes 913 members who retired in July 2015.

SECTION IV - CENSUS DATA

**E. Distribution of Active Members by Age and Service <sup>1</sup>**

<b>Attained Age</b>	Distribution of Active Members by Age and Service as of June 30, 2015							Total
	0 to 4 years	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	Over 30	
<25	1,591	16						1,607
25-29	2,324	378	13					2,715
30-34	2,215	891	226	13				3,345
35-39	2,305	1,077	533	182	4			4,101
40-44	2,419	1,454	799	389	98	12		5,171
45-49	2,302	1,766	1,234	723	214	108	8	6,355
50-54	2,109	1,866	1,685	1,379	522	229	90	7,880
55-59	1,814	1,659	1,545	1,544	854	282	138	7,836
60-64	1,174	1,131	911	874	553	290	130	5,063
≥65	692	680	566	341	198	148	137	2,762
Total	18,945	10,918	7,512	5,445	2,443	1,069	503	46,835

<sup>1</sup> Includes 913 members who retired in July 2015.

SECTION IV - CENSUS DATA

**F. Distribution of Inactive Members by Age and Service <sup>1</sup>**

Attained Age	Distribution of Inactive Members by Age and Service as of June 30, 2015							Total
	0 to 4 years	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	Over 30	
<25	1,017	3						1,020
25-29	2,329	76						2,405
30-34	1,563	279	20	1				1,863
35-39	1,176	432	82	9				1,699
40-44	1,147	534	108	22	2			1,813
45-49	1,018	722	218	49	10	2		2,019
50-54	833	1,010	419	123	28	2	1	2,416
55-59	669	1,037	420	164	23	2	1	2,316
60-64	337	225	51	16	3	1		633
≥65	237	68	13	11	3	3		335
Total	10,326	4,386	1,331	395	69	10	2	16,519

<sup>1</sup> Includes 54 members who retired in July 2015.

SECTION IV - CENSUS DATA

**G. Distribution of Retired Members, Beneficiaries, and Disabled Members by Age and Number of Years Retired**

<b>Attained Age</b>	Distribution of Retired Members, Beneficiaries, and Disabled Members by Age and Number of Years Retired as of June 30, 2015							
	0 to 4 years	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	Over 30	Total
<50	48	5	3					56
50-54	244	62	14	3	2		1	326
55-59	1,108	181	42	5	3			1,339
60-64	3,226	791	114	25		1		4,157
65-69	2,801	2,353	697	59	5	1		5,916
70-74	1,143	1,827	1,859	441	19	5		5,294
75- 79	379	584	1,309	1,272	241	6		3,791
80-84	115	227	393	1,066	818	88	2	2,709
85-89	31	74	124	234	689	494	2	1,648
≥90	3	15	34	61	174	419	356	1,062
Total	9,098	6,119	4,589	3,166	1,951	1,014	361	26,298

<sup>1</sup> Does not include 967 members who retired in July 2015.

SECTION IV - CENSUS DATA

**H. History of Retirees, Beneficiaries, and Disabled Members**<sup>1,2</sup>

Valuation Date	Service Retirees			Disability Retirees			Beneficiaries		
	Added	Removed	End of Year	Added	Removed	End of Year	Added	Removed	End of Year
6/30/1995	782	372	9,967	33	19	249	54	12	386
6/30/1996	799	390	10,376	26	8	267	47	18	415
6/30/1997	823	388	10,811	22	13	276	63	18	460
6/30/1998	841	424	11,218	29	17	288	59	22	497
6/30/1999	813	431	11,600	35	7	316	67	19	545
6/30/2000	945	432	12,113	45	14	347	76	20	601
6/30/2001	987	468	12,632	53	22	378	76	14	663
6/30/2002	980	471	13,141	30	21	387	97	18	742
6/30/2003	979	501	13,619	31	13	405	96	25	813
6/30/2004	1,081	541	14,159	44	18	431	86	44	855
6/30/2005	1,116	505	14,770	43	26	448	98	29	924
6/30/2006	1,080	528	15,322	53	23	478	86	50	960
6/30/2007	1,250	563	16,009	29	18	489	120	39	1,041
6/30/2008	1,256	569	16,696	46	21	514	99	62	1,078
6/30/2009	1,439	578	17,557	45	18	541	113	41	1,150
6/30/2010	1,471	670	18,358	51	15	577	140	67	1,223
6/30/2011	1,681	595	19,444	74	31	620	114	73	1,264
6/30/2012	1,680	587	20,537	65	17	668	152	59	1,357
6/30/2013	1,656	674	21,519	68	27	709	164	75	1,446
6/30/2014	1,886	649	22,756	59	33	735	156	64	1,538
6/30/2015	1,866	722	23,900	57	25	767	159	66	1,631

<sup>1</sup> Does not include 967 members who retired in July 2015.

<sup>2</sup> Valuation results prior to June 30, 2009 were computed by the prior actuary.

SECTION IV - CENSUS DATA

**I. History of Cost of Living Increases to Retired Members**

Retirement In	Effective Date of First COLA	First COLA Percentage Increase	Total Increases Through January 2015 <sup>1</sup>	January 2016 Increase Based on Proposal	Total Increases Through January 2016 <sup>1</sup>	Number of Retired Members at 6/30/2015 <sup>2</sup>
1988 & Earlier	Various	Various	80.00%	0.00%	80.00%	831
1989	Jan. 1993	3.10%	74.33%	2.00%	77.82%	230
1990	Jan. 1994	3.00%	69.11%	2.00%	72.49%	283
1991	Jan. 1995	2.50%	64.18%	2.00%	67.46%	305
1992	Jan. 1996	3.00%	60.17%	2.00%	63.37%	357
1993	Jan. 1997	2.80%	55.50%	2.00%	58.61%	354
1994	Jan. 1998	2.30%	51.25%	2.00%	54.28%	414
1995	Jan. 1999	1.70%	47.85%	2.00%	50.81%	472
1996	Jan. 2000	2.00%	45.37%	2.00%	48.28%	526
1997	Jan. 2001	3.70%	42.53%	2.00%	45.38%	600
1998	Jan. 2002	3.30%	37.45%	2.00%	40.20%	597
1999	Jan. 2003	1.10%	33.07%	2.00%	35.73%	692
2000	Jan. 2004	2.10%	31.61%	2.00%	34.24%	772
2001	Jan. 2005	3.30%	28.90%	2.00%	31.48%	753
2002	Jan. 2006	2.50%	24.80%	2.00%	27.30%	802
2003	Jan. 2007	4.30%	21.75%	2.00%	24.19%	896
2004	Jan. 2008	2.70%	16.73%	2.00%	19.06%	922
2005	Jan. 2009	5.00%	13.65%	2.00%	15.92%	977
2006	Jan. 2010	0.00%	8.24%	2.00%	10.40%	1,024
2007	Jan. 2011	0.00%	8.24%	2.00%	10.40%	1,174
2008	Jan. 2012	2.00%	8.24%	2.00%	10.40%	1,185
2009	Jan. 2013	2.00%	6.12%	2.00%	8.24%	1,269
2010	Jan. 2014	2.00%	4.04%	2.00%	6.12%	1,656
2011	Jan. 2015	2.00%	2.00%	2.00%	4.04%	1,677
2012	Jan. 2016	2.00%		2.00%	2.00%	1,626
2013						1,837
2014						1,919
2015						517
<b>Total</b>						<b>24,667</b>

<sup>1</sup> Cumulative lifetime COLA increases are limited to 80%.

<sup>2</sup> Includes Service Retirees and Disabled Retirees as of June 30, 2015; Does not include 967 members who retired in July 2015.

SECTION IV - CENSUS DATA

**J. Distribution of Retired Members by Type and Monthly Amount <sup>1</sup>**

<u>Monthly</u>	<u>Service</u>	<u>Disability</u>	<u>Beneficiary</u>	<u>Total</u>
Less than \$100	1,315	23	156	1,494
\$100-199	3,779	135	341	4,255
\$200-299	3,371	147	275	3,793
\$300-399	2,543	134	186	2,863
\$400-499	1,965	89	154	2,208
\$500-999	5,769	201	363	6,333
\$1,000-1,499	2,685	34	95	2,814
\$1,500 & Over	2,473	4	61	2,538
Total	23,900	767	1,631	26,298

<sup>1</sup> Does not include 967 members who retired in July 2015.



SECTION IV - CENSUS DATA

**K. Distribution of Retired Members by Type of Benefit <sup>1</sup>**

<u>Type of Benefit</u>	<u>Number</u>	<u>Annual Benefit</u>
Service Retirees		
Options 1 & 10 (Life Only)	16,631	\$ 125,780,080
Options 2 & 21 (100% J&S with Pop-Up)	4,322	39,917,876
Options 3 & 31 (75% J&S with Pop-Up)	645	8,312,334
Options 4 & 41 (50% J&S with Pop-Up)	1,084	14,533,324
Option 5 (10 Years Certain & Life)	835	5,688,691
Option 6 (5 Years Certain & Life)	255	2,008,350
Options 20 (100% J&S)	76	403,754
Options 30 (75% J&S)	1	4,234
Options 40 (50% J&S)	12	106,326
Accelerated Payment	39	600,903
<b>Total</b>	<b>23,900</b>	<b>\$ 197,355,872</b>
Disability Retirees	767	\$ 4,020,963
Beneficiaries	1,631	\$ 9,170,032

<sup>1</sup> Does not include 967 members who retired in July 2015.

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SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

**ACTUARIAL ASSUMPTIONS AND METHODS**

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SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

**A. Actuarial Assumptions**

The assumptions used in the valuation were selected and approved by the PEERS Board of Trustees. The demographic assumptions are reviewed every five years through a study of actual experience. In this way, the actuary provides guidance to the Board in selecting the assumptions. The actuary and other economic and investment professionals also provide advice for selecting the economic assumptions. The most recent comprehensive experience study was completed in 2011 and was based on member experience between June 30, 2005 and June 30, 2010.

Since the prior experience study, significant new information has become available and new actuarial practices have become prevalent with regard to the mortality assumption. During the next experience study the mortality assumption, including the base mortality table and mortality improvement scale, will be reassessed. It is anticipated that new base mortality tables and a fully generational approach to mortality projection will be recommended and if adopted by the Board, will increase the actuarial liabilities and actuarial determined contribution rates computed in future valuations. The actual impact will depend on the assumption ultimately selected, which will be based in part on the recent experience of plan members as well as other publicly available mortality information. The other actuarial assumptions will also be evaluated and changes to those assumptions may offset or increase the impact.

Inflation 2.50% per annum

Total Payroll Growth 3.75% per annum, consisting of 2.50% inflation, 0.75% additional inflation due to the inclusion of health care costs in pension earnings, and 0.50% of real wage growth

Salary Increases

Service	General Inflation	Health Care Inflation	Longevity	Total Increase
0	2.50%	0.75%	8.75%	12.00%
1	2.50%	0.75%	4.00%	7.25%
2	2.50%	0.75%	3.50%	6.75%
3	2.50%	0.75%	3.25%	6.50%
4	2.50%	0.75%	3.00%	6.25%
5	2.50%	0.75%	2.90%	6.15%
6	2.50%	0.75%	2.80%	6.05%
7	2.50%	0.75%	2.70%	5.95%
8	2.50%	0.75%	2.60%	5.85%
9	2.50%	0.75%	2.50%	5.75%
10	2.50%	0.75%	2.40%	5.65%
11	2.50%	0.75%	2.30%	5.55%
12	2.50%	0.75%	2.20%	5.45%
13	2.50%	0.75%	2.10%	5.35%
14	2.50%	0.75%	2.00%	5.25%
15	2.50%	0.75%	1.95%	5.20%
16	2.50%	0.75%	1.90%	5.15%
17	2.50%	0.75%	1.85%	5.10%
18	2.50%	0.75%	1.80%	5.05%
19	2.50%	0.75%	1.75%	5.00%
20+	2.50%	0.75%	1.75%	5.00%

SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

**A. Actuarial Assumptions (Continued)**

Investment Returns

Funding: 8% per annum (net of investment and administrative expenses).  
 Accounting: 8% per annum (net of investment expenses).

Cost of Living Adjustments

2.00% per year, based on the current policy of the Board to grant a 2.00% COLA whenever annual inflation, as measured by the CPI-U index for a fiscal year, increases between 0.00% and 5.00%.

The COLA applies to service retirements and beneficiary annuities. The COLA does not apply to the benefits for in-service death payable to spouses (where the spouse is over age 60), and does not apply to the spouse with children pre-retirement death benefit, the dependent children pre-retirement death benefit, or the dependent parent death benefit. Members begin receiving COLAs on the fourth January after benefit commencement. The total lifetime COLA cannot exceed 80% of the original benefit. Future COLAs for current benefit recipients reflect actual cumulative adjustments granted at the time of valuation.

Mortality Rates

For actives, rates are based on the RP 2000 Mortality Table set back one year for males and six years for females, then projected to 2016 using Scale AA. Illustrative rates per 1,000 members at various ages are as follows:

<u>Age</u>	<u>Male</u>	<u>Female</u>
20	0.244	0.131
30	0.380	0.171
40	0.898	0.342
50	1.492	0.782
60	4.593	2.237
70	15.549	7.955

For non-disabled retirees, beneficiaries, and survivors, rates are based on the RP 2000 Mortality Table set forward one year for males and no set back/forward for females, then projected to 2016 using Scale AA. Illustrative rates per 1,000 members at various ages are as follows:

<u>Age</u>	<u>Male</u>	<u>Female</u>
40	1.004	0.554
50	1.831	1.274
60	5.930	4.665
70	19.292	15.452
80	61.340	41.002
90	187.360	125.502
100	352.933	233.696
110	400.000	364.617

SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

**A. Actuarial Assumptions (Continued)**

Mortality Rates (Continued)

For disabled retirees, rates are based on the RP 2000 Disabled Retiree Mortality Table. Illustrative rates per 1,000 members at various ages are as follows:

<u>Age</u>	<u>Male</u>	<u>Female</u>
40	22.571	7.450
50	28.975	11.535
60	42.042	21.839
70	62.583	37.635
80	109.372	72.312
90	183.408	140.049
100	344.556	237.467

Withdrawal Rates

Termination of membership prior to eligibility for retirement from all causes other than death, disability or retirement, whether resulting in a refund or a deferred benefit, is assumed in accordance with the following illustrative rates per 1,000 members:

<u>Years of Service</u>	<u>Rate</u>
0	300
1	220
2	150
3	120
4	100
5	81
10	48
15	33
20	18
25+	0

SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions (Continued)

Retirement Rates Retirement is assumed in accordance with the following rates per 1,000 eligible members:

<u>Age</u>	<u>Service</u>										
	<u>&lt;=20</u>	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>&gt;=30</u>
<50	0	0	0	0	0	50	50	50	50	50	150
50	0	0	0	0	0	50	50	50	50	50	250
51	0	0	0	0	0	50	50	50	50	250	150
52	0	0	0	0	0	50	50	50	250	150	150
53	0	0	0	0	0	50	50	250	150	150	150
54	0	0	0	0	0	50	250	150	150	150	150
55	30	30	30	30	30	270	170	170	170	170	170
56	30	30	30	30	130	170	170	170	170	170	170
57	30	30	30	130	30	170	170	170	170	170	170
58	30	30	130	30	30	170	170	170	170	170	170
59	30	130	30	30	30	170	170	170	170	170	170
60	160	160	160	160	160	160	160	160	160	160	160
61	100	100	100	100	100	100	100	100	100	100	100
62	240	240	240	240	240	240	240	240	240	240	240
63	200	200	200	200	200	200	200	200	200	200	200
64	140	140	140	140	140	140	140	140	140	140	140
65	260	260	260	260	260	260	260	260	260	260	260
66	200	200	200	200	200	200	200	200	200	200	200
67	200	200	200	200	200	200	200	200	200	200	200
68	200	200	200	200	200	200	200	200	200	200	200
69	200	200	200	200	200	200	200	200	200	200	200
70	200	200	200	200	200	200	200	200	200	200	200
71	200	200	200	200	200	200	200	200	200	200	200
72	200	200	200	200	200	200	200	200	200	200	200
73	200	200	200	200	200	200	200	200	200	200	200
74	200	200	200	200	200	200	200	200	200	200	200
>=75	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

**A. Actuarial Assumptions (Continued)**

Disability Rates                      Retirement for disability prior to age 60 is assumed in accordance with the following illustrative rates per 1,000 eligible members:

Age	Male and Female Rates
30	0.08
35	0.16
40	0.32
45	0.64
50	1.04
55	1.68

Refund of Contributions              It is assumed that 80% of those leaving after earning 5 years of service, but before retirement age, leave their contributions in the fund and receive a vested benefit. The remaining 20% are assumed to take an immediate refund of their contributions, thus forfeiting their vested retirement benefit. For the remaining 80%, if the present value of the deferred benefit is less than the member account balance, the member's account balance is valued.

It is assumed that 100% of those leaving prior to earning 5 years of service will take an immediate refund of their contributions.

Interest on Member Accounts        1.00% per annum.

Service Purchases                    A 1.50% load is added to the Normal Cost to account for anticipated losses resulting from service purchases and reinstatements

Provisions for Expenses              There is no specific provision for expenses. The implicit assumption for funding purposes is that investment and administrative expenses are paid from investment income in excess of 8.00% per annum. For accounting purposes the expected return is assumed to be net of investment expenses. Administrative expenses are included in the current year expense.

Dependent Assumptions              85% of male members and 70% of female members are assumed to be married.  
  
Beneficiaries are assumed to be of the opposite sex from the member.  
  
Male and Female members are assumed to be 5 years older than their beneficiary.

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SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

**A. Actuarial Assumptions (Continued)**

Return of Unused Member Account Balance	Under the single life annuity payment option, any unused balance of contributions and interest in the member account balance at the time of death is paid in a lump sum to a designated beneficiary. This benefit is approximated with a 3-year certain benefit.
Form of Payment:	For active members, benefits are assumed to be paid in the form of a single life annuity since all optional forms are actuarially equivalent using the same interest and mortality assumptions used in the valuation.
Data Assumptions	Members without a date of birth provided are assumed to be 30 years old. Pensionable pay for valuation purposes is assumed to be the greater of the current year's salary, the previous year's salary and \$5,000. Pensionable pay for active members hired in the current year is assumed to be the greater of annualized pay and \$5,000. Pensionable pay for valuation purposes for inactive members is assumed to be the greater of the two most recent years of salary history provided and \$5,000.
Assumption Changes Since the Prior Valuation	There have been no changes in the actuarial assumptions since the June 30, 2014 valuation.



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## SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

### **B. Actuarial Methods**

The actuarial methods used in the valuation for funding purposes and noted below were selected and approved by the PSRS Board of Trustees. The actuarial methods are generally reviewed in conjunction with experience studies of the assumptions. In this way, the actuary provides guidance to the Board in selecting the methods. The actuarial methods used for financial reporting purposes and noted below are prescribed by GASB 67 and 68.

#### Actuarial Cost Method

The actuarial cost method is Entry Age Normal - Level Percent of Payroll.

The Normal Cost is calculated separately for each active member and is equal to the level percentage of payroll needed as an annual contribution from entry age to retirement age to fund projected benefits. The Actuarial Accrued Liability on any valuation date is the accumulated value of such Normal Costs from entry age to the valuation date.

#### Amortization of Unfunded Actuarial Accrued Liability

For funding, gains and losses occurring from census experience different than assumed and assumption changes are amortized over a 30-year period as a level percent of payroll. A new gain or loss base is established each year based on the additional gain or loss during that year and that base is amortized over a new 30-year period. The purpose of the method is to give a smooth progression of the costs from year to year and, at the same time, provide for an orderly funding of the unfunded liabilities.

Increases in the Actuarial Accrued Liability caused by changes in the benefit provisions are amortized over 20 years, as determined in the 2007 session of the Legislature.

For accounting, gains and losses occurring from census experience different than assumed and assumption changes are amortized into expense over the average expected future service of all plan participants (actives and inactive). Gains and losses occurring from investment experience different than assumed are amortized into expense over a 5-year period. The effect of plan changes on the plan liability are fully recognized in expense in the year in which they occur.

#### Asset Valuation Method

The Actuarial Value of Assets is a smoothed value of assets. The actuarial value at June 30 of the prior year is projected by increasing the amount by 8% interest, adding contributions with 8% interest for half the year, and subtracting benefit payments with 8% interest for half the year. 20% of the difference between the actual returns on market value for the year and the expected return from the projection of the prior year actuarial value, along with corresponding amounts from each of the prior four years, is added to the actuarial value.

For accounting purposes, market value was used.

#### Changes Since the Prior Valuation

There have been no changes in the actuarial methods since the June 30, 2014 valuation.

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SECTION VI - SUMMARY OF PLAN PROVISIONS

**SUMMARY OF BENEFIT PROVISIONS**

Page

A. Summary of Benefit Provisions

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SECTION VI - SUMMARY OF PLAN PROVISIONS

**A. Summary of Benefit Provisions**

Member Contributions	Half the total PEERS contribution rate. For fiscal year 2015, the total PEERS contribution rate is 13.72%.
Normal (Unreduced) Retirement	
Eligibility	Attainment of age 60 with at least five years of Creditable Service, or Completion of 30 years of Creditable Service at any age, or Age plus Creditable Service is at least 80.
Benefit	1.61% of Final Average Salary for each year of Membership Service. A year of Prior Service is treated as 0.6 year of Membership Service. Any person retiring prior to age 62 under the Rule of 80 or with 30 years of creditable service will receive an additional benefit payable to attainment of age 62. This benefit is equal to 0.8% of Final Average Salary for each year of Membership Service.
Compensation	All regular earnings as an employee of a PEERS-covered employer. Compensation or salary includes, but is not limited to, payments for extra duties, overtime payments and employer-paid medical, dental and vision insurance premiums for the member.
Final Average Salary	Average monthly salary over the Member's three highest consecutive years of service. Effective August 28, 2007, the maximum increase in the annual compensation used for the final average salary shall not exceed twenty percent.
Membership Service	Service while a participating member of PEERS. Service is measured each year in relation to minimum salary for 20 hours per week in the position for that year.
Prior Service	Service rendered in a covered position prior to November 1, 1965.
Creditable Service	Membership Service plus any Prior Service.
Normal Form of Benefit	Single Life Annuity  Options available include joint and survivor (50%, 75%, or 100%), term certain (60 or 120 months) and life thereafter, partial lump sum option (PLSO), and accelerated payment plan (APP).

SECTION VI - SUMMARY OF PLAN PROVISIONS

**A. Summary of Benefit Provisions (Continued)**

Early (Age Reduced) Retirement

Eligibility                      Attainment of age 55 and under age 60 with at least five years of creditable service.

Benefit                              Normal retirement benefit accrued to the date of early retirement, actuarially reduced from age 60.

Special Early Retirement Under Modified Formula

Eligibility                      Retirement at an age under 55 and with at least 25 years of creditable service but not eligible for the Rule of 80.

Benefit                              Based on a percentage of final average salary per year of creditable service. Percentages are as follows:

<u>Years of Service</u>	<u>Benefit Percentage</u>
25-25.9	1.51%
26-26.9	1.53%
27-27.9	1.55%
28-28.9	1.57%
29-29.9	1.59%

COLA Adjustments

The Board has established a policy of providing a 2.00% COLA for years in which the CPI increases between 0.00% and 5.00%. If the CPI increase is greater than 5.00%, the Board will provide a COLA of 5.00%. If the CPI decreases, no COLA is provided.

For any member such adjustments commence in the fourth January after commencement of benefits. The total of such increases may not exceed 80% of the original benefit for any member.

Disability Benefits

Definition of Disability      Incapacity for performance of gainful employment after completion of five years of creditable service and before age 60.

Benefit                              Lifetime benefit equal to 90% of accrued normal retirement benefit.

Form of Benefit                If eligible, surviving spouse may elect a survivor benefit. COLA adjustments similar to those provided to retirees are provided on this benefit.

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SECTION VI - SUMMARY OF PLAN PROVISIONS

**A. Summary of Benefit Provisions (Continued)**

Vesting

Eligibility	Completion of five years of creditable service.
Benefit	Accrued normal retirement benefit payable at earliest retirement age based on service at date of termination. Benefit is based on formula in effect at commencement of benefit.

Death/Survivor Benefits

Refund	Refund of accumulated member contributions with interest.
Survivor Benefits	<p>If the member has at least 5 years of creditable service at date of death, the spouse may receive a survivor benefit based on 100% J&amp;S equivalent of the benefit accrued to date of death. The benefit may commence:</p> <ol style="list-style-type: none"><li>1. Immediately if member is eligible to retire at date of death, or</li><li>2. At a future retirement date of the deceased member.</li></ol> <p>The benefit may be reduced for early commencement if the deceased member would not have been eligible for unreduced retirement at that date based on service to date of death.</p> <p>COLA adjustments similar to those provided to retirees are provided on these benefits.</p>

Changes in Benefit Provisions	There have been no changes since the June 30, 2014 valuation.
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