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Public Education Employee Retirement System of Missouri

Actuarial Valuation as of
June 30, 2023

pwc

November 15, 2023

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, 2023

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, 2023 and are presented herein pursuant to the engagement letter between PEERS and PwC US, dated July 11, 2019. 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 actuarially determined contribution presented herein was based on the funding policy, actuarial assumptions, and actuarial methods adopted by the Board.

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.
- 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 of not meeting the above target.

Progress Toward Realization of Financing Objectives

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a measure of the Plan's funded status. Absent changes in plan provisions and actuarial assumptions and methods, it should increase over time until it reaches 100% under the current funding policy, though adverse experience could prevent this from being achieved. The funded ratio for the Plan is 87.3% as of June 30, 2023, unchanged from June 30, 2022. The liabilities increased more than expected mainly due to salary increases being greater than assumed, but the actuarial value of assets also increased by more than the 7.3% expected return assumption because average returns over the last five years have exceeded the assumed returns. Over time, we expect the annual gains/losses to be offsetting.

Benefit Provisions

The benefit provisions of PEERS reflected in our June 30, 2023 valuation include the amendments of Senate Bill 75 (HCS/SS/SB 75), which was passed prior to the June 30, 2023 valuation date and contained the following provisions that became effective on August 28, 2023:

- Increase the salary limit for PSRS retirees working in non-certificated positions to 133% of the annual Social Security earnings limit from August 28, 2023 to June 30, 2028, and then to 100% of the annual Social Security earnings limit thereafter which would increase the employer contributions made to PEERS
- Modify the Critical Shortage Employment provision to expand the allowed lifetime limit on time worked from two years to four years
- Allow certain retirees who nominated a same-sex domestic partner as beneficiary for lifetime monthly benefits under a Joint-and-Survivor benefit option to have their monthly retirement benefit “pop-up” to the amount they would have received if they had not elected to receive reduced monthly benefits

There was no impact on the valuation related to this legislation. All other benefit provisions are consistent with the June 30, 2022 valuation.

Assets and Member Data

The valuation was based on asset values of the trust fund and member census data as of June 30, 2023. All asset information and member data were provided by PEERS. While we performed certain checks for reasonableness relative to the prior year data, 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 actuarial assumptions used in the June 30, 2023 valuations were adopted by the Board pursuant to an experience study completed in May 2021. All economic and demographic assumptions were reviewed and certain assumptions were updated, where appropriate, based on the results of the 2021 experience study. The assumptions were updated for the June 30, 2021 valuation based on the results of the experience study and there have been no assumption changes since the June 30, 2021 valuation. The next experience study is scheduled to be completed prior to the June 30, 2026 valuation.

We believe the actuarial assumptions and methods are reasonable for the purposes of this valuation report, were developed in accordance with the Actuarial Standards of Practice, and comply with the parameters set forth in Statements No. 67 and No. 68 (as amended) 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 report 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, 2023 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 Annual Comprehensive Financial Report. This information has been prepared in accordance with our understanding of GASB No. 67, as amended. This report also contains employer accounting information prepared in accordance with our understanding of GASB No. 68, as amended.

In preparing the results presented herein, we have used and evaluated actuarial models in accordance with Actuarial Standards of Practice (“ASOP”) No. 56. PwC US uses the ProVal valuation system developed by Winklevoss Technologies, LLC in performing valuations of pension and postretirement benefit plans. We have utilized the ProVal software to prepare the valuation results presented herein. ProVal is used to value participant data through projecting retirement benefits and applying plan specific assumptions, methods, and plan provisions under applicable accounting and funding standards. We are not aware of any material limitations or known weaknesses in the ProVal software.

A range of results, different from those presented in this report, could be considered reasonable. Future actuarial measurements may differ significantly from the current measurement presented in this report due to a number of factors including but not limited to: plan experience differing from that anticipated by the economic and demographic assumptions; increases or decreases expected as part of the natural operation of the methods used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the Plan’s funded status); rounding conventions; and changes in plan provisions or applicable law. Due to the limited scope of this report, an analysis of the potential range of such future measurements has not been performed.

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. Our calculations also reflect 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 US, and is intended solely for the use and benefits of PEERS and not for reliance by any other person.

Respectfully submitted,

Cindy Fraterrigo

Ms. Cindy Fraterrigo
Member, American Academy of Actuaries
Fellow of the Society of Actuaries
Enrolled Actuary (No. 23-06229)
PwC US Tax LLP

Brandon A. Robertson

Mr. Brandon Robertson
Member, American Academy of Actuaries
Associate of the Society of Actuaries
Enrolled Actuary (No. 23-07568)
PwC US Consulting LLP

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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, 2023 and has been prepared to present the current funded status of the Plan, contribution requirements for fiscal year 2025 (July 1, 2024 through June 30, 2025), and certain financial statement disclosure information. The valuation was performed using census data for plan members as of June 30, 2023 provided by PEERS and summarized in Section IV of this report, asset information as of June 30, 2023 provided by PEERS and summarized in Sections II and III, the actuarial assumptions and methods approved by the Board and summarized in Section V, and the plan provisions effective June 30, 2023 summarized in Section VI.

Contributions

The Board sets, at its discretion, but subject to certain statutory restrictions, the applicable employer and member contribution rates upon considering the results of the actuarial valuation and other analysis as appropriate. Based on the objectives of the Board's funding policy, the assumptions and methods approved by the Board, and our valuation of the Actuarially Determined Contribution Rate, the contribution rate approved by the Board is 13.72% (6.86% for employers and 6.86% for members) for fiscal year 2025. A contribution rate of 13.72% represents no change from the rate currently in effect for fiscal year 2024. The contribution rate approved by the Board becomes effective on July 1, 2024. Therefore, the dollar cost will depend on the actual payroll during fiscal year 2025.

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 commencing 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”) computed in accordance with assumptions and methods summarized in Section V. The funded status is an indicator of future contribution requirements in that a funded status below 100% results in an Actuarially Determined Contribution rate that includes contributions towards the deficit. The funded status measured on this basis is not intended to represent the sufficiency of plan assets for settling the Plan's benefit obligations and should not be relied on for that purpose or any other purpose not mentioned above in isolation.

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 is 87.3% as of June 30, 2023, unchanged from June 30, 2022. The liabilities increased more than expected mainly due to salary increases being greater than assumed, but the actuarial value of assets also increased by more than the 7.3% expected return because average returns over the last five years have exceeded the assumed returns. Over time, we expect the annual gains/losses to be offsetting. The funded status is 86.5% when based on the market value of assets rather than the actuarial value of assets.

Investment Experience

The market value of the assets available for benefits has increased from $6.15 billion as of June 30, 2022 to $6.40 billion as of June 30, 2023. The actuarial value of assets increased from $6.11 billion as of June 30, 2022 to $6.46 billion as of June 30, 2023. The actuarial value of assets is greater than the market value by $0.06 billion and the difference will be recognized over the next four years.

The assets of the Plan returned 6.2% (net of all expenses) for the year ended June 30, 2023. Based on the Actuarial Value of Assets, the approximate return for the same period was 7.6%. 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 6.1%.

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 the applicable statutes of the State of Missouri, as well as sound financial principles, such as maintaining contribution rate stability and intergenerational equity. The policy sets forth certain actions, actuarial assumptions, and actuarial methods that are to be utilized in executing the funding strategy. Key principles and objectives of the funding policy are summarized in Section II.

The funding policy is updated every five years in conjunction with an experience study. Other changes to the funding policy may be considered in the interim as deemed appropriate by the Board or as recommended by the actuary. The funding policy was most recently amended at the June 8, 2021 Board meeting, with all changes effective for the June 30, 2021 actuarial valuations.

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"), as amended. Information prepared in accordance with GASB 67 is intended to assist PEERS with the preparation of its Annual Comprehensive 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. PEERS is responsible for confirming the accuracy and completeness of any financial reporting information contained herein.

Changes in Actuarial Assumptions

There were no changes in the actuarial assumptions for the June 30, 2023 valuation.

Since the actual increase in the CPI-U index from June 2022 to June 2023 was 2.97%, the Board approved an actual COLA as of January 1, 2024 of 2.00%, in accordance with the Board's funding policy and Missouri statutes, consistent with the assumed COLA of 2.00%. Since the actual COLA for January 1, 2024 is known, it has been reflected in the June 30, 2023 liability valuation.

Changes in Plan Provisions

The benefit provisions of PEERS reflected in our June 30, 2023 valuation include the amendments of Senate Bill 75 (HCS/SS/SB 75), which was passed prior to the June 30, 2023 valuation date and contained the following provisions that became effective on August 28, 2023:

- Increase the salary limit for PSRS retirees working in non-certificated positions to 133% of the annual Social Security earnings limit from August 28, 2023 to June 30, 2028, and then to 100% of the annual Social Security earnings limit thereafter which would increase the employer contributions made to PEERS
- Modify the Critical Shortage Employment provision to expand the allowed lifetime limit on time worked from two years to four years
- Allow certain retirees who nominated a same-sex domestic partner as beneficiary for lifetime monthly benefits under a Joint-and-Survivor benefit option to have their monthly retirement benefit “pop-up” to the amount they would have received if they had not elected to receive reduced monthly benefits

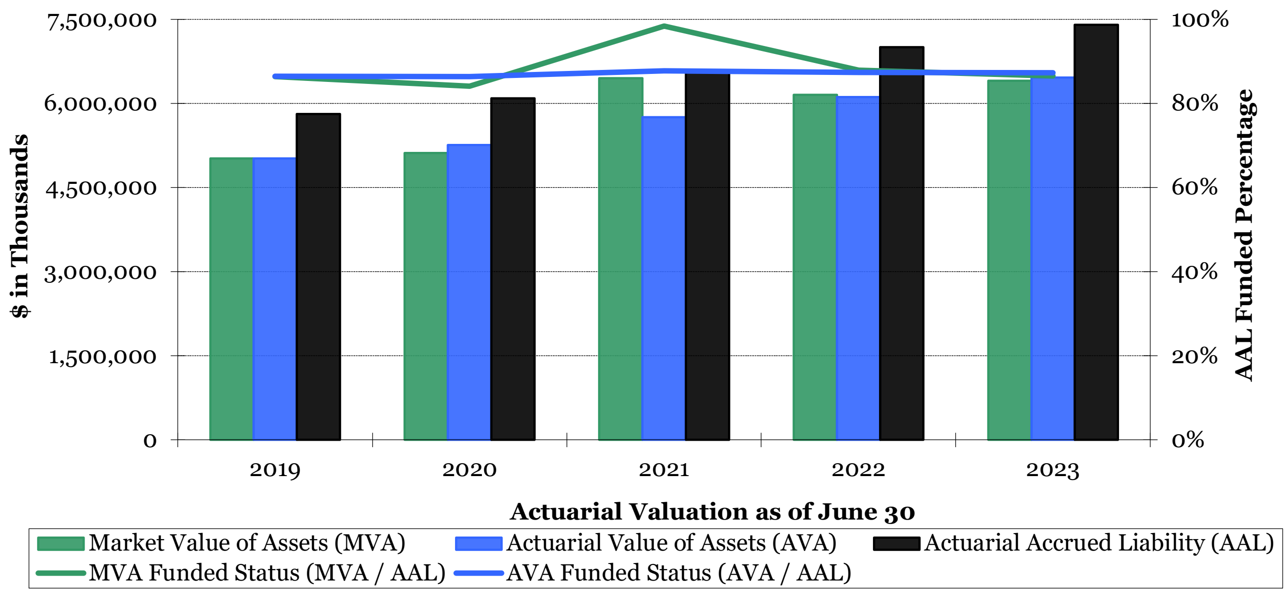
There was no impact on the valuation related to this legislation. All other benefit provisions are consistent with the June 30, 2022 valuation.

Changes in Actuarial Methods

There were no changes in the actuarial methods for the June 30, 2023 valuation.

HISTORICAL SUMMARY

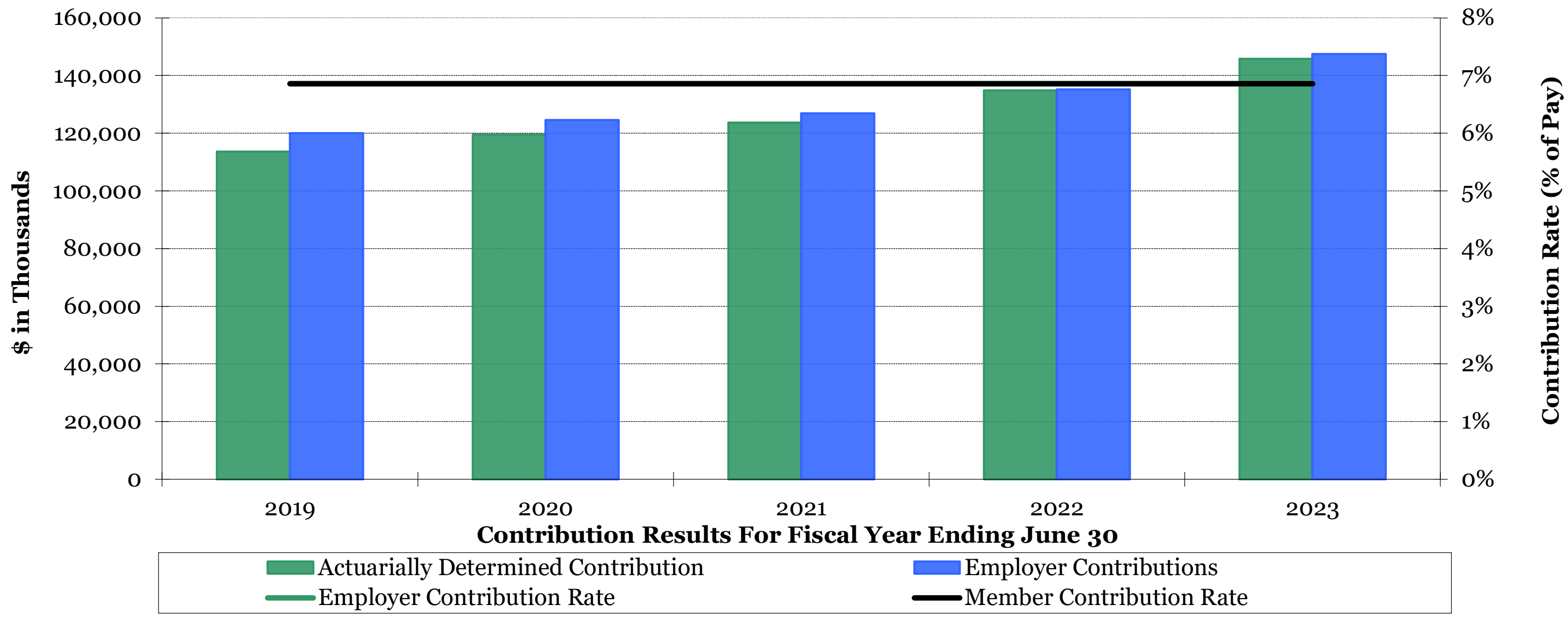
5-Year History of Funded Status



Actuarial Valuation as of June 30: ($ in '000's)	**2019**	**2020**	**2021**	**2022**	**2023**
Actuarial Accrued Liability (AAL)	$5,809,485	$6,089,401	$6,560,854	$6,998,708	$7,401,637
Actuarial Value of Assets (AVA)	$5,019,868	$5,257,847	$5,756,526	$6,113,154	$6,459,684
Market Value of Assets (MVA)	$5,018,524	$5,118,844	$6,453,162	$6,153,591	$6,402,733
Unfunded Liability (AAL - AVA)	$789,617	$831,554	$804,328	$885,554	$941,953
AVA Funded Status (AVA / AAL)	86.4%	86.3%	87.7%	87.3%	87.3%
MVA Funded Status (MVA / AAL)	86.4%	84.1%	98.4%	87.9%	86.5%

HISTORICAL SUMMARY (Continued)

5-Year History of Contributions



Contribution Results For Fiscal Year: ($ in '000's)	**2019**	**2020**	**2021**	**2022**	**2023**
Actuarially Determined Contribution[1,2]	$113,567	$119,461	$123,733	$134,787	$145,744
Employer Contributions	$120,042	$124,545	$126,877	$135,181	$147,464
ADC % Contributed	105.7%	104.3%	102.5%	100.3%	101.2%
Employer ADC Rate	6.49%	6.58%	6.69%	6.84%	6.78%
Employer Contribution Rate	6.86%	6.86%	6.86%	6.86%	6.86%
Member Contribution Rate	6.86%	6.86%	6.86%	6.86%	6.86%

[1] Employer portion only.
[2] Actuarially Determined Contribution ("ADC") based on ADC percentage calculated in the prior fiscal year and payroll during the current year.

HISTORICAL SUMMARY (CONTINUED)

Summary of Valuation Results[1]

Valuation Date	June 30, 2019	June 30, 2020	June 30, 2021	June 30, 2022	June 30, 2023
Development of Actuarially Determined Contribution Rate:					
1. Anticipated Payroll	$ 1,665,654,047	$ 1,732,243,294	$ 1,758,535,339	$ 1,864,704,185	$ 2,037,530,583
2. Total Normal Cost:[2]					
a. Amount	$ 173,676,697	$ 181,297,752	$ 181,174,916	$ 191,021,192	$ 207,757,197
b. Percentage of Payroll	10.43%	10.47%	10.30%	10.24%	10.20%
3. Total Unfunded Actuarial Accrued Liability Annual Amortizations:[3]					
a. Amount	$ 52,046,253	$ 55,915,866	$ 58,681,633	$ 65,269,853	$ 70,603,518
b. Percentage of Payroll	3.12%	3.23%	3.34%	3.50%	3.47%
4. Total Actuarially Determined Contribution Rate:					
a. Percentage of Payroll: (2)(b) + (3)(b)	**13.55%**	**13.70%**	**13.64%**	**13.74%**	**13.67%**
b. Effective UAAL Amortization Period	22.7 Years	22.0 Years	20.8 Years	20.4 Years	19.8 Years
5. Recommended Total Contribution Rate, Member + Employer:					
a. Percentage of Payroll	**13.72%**	**13.72%**	**13.72%**	**13.72%** [4]	**13.72%**
b. Effective UAAL Amortization Period	20.9 Years	21.8 Years	20.0 Years	20.6 Years	19.4 Years
c. Effective Date	July 1, 2020	July 1, 2021	July 1, 2022	July 1, 2023	July 1, 2024

[1] The contribution rates shown were developed on a funding basis only and do not reflect accounting requirements.

[2] The Normal Cost is as of the beginning of the year and includes a 1.50% load for anticipated losses on service purchases.

[3] The UAAL Amortization is as of the beginning of the year.

[4] The recommendation of a contribution rate that is lower than the Actuarially Determined Contribution rate is generally based on the Board's funding policy to maintain stability in the contribution rate, the effective UAAL amortization period of the recommended rate being within 3 years of the effective UAAL amortization period of the Actuarially Determined Contribution rate, and the projected Actuarially Determined Contribution rate being below the current contribution rate again next year if all assumptions are met. Other information (e.g., margin in the Actuarially Determined Contribution rate for adverse experience, risks and sensitivities, known COLAs and investment returns, external forecasts, etc.) is also considered and presented to the Board when recommending actual contribution rates.

HISTORICAL SUMMARY (Continued)

Summary of Valuation Results (Continued)

	June 30, 2019	June 30, 2020	June 30, 2021	June 30, 2022	June 30, 2023
Census Information					
Active					
Number[1]	49,345	50,179	49,572	50,179	51,787
Average Age	48.1	48.0	47.9	47.5	47.2
Average Years of Service	8.3	8.2	8.2	7.9	7.6
Anticipated Payroll of Actives ($ in 000's)[2]	$ 1,665,654	$ 1,732,243	$ 1,758,535	$ 1,864,704	$ 2,037,531
Inactive Members					
Vested					
Number[3]	6,744	6,867	7,158	7,764	8,132
Annual Deferred Annuities ($ in 000's)	$ 27,890	$ 29,199	$ 31,239	$ 34,927	$ 37,899
Non Vested					
Number[4]	14,839	15,642	18,949	21,330	23,648
Account Balance ($ in 000's)	$ 33,295	$ 35,400	$ 44,256	$ 51,289	$ 58,740
Former Members					
Entitled to a Deferred Annuity					
Number	63	47	31	-	-
Annual Deferred Annuities ($ in 000's)	$ 413	$ 334	$ 158	$ -	-
Entitled to a Refund of Contributions					
Number	15,472	16,422	15,110	16,026	17,151
Account Balance ($ in 000's)	$ 16,894	$ 19,580	$ 16,680	$ 17,985	$ 19,946
Retiree/Beneficiary/Disabled					
Number	31,850	33,232	34,671	36,198	37,737
Annual Benefits Payable ($ in 000's)[5]	$ 284,525	$ 302,850	$ 328,758	$ 362,172	$ 392,074

[1] The number of active members as of June 30, 2023 includes 1,019 members who retired or became disabled effective July 1, 2023 and 94 members who were refund pending.

[2] Figures shown are the anticipated payroll for the one-year period following the valuation date. For the June 30, 2023 valuation, anticipated payroll excludes 1,019 members who retired or became disabled effective July 1, 2023 and 94 members who were refund pending.

[3] The number of inactive members as of June 30, 2023 includes 82 members who retired effective July 1, 2023 and 68 members who were refund pending.

[4] Includes refund pending members since these members elected to receive a refund of their contributions.

[5] The annual benefits payable as of June 30, 2023 does not include 1,101 members who retired or became disabled effective July 1, 2023. The annual benefits payable for the 1,101 members who retired or became disabled effective July 1, 2023 are $16,466,181.

HISTORICAL SUMMARY (Continued)

Summary of Valuation Results (Continued)

	June 30, 2019	June 30, 2020	June 30, 2021	June 30, 2022	June 30, 2023
Present Value of Future Benefits					
Member Contribution Balances[1]	$ 1,050,906,650	$ 1,097,457,007	$ 1,122,128,813	$ 1,147,611,990	$ 1,204,717,716
Retiree/Beneficiary	2,798,909,191	3,007,294,550	3,363,388,128	3,689,592,052	3,939,699,274
Disabled	62,250,936	63,804,762	67,173,126	66,148,464	66,133,643
Inactive	104,954,582	100,631,671	106,801,769	115,259,642	122,707,098
Active	3,056,095,370	3,137,750,045	3,169,712,117	3,317,169,634	3,522,342,413
Total	$ 7,073,116,729	$ 7,406,938,035	$ 7,829,203,953	$ 8,335,781,782	$ 8,855,600,144
Actuarial Accrued Liability (AAL)					
Member Contribution Balances[1]	$ 1,050,906,650	$ 1,097,457,007	$ 1,122,128,813	$ 1,147,611,990	$ 1,204,717,716
Retiree/Beneficiary	2,798,909,191	3,007,294,550	3,363,388,128	3,689,592,052	3,939,699,274
Disabled	62,250,936	63,804,762	67,173,126	66,148,464	66,133,643
Inactive	104,954,582	100,631,671	106,801,769	115,259,642	122,707,098
Active	1,792,463,340	1,820,213,214	1,901,362,507	1,980,096,193	2,068,379,441
Total	$ 5,809,484,699	$ 6,089,401,204	$ 6,560,854,343	$ 6,998,708,341	$ 7,401,637,172
Actuarial Value of Assets (AVA)					
Member Contribution Balances	$ 1,050,906,650	$ 1,097,457,007	$ 1,122,128,813	$ 1,147,611,990	$ 1,204,717,716
Retiree/Beneficiary	2,798,909,191	3,007,294,550	3,363,388,128	3,689,592,052	3,939,699,274
Disabled	62,250,936	63,804,762	67,173,126	66,148,464	66,133,643
Inactive	104,954,582	100,631,671	106,801,769	115,259,642	122,707,098
Active	1,002,847,118	988,658,699	1,097,034,633	1,094,541,713	1,126,426,462
Total	$ 5,019,868,477	$ 5,257,846,689	$ 5,756,526,469	$ 6,113,153,861	$ 6,459,684,193
Unfunded Actuarial Accrued Liability: AAL - AVA[2]					
Member Contribution Balances	$ -	$ -	$ -	$ -	$ -
Retiree/Beneficiary	-	-	-	-	-
Disabled	-	-	-	-	-
Inactive	-	-	-	-	-
Active	789,616,222	831,554,515	804,327,874	885,554,480	941,952,979
Total	$ 789,616,222	$ 831,554,515	$ 804,327,874	$ 885,554,480	$ 941,952,979
Funded Percentage: AVA / AAL[2]					
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	55.9%	54.3%	57.7%	55.3%	54.5%
Total	86.4%	86.3%	87.7%	87.3%	87.3%
Market Value of Assets	$ 5,018,523,615	$ 5,118,843,873	$ 6,453,161,951	$ 6,153,590,531	$ 6,402,733,160
Summary of Assumptions					
Valuation Interest Rate	7.50%	7.50%	7.30%	7.30%	7.30%
Salary Increases	4.00% - 11.00%	4.00% - 11.00%	3.25% - 9.75%	3.25% - 9.75%	3.25% - 9.75%
Cost-of-Living Assumption[3]	1.30% - 1.65%	1.35% - 1.65%	1.35%	1.35%	1.35%

[1] Member contribution balances as of June 30, 2023 include $971,219,595 associated with active members and $233,498,121 associated with inactive members.

[2] 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. This does not represent a legal allocation of assets.

[3] For the June 30, 2021 valuation, the COLA assumption is 2.00% for January 1, 2022, January 1, 2023, and January 1, 2024, and 1.35% thereafter. For the June 30, 2022 valuation, the COLA assumption is 2.00% for January 1, 2023 and January 1, 2024, and 1.35% thereafter. For the June 30, 2023 valuation, the COLA assumption is 2.00% for January 1, 2024, and 1.35% thereafter based on the long-term inflation assumption of 2.00%.

FUNDING

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 Board's funding objectives, including the systematic funding of future benefit payments for members of PEERS. The Board, through its funding policy, adopts the actuarial assumptions and methods to be used in performing the actuarial valuation, which is the basis for determining the annual contribution rate for both employers and members. The funding policy is updated every five years in conjunction with an experience study. Other changes to the funding policy may be considered in the interim as deemed appropriate by the Board or as recommended by the actuary. The funding policy was most recently amended at the June 8, 2021 Board meeting, with all changes effective for the June 30, 2021 actuarial valuations.

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

Funding Objective

The funding objective set by the Board is to achieve a funded ratio of 100% over a closed 30-year period. 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 Level Percent cost method and the actuarial assumptions adopted by the Board.

Principles of Funding

The Board has identified the following principles to guide its funding policy:

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 6.86% of pay, the contribution rate first paid during 2011-2012.

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 ("ADC") Rate is equal to the sum of the employer Normal Cost Rate and the Unfunded Actuarial Accrued Liability ("UAAL") Amortization Rate. The Normal Cost Rate is the portion of the Present Value of Future Benefits allocated to the year following the Actuarial Valuation Date by the Actuarial Cost Method, expressed as a percentage of anticipated payroll. The Unfunded Actuarial Accrued Liability ("UAAL") Amortization Rate is the portion of the difference between the Actuarial Accrued Liability and Actuarial Value of Assets as of the valuation date, that is to be amortized, expressed as a percentage of anticipated payroll. The contribution rates shall be approved by the Board no later than December 31st for the upcoming school year.

The Board, at its discretion, but subject to certain statutory restrictions, may authorize a change in the member and employer contribution rates from one year to the next should the actuary determine that the contribution rates currently in effect are more or less than required to fully fund the Plan over the weighted-average period of the existing UAAL amortization bases established in accordance with the funding policy. The decision by the Board will be based on the expected number of years required to fully fund under the current contribution rates. By statute, the contribution rates cannot be increased by more than 0.5% (0.25% for employers and 0.25% for members) per year.

B. Development of Funded Status

		June 30, 2022	June 30, 2023
1.	Present Value of Future Benefits		
	a. Member Contribution Balances[1]	$ 1,147,611,990	$ 1,204,717,716
	b. Retirees, Beneficiaries, and Disableds	3,755,740,516	4,005,832,917
	c. Inactives	115,259,642	122,707,098
	d. Actives	3,317,169,634	3,522,342,413
	e. Total: (1)(a) + (1)(b) + (1)(c) + (1)(d)	$ 8,335,781,782	$ 8,855,600,144
2.	Actuarial Accrued Liability		
	a. Member Contribution Balances[1]	$ 1,147,611,990	$ 1,204,717,716
	b. Retirees, Beneficiaries, and Disableds	3,755,740,516	4,005,832,917
	c. Inactives	115,259,642	122,707,098
	d. Actives	1,980,096,193	2,068,379,441
	e. Total: (2)(a) + (2)(b) + (2)(c) + (2)(d)	$ 6,998,708,341	$ 7,401,637,172
3.	Actuarial Value of Assets[2]		
	a. Member Contribution Balances	$ 1,147,611,990	$ 1,204,717,716
	b. Retirees, Beneficiaries, and Disableds	3,755,740,516	4,005,832,917
	c. Inactives	115,259,642	122,707,098
	d. Actives	1,094,541,713	1,126,426,462
	e. Total: (3)(a) + (3)(b) + (3)(c) + (3)(d)	$ 6,113,153,861	$ 6,459,684,193
4.	Unfunded Actuarial Accrued Liability[2]		
	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)	885,554,480	941,952,979
	e. Total: (2)(e) - (3)(e)	$ 885,554,480	$ 941,952,979
5.	Funded Percentage[2]		
	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)	55.3%	54.5%
	e. Total: (3)(e)/(2)(e)	87.3%	87.3%

1 Member contribution balances include $971,219,595 with active members and $233,498,121 with inactive members as of June 30, 2023.

2 In determining the funded amount and 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. This does not represent a legal allocation of assets.

C. Reconciliation of Unfunded Actuarial Accrued Liability

1.	June 30, 2022 Unfunded Actuarial Accrued Liability	$	885,554,480
2.	Normal Cost for 2022-2023 Plan Year		191,021,192
3.	Actuarially Determined Contribution (Employer + Member)		256,291,045
4.	Interest of 7.30% on (1) + (2) - (3)		59,880,778
5.	Expected June 30, 2023 Unfunded Actuarial Accrued Liability: (1) + (2) - (3) + (4)	$	880,165,405
6.	Actuarial Value of Assets Experience (Gain)/Loss[1]	$	(48,825,117)
7.	Actuarial Accrued Liability Experience (Gain)/Loss		
	a. Actuarial Accrued Liability Experience	$	110,612,691
	b. Additional Liability Due to Cost-of-Living Adjustments		-
	c. Additional Liability Due to Changes in Actuarial Assumptions		-
	d. Total Actuarial Accrued Liability Experience (Gain)/Loss	$	110,612,691
8.	Total Experience (Gain)/Loss - New Amortization Base (6) + (7)(d)	$	61,787,574
9.	Additional Liability Due to Changes in Plan Provisions[2]	$	-
10.	Total (Gain)/Loss due to Experience and Changes in Plan Provisions (8) + (9)	$	61,787,574
11.	Actual June 30, 2023 Unfunded Actuarial Accrued Liability (5) + (10)	$	941,952,979

[1] Based on Actuarial (smoothed) Value of Assets. Includes a gain due to contributions made in excess of the Actuarially Determined Contribution.

[2] Legislation (HCS SS SB 75) passed during the 2022-2023 plan year enacted various changes to the provisions of PEERS effective August 28, 2023, which are reflected in the June 30, 2023 valuation. These changes had no impact on the Actuarial Accrued Liability.

D. Reconciliation of Actuarial Accrued Liability

1.	June 30, 2022 Actuarial Accrued Liability	$	6,998,708,341	
2.	Normal Cost for 2022-2023 Plan Year		191,021,192	
3.	Actual Benefit Payments[1]		419,271,522	
4.	Transfers, Purchases, and Reinstatements		10,377,965	
5.	Interest of 7.30% on (1) + (2) - (3) + (4)[2]		510,188,505	
6.	Expected June 30, 2023 Actuarial Accrued Liability: (1) + (2) - (3) + (4) + (5)	$	7,291,024,481	
			Dollar Change in Liability	**Percent Change in Liability**
7.	(Gain)/Loss Components			
	a. Inactive and Retired Member Mortality Experience	$	(41,595,778)	(0.6%)
	b. Active Member Salary Experience		90,094,592	1.2%
	c. Other Demographic Experience		62,113,877	0.9%
	d. Additional Liability Due to Cost-of-Living Adjustment		-	0.0%
	e. Additional Liability Due to Assumption Changes		-	0.0%
	f. Additional Liability Due to Plan Provision Changes[3]		-	0.0%
	g. Total: (7)(a) + (7)(b) + (7)(c) + (7)(d) + (7)(e) + (7)(f)	$	110,612,691	1.5%
8.	Actual June 30, 2023 Actuarial Accrued Liability: (6) + (7)(g)	**$**	**7,401,637,172**	

[1] Includes refunds of accumulated member contributions.

[2] Reflects a half year of interest on benefit payments and transfers, purchases, and reinstatements.

[3] Legislation (HCS SS SB 75) passed during the 2022-2023 plan year enacted various changes to the provisions of PEERS effective August 28, 2023, which are reflected in the June 30, 2023 valuation. These changes had no impact on the Actuarial Accrued Liability.

E. Reconciliation of Market Value of Assets

		June 30, 2022	June 30, 2023
1.	Market Value of Assets, Prior June 30	$ 6,453,161,951	$ 6,153,590,531
2.	Operating Revenues (Receipts)		
	a. Employer Contributions	$ 135,180,782	$ 147,463,789
	b. Member Contributions	144,214,603	156,401,863
	c. Interest	22,925,832	27,086,617
	d. Dividends	27,148,813	30,578,310
	e. Net Income from Security Lending Activities	103,899	35,313
	f. Net Capital Appreciation/(Depreciation)	(145,509,811)	358,314,806
	g. Investment Expenses	(93,969,497)	(42,817,156)
	h. Other Income	531	3,757
	i. Total Receipts: (2)(a) + (2)(b) + (2)(c) + (2)(d) + (2)(e) + (2)(f) + (2)(g) + (2)(h)	$ 90,095,152	$ 677,067,299
3.	Operating Expenses (Disbursements)		
	a. Benefit Payments	$ 358,626,871	$ 393,909,238
	b. Refunds to Members	23,333,630	25,362,284
	c. Administrative Expenses	7,706,071	8,645,987
	d. Other Expenses	-	7,161
	e. Total Disbursements: (3)(a) + (3)(b) + (3)(c) + (3)(d)	$ 389,666,572	$ 427,924,670
4.	Excess of Revenues over Expenses: (2)(i) - (3)(e)	$ (299,571,420)	$ 249,142,629
5.	Market Value of Assets, Current June 30: (1) + (4)	**$ 6,153,590,531**	**$ 6,402,733,160**

F. Development of Actuarial Value of Assets

1.	Actuarial Value of Assets June 30, 2022			$	6,113,153,861
2.	Activity for the 2022-2023 Plan Year				
	a. Contributions			$	303,865,652
	b. Benefit Payments[1]				(419,271,522)
	c. Net Cash Flow			$	(115,405,870)
3.	Expected Returns[2]			$	442,122,108
4.	Assets Before Allocation of Gain/Loss: (1) + (2)(c) + (3)			$	6,439,870,099
5.	Actual Returns for 2023 (Net of Expenses)			$	364,548,499
6.	Excess Returns for 2023: (5) - (3)			$	(77,573,609)
7.	Recognized Excess Returns:				
	Year	Excess Return	% Unrecognized		
	2023	(77,573,609)	80%	$	(15,514,722)
	2022	(613,555,045)	60%		(122,711,010)
	2021	1,032,587,809	40%		206,517,562
	2020	(198,971,229)	20%		(39,794,246)
	2019	(43,417,454)	0%		(8,683,490)
	Total			$	19,814,094
8.	Actuarial Value of Assets, June 30, 2023: (4) + (7)			**$**	**6,459,684,193**

[1] Includes refunds of accumulated member contributions.

[2] Assumes cash flows occur at mid-year.

G. Contribution Rate

Development of Actuarially Determined Contribution Rate:	June 30, 2022	June 30, 2023
1. Anticipated Payroll	$ 1,864,704,185	$ 2,037,530,583
2. Normal Cost		
a. Amount	$ 191,021,192	$ 207,757,197
b. Percentage of Payroll	10.24%	10.20%
3. Unfunded Actuarial Accrued Liability (UAAL) Amortization		
a. Amount	$ 65,269,853	$ 70,603,518
b. Percentage of Payroll	3.50%	3.47%
4. Actuarially Determined Contribution Rate		
a. Percentage of Payroll: (2)(b) + (3)(b)	**13.74%**	**13.67%**
b. Effective UAAL Amortization Period	20.4 Years	19.8 Years
5. Recommended Total Contribution Rate, Member + Employer		
a. Percentage of Payroll	**13.72%**	**13.72%**
b. Effective UAAL Amortization Period	20.6 Years	19.4 Years
c. Effective Date	July 1, 2023	July 1, 2024

H. Development of the Normal Cost Rate

		Dollar[1]	Rate
1.	Active Members		
	a. Retirement Benefits	$ 150,686,032	7.40%
	b. Termination Benefits	52,118,739	2.56%
	c. Death and Disability Benefits	4,952,426	0.24%
	d. Total Normal Cost	$ 207,757,197	10.20%
2.	Anticipated Member Payroll	$ 2,037,530,583	

[1] Normal cost amounts include a 1.50% load for anticipated losses on service purchases.

I. Development of the Unfunded Actuarial Accrued Liability Amortization Rate

	Date Base Established	Reason	Remaining Balance[1]	Remaining Period	Amortization Amount	Rate
1.	6/30/2007	Plan Amendment	$ 534,609	4	$ 142,962	0.01%
2.	6/30/2011	UAAL Fresh Start	$ 566,995,581	18	$ 45,193,760	2.22%
3.	6/30/2012	Actuarial Experience	$ 137,426,987	19	$ 10,583,804	0.52%
4.	6/30/2013	Plan Amendment	$ 1,443,659	10	$ 175,857	0.01%
5.	6/30/2013	Actuarial Experience	$ 67,969,051	20	$ 5,070,883	0.25%
6.	6/30/2014	Actuarial Experience	$ (126,250,400)	21	$ (9,145,810)	-0.45%
7.	6/30/2015	Actuarial Experience	$ (42,415,296)	22	$ (2,989,802)	-0.15%
8.	6/30/2016	Actuarial Experience and Assumption Changes	$ 50,027,066	23	$ 3,437,808	0.17%
9.	6/30/2017	Actuarial Experience and Assumption Changes	$ 85,978,710	24	$ 5,769,977	0.28%
10.	6/30/2018	Actuarial Experience and Assumption Changes	$ 24,208,863	25	$ 1,589,086	0.08%
11.	6/30/2019	Actuarial Experience	$ 18,209,255	26	$ 1,170,791	0.06%
12.	6/30/2020	Actuarial Experience	$ 39,785,337	27	$ 2,508,976	0.12%
13.	6/30/2021	Actuarial Experience and Assumption Changes	$ (29,968,804)	28	$ (1,855,902)	-0.09%
14.	6/30/2022	Actuarial Experience	$ 86,220,787	29	$ 5,249,210	0.26%
15.	6/30/2023	Actuarial Experience	$ 61,787,574	30	$ 3,701,918	0.18%
	Total		$ 941,952,979		$ 70,603,518	3.47%
16.	Anticipated Member Payroll				$ 2,037,530,583	

[1] In accordance with the funding policy, all remaining balances are amortized as a level percent of payroll assuming 2.50% payroll growth and a 7.30% discount rate.

J. History of Contribution Rates

Valuation Date	Effective Date	Total Contribution Rate[1]
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%
June 30, 2015	July 1, 2016	13.72%
June 30, 2016	July 1, 2017	13.72%
June 30, 2017	July 1, 2018	13.72%
June 30, 2018	July 1, 2019	13.72%
June 30, 2019	July 1, 2020	13.72%
June 30, 2020	July 1, 2021	13.72%
June 30, 2021	July 1, 2022	13.72%
June 30, 2022	July 1, 2023	13.72%
June 30, 2023	July 1, 2024	13.72%

[1] Valuation results prior to June 30, 2009 were calculated by the prior actuary.

K. Historical Investment Experience

Year Ending June 30	Rate of Investment Return: Market Basis[1]	Rate of Investment Return: Actuarial Basis[2,3]	Actuarial Assumed Interest Rate
2004	16.3%	3.0%	7.25%
2006	9.6%	9.2%	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%
2016	1.6%	7.0%	8.00%
2017	12.3%	8.5%	7.75%
2018	8.7%	8.0%	7.60%
2019	6.9%	6.5%	7.50%
2020	3.7%	6.3%	7.50%
2021	28.5%	11.3%	7.50%
2022	(3.1%)	8.0%	7.30%
2023	6.2%	7.6%	7.30%

[1] Time-weighted returns as provided by PEERS. Net of all expenses and fees.
[2] Approximate return net of all expenses and fees and assuming all cash flows occurred at mid-year.
[3] Valuation results prior to June 30, 2009 were calculated by the prior actuary.

SECTION III - ACCOUNTING

ACCOUNTING

PLAN FINANCIAL STATEMENTS UNDER GASB #67

A. Statement of Fiduciary Net Position under GASB #67 as of June 30, 2023

1.	Assets			
	a.	Cash	$	73,271,976
	b.	Receivables		
		i. Contributions Receivable	$	26,958,207
		ii. Accrued Interest and Dividends		11,144,598
		iii. Investment Sales		108,711,141
		iv. Due from PSRS		-
		v. Other		2
		vi. Total Receivables	$	146,813,948
	c.	Total Investments		
		i. Short-Term Investments	$	137,370,694
		ii. US Treasuries and TIPS		923,457,539
		iii. US Public Equities		1,586,490,406
		iv. Global Public Equities		1,071,216,087
		v. Public Debt		-
		vi. Private Equity		1,148,902,914
		vii. Private Credit		336,833,107
		viii. Private Real Estate		653,702,303
		ix. Hedged Assets		495,018,339
		x. Total Investments	$	6,352,991,389
	d.	Invested Securities Lending Collateral		3,598
	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)	$	6,573,080,911
2.	Deferred Outflow of Resources			
	a.	Outflows Related to Other Post Employment Benefit Obligations	$	88,521
3.	Liabilities			
	a.	Accounts Payable	$	3,242,582
	b.	Interest Payable		165,314
	c.	Securities Lending Collateral		3,598
	d.	Investment Purchases		162,804,318
	e.	Due to PSRS		778,610
	f.	Total Lease Liability		-
	g.	Accrued Medical Claims[1]		100,040
	h.	OPEB Liability for System Employees[1]		1,335,000
	i.	Compensated Absences[1]		1,436,115
	j.	Total Liabilities: (3)(a) + (3)(b) + (3)(c) + (3)(d) + (3)(e) + (3)(f) + (3)(g) + (3)(h) + (3)(i)	$	169,865,577
4.	Deferred Inflow of Resources			
	a.	Inflows Related to Other Post Employment Benefit Obligations	$	570,695
5.	Fiduciary Net Position Restricted for Pensions: (1)(g) + (2)(a) - (3)(j) - (4)(a)		**$**	**6,402,733,160**

[1] Compensation and benefit costs related to System employees and paid from the Trust.

PLAN FINANCIAL STATEMENTS UNDER GASB #67

B. Statement of Changes in Fiduciary Net Position under GASB #67 for the Year Ended June 30, 2023

1.	Fiduciary Net Position as of June 30, 2022		$	6,153,590,531
2.	Additions			
	a.	Contributions		
		i. Member Contributions	$	156,401,863
		ii. Employer Contributions - Proportionate Share		146,077,918
		iii. Employer Contributions - Other		1,385,871
		iv. Non-Employer Contributing Entity Contributions		-
		v. Total Contributions	$	303,865,652
	b.	Investment Income/(Loss)		
		i. Net Appreciation/(Depreciation)	$	358,314,806
		ii. Net Interest and Dividend Income		57,664,927
		iii. Net Income from Security Lending Activities		35,313
		iv. Other Net Investment Income		-
		v. Investment Expenses and Rebates		(42,817,156)
		vi. Total Investment Income/(Loss)	$	373,197,890
	c.	Other Additions		
		i. Miscellaneous Income	$	3,757
		ii. Total Other Additions	$	3,757
	d.	Total Revenue (Additions): (2)(a)(v) + (2)(b)(vi) + (2)(c)(ii)	$	677,067,299
3.	Deductions			
	a.	Monthly Benefits	$	393,909,238
	b.	Refunds of Contributions		25,362,284
	c.	Administrative Expenses		8,645,987
	d.	Other Expenses		7,161
	e.	Total Expenses (Deductions): (3)(a) + (3)(b) + (3)(c) + (3)(d)	$	427,924,670
4.	Net Increase (Decrease) in Fiduciary Net Position: (2)(d) - (3)(e)		$	249,142,629
5.	Fiduciary Net Position as of June 30, 2023: (1) + (4)		**$**	**6,402,733,160**

EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68

C. Net Pension Liability under GASB #68 for the Year Ended June 30, 2023

1. Total Pension Liability			
a. Total Pension Liability - Beginning of year		$	6,998,708,341
b. Total service cost			191,021,192
c. Interest cost[1]			510,188,505
d. Experience (gains)/losses			110,612,691
e. Assumption changes			-
f. Plan amendments			-
g. Benefit payments[2]			(419,271,522)
h. Transfers, Purchases, and Reinstatements			10,377,965
i. Total Pension Liability - End of year		$	7,401,637,172
2. Plan Fiduciary Net Position			
a. Plan Fiduciary Net Position - Beginning of year		$	6,153,590,531
b. Employer contributions			147,463,789
c. Member contributions			156,401,863
d. Non-employer contributing entity contributions			-
e. Investment return			
i. Expected investment return[3]	$ 445,073,985		
ii. Investment gain/(loss)	(71,872,338)		
iii. Net investment return			373,201,647
f. Benefit payments[2]			(419,271,522)
g. Administrative and Other Expenses			(8,653,148)
h. Plan Fiduciary Net Position - End of year:		$	6,402,733,160
3. Net Pension Liability			
a. Net Pension Liability: (1)(i) - (2)(h)		**$**	**998,904,012**
b. Plan Fiduciary Net Position as a Percentage of the Total Pension Liability: (2)(h)/(1)(i)			86.5%

[1] Reflects interest on total service cost and actual benefit payments.
[2] Includes refunds of accumulated member contributions.
[3] 7.30%, net of investment expenses and assuming cash flows occur at mid-year.

EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68

D. Deferred Inflows and Outflows of Resources under GASB #68 for the Year Ended June 30, 2023

Fiscal Year Established	Reason	Remaining Balance At Beginning of Year	Remaining Period[1]	Annual Recognition	Remaining Balance At End of Year
1. Liability experience					
a. Inflows					
2020	Experience gain	$ 896,607	0.37	$ 896,607	$ -
b. Outflows					
2021	Experience loss	$ (33,983,294)	1.20	$ (28,319,413)	$ (5,663,881)
2022	Experience loss	$ (100,852,159)	2.07	$ (48,720,851)	$ (52,131,308)
2023	Experience loss	$ (110,612,691)	3.01	$ (36,748,403)	$ (73,864,288)
2. Assumption changes					
a. Inflows					
None					
b. Outflows					
2021	Assumption loss	$ (31,591,928)	1.20	$ (26,326,608)	$ (5,265,320)
3. Investment experience[2]					
a. Inflows					
2021	Investment gain	$ 630,235,558	3.00	$ 210,078,520	$ 420,157,038
b. Outflows					
2019	Investment loss	$ (7,123,512)	1.00	$ (7,123,512)	$ -
2020	Investment loss	$ (76,717,029)	2.00	$ (38,358,515)	$ (38,358,514)
2022	Investment loss	$ (525,362,691)	4.00	$ (131,340,673)	$ (394,022,018)
2023	Investment loss	$ (71,872,338)	5.00	$ (14,374,468)	$ (57,497,870)
4. Total deferred inflows/outflows: (1) + (2) + (3)					
a. Inflows					
	Total	**$ 631,132,165**		**$ 210,975,127**	**$ 420,157,038**
b. Outflows					
	Total	**$ (958,115,642)**		**$ (331,312,443)**	**$ (626,803,199)**

[1] 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.

[2] Net of investment expenses.

EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68

D. Deferred Inflows and Outflows of Resources under GASB #68 for the Year Ended June 30, 2023 (Continued)

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

Year Ending June 30:		
2024	$	(70,393,590)
2025	$	24,204,517
2026	$	(146,082,622)
2027	$	(14,374,466)
2028	$	-
Thereafter	$	-

EMPLOYER FINANCIAL STATEMENTS UNDER GASB #68

E. Pension Expense under GASB #68 for the Year Ended June 30, 2023

1. Service cost			
	a. Total service cost	$	191,021,192
	b. Member contributions[1]		(146,308,541)
	c. Administrative and other expenses[2]		7,912,666
	d. Net employer service cost: (1)(a) + (1)(b) + (1)(c)	$	52,625,317
2. Plan amendments		$	-
3. Interest cost		$	510,188,505
4. Expected return on assets[3]		$	(445,434,731)
5. Recognition of deferred (inflows)/outflows of resources related to:			
	a. Liability experience (gains)/losses	$	112,892,060
	b. Assumption changes (gains)/losses		26,326,608
	c. Investment (gains)/losses		(18,881,352)
	d. Total: (5)(a) + (5)(b) + (5)(c)	$	120,337,316
6. Total collective pension expense: (1)(d) + (2) + (3) + (4) + (5)(d)		**$**	**237,716,407**

[1] Excludes $10,093,322 of member service purchases and reinstatements.

[2] Administrative expenses exclude $697,562 of contributions for system employees other than investment staff, but includes ($42,920) of interest and other adjustments to employer contributions.

[3] Gross of $360,746 of contributions for system investment staff.

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

F. Selected Notes to the Financial Statements under GASB #67 and #68

1. The Public Education Employee Retirement System of Missouri is a cost-sharing multiple-employer plan for GASB accounting purposes.

2. Significant actuarial assumptions and other inputs used to measure the total pension liability:

- Measurement Date	June 30, 2023
- Valuation Date	June 30, 2023
- Experience Study	The Board of Trustees adopts actuarial assumptions, each of which individually represents a reasonable long-term estimate of anticipated experience under the System, derived from experience studies conducted every fifth year. The most recent comprehensive experience study was completed in May 2021. All economic and demographic assumptions were reviewed and updated, where appropriate, based on the results of the study and effective with the June 30, 2021 valuation. The next experience study is scheduled to be completed prior to the June 30, 2026 valuation.
- Long-term Inflation	2.00% per annum
- Total Payroll Growth	2.50% per annum, consisting of 2.00% inflation, 0.25% real wage growth due to the inclusion of active health care costs in pensionable earnings, and 0.25% of real wage growth due to productivity.
- Future Salary Increases	3.25% - 9.75%, depending on service and including 2.00% inflation, 0.25% real wage growth due to the inclusion of active health care costs in pensionable earnings, and 0.25% of real wage growth due to productivity.
- Cost-of-Living Increases	Given that the actual increase in the CPI-U index from June 2022 to June 2023 was 2.97%, the Board approved an actual cost-of-living adjustment ("COLA") as of January 1, 2024 of 2.00%, in accordance with the Board's funding policy and Missouri statutes, consistent with the assumed COLA of 2.00%. Future COLAs assumed in the valuation are 1.35% each January 1. This COLA assumption is based on the 20-year stochastic analysis of inflation performed in the 2021 experience study and application of the Board's funding policy to those expectations. The assumption was re-evaluated for the June 30, 2022 valuation in light of the current inflationary environment, short- and long-term inflation assumptions reflected in the capital market forecasts from various investment advisors and analysts, and volatility of capital market assumptions in recent years. Based on this information, no change was made to the COLA assumption for the June 30, 2022 valuation. At June 30, 2023, the assumption was again revisited and given the current inflationary environment, and the current policy of the Board, no changes were made to the assumption for the current year. The current policy of the Board to grant a COLA on each January 1 is as follows: • If the June to June change in the CPI-U is less than 2% for consecutive one year periods, a cost-of-living increase of 2% will be granted when the cumulative increase is equal to or greater than 2%, at which point the cumulative increase in the CPI-U will be reset to zero. For the following year, the starting CPI-U will be based on the June value immediately preceding the January 1 at which the 2% cost-of-living increase is granted. • If the June to June change in the CPI-U is greater than or equal to 2%, but less than 5%, a cost-of-living increase of 2% will be granted. • If the June to June change in the CPI-U is greater than or equal to 5%, a cost-of-living increase of 5% will be granted. The COLA is effective each January 1, beginning on the fourth January after retirement, and capped at 80% lifetime increase.
- Mortality Assumption	
Actives:	Experience-adjusted PubG-2010(B) (General Employees, Below-Median Income) base mortality table for employees with generational projection using the MP-2020 improvement scale.
Non-Disabled Retirees:	Experience-adjusted PubG-2010(B) (General Employees, Below-Median Income) base mortality table for retirees with generational projection using the MP-2020 improvement scale.

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

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

- Mortality Assumption (Continued)

Non-Disabled Beneficiaries and Survivors:	Experience-adjusted PubG-2010(B) (General Employees, Below-Median Income) base mortality table for contingent survivors with generational projection using the MP-2020 improvement scale.
Disabled Retirees:	Experience-adjusted PubG-2010 (General Employees) base mortality table for disabled participants with generational projection using the MP-2020 improvement scale.
	A summary of mortality rates are shown in Section V of the report.

- Discount Rate

The discount rate used to measure the total pension liability was 7.30% as of June 30, 2023, and is equal to the long-term expected return on plan investments. Consistent with the Board's funding policy, we have assumed that the employer contributions would be made at a rate consistent with the actuarially determined rate, computed in accordance with assumptions and methods stated in the funding policy. The funding policy requires payment of the normal cost and amortization of the unfunded actuarially accrued liability as a level percent of employee payroll in installments over 30 years utilizing a closed period, layered approach. Based on this policy, which has been followed for the past several years, the pension plan's fiduciary net position would be sufficient to make all projected future benefit payments of current plan members.

- Discount Rate Sensitivity	1% Decrease (6.30%)	Current Rate (7.30%)	1% Increase (8.30%)
Net Pension Liability (Asset)	$ 1,896,393,220	$ 998,904,012	$ 250,248,018

3. Classes of plan members covered:

- Retired members, beneficiaries, and disabled members receiving benefits:	37,737
- Inactive members (vested and non-vested):	31,780
- Former members:	17,151
- Active members:	51,787
- Total membership:	138,455

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, 2023, the money-weighted return on the plan assets, as provided by PEERS, is 6.1%.

5. The components of the Net Pension Liability for the Public Education Employee Retirement System of Missouri as of June 30, 2023, are as follows

- Total Pension Liability	$ 7,401,637,172
- Plan Fiduciary Net Position	6,402,733,160
- Net Pension Liability	$ 998,904,012
- Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	86.5%

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

Year Ending June 30:	2014	2015	2016	2017	2018
1. Total Pension Liability					
a. Total Pension Liability - Beginning of year	$ 3,967,618,752	$ 4,211,488,832	$ 4,512,316,979	$ 4,809,665,957	$ 5,209,368,865
b. Total service cost[1]	159,672,364	156,599,641	161,391,660	150,975,958	161,028,014
c. Interest cost[2]	315,131,402	333,780,285	372,184,628	374,497,203	397,675,858
d. Experience (gains)/losses	(14,308,876)	45,342,850	(58,947,668)	(4,467,870)	(6,735,556)
e. Assumption changes	-	-	65,420,724	140,420,925	61,921,295
f. Plan amendments	-	-	-	-	-
g. Benefit payments[3]	(216,624,810)	(235,070,181)	(250,390,477)	(269,268,101)	(287,634,108)
h. Transfers, Purchases, and Reinstatements	-	175,552	7,690,111	7,544,793	6,853,242
i. Total Pension Liability - End of year	$ 4,211,488,832	$ 4,512,316,979	$ 4,809,665,957	$ 5,209,368,865	$ 5,542,477,610
2. Plan Fiduciary Net Position					
a. Plan Fiduciary Net Position - Beginning of year	$ 3,316,512,798	$ 3,846,322,885	$ 3,983,410,820	$ 4,007,330,673	$ 4,446,418,007
b. Employer contributions	100,699,735	103,624,310	106,717,021	111,239,585	115,103,143
c. Member contributions	106,420,656	110,443,660	114,257,497	118,446,790	121,467,850
d. Non-employer contributing entity contributions	-	-	-	-	-
e. Net investment return	544,154,941	163,719,697	60,317,389	485,046,866	381,523,965
f. Benefit payments[3]	(216,624,810)	(235,070,181)	(250,390,477)	(269,268,101)	(287,634,108)
g. Administrative and Other Expenses	(4,840,435)	(5,629,551)	(6,981,577)	(6,377,806)	(7,113,568)
h. Plan Fiduciary Net Position - End of year	$ 3,846,322,885	$ 3,983,410,820	$ 4,007,330,673	$ 4,446,418,007	$ 4,769,765,289

1 The service cost shown for fiscal years ending on or before June 30, 2016 is mid-year and includes a 1.50% load for anticipated losses on service purchases. The service cost shown for fiscal years ending on or after June 30, 2017 is as of the beginning of the year and includes a 1.50% load for anticipated losses on service purchases. As a suggestion noted in the 2016 actuarial audit, this methodology was refined beginning with the June 30, 2016 valuation and approved by PEERS.

2 Reflects actual benefit payments. The interest cost shown for fiscal year ending June 30, 2016 includes an adjustment due to changes from mid-year to beginning-of-year and from simple to compound interest. As a suggestion noted in the 2016 actuarial audit, this methodology was refined beginning with the June 30, 2016 valuation and approved by PEERS.

3 Includes refunds of accumulated member contributions and other interfund transfers.

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 (Continued)

Year Ending June 30:	2019	2020	2021	2022	2023
1. Total Pension Liability					
a. Total Pension Liability - Beginning of year	$ 5,542,477,610	$ 5,809,484,699	$ 6,089,401,204	$ 6,560,854,343	$ 6,998,708,341
b. Total service cost[1]	170,543,513	173,676,697	181,297,752	181,174,916	191,021,192
c. Interest cost[2]	417,341,777	436,863,559	457,694,318	478,838,864	510,188,505
d. Experience (gains)/losses	(18,483,245)	(8,166,414)	90,622,120	149,573,010	110,612,691
e. Assumption changes	-	-	84,245,144	-	-
f. Plan amendments	-	-	-	-	-
g. Benefit payments[3]	(310,242,399)	(330,337,694)	(350,520,890)	(381,960,501)	(419,271,522)
h. Transfers, Purchases, and Reinstatements	7,847,443	7,880,357	8,114,695	10,227,709	10,377,965
i. Total Pension Liability - End of year	$ 5,809,484,699	$ 6,089,401,204	$ 6,560,854,343	$ 6,998,708,341	$ 7,401,637,172
2. Plan Fiduciary Net Position					
a. Plan Fiduciary Net Position - Beginning of year	$ 4,769,765,289	$ 5,018,523,615	$ 5,118,843,873	$ 6,453,161,951	$ 6,153,590,531
b. Employer contributions	120,042,046	124,544,728	126,877,255	135,180,782	147,463,789
c. Member contributions	126,609,105	131,335,977	134,324,324	144,214,603	156,401,863
d. Non-employer contributing entity contributions	-	-	-	-	-
e. Net investment return	319,773,263	181,855,037	1,431,016,967	(189,300,233)	373,201,647
f. Benefit payments[3]	(310,242,399)	(330,337,694)	(350,520,890)	(381,960,501)	(419,271,522)
g. Administrative and Other Expenses	(7,423,689)	(7,077,790)	(7,379,578)	(7,706,071)	(8,653,148)
h. Plan Fiduciary Net Position - End of year	$ 5,018,523,615	$ 5,118,843,873	$ 6,453,161,951	$ 6,153,590,531	$ 6,402,733,160

[1] The service cost shown for fiscal years ending on or before June 30, 2016 is mid-year and includes a 1.50% load for anticipated losses on service purchases. The service cost shown for fiscal years ending on or after June 30, 2017 is as of the beginning of the year and includes a 1.50% load for anticipated losses on service purchases. As a suggestion noted in the 2016 actuarial audit, this methodology was refined beginning with the June 30, 2016 valuation and approved by PEERS.

[2] Reflects actual benefit payments. The interest cost shown for fiscal year ending June 30, 2016 includes an adjustment due to changes from mid-year to beginning-of-year and from simple to compound interest. As a suggestion noted in the 2016 actuarial audit, this methodology was refined beginning with the June 30, 2016 valuation and approved by PEERS.

[3] Includes refunds of accumulated member contributions and other interfund transfers.

REQUIRED SUPPLEMENTARY INFORMATION UNDER GASB #67 AND #68

H. Schedule of Net Pension Liability and Related Ratios under GASB #67 and #68

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[1]	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%
6/30/2016	$ 4,809,665,957	$ 4,007,330,673	$ 802,335,284	83.3%	$ 1,519,081,146	52.8%
6/30/2017	$ 5,209,368,865	$ 4,446,418,007	$ 762,950,858	85.4%	$ 1,558,183,433	49.0%
6/30/2018	$ 5,542,477,610	$ 4,769,765,289	$ 772,712,321	86.1%	$ 1,636,007,948	47.2%
6/30/2019	$ 5,809,484,699	$ 5,018,523,615	$ 790,961,084	86.4%	$ 1,665,654,047	47.5%
6/30/2020	$ 6,089,401,204	$ 5,118,843,873	$ 970,557,331	84.1%	$ 1,732,243,294	56.0%
6/30/2021	$ 6,560,854,343	$ 6,453,161,951	$ 107,692,392	98.4%	$ 1,758,535,339	6.1%
6/30/2022	$ 6,998,708,341	$ 6,153,590,531	$ 845,117,810	87.9%	$ 1,864,704,185	45.3%
6/30/2023	$ 7,401,637,172	$ 6,402,733,160	$ 998,904,012	86.5%	$ 2,037,530,583	49.0%

[1] Pensionable pay as provided by PEERS. Gross member compensation, which may include components of compensation that are not included in pensionable compensation, was not made available to PwC US.

REQUIRED SUPPLEMENTARY INFORMATION UNDER GASB #67 AND #68

I. Schedule of Contributions under GASB #67 and #68

1. Year Ending	2. Actuarially Determined Contribution[1]	3. Actual Employer Contributions	4. Contribution Excess/(Deficiency) (3) - (2)	5. Actual Covered Member Payroll	6. Contributions as a Percentage of Covered Payroll (3)/(5)
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%
6/30/2016	104,011,593	106,654,638	2,643,045	1,554,732,332	6.86%
6/30/2017	108,807,233	111,239,585	2,432,352	1,621,568,294	6.86%
6/30/2018	97,653,104	115,103,143	17,450,039	1,677,888,382	6.86%
6/30/2019	113,567,475	120,042,046	6,474,571	1,749,884,052	6.86%
6/30/2020	119,461,270	124,544,728	5,083,458	1,815,520,816	6.86%
6/30/2021	123,733,066	126,877,255	3,144,189	1,849,522,668	6.86%
6/30/2022	134,786,669	135,180,782	394,113	1,970,565,335	6.86%
6/30/2023	145,744,095 [2]	147,463,789	1,719,694	2,149,617,915	6.86%

[1] Employer portion of the Actuarially Determined Contribution, net of member contributions.
[2] The actuarially determined contribution rate for employers for the year ending June 30, 2023 is 6.78%. This consists of an employer normal cost rate of 3.44%, which is net of the 6.86% contribution rate for members, and a UAAL amortization rate of 3.34%. Based on these percentages, the actuarially determined contribution amount for employers consists of $73,946,856 for normal cost and $71,797,239 for UAAL amortization.

J. Schedule of Money-Weighted Returns under GASB #67 and #68

1. Year Ending	2. Money-Weighted Rate of Return[1]
6/30/2014	16.7%
6/30/2015	4.3%
6/30/2016	1.6%
6/30/2017	12.3%
6/30/2018	8.7%
6/30/2019	6.9%
6/30/2020	3.7%
6/30/2021	28.4%
6/30/2022	(3.0%)
6/30/2023	6.1%

[1] As provided by PEERS, net of all expenses and fees.

CENSUS DATA

A. Reconciliation of Member Counts

	Actives[1]	Former Members[2]	Inactive Members[3]	Disabled Retirements	Service Retirements[4]	Beneficiary	Total
Total as of June 30, 2022	50,179	16,026	29,094	776	32,891	2,531	131,497
New Memberships	9,950	14	2,371	0	0	0	12,335
Terminated Members Reinstated	775	0	(775)	0	0	0	0
Refunds	(1,456)	(918)	(1,907)	0	0	0	(4,281)
Other Terminations	(5,525)	1,999	3,526	0	0	0	0
Service Retirements	(1,996)	0	(431)	(1)	2,428	0	0
Disabled Retirements	(15)	0	(8)	23	0	0	0
Death with Beneficiary	(20)	0	(15)	(20)	(210)	277	12
Death without Beneficiary	(54)	(34)	(35)	(7)	(821)	(119)	(1,070)
Voided memberships	(23)	0	(4)	0	0	0	(27)
Refund Pending	(28)	64	(36)	0	0	0	0
Benefit Expirations	0	0	0	0	0	(6)	(6)
Death Pending	0	0	0	(4)	(7)	6	(5)
Data Adjustments	0	0	0	0	0	0	0
Total as of June 30, 2023	51,787	17,151	31,780	767	34,281	2,689	138,455

[1] The number of active members as of June 30, 2023 includes 1,019 members who retired or became disabled effective July 1, 2023 and 94 members who were refund pending.

[2] Includes terminated and deceased former members whose contributions had yet to be distributed as of the valuation date.

[3] The number of inactive members as of June 30, 2023 includes 82 members who retired effective July 1, 2023 and 68 members who were refund pending.

[4] Includes members with benefits on hold that will be re-started at a future date.

[5] There are 5 death pending members included as beneficiaries in 2022 that started receiving payments as a beneficiary in 2023. These members were removed from the "Death Pending" line item and added to the "Death with Beneficiary" line item to indicate that they received a new payment account ID and commenced benefits (no longer counted as a death pending placeholder).

B. Member Census Statistics as of June 30, 2023

	Male	Female	Total
1. Active			
Number[1]	13,417	38,370	51,787
Average Age	47.6	47.1	47.2
Average Years of Service	7.1	7.7	7.6
Anticipated Payroll of Actives[2]	$ 615,039,281	$ 1,422,491,302	$ 2,037,530,583
2. Inactive			
Vested			
Number[3]	1,603	6,529	8,132
Annual Deferred Annuities	$ 10,086,799	$ 27,811,825	$ 37,898,624
Non Vested			
Number[4]	6,264	17,384	23,648
Account Balance	$ 16,379,370	$ 42,360,566	$ 58,739,936
3. Former Members Entitled to a Deferred Annuity			
Number	-	-	-
Annual Deferred Annuities	$ -	$ -	$ -
Former Members Entitled to a Refund of Contributions			
Number[4]	6,000	11,151	17,151
Account Balance	$ 5,904,800	$ 14,040,851	$ 19,945,651
4. Retiree/Beneficiary/Disabled[5]			
Number	9,574	28,163	37,737
Annual Benefits Payable	$ 111,236,993	$ 280,837,456	$ 392,074,449

[1] Includes 1,019 members who retired or became disabled effective July 1, 2023 and 94 members who were refund pending.

[2] Figures shown are the anticipated pay for the one-year period following the valuation date; excludes 1,019 members who retired or became disabled effective July 1, 2023 and 94 members who were refund pending.

[3] Includes 82 members who retired effective July 1, 2023 and 68 members who were refund pending.

[4] Includes refund pending members since these members elected to receive a refund of their contributions.

[5] Excludes 1,101 members who retired or became disabled effective July 1, 2023. Of these 1,101 members, 1,019 members are included in the active number and 82 are included in the inactive number. The annual benefits payable for the 1,101 members who retired or became disabled in July 2023 are $16,466,181.

C. History of Active Member Average Pay, Age, and Service[1]

1. Valuation Date	2. Active Members	3. Covered Payroll ($ in Thousands)	4. Average Pay (3)/(2)	5. Annual Percent Change	6. Average Attained Age	7. Average Years of Service
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	46,835	1,469,772	32,006	1.1%	48.4	8.7
6/30/2016	47,851	1,519,081	32,404	2.4%	48.3	8.6
6/30/2017	47,953	1,558,183	33,133	2.2%	48.3	8.5
6/30/2018	48,549	1,636,008	34,422	3.9%	48.2	8.5
6/30/2019	49,345	1,665,654	34,464	0.1%	48.1	8.3
6/30/2020	50,179	1,732,243	35,192	2.1%	48.0	8.2
6/30/2021	49,572	1,758,535	36,308	3.2%	47.9	8.2
6/30/2022	50,179	1,864,704	38,103	4.9%	47.5	7.9
6/30/2023	51,787 [2]	2,037,531 [3]	40,209 [3]	5.5%	47.2	7.6

[1] Valuation results prior to June 30, 2009 were computed by the prior actuary.
[2] Includes 1,019 members who retired or became disabled effective July 1, 2023 and 94 members who were refund pending.
[3] Excludes pay for the 1,019 members who retired or became disabled effective July 1, 2023 and 94 members who were refund pending.

D. Distribution of Active Members by Salary[1]

Salary	Number	Percent
Under $5,000	741	1.46%
$5,000 - 9,999	1,222	2.41%
$10,000 - 14,999	2,210	4.36%
$15,000 - 19,999	3,250	6.41%
$20,000 - 24,999	4,571	9.02%
$25,000 - 29,999	6,116	12.07%
$30,000 - 34,999	5,993	11.83%
$35,000 - 39,999	5,377	10.61%
$40,000 - 44,999	4,481	8.84%
$45,000 - 49,999	4,089	8.07%
$50,000 - 54,999	3,379	6.67%
$55,000 - 59,999	2,523	4.98%
$60,000 - 64,999	1,940	3.83%
$65,000 - 69,999	1,340	2.65%
$70,000 - 74,999	922	1.82%
$75,000 & Over	2,520	4.97%
Total	50,674	100.00%

[1] Excludes pay for the 1,019 members who retired or became disabled effective July 1, 2023 and 94 members who were refund pending.

E. Distribution of Active Members by Age and Service[1]

Attained Age	Distribution of Active Members by Age and Service as of June 30, 2023							
	0 to 4 years	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	Over 30	Total
<25	2,527	11						2,538
25-29	3,277	396	4					3,677
30-34	3,140	1,059	141	6				4,346
35-39	3,248	1,219	438	160	5			5,070
40-44	3,231	1,594	589	461	143	8		6,026
45-49	2,443	1,584	807	578	361	107	5	5,885
50-54	2,287	1,529	996	931	541	221	44	6,549
55-59	2,165	1,395	1,002	1,191	837	315	95	7,000
60-64	2,033	1,289	871	995	748	362	132	6,430
≥65	1,506	1,031	502	487	362	228	150	4,266
Total	25,857	11,107	5,350	4,809	2,997	1,241	426	51,787

[1] Includes 1,019 members who retired or became disabled effective July 1, 2023 and 94 members who were refund pending.

F. Distribution of Inactive Members by Age and Service[1]

Attained Age	Distribution of Inactive Members by Age and Service as of June 30, 2023							
	0 to 4 years	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	Over 30	Total
<25	2,319	1						2,320
25-29	5,665	91						5,756
30-34	5,967	427	21					6,415
35-39	5,145	675	112	15				5,947
40-44	4,841	783	211	54	11			5,900
45-49	3,989	897	289	77	21			5,273
50-54	3,428	1,110	386	136	39	2		5,101
55-59	2,875	1,158	472	172	36			4,713
60-64	2,324	467	193	60	5	3		3,052
≥65	4,230	161	40	16	4	3		4,454
Total	40,783	5,770	1,724	530	116	8		48,931

[1] Includes 82 members who retired effective July 1, 2023 and 68 members who were refund pending.

G. Distribution of Retired Members, Beneficiaries, and Disabled Members by Age and Number of Years Retired[1]

Attained Age	Distribution of Retired Members, Beneficiaries, and Disabled Members by Age and Number of Years Retired as of June 30, 2023							
	0 to 4 years	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	Over 30	Total
<50	77	69	40	18	4	4	2	214
50-54	161	45	21	15	7	1		250
55-59	1,006	212	44	27	13	7	5	1,314
60-64	3,728	1,265	278	67	32	6	9	5,385
65-69	3,543	3,826	1,016	180	45	15	17	8,642
70-74	1,172	2,979	2,766	779	92	22	15	7,825
75- 79	344	1,039	2,293	1,854	616	62	12	6,220
80-84	130	338	752	1,297	1,391	328	25	4,261
85-89	26	98	217	317	765	731	173	2,327
≥90	4	14	48	83	122	415	613	1,299
Total	10,191	9,885	7,475	4,637	3,087	1,591	871	37,737

[1] Does not include 1,101 (1,019 active and 82 inactive) members who retired or became disabled effective July 1, 2023.

H. History of Retirees, Beneficiaries, and Disabled Members[1,2]

	Service Retirees			Disability Retirees			Beneficiaries		
Valuation Date	Added	Removed	End of Year	Added	Removed	End of Year	Added	Removed	End of Year
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
6/30/2016	1,907	746	25,061	53	38	782	199	90	1,740
6/30/2017	2,026	752	26,335	48	26	804	216	93	1,863
6/30/2018	2,028	788	27,575	36	27	813	216	107	1,972
6/30/2019	2,104	732	28,947	44	25	832	193	94	2,071
6/30/2020	2,133	914	30,166	32	33	831	270	106	2,235
6/30/2021	2,326	1,029	31,463	19	41	809	302	138	2,399
6/30/2022	2,492	1,064	32,891	10	43	776	283	151	2,531
6/30/2023	2,428	1,038	34,281	23	32	767	283	125	2,689

[1] Valuation results prior to June 30, 2009 were computed by the prior actuary.

[2] Does not include 1,101 (1,019 active and 82 inactive) members who retired or became disabled effective July 1, 2023.

I. History of Cost of Living Increases to Retired Members

Retirement In Calendar Year	Effective Date of First COLA[1]	First COLA Percentage Increase	Total Increases Through January 2023	January 2024 Increase Based on Proposal	Total Increases Through January 2024[2]	Number of Retired Members at 6/30/2023[3]
1993 & Earlier	Various	Various	80.00%	0.00%	80.00%	684
1994	Jan. 1998	2.30%	79.85%	0.09%	80.00%	185
1995	Jan. 1999	1.70%	75.81%	2.00%	79.33%	220
1996	Jan. 2000	2.00%	72.85%	2.00%	76.31%	276
1997	Jan. 2001	3.70%	69.48%	2.00%	72.87%	330
1998	Jan. 2002	3.30%	63.44%	2.00%	66.71%	351
1999	Jan. 2003	1.10%	58.22%	2.00%	61.38%	455
2000	Jan. 2004	2.10%	56.49%	2.00%	59.62%	521
2001	Jan. 2005	3.30%	53.27%	2.00%	56.34%	510
2002	Jan. 2006	2.50%	48.40%	2.00%	51.37%	569
2003	Jan. 2007	4.30%	44.76%	2.00%	47.66%	653
2004	Jan. 2008	2.70%	38.79%	2.00%	41.57%	694
2005	Jan. 2009	5.00%	35.14%	2.00%	37.84%	757
2006	Jan. 2010	0.00%	28.70%	2.00%	31.27%	805
2007	Jan. 2011	0.00%	28.70%	2.00%	31.27%	943
2008	Jan. 2012	2.00%	28.70%	2.00%	31.27%	964
2009	Jan. 2013	2.00%	26.17%	2.00%	28.69%	1,056
2010	Jan. 2014	2.00%	23.70%	2.00%	26.17%	1,410
2011	Jan. 2015	2.00%	21.29%	2.00%	23.72%	1,442
2012	Jan. 2016	2.00%	18.90%	2.00%	21.28%	1,413
2013	Jan. 2017	0.00%	16.57%	2.00%	18.90%	1,613
2014	Jan. 2018	1.63%	16.57%	2.00%	18.90%	1,700
2015	Jan. 2019	2.00%	14.70%	2.00%	16.99%	1,760
2016	Jan. 2020	0.00%	12.46%	2.00%	14.71%	1,901
2017	Jan. 2021	2.00%	12.46%	2.00%	14.71%	1,906
2018	Jan. 2022	5.00%	10.25%	2.00%	12.46%	2,094
2019	Jan. 2023	5.00%	5.00%	2.00%	7.10%	2,069
2020	Jan. 2024	2.00%		2.00%	2.00%	2,218
2021						2,393
2022						2,532
2023						624
Total						**35,048**

[1] The COLA is effective each January 1, beginning on the fourth January after retirement.

[2] Cumulative lifetime COLA increases are limited to 80%.

[3] Includes Service Retirees and Disabled Retirees (beneficiaries of deceased members are excluded) as of June 30, 2023; excludes 1,101 (1,019 active and 82 inactive) members who retired or became disabled as of July 2023, or any additional members who have retired since.

J. Distribution of Retired Members by Type and Monthly Amount[1]

Monthly	Service	Disability	Beneficiary	Total
Less than $100	1,015	8	148	1,171
$100-199	3,769	85	404	4,258
$200-299	4,041	122	403	4,566
$300-399	3,197	125	295	3,617
$400-499	2,714	89	269	3,072
$500-749	5,169	155	440	5,764
$750-999	3,846	95	272	4,213
$1,000-1,499	5,169	75	267	5,511
$1,500 & Over	5,361	13	191	5,565
Total	34,281	767	2,689	37,737

[1] Does not include 1,101 (1,019 active and 82 inactive) members who retired or became disabled effective July 1, 2023.

K. Distribution of Retired Members by Type of Benefit[1]

Type of Benefit	Number	Annual Benefit
Service Retirees		
Options 1 & 10 (Life Only)	22,691	$ 223,753,922
Options 2 & 21 (100% J&S with Pop-Up)	7,299	$ 84,049,029
Options 3 & 31 (75% J&S with Pop-Up)	1,085	$ 17,591,173
Options 4 & 41 (50% J&S with Pop-Up)	1,672	$ 27,118,574
Option 5 (10 Years Certain & Life)	1,181	$ 10,500,058
Option 6 (5 Years Certain & Life)	310	$ 3,123,470
Options 20 (100% J&S)	11	$ 60,869
Options 30 (75% J&S)	0	$ -
Options 40 (50% J&S)	2	$ 16,427
Accelerated Payment	30	$ 806,384
Total	34,281	$ 367,019,906
Disability Retirees	767	$ 5,044,777
Beneficiaries	2,689	$ 20,009,766

[1] Does not include 1,101 (1,019 active and 82 inactive) members who retired or became disabled effective July 1, 2023. The annual benefits payable for the 1,101 members who retired or became disabled in July 2023 are $16,466,181.

SECTION V - ACTUARIAL ASSUMPTIONS AND METHODS

ACTUARIAL ASSUMPTIONS AND METHODS, ASSESSMENT OF RISKS, AND LDROM

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 as determined by the Board.

There was a comprehensive experience study completed in May 2021. All economic and demographic assumptions were reviewed and certain assumptions were updated, where appropriate, based on the results of the study and effective with the June 30, 2021 valuation. In our opinion, the assumptions used as of June 30, 2021 continue to be reasonable for purposes of this valuation as of June 30, 2023.

It is noted that for the June 30, 2023 valuation, the long-term inflation assumption was again reviewed in light of the current high inflationary environment. Capital market forecasts of both short- and long-term inflation from various sources, the wide range of those forecasts, the volatility of recent observed inflation, and the efforts of the Federal Reserve Open Market Committee to reduce inflation were considered. Based on this information, the current long-term inflation assumption and COLA assumption were not adjusted. We will continue to monitor these data sources and the effectiveness of the Fed's actions in reducing inflation in determining whether the long-term inflation assumption or COLA assumption should be updated before the next experience study.

Long-term Inflation: 2.00% per annum

Payroll Growth: 2.50% per annum, consisting of 2.00% inflation, 0.25% real wage growth due to the inclusion of active health care costs in pensionable earnings, and 0.25% of real wage growth due to productivity.

Salary and Payroll Increases

Service	Inflation	Health Care Cost	Productivity	Merit, Promotion, Seniority	Total Individual Salary Growth
0	2.00%	0.25%	0.25%	7.25%	9.75%
1	2.00%	0.25%	0.25%	3.25%	5.75%
2	2.00%	0.25%	0.25%	2.75%	5.25%
3	2.00%	0.25%	0.25%	2.55%	5.05%
4	2.00%	0.25%	0.25%	2.35%	4.85%
5	2.00%	0.25%	0.25%	2.15%	4.65%
6	2.00%	0.25%	0.25%	2.00%	4.50%
7	2.00%	0.25%	0.25%	1.85%	4.35%
8	2.00%	0.25%	0.25%	1.75%	4.25%
9	2.00%	0.25%	0.25%	1.65%	4.15%
10	2.00%	0.25%	0.25%	1.55%	4.05%
11	2.00%	0.25%	0.25%	1.45%	3.95%
12	2.00%	0.25%	0.25%	1.35%	3.85%
13	2.00%	0.25%	0.25%	1.25%	3.75%
14	2.00%	0.25%	0.25%	1.20%	3.70%
15	2.00%	0.25%	0.25%	1.15%	3.65%
16	2.00%	0.25%	0.25%	1.10%	3.60%
17	2.00%	0.25%	0.25%	1.05%	3.55%
18	2.00%	0.25%	0.25%	1.00%	3.50%
19	2.00%	0.25%	0.25%	0.95%	3.45%
20	2.00%	0.25%	0.25%	0.90%	3.40%
21	2.00%	0.25%	0.25%	0.85%	3.35%
22	2.00%	0.25%	0.25%	0.80%	3.30%
23+	2.00%	0.25%	0.25%	0.75%	3.25%

A. Actuarial Assumptions (Continued)

Investment Returns

Funding	7.30% per annum (net of investment and administrative expenses)
Accounting	7.30% per annum (net of investment expenses)

Cost-of-Living Adjustments (COLA)

Given that the actual increase in the CPI-U index from June 2022 to June 2023 was 2.97%, the Board approved an actual cost-of-living adjustment ("COLA") as of January 1, 2024 of 2.00%, in accordance with the Board's funding policy and Missouri statutes, consistent with the assumed COLA of 2.00%. Future COLAs assumed in the valuation are 1.35% each January 1. This COLA assumption is based on the 20-year stochastic analysis of inflation performed in the 2021 experience study and application of the Board's funding policy to those expectations. The assumption was re-evaluated for the June 30, 2022 valuation in light of the current inflationary environment, short- and long-term inflation assumptions reflected in the capital market forecasts from various investment advisors and analysts, and volatility of capital market assumptions in recent years. Based on this information, no change was made to the COLA assumption for the June 30, 2022 valuation. At June 30, 2023, the assumption was again revisited and given the current inflationary environment, and the current policy of the Board, no changes were made to the assumption for the current year. The current policy of the Board to grant a COLA on each January 1 is as follows:

- If the June to June change in the CPI-U is less than 2% for consecutive one year periods, a cost-of-living increase of 2% will be granted when the cumulative increase is equal to or greater than 2%, at which point the cumulative increase in the CPI-U will be reset to zero. For the following year, the starting CPI-U will be based on the June value immediately preceding the January 1 at which the 2% cost-of-living increase is granted.
- If the June to June change in the CPI-U is greater than or equal to 2%, but less than 5%, a cost-of-living increase of 2% will be granted.
- If the June to June change in the CPI-U is greater than or equal to 5%, a cost-of-living increase of 5% will be granted.

The COLA is effective each January 1, beginning on the fourth January after retirement, and capped at 80% lifetime increase.

The COLA assumption applies to service retirements, disability 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). Future COLAs for current benefit recipients reflect actual cumulative adjustments granted at the time of valuation.

Mortality Rates

Actives: Experience-adjusted PubG-2010(B) (General Employees, Below-Median Income) base mortality table for employees with generational projection using the MP-2020 improvement scale. The Plan-specific experience adjustments are equivalent to the experience adjustment factors used for the retiree mortality rates and are as follows:

Male	Female
1.13	0.94

A. Actuarial Assumptions (Continued)

Mortality Rates (Continued)

Illustrative rates for 2018, the base year of the PubG-2010(B) tables, after the application of the experience adjustments per 1,000 members at various ages are shown below. Those rates are projected generationally to each subsequent year using the MP-2020 improvement scale.

Age	Male	Female
20	0.470	0.130
30	0.760	0.228
40	1.277	0.488
50	2.319	0.965
60	5.494	2.348
70	10.908	5.384

Retirees: Experience-adjusted PubG-2010(B) (General Employees, Below-Median Income) base mortality table for retirees with generational projection using the MP-2020 improvement scale. The Plan-specific experience adjustments are as follows:

Male	Female
1.13	0.94

Illustrative rates for 2018, the base year of the PubG-2010(B) tables, after the application of the experience adjustments per 1,000 members at various ages are shown below. Those rates are projected generationally to each subsequent year using the MP-2020 improvement scale.

Age	Male	Female
40	1.277	0.488
50	7.670	3.790
60	12.769	5.259
70	22.199	10.211
80	62.227	32.768
90	175.692	110.953
100	355.852	257.795
110	558.367	444.356

Beneficiaries: Experience-adjusted PubG-2010(B) (General Employees, Below-Median Income) base mortality table for contingent survivors with generational projection using the MP-2020 improvement scale. The Plan-specific experience adjustments are as follows:

Male	Female
1.01	1.07

A. Actuarial Assumptions (Continued)

Mortality Rates (Continued)

Illustrative rates for 2018, the base year of the PubG-2010(B) tables, after the application of the experience adjustments per 1,000 members at various ages are shown below. Those rates are projected generationally to each subsequent year using the MP-2020 improvement scale.

Age	Male	Female
40	1.141	0.555
50	8.663	5.516
60	13.099	10.345
70	23.551	17.440
80	55.798	43.418
90	146.001	125.260
100	318.062	293.448
110	499.071	505.809

Disabled Retirees: Experience-adjusted PubG-2010 (General Employees) base mortality table for disabled participants with generational projection using the MP-2020 improvement scale. The Plan-specific experience adjustments are equivalent to the experience adjustment factors used for the retiree mortality rates and are as follows:

Male	Female
1.13	0.94

Illustrative rates for 2018, the base year of the PubG-2010 tables, after the application of the experience adjustments per 1,000 members at various ages are shown below. Those rates are projected generationally to each subsequent year using the MP-2020 improvement scale.

Age	Male	Female
40	8.576	6.526
50	17.075	13.383
60	29.511	19.302
70	41.514	24.579
80	77.407	53.811
90	175.692	124.644
100	355.852	257.795
110	558.367	444.356

A. Actuarial Assumptions (Continued)

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:

Years of Service	Rate
0	350
1	230
2	180
3	150
4	125
5	100
10	55
15	33
20	18
25+	0

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	1.22
55	2.10

A. Actuarial Assumptions (Continued)

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

	Service										
Age	<=20	21	22	23	24	25	26	27	28	29	>=30
<50	0	0	0	0	0	50	50	50	50	50	300
50	0	0	0	0	0	50	50	50	50	50	200
51	0	0	0	0	0	50	50	50	50	300	200
52	0	0	0	0	0	50	50	50	300	200	200
53	0	0	0	0	0	50	50	300	200	200	200
54	0	0	0	0	0	50	300	200	200	200	200
55	50	50	50	50	50	300	200	200	200	200	200
56	50	50	50	50	300	200	200	200	200	200	200
57	50	50	50	300	200	200	200	200	200	200	200
58	50	50	300	200	200	200	200	200	200	200	200
59	50	200	200	200	200	200	200	200	200	200	200
60	100	100	100	100	100	100	100	100	100	100	100
61	100	100	100	100	100	100	100	100	100	100	100
62	200	200	200	200	200	200	200	200	200	200	200
63	200	200	200	200	200	200	200	200	200	200	200
64	200	200	200	200	200	200	200	200	200	200	200
65	300	300	300	300	300	300	300	300	300	300	300
66	300	300	300	300	300	300	300	300	300	300	300
67	250	250	250	250	250	250	250	250	250	250	250
68	250	250	250	250	250	250	250	250	250	250	250
69	250	250	250	250	250	250	250	250	250	250	250
70	250	250	250	250	250	250	250	250	250	250	250
71	250	250	250	250	250	250	250	250	250	250	250
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	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

A. Actuarial Assumptions (Continued)

Refund of Contributions	For active members assumed to terminate employment with less than five years of service, regardless of age, 100% are assumed to take an immediate refund of their contributions. For active members assumed to terminate employment with five or more years of service, but prior to satisfying the age and service requirements for service retirement, 100% are assumed to select the option that has the greater present value between an immediate refund and a deferred annuity commencing at age 60. For active members assumed to terminate employment with five or more years of service and satisfy the age and service requirements for service retirement upon termination, 100% are assumed to elect an immediate lifetime annuity benefit. For inactive members with less than five years of service, regardless of age, 100% are assumed to take an immediate refund of their contributions. For inactive members with five or more years of service, 100% are assumed to select the option that has the greater present value between an immediate refund and a deferred annuity commencing at age 60.
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 7.30% 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 (Pre-Retirement)	70% of male and female members are assumed to be married. Beneficiaries are assumed to be of the opposite sex from the member. Male spouses are assumed to be 2 years older than female spouses.
Beneficiary Age (Post-Retirement)	Members are assumed to be 3 years older than their joint annuitant.
Return of Unused Member Account Balance	The cash refund is explicitly valued.
Form of Payment	For active members assumed to terminate employment with five or more years of service, 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 that are used in the valuation.

A. Actuarial Assumptions (Continued)

Data Assumptions	Active and inactive 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	None.

B. Assumptions Rationale

Investment Return

The investment return assumption is based on analysis completed by the PEERS investment advisor and an independent, high-level analysis completed by PwC US as part of the 2021 experience study using a "building block" approach that considered the target asset allocation from the Board's investment policy and capital market forecasts from various investment professionals.

Cost-of-Living Adjustments

Given that the actual increase in the CPI-U index from June 2022 to June 2023 was 2.97%, the Board approved an actual cost-of-living adjustment ("COLA") as of January 1, 2024 of 2.00%, in accordance with the Board's funding policy and Missouri statutes, consistent with the assumed COLA of 2.00%. Future COLAs assumed in the valuation are 1.35% each January 1. This COLA assumption is based on the 20-year stochastic analysis of inflation performed in the 2021 experience study and application of the Board's funding policy to those expectations. The assumption was re-evaluated for the June 30, 2022 valuation in light of the current inflationary environment, short- and long-term inflation assumptions reflected in the capital market forecasts from various investment advisors and analysts, and volatility of capital market assumptions in recent years. Based on this information, no change was made to the COLA assumption for the June 30, 2022 valuation. At June 30, 2023, the assumption was again revisited and given the current inflationary environment, and the current policy of the Board, no changes were made to the assumption for the current year. The current policy of the Board to grant a COLA on each January 1 is as follows:

- If the June to June change in the CPI-U is less than 2% for consecutive one year periods, a cost-of-living increase of 2% will be granted when the cumulative increase is equal to or greater than 2%, at which point the cumulative increase in the CPI-U will be reset to zero. For the following year, the starting CPI-U will be based on the June value immediately preceding the January 1 at which the 2% cost-of-living increase is granted.
- If the June to June change in the CPI-U is greater than or equal to 2%, but less than 5%, a cost-of-living increase of 2% will be granted.
- If the June to June change in the CPI-U is greater than or equal to 5%, a cost-of-living increase of 5% will be granted.

The COLA is effective each January 1, beginning on the fourth January after retirement, and capped at 80% lifetime increase.

Other Assumptions

The Board of Trustees adopts actuarial assumptions, each of which individually represents a reasonable long-term estimate of anticipated experience under the System, derived from experience studies conducted every fifth year. The most recent comprehensive experience study was completed in May 2021. All economic and demographic assumptions listed previously in the report were reviewed and certain assumptions were updated as of June 30, 2021, where appropriate, based on the historical experience observed during the 2021 experience study and expectations for the future. In our opinion, the assumptions used are reasonable for purposes of this valuation as of June 30, 2023.

C. Actuarial Methods

The actuarial methods used in the valuation for funding purposes and noted below were selected and approved by the PEERS 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 and decreases in the Actuarial Accrued Liability caused by changes in the benefit provisions are amortized over 30 years. 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 inactives). 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, 2022 was projected by increasing the amount with 7.30% interest, adding contributions made during the year with 7.30% interest for half the year, and subtracting benefit payments made during the year with 7.30% interest for half the year to arrive at a preliminary June 30, 2023 Actuarial Value of Assets. 20% of the difference between the actual returns on market value for the year and the expected 7.30% 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 preliminary value to arrive at the final June 30, 2023 Actuarial Value of Assets. For accounting purposes, market value was used as required under GASB 67 and 68.
Changes Since the Prior Valuation	There have been no changes in the actuarial methods since the June 30, 2022 valuation.

D. Assessment of Risk Associated with Measurement of Pension Liability and Contributions

The actuarial valuation results presented herein are based on a single set of actuarial assumptions; however, there is a risk that emerging results may differ significantly if actual experience proves to be different than expected by the current assumptions.

In accordance with Actuarial Standard of Practice No. 51 we have assessed the risks related to the measurement of the Plan's obligations and determination of contributions, and have identified the following as being the most significant risks:

- Investment risk
- Interest rate risk
- Inflation/COLA risk
- Asset/Liability mismatch risk
- Longevity and other demographic risks
- Contribution risk

Investment risk: *The potential that investment returns will be different than expected.*

Poor investment performance decreases the Plan's funded position and could increase the funding deficiency and future contribution amounts.

Interest rate risk: *The potential that interest rates will be different than expected.*

The risk that future interest rates negatively affect investment returns. This risk is linked to investment risk as both accounting and funding results use a discount rate that is equal to the expected investment return.

Inflation/COLA risk: *The potential that inflation will be different than expected resulting in cost of living adjustments, wages, and investment returns different than expected.*

All economic assumptions used in the actuarial valuation including payroll growth, individual salary growth, and investment return assumptions are directly impacted by inflation. Based on the current Board policy, the COLA assumption is also directly impacted by the annual June-to-June inflation change as indicated by the CPI-U index. To the extent future inflation is higher than expected, this could result in higher than expected COLAs being provided which could decrease the funded status and increase the unfunded actuarial accrued liability.

Asset/Liability mismatch risk: *The potential that changes in asset values are not matched by changes in the value of liabilities.*

Asset/Liability mismatch exists to the extent that market fluctuations do not have the same impact on assets and liabilities. This impacts the funded status of the Plan and the unfunded actuarial accrued liability that needs to be funded in the future.

Longevity and other demographic risks: *The potential that mortality or other demographic experience will be different than expected.*

For participants whose benefits are paid as lifetime annuities, living longer than expected could increase the UAAL of the Plan. Similarly, turnover, retirement, and other demographic experience different than assumed could result in an increase in UAAL of the Plan.

D. Assessment of Risk Associated with Measurement of Pension Liability and Contributions (Continued)

As the population ages and the Plan matures, the level of risk associated with funding the Plan increases. Below are some Plan maturity measures that are significant to understanding the risks associated with the Plan.

Ratio of Market Value of Assets to Active Participant Payroll: The amount of plan assets relative to covered payroll is an indicator of contribution risk for the plan since the plan is funded by contributions that are a function of covered payroll of the active members. A higher ratio means that the PEERS contribution rate would be more sensitive to investment returns that are higher or lower than expected.

Valuation Date	Market Value of Assets (a)	Covered Payroll (b)	Ratio (c) = (a)/(b)
6/30/2019	$ 5,018,523,615	$ 1,665,654,047	3.01
6/30/2020	$ 5,118,843,873	$ 1,732,243,294	2.96
6/30/2021	$ 6,453,161,951	$ 1,758,535,339	3.67
6/30/2022	$ 6,153,590,531	$ 1,864,704,185	3.30
6/30/2023	$ 6,402,733,160	$ 2,037,530,583	3.14

Ratio of Retired Life Actuarial Accrued Liability to Total Actuarial Accrued Liability: As the Plan matures, the percentage of the liability attributable to retirees will grow. When more of the total liability is associated with retirees, volatility of investment returns can have an impact on the funding of PEERS as it becomes more costly to recoup investment losses through contributions from active members and their employers. A higher retiree AAL percentage means that the PEERS contribution rate would be more sensitive to investment returns that are higher or lower than expected.

Valuation Date	Retiree AAL (a)	Total AAL (b)	Retiree AAL Percentage (c) = (a)/(b)
6/30/2019	$ 2,861,160,127	$ 5,809,484,699	49.25%
6/30/2020	$ 3,071,099,312	$ 6,089,401,204	50.43%
6/30/2021	$ 3,430,561,254	$ 6,560,854,343	52.29%
6/30/2022	$ 3,755,740,516	$ 6,998,708,341	53.66%
6/30/2023	$ 4,005,832,917	$ 7,401,637,172	54.12%

Ratio of Net Cash Flow (Contributions Less Benefit Payments) to Market Value of Assets: When a plan has negative cash flows, meaning benefit payments are greater than contributions, and has a year with lower than expected investment returns, there will then be less total assets that can be reinvested to earn higher returns in future years.

Year Ending / Valuation Date	Contributions (a)	Benefit Payments (b)	Net Cash Flow (c) = (a) - (b)	Market Value of Assets (d)	Ratio (e) = (c)/(d)
6/30/2019	$ 246,651,151	$ 310,242,399	$ (63,591,248)	$ 5,018,523,615	-1.27%
6/30/2020	$ 255,880,705	$ 330,337,694	$ (74,456,989)	$ 5,118,843,873	-1.45%
6/30/2021	$ 261,201,579	$ 350,520,890	$ (89,319,311)	$ 6,453,161,951	-1.38%
6/30/2022	$ 279,395,385	$ 381,960,501	$ (102,565,116)	$ 6,153,590,531	-1.67%
6/30/2023	$ 303,865,652	$ 419,271,522	$ (115,405,870)	$ 6,402,733,160	-1.80%

D. Assessment of Risk Associated with Measurement of Pension Liability and Contributions (Continued)

Contribution risk: *The potential of actual future contributions deviating from expected future contributions.*

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 the applicable statutes of the State of Missouri, as well as sound financial principles, such as maintaining contribution rate stability and intergenerational equity. The risks noted above could trigger changes in the UAAL of the Plan, thus requiring additional funding. In addition, the financial viability and cash position, as well as applicable law of the State of Missouri, could change over time. Finally, the funding method currently assumes a stable payroll growth into the future. To the extent future covered payroll declines, this would lead to a higher contribution rate. For the reasons noted, there is risk that the Actuarially Determined Contribution could increase and/or that some/all employers and members may not fully contribute at the rates established by the Board.

A numerical assessment of investment and inflation risk is presented below. A numerical assessment of the other risks identified was beyond the scope of this engagement, though we encourage such an assessment be performed to better understand exposure to these risks.

	Impact of 0.5% Increase in COLA Assumption	Impact of One-time 1.0% COLA Greater than Assumed	Impact of 0.5% Decrease in Investment Return Assumption	Impact of One-time 1.0% Investment Return Less Than Assumed
UAAL ($)	$264M	$29M	$431M	$65M
Funded %	(3.00%)	(0.34%)	(4.80%)	(0.76%)
ADC Rate	1.09%	0.08%	2.39%	0.19%

E. Low-Default-Risk Obligation Measure (LDROM)

Actuarial Standard of Practice No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions* ("ASOP 4") requires actuaries to annually compute and disclose a liability measure that utilizes a discount rate that assumes the pension plan assets are invested solely in high quality (i.e., low default risk) bonds. The Plan assets are actually invested in a diversified portfolio of investments that includes stocks, bonds, real estate, and private equity with the objective of maximizing investment returns at a reasonable level of risk. As mentioned above, the potential for investment returns to be different than expected is a key risk for the Plan.

The “Low-Default-Risk Obligation Measure” (“LDROM”) represents what the Actuarial Accrued Liability would be if the plan invested its assets solely in a portfolio of high-quality bonds whose cash flows approximately match future benefit payments. The LDROM therefore helps to illustrate the cost of mitigating the investment risk by investing in an all-bond portfolio and significantly lowering expected long-term investment returns. Consequently, the difference between the plan’s Actuarial Accrued Liability and the LDROM can be thought of as representing the expected employer and member savings from investing in the plan’s diversified portfolio compared to investing only in high quality bonds.

To calculate the LDROM, the 20-year U.S. Treasury Yield as of June 30, 2023 of 4.06% was selected as the discount rate. All other actuarial assumptions are the same as those used in computing the Actuarial Accrued Liability for funding purposes and summarized in Section V. The table below presents the Actuarial Accrued Liability and LDROM.

	Investment Return	AAL
Plan	7.30%	$ 7,401,637,172
LDROM	4.06%	$ 11,069,030,727

The assets are not invested in an all-bond portfolio, so the LDROM is not indicative of the funding status or progress, nor does it provide information on necessary plan contributions or the security of participant benefits.

SUMMARY OF BENEFIT PROVISIONS

SECTION VI - SUMMARY OF PLAN PROVISIONS

A. Summary of Benefit Provisions

Below is a summary of the plan provisions that are pertinent to the valuation herein and may exclude certain provisions that are not deemed relevant to our calculations. This summary is based on our understanding of the plan provisions set forth in the applicable statutes of the State of Missouri. If there is a discrepancy between the summary below and the applicable statutes, the applicable statutes shall govern.

Member Contributions	Half the total PEERS contribution rate. For fiscal year 2023, the total PEERS contribution rate was 13.72%.
Normal (Unreduced) Retirement	
Eligibility	Attainment of age 60 with at least five years of creditable service, or at any age after completion of 30 years of creditable service, or at any age when 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).

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:

Years of Service	Benefit Percentage
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 — Applicable statutes provide the Board with limited discretion in granting COLAs. The Board has established a policy of granting a COLA on each January 1 as follows, which is compliant with current statutes:

- If the June to June change in the CPI-U is less than 2% for consecutive one year periods, a cost-of-living increase of 2% will be granted when the cumulative increase is equal to or greater than 2%, at which point the cumulative increase in the CPI-U will be reset to zero. For the following year, the starting CPI-U will be based on the June value immediately preceding the January 1 at which the 2% cost-of-living increase is granted.
- If the June to June change in the CPI-U is greater than or equal to 2%, but less than 5%, a cost-of-living increase of 2% will be granted.
- If the June to June change in the CPI-U is greater than or equal to 5%, a cost-of-living increase of 5% will be granted.

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.

A. Summary of Benefit Provisions (Continued)

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.
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	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&S equivalent of the benefit accrued to date of death. The benefit may commence: 1. Immediately if member is eligible to retire at date of death, or 2. At a future retirement date of the deceased member. 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. COLA adjustments similar to those provided to retirees are provided on these benefits.

A. Summary of Benefit Provisions (Continued)

Changes in Benefit Provisions

Senate Bill 75 (HCS/SS/SB 75) was passed since the prior valuation which contained the following provisions effective August 28, 2023:

- Increase the salary limit for PSRS retirees working in non-certificated positions to 133% of the annual Social Security earnings limit from August 28, 2023 to June 30, 2028, and then to 100% of the annual Social Security earnings limit thereafter which would increase the employer contributions to PEERS
- Modify the Critical Shortage Employment provision to expand the allowed lifetime limit on time worked from two years to four years
- Allow certain retirees who nominated a same-sex domestic partner as beneficiary for lifetime monthly benefits under a Joint-and-Survivor benefit option to have their monthly retirement benefit “pop-up” to the amount they would have received if they had not elected to receive reduced monthly benefits

There was no impact on the valuation related to this legislation. All other benefit provisions are consistent with the June 30, 2022 valuation.