



Accurate and timely employer data reporting is key for PSRS/PEERS' operations, and for our members' future financial security. The staff at our partner employers who report data to us provide the essential information we need to ensure member records are correct. We understand that employer reporting is just one of their many responsibilities, and that it can be complex.

Our Employer Services department is comprised of 13 individuals, dedicated to providing information, education and support to our employers. Whether through telephone support, webinars, in-person training or annual conferences, we work hard to help make employer reporting easier, faster and better.

# Actuarial Section

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# Certification of Actuarial Results



November 9, 2021

Board of Trustees  
Public School Retirement System of Missouri  
Public Education Employee Retirement System of Missouri  
3210 West Truman Boulevard  
Jefferson City, MO 65109

**Re: Certification of Actuarial Results as of June 30, 2021**

Dear Members of the Board:

At your request, we have performed actuarial valuations of the Public School Retirement System ("PSRS") and the Public Education Employee Retirement System ("PEERS") of Missouri as of June 30, 2021. An actuarial valuation of each System is performed annually for purposes of preparing the required accounting information under Governmental Accounting Standards and for purposes of determining the Actuarially Determined Contribution under the Board's funding policy. Our reports have been prepared pursuant to an engagement letter between PSRS and PEERS of Missouri and PwC, and are intended solely for the use and benefits of PSRS and PEERS of Missouri and not for reliance by any other person.

The actuarial valuations are based upon:

- a. *Benefit Provisions* - Our understanding of the benefit provisions in effect on the valuation date under Missouri Revised Statutes Chapter 169.
- b. *Data Relative to the Members of the Systems* - Data for all members of each System as of June 30, 2021 was provided by PSRS and PEERS of Missouri staff ("staff"). PwC relied on the data provided. PwC reviewed the data for reasonableness relative to the prior year's data, but the data was not audited.
- c. *Assets of the Fund* - The values of the trust fund assets as of June 30, 2021 for each System were also provided by the staff. An actuarial value of assets, with investment gains and losses relative to the assumed return recognized over five years, is used in the development of the contribution rates.
- d. *Actuarial Cost Method* - The actuarial cost method utilized by each System for accounting purposes is the Entry Age Normal, Level Percent method, as required by GASB Statement No. 67. Each System has elected to use the same cost method in the determination of the contribution rates for pre-funding the benefits. The objective of this method is to allocate the cost of benefits as a level percentage of pay over the entire career of each member. On a funding basis, any Unfunded Actuarial Accrued Liability ("UAAL") is separately financed as a level percentage of payroll over a fixed 30-year period, where a new 30-year amortization base is established for the gain or loss that occurred during the year prior to the valuation date.
- e. *Actuarial Assumptions* - The actuarial assumptions used for the June 30, 2021 valuations were based on an experience study that was completed for each System in May 2021. Based on those studies, the Board adopted all assumptions required for the valuations.

For accounting purposes, the actuarial assumptions and methods used in this valuation were selected and approved by the Board and are in accordance with our understanding of GASB Statement No. 67.

For funding purposes, the actuarial assumptions and methods were selected and approved by the Board and are consistent with the funding policy adopted by the Board and summarized below. In general, the methods provide orderly funding of all benefits being accrued, as well as funding of the Unfunded Actuarial Accrued Liability over a period of 30 years. The five-year smoothing method elected by the Board in determining the Actuarial Value of Assets may accelerate or lengthen the effective funding period, depending on whether gains or losses are experienced. In our opinion, the actuarial assumptions and methods are reasonable for purposes of the actuarial valuations and meet the parameters set by the Actuarial Standards of Practice.

In order to establish long-term, consistent methods for pre-funding the benefits of each System, the Board of Trustees has adopted a funding policy. The objective 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.

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.

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## Certification of Actuarial Results, continued

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 earnings 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 the periodic 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 14.5% of pay for PSRS and 6.86% of pay for PEERS, the contribution rates first paid during 2011-2012.

The actuarially determined contribution rates developed from the June 30, 2021 valuations reflect these principles.

We provide the following information used by PSRS and PEERS of Missouri staff to prepare the required schedules and other data in the Actuarial Section:

- Schedules of Funding Progress
- Required Contribution Rates and Amortizations of Unfunded Liability
- Reconciliation of Unfunded Actuarial Accrued Liability
- Solvency Tests
- Schedules of Active Member Valuation Data
- Schedules of Retirees and Beneficiaries Added to and Removed from Retirement

We also provide the information used by PSRS and PEERS of Missouri staff to prepare the following schedules and other data in the Financial Section:

- Sensitivity of the Net Pension Liabilities to Changes in the Discount Rate
- Schedules of Changes in the Employers' Net Pension Liability
- Schedules of Employers' Net Pension Liability
- Schedules of Employer Contributions

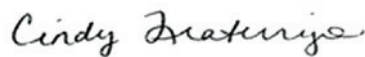
In preparing the results presented herein, we have used and evaluated actuarial models in accordance with Actuarial Standards of Practice ("ASOP") No. 56. PwC uses the ProVal valuation system developed by Winklevoss Technologies, LLC in performing valuations of pension and postretirement benefit plans. 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. PwC is 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.

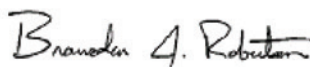
To the best of our knowledge, our actuarial reports are complete and accurate and have been prepared in accordance with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. Our calculations also reflect our understanding 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 PSRS and PEERS of Missouri that may impair our objectivity.

We certify that the information presented herein is accurate and fairly portrays the actuarial position of the Plans administered by PSRS and PEERS of Missouri as of June 30, 2021 based on the underlying census data, asset information and selected assumptions and methods.

Sincerely,



Cindy Fraterrigo, FSA, EA, MAAA  
Principal



Brandon Robertson, ASA, EA, MAAA  
Director

Schedule of Funding Progress						
Public School Retirement System of Missouri (Dollar amounts in thousands)						
Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL)-Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
6/30/12	\$ 29,013,002	\$ 35,588,030 <sup>1</sup>	\$ 6,575,028	81.5%	\$ 4,379,060	150.1%
6/30/13	29,443,147	36,758,165 <sup>2</sup>	7,315,018	80.1%	4,460,872	164.0%
6/30/14	31,846,599	38,483,184 <sup>1</sup>	6,636,585	82.8%	4,425,568	150.0%
6/30/15	34,073,415	40,610,540 <sup>1</sup>	6,537,125	83.9%	4,508,242	145.0%
6/30/16	35,419,278	41,744,619 <sup>3</sup>	6,325,341	84.8%	4,556,137	138.8%
6/30/17	37,373,740	44,501,771 <sup>3</sup>	7,128,031	84.0%	4,655,169	153.1%
6/30/18	39,211,452	46,702,002 <sup>3</sup>	7,490,550	84.0%	4,759,665	157.4%
6/30/19	40,498,479	47,973,829 <sup>1</sup>	7,475,350	84.4%	4,844,249	154.3%
6/30/20	41,705,059	49,641,020 <sup>1</sup>	7,935,961	84.0%	4,919,286	161.3%
6/30/21	45,033,548	52,834,297 <sup>3</sup>	7,800,749	85.2%	5,039,838	154.8%

<sup>1</sup> There were no significant legislative changes in fiscal years 2012, 2014, 2015, 2019 and 2020 impacting the valuation.

<sup>2</sup> The extension of the 25-and-out and 2.55% provisions to 2014 are included in the AAL for 2013.

<sup>3</sup> There were no significant legislative changes in fiscal years 2016, 2017, 2018 and 2021, however actuarial assumptions were revised.

Schedule of Funding Progress						
Public Education Employee Retirement System of Missouri (Dollar amounts in thousands)						
Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL)-Entry Age (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
6/30/12	\$ 3,090,880	\$ 3,746,347 <sup>1</sup>	\$ 655,467	82.5%	\$ 1,437,310	45.6%
6/30/13	3,237,200	3,967,619 <sup>2</sup>	730,419	81.6%	1,470,830	49.7%
6/30/14	3,584,719	4,211,489 <sup>1</sup>	626,770	85.1%	1,442,701	43.4%
6/30/15	3,915,199	4,512,317 <sup>1</sup>	597,118	86.8%	1,469,772	40.6%
6/30/16	4,157,427	4,809,666 <sup>3</sup>	652,239	86.4%	1,519,081	42.9%
6/30/17	4,470,270	5,209,369 <sup>3</sup>	739,099	85.8%	1,558,183	47.4%
6/30/18	4,774,781	5,542,478 <sup>3</sup>	767,697	86.1%	1,636,008	46.9%
6/30/19	5,019,868	5,809,485 <sup>1</sup>	789,617	86.4%	1,665,654	47.4%
6/30/20	5,257,847	6,089,401 <sup>1</sup>	831,554	86.3%	1,732,243	48.0%
6/30/21	5,756,526	6,560,854 <sup>3</sup>	804,328	87.7%	1,758,535	45.7%

<sup>1</sup> There were no significant legislative changes in fiscal years 2012, 2014, 2015, 2019 and 2020, impacting the valuation.

<sup>2</sup> The extension of the 25-and-out provision is included in the AAL for 2013.

<sup>3</sup> There were no significant legislative changes in fiscal years 2016, 2017, 2018 and 2021, however actuarial assumptions were revised.

**Required Contribution Rate & Amortization of Unfunded Liability**

**Public School Retirement System of Missouri**

*For the fiscal year ended June 30, 2021*

	<u>Percentage of Payroll</u>
(1) Normal cost rate	17.06%
(2) Rate needed to fund UAAL	<u>11.56%</u>
(3) Benchmark contribution rate - normal cost plus a rate to fund the UAAL over 20.6 years	28.62%
(4) Additional amount towards funding UAAL	<u>0.38%</u>
(5) Recommended rate for FY 2023	<u><u>29.00%</u></u>

**Required Contribution Rate & Amortization of Unfunded Liability**

**Public Education Employee Retirement System of Missouri**

*For the fiscal year ended June 30, 2021*

	<u>Percentage of Payroll</u>
(1) Normal cost rate	10.30%
(2) Rate needed to fund UAAL	<u>3.34%</u>
(3) Benchmark contribution rate - normal cost plus a rate to fund the UAAL over 20.8 years	13.64%
(4) Additional amount towards funding UAAL	<u>0.08%</u>
(5) Recommended rate for FY 2023	<u><u>13.72%</u></u>

<b>Reconciliation of Unfunded Actuarial Accrued Liability</b>	
<b>Public School Retirement System of Missouri</b>	
<i>As of June 30, 2021</i>	
(1) Unfunded actuarial liability as of July 1, 2020	\$ 7,935,961,741
(2) Changes in Unfunded Actuarial Accrued Liability	
a. Impact of Plan Changes	-
b. Actuarial (Gains)/Losses	
i. From investment	(1,639,501,501)
ii. From actuarial liabilities due to assumption changes	590,572,160
iii. From actuarial liabilities due to actual vs. expected COLA	820,401,906
iv. From actuarial liabilities due to actual vs. expected salary changes	72,323,700
v. From actuarial liabilities due to other demographic experience	<u>28,333,079</u>
vi. Total Unfunded Actuarial Accrued Liability (Gain)/Loss	<u>(127,870,656)</u>
c. Total New Amortization Bases: (2)(a) + (2)(b)(vi)	(127,870,656)
d. Net Change in Existing Bases Due to Prior Year Contributions, Net of Interest	<u>(7,342,241)</u>
e. Total changes in Unfunded Actuarial Accrued Liability	(135,212,897)
(3) Unfunded Actuarial Accrued Liability as of June 30, 2021	<u>\$ 7,800,748,844</u>

<b>Reconciliation of Unfunded Actuarial Accrued Liability</b>	
<b>Public Education Employee Retirement System of Missouri</b>	
<i>As of June 30, 2021</i>	
(1) Unfunded actuarial liability as of July 1, 2020	\$ 831,554,515
(2) Changes in Unfunded Actuarial Accrued Liability	
a. Impact of Plan Changes	-
b. Actuarial (Gains)/Losses	
i. From investment	(204,350,938)
ii. From actuarial liabilities due to assumption changes	84,245,144
iii. From actuarial liabilities due to actual vs. expected COLA	72,576,578
iv. From actuarial liabilities due to actual vs. expected salary changes	(580,636)
v. From actuarial liabilities due to other demographic experience	<u>18,626,178</u>
vi. Total Unfunded Actuarial Accrued Liability (Gain)/Loss	<u>(29,483,674)</u>
c. Total New Amortization Bases: (2)(a) + (2)(b)(vi)	(29,483,674)
d. Net Change in Existing Bases Due to Prior Year Contributions, Net of Interest	<u>2,257,033</u>
e. Total changes in Unfunded Actuarial Accrued Liability	(27,226,641)
(3) Unfunded Actuarial Accrued Liability as of June 30, 2021	<u>\$ 804,327,874</u>

**Schedule of Active Member Valuation Data**

Public School Retirement System of Missouri

Actuarial Valuation Date	Number of Employers	Number of Members	Covered Annual Payroll (000's)	Average Annual Salary	% Increase in Average Salary	Average Attained Age	Average Years of Service
6/30/12	537	77,529	\$ 4,379,060	\$ 56,483	1.2%	42.2	11.4
6/30/13	535	78,076	4,460,872	57,135	1.2%	42.1	11.4
6/30/14	535	75,168	4,425,568	58,876	3.0%	42.2	11.8
6/30/15	535	78,138	4,508,242	58,582	-0.5%	42.0	11.5
6/30/16	534	78,129	4,556,137	59,005	0.7%	42.0	11.6
6/30/17	534	78,274	4,655,169	60,643	2.8%	42.0	11.7
6/30/18	533	78,700	4,759,665	61,634	1.6%	42.1	11.8
6/30/19	533	78,863	4,844,249	62,764	1.8%	42.2	12.0
6/30/20	533	78,848	4,919,286	63,688	1.5%	42.3	12.2
6/30/21	533	78,944	5,039,838	65,639	3.1%	42.3	12.3

**Schedule of Active Member Valuation Data**

Public Education Employee Retirement System of Missouri

Actuarial Valuation Date	Number of Employers	Number of Members	Covered Annual Payroll (000's)	Average Annual Salary	% Increase in Average Salary	Average Attained Age	Average Years of Service
6/30/12	534	48,605	\$ 1,437,310	\$ 29,571	2.0%	48.1	8.4
6/30/13	532	48,709	1,470,830	30,196	2.1%	48.1	8.5
6/30/14	532	45,589	1,442,701	31,646	4.8%	48.6	8.9
6/30/15	532	46,864	1,469,772	32,220	1.8%	48.4	8.6
6/30/16	530	47,851	1,519,081	32,887	2.1%	48.3	8.6
6/30/17	530	47,953	1,558,183	33,643	2.3%	48.3	8.5
6/30/18	530	48,549	1,636,008	34,361	2.1%	48.2	8.4
6/30/19	530	49,345	1,665,654	35,111	2.2%	48.1	8.3
6/30/20	530	50,179	1,732,243	35,800	2.0%	48.0	8.2
6/30/21	530	49,572	1,758,535	37,257	4.1%	47.9	8.2



Solvency Test							
Public School Retirement System of Missouri (Dollar amounts in thousands)							
Actuarial Accrued Liability for:							
Actuarial Valuation Date	Member Contributions	Current Retirees & Beneficiaries	Active & Inactive Members Employer Financed Portion	Actuarial Value of Assets	Percentage of Actuarial Liabilities Covered by Actuarial Value of Assets for:		
					(1)	(2)	(3)
6/30/12	\$ 6,687,358	\$ 21,191,032	\$ 7,709,641	\$ 29,013,002	100.0%	100.0%	14.7%
6/30/13	6,856,920	22,328,795	7,572,451	29,443,147	100.0%	100.0%	3.4%
6/30/14	6,985,665	23,579,998	7,917,522	31,846,599	100.0%	100.0%	16.2%
6/30/15	6,787,038	24,674,171	9,149,331	34,073,415	100.0%	100.0%	28.6%
6/30/16	6,994,370	25,895,012	8,855,237	35,419,278	100.0%	100.0%	28.6%
6/30/17	7,267,682	27,544,082	9,690,007	37,373,740	100.0%	100.0%	26.4%
6/30/18	7,593,869	28,811,151	10,296,982	39,211,452	100.0%	100.0%	27.3%
6/30/19	7,928,036	29,429,993	10,615,800	40,498,479	100.0%	100.0%	29.6%
6/30/20	8,268,226	30,515,563	10,857,231	41,705,059	100.0%	100.0%	26.9%
6/30/21	8,502,510	32,740,719	11,591,068	45,033,548	100.0%	100.0%	32.7%

Solvency Test							
Public Education Employee Retirement System of Missouri (Dollar amounts in thousands)							
Actuarial Accrued Liability for:							
Actuarial Valuation Date	Member Contributions	Current Retirees & Beneficiaries	Active & Inactive Members Employer Financed Portion	Actuarial Value of Assets	Percentage of Actuarial Liabilities Covered by Actuarial Value of Assets for:		
					(1)	(2)	(3)
6/30/12	\$ 822,485	\$ 1,541,541	\$ 1,382,321	\$ 3,090,880	100.0%	100.0%	52.6%
6/30/13	862,035	1,653,613	1,451,971	3,237,200	100.0%	100.0%	49.7%
6/30/14	894,650	1,861,575	1,455,264	3,584,719	100.0%	100.0%	56.9%
6/30/15	892,547	2,040,647	1,579,123	3,915,199	100.0%	100.0%	62.2%
6/30/16	926,274	2,205,328	1,678,064	4,157,427	100.0%	100.0%	61.1%
6/30/17	962,156	2,453,877	1,793,336	4,470,270	100.0%	100.0%	58.8%
6/30/18	1,004,383	2,678,124	1,859,971	4,774,781	100.0%	100.0%	58.7%
6/30/19	1,050,907	2,861,160	1,897,418	5,019,868	100.0%	100.0%	58.4%
6/30/20	1,097,457	3,071,099	1,920,845	5,257,847	100.0%	100.0%	56.7%
6/30/21	1,122,129	3,430,561	2,008,164	5,756,526	100.0%	100.0%	59.9%

**PSRS Schedule of Retirees and Beneficiaries Added to and Removed from Retirement Rolls**

	Added to Rolls		Removed from Rolls		Rolls End of Year		Average Annual Allowances	% Increase		
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		in Annual Allowance	in Average Annual Allowance	
<b>2020-2021</b>										
Service Retirees	2,587	\$ 102,668,779	1,320	\$ 51,809,696	60,122	\$ 2,628,405,650	\$ 43,718	3.94 %	1.75 %	
Disability Retirees	44	1,224,478	31	539,059	1,043	30,129,625	28,887	3.03	1.94	
Beneficiaries	430	16,073,547	273	8,114,216	4,915	162,677,085	33,098	7.86	3.32	
<i>Note: Other adjustments to 2 disability retirees and 50 beneficiaries occurred during the current year.</i>										
<b>2019-2020</b>										
Service Retirees	2,472	\$ 101,028,068	1,120	\$ 41,405,854	58,855	\$ 2,528,800,920	\$ 42,967	2.39 %	0.04 %	
Disability Retirees	56	1,554,789	43	795,175	1,032	29,243,125	28,336	1.46	0.28	
Beneficiaries	370	12,637,095	238	7,157,255	4,708	150,820,748	32,035	4.24	0.74	
<i>Note: Other adjustments to 1 service retiree, 1 disability retiree, and 26 beneficiaries occurred during the 2019-2020 fiscal year.</i>										
<b>2018-2019</b>										
Service Retirees	2,502	\$ 98,082,129	935	\$ 36,759,920	57,502	\$ 2,469,681,559	\$ 42,949	4.55 %	1.69 %	
Disability Retirees	44	1,297,197	22	559,767	1,020	28,822,119	28,257	5.17	2.18	
Beneficiaries	359	13,443,600	183	5,334,802	4,550	144,685,986	31,799	7.46	3.30	
<i>Note: Other adjustments to 5 service retirees and 7 disability retirees occurred during the 2018-2019 fiscal year.</i>										
<b>2017-2018</b>										
Service Retirees	2,406	\$ 90,851,701	1,105	\$ 41,389,599	55,930	\$ 2,362,271,747	\$ 42,236	3.78 %	1.36 %	
Disability Retirees	50	1,448,148	38	952,179	991	27,406,384	27,655	3.09	2.05	
Beneficiaries	405	13,902,271	202	5,519,407	4,374	134,644,480	30,783	7.72	2.50	
<i>Note: Other adjustments to 2 disability retirees and 9 beneficiaries occurred during the 2017-2018 fiscal year.</i>										
<b>2016-2017</b>										
Service Retirees	2,601	\$ 97,816,017	1,042	\$ 36,450,990	54,629	\$ 2,276,325,975	\$ 41,669	2.73 %	-0.21 %	
Disability Retirees	56	1,525,607	30	585,716	981	26,584,277	27,099	2.83	0.31	
Beneficiaries	345	12,304,287	203	5,520,642	4,162	124,990,237	30,031	6.00	1.72	
<i>Note: Other adjustments to 1 service retiree, 2 disability retirees and 26 beneficiaries occurred during the 2016-2017 fiscal year.</i>										
<b>2015-2016</b>										
Service Retirees	2,603	\$ 94,495,423	883	\$ 30,442,764	53,069	\$ 2,215,921,481	\$ 41,755	5.03 %	1.62 %	
Disability Retirees	83	2,292,574	23	524,458	957	25,852,085	27,014	9.35	1.92	
Beneficiaries	311	9,947,411	190	4,077,020	3,994	117,916,972	29,524	6.53	3.60	
<i>Note: Other adjustments to 4 service retirees, 5 disability retirees and 11 beneficiaries occurred during the 2015-2016 fiscal year.</i>										

**PEERS Schedule of Retirees and Beneficiaries Added to and Removed from Retirement Rolls**

	Added to Rolls		Removed from Rolls		Rolls End of Year		Average Annual Allowances	% Increase		
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		in Annual Allowance	in Average Annual Allowance	
<b>2020-2021</b>										
Service Retirees	2,326	\$ 26,665,088	1,029	\$ 6,928,991	31,463	\$ 303,890,231	\$ 9,659	7.20 %	2.79 %	
Disability Retirees	19	180,395	41	149,600	809	4,812,612	5,949	0.60	3.34	
Beneficiaries	257	1,900,419	138	851,511	2,399	16,086,917	6,706	11.05	3.46	
<i>Note: Other adjustments to 45 beneficiaries occurred during the current year.</i>										
<b>2019-2020</b>										
Service Retirees	2,132	\$ 24,672,435	914	\$ 6,646,821	30,166	\$ 283,475,672	\$ 9,397	5.34 %	1.09 %	
Disability Retirees	32	206,913	32	140,024	831	4,783,679	5,757	0.80	0.93	
Beneficiaries	248	1,873,479	106	614,372	2,235	14,486,379	6,482	9.74	1.69	
<i>Note: Other adjustments to 1 service retiree, 1 disability retiree, and 22 beneficiaries occurred during the 2019-2020 fiscal year.</i>										
<b>2018-2019</b>										
Service Retirees	2,104	\$ 25,207,998	732	\$ 5,118,903	28,947	\$ 269,094,108	\$ 9,296	8.20 %	3.07 %	
Disability Retirees	45	337,905	25	148,841	832	4,745,905	5,704	5.82	3.41	
Beneficiaries	179	1,332,732	94	440,834	2,071	13,200,310	6,374	9.18	3.96	
<i>Note: Other adjustments to 1 disability retiree and 14 beneficiaries occurred during the 2018-2019 fiscal year.</i>										
<b>2017-2018</b>										
Service Retirees	2,025	\$ 23,443,109	788	\$ 5,183,020	27,575	\$ 248,707,170	\$ 9,019	7.93 %	3.07 %	
Disability Retirees	36	219,230	27	179,121	813	4,484,799	5,516	2.19	1.06	
Beneficiaries	206	1,426,667	92	482,533	1,972	12,090,177	6,131	10.00	3.92	
<i>Note: Other adjustments to 3 service retirees and 5 beneficiaries occurred during the 2017-2018 fiscal year.</i>										
<b>2016-2017</b>										
Service Retirees	2,023	\$ 23,078,805	752	\$ 4,631,306	26,335	\$ 230,438,067	\$ 8,750	7.36 %	2.16 %	
Disability Retirees	46	313,598	23	109,268	804	4,388,588	5,458	4.54	1.68	
Beneficiaries	207	1,335,560	88	451,434	1,863	10,991,043	5,900	8.14	1.01	
<i>Note: Other adjustments to 3 service retirees, 1 disability retiree and 4 beneficiaries occurred during the 2016-2017 fiscal year.</i>										
<b>2015-2016</b>										
Service Retirees	1,903	\$ 20,486,168	746	\$ 4,299,969	25,061	\$ 214,643,511	\$ 8,565	8.59 %	3.57 %	
Disability Retirees	53	333,484	31	149,572	782	4,198,147	5,368	5.38	3.35	
Beneficiaries	192	1,254,525	90	413,164	1,740	10,163,757	5,841	11.60	4.60	
<i>Note: Other adjustments to 4 service retirees, 7 disability retirees and 7 beneficiaries occurred during the 2015-2016 fiscal year.</i>										

## PSRS Summary Plan Description

The Public School Retirement System of Missouri (PSRS) became operative July 1, 1946. It was established by an Act of the Missouri Legislature and is governed by Chapter 169 of the Revised Statutes of Missouri. Its purpose is to provide benefits to members and their dependents at retirement or in the event of death or disability prior to retirement.

PSRS is a defined benefit plan funded on an actuarial reserve basis, which establishes the availability of funds to pay benefits as prescribed by law. The System is established as an independent trust fund and is not subject to direction by any state agency. Administrative expenses are paid entirely out of investment earnings.

**Administration** – The administration of PSRS is vested in a seven-member Board of Trustees, composed of three elected active PSRS members, one elected active Public Education Employee Retirement System of Missouri (PEERS) member, and three appointed trustees. The four elected trustees are selected by vote of the members and retirees of both Systems. Two are elected each even-numbered calendar year to serve four-year terms. The three appointed trustees, one of whom must be a PSRS or a PEERS retiree, are named by the governor to serve four-year terms. The appointed trustees must be residents of school districts included in the System but not employees of such districts nor state employees nor state elected officials.

The Board appoints an executive director who is responsible for employment of the retirement office staff, routine operation of the System, and acts as an advisor to the Board on all matters pertaining to the System.

**Member Participation** – PSRS membership is automatic for certificated, full-time employees of public school districts in Missouri (except the St. Louis city and the Kansas City school districts), public two-year colleges in Missouri, PSRS and certain statewide non-profit educational associations that have previously elected to join. Non-profit educational associations are no longer allowed to join the System. Certificated, part-time employees whose services would qualify them for membership in PEERS are contributing members of PSRS unless PEERS membership is elected. The vast majority of PSRS members are not covered by Social Security. However, there are a few exceptions

due to specific guidance from the Social Security Administration. Those members who are also covered by Social Security contribute to PSRS at two-thirds the rate of other members and receive two-thirds benefits.

Members working in covered employment are considered active members. Such members contribute 14.5% of total retirement salary to PSRS. The contributions are deducted and remitted by the employer and are credited by PSRS to individual member accounts. Since July 1, 1989, member contributions have been tax-deferred for federal and state income tax purposes under IRS 414(h)(2). Contributions are not considered income for such purposes until they are paid as a lump-sum refund or monthly benefits.

Interest at a rate set each year by the Board of Trustees is credited to individual member accounts each June 30 on the previous June 30 balance. The interest rate set annually by the board, was 1.0% on June 30, 2021. Since PSRS is a defined benefit plan, benefits are based upon the member's final average salary and years of service. The amount of interest credited to a member's account has no bearing on the monthly benefit amount payable at retirement.

In addition to service earned for covered employment, members may purchase service in various categories including several types of leave, out-of-state school service, other public and private employment, active U.S. military duty, and service under the federal Uniformed Services Employment and Re-Employment Rights Act of 1994 (USERRA).

Members who have contributions on deposit with PSRS but are not working in covered employment are considered inactive members.

**Employer Participation** – The employers served by PSRS withhold members' contributions from salary payments and contribute an amount equal to those contributions at a current rate of 14.5% of payroll. Employer contributions and investment earnings on those funds are placed by PSRS in a general reserve account to pay monthly benefits to retirees and to beneficiaries of deceased members. Employers are responsible for remitting contributions promptly and for furnishing contribution information and new membership information to PSRS. Employers also provide needed data when members apply for monthly benefits or for refunds upon termination of employment.

**Survivor Benefits** – The designated beneficiary of a member who dies before retirement is eligible for a lump-sum refund of the member's contributions and interest. If the beneficiary is an eligible dependent and the member dies while in covered employment with at least two years of service, or while eligible for disability retirement benefits, monthly survivor benefits based on a percentage of the member's salary for the last full year of covered service can be elected instead of a lump-sum refund. Monthly survivor benefits may also be payable to qualified dependents of an inactive member who has at least five years of service.

In lieu of a lump-sum refund or monthly survivor benefits, survivors with an insurable interest and beneficiaries of disability retirees may elect to receive monthly benefits under the Joint-and-Survivor 100% benefit plan. Such benefits are payable when the member would have been eligible for early or normal service retirement.

**Refund of Contributions** – Member contributions and interest are fully refundable upon termination of covered employment or death. All service and benefit rights are forfeited upon voluntary refund or automatic termination of membership.

A member may, upon returning to covered employment, reinstate the service forfeited through termination of a previous membership by repaying the money refunded plus interest.

**Membership Termination** – Membership is terminated by death, retirement, refund of contributions or absence from covered employment by a non-vested member for five consecutive school years.

**Disability Retirement Benefits** – Disability retirement benefits are payable to eligible members who have met service and eligibility requirements and who, because of permanent disability, are unable to earn a livelihood in any occupation. In most instances, the disability retirement benefit is calculated at 50% of the member's salary for the last full year of service.

**Service Retirement Benefits** – Service retirement benefits are payable to members who have terminated covered employment and have met certain eligibility requirements.

**Benefit Formula** – All service retirement benefits are based on a formula which multiplies final average salary by the applicable benefit factor, by the years of service and, in the case of early retirement, by an age-reduction factor. Final average salary is obtained by dividing the total salaries for the three highest consecutive years of service by 36 months to arrive at a monthly average; the applicable factor is determined by the type of retirement eligibility; total service is the amount accumulated at retirement for covered employment and purchased service; and the age-reduction factor, when applicable, is determined by the age at retirement.

**Normal Retirement** – A member may retire with benefits calculated under the standard (2.5%) benefit factor at age 60 with five years of service, at any age with 30 years of service, or when a combination of age and service equals 80 or more. Between July 1, 2001 and July 1, 2014, a member could retire with a 2.55% benefit factor with 31 or more years of service.

**Early Retirement** – A member may retire with benefits calculated under the standard (2.5%) formula with an age-reduction factor applied, at age 55 with five years of service or at any age with 25 years of service, as long as he or she does not qualify for Rule of 80.

A special provision allows members under age 55 with 25.0 to 29.9 years of service to retire with benefits calculated under a modified benefit factor ranging from 2.2% to 2.4% with no age-reduction factor applied.

**Payment Options** – A retiring member may choose to receive the maximum benefits payable under the Single Life benefit plan, or may elect to receive a reduced benefit under one of three Joint-and-Survivor benefit plans or under one of two Term-Certain benefit plans, to provide survivor benefit coverage in varying degrees after the retiree's death.

Certain benefit minimums apply to normal or early retirement with 15 or more years of service. The minimums for 15 but fewer than 25 years of service are reduced if a Joint-and-Survivor or a Term-Certain benefit plan is elected and/or if an age-reduction factor is applicable because of early retirement. The minimums for 25 or more years of service are reduced only if a Joint-and-Survivor or a Term-Certain benefit plan is selected.

The Partial Lump Sum Option (PLSO) is available to qualified members. This option allows qualified members to choose to have their lifetime monthly benefits actuarially reduced in exchange for the right to also receive a one-time, lump-sum payment at retirement.

**Cost-of-Living Adjustments** – Cost-of-living adjustments (COLAs) are provided beginning the second January after retirement to service and disability retirees, and to Joint-and-Survivor and Term-Certain beneficiaries of deceased retirees. Lifetime COLAs are limited to 80% of the original retirement benefit.

The Department of Labor Consumer Price Index for Urban Consumers (CPI-U) for the previous fiscal year is used as a guideline for the annual COLA which is set by the Board. By law, if the change in CPI-U is 2% or more, the COLA must be at least 2%, but no more than 5%. If the change in CPI-U is between 0% and 2%, the Board may grant a COLA of 0% to 5%. If the change in CPI-U is less than 0%, no increase can be given. If it is more than 5%, the Board is required to give a 5% increase. Under the funding policies adopted by the Board, the following applies:

- 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 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.

**Member Handbook** – A *Member Handbook* containing detailed information concerning the retirement program is available on our website or can be obtained from the retirement office upon request.

## PEERS Summary Plan Description

The Public Education Employee Retirement System of Missouri (PEERS) was established by an Act of the Missouri Legislature to begin operations on November 1, 1965, and is governed by Chapter 169 of the Revised Statutes of Missouri. Its purpose is to provide benefits to members and their dependents at retirement or in the event of death or disability prior to retirement.

PEERS is a defined benefit plan funded on an actuarial reserve basis, which establishes the availability of funds to pay benefits as prescribed by law. The System is established as an independent trust fund and is not subject to direction by any state agency. Administrative expenses are paid entirely out of investment earnings.

**Administration** – The law provides that the responsibility for the operation and administration of the retirement system is vested in the Public School Retirement System of Missouri (PSRS) Board of Trustees sitting as the Board of Trustees for PEERS. The Board is comprised of three elected active PSRS members, one elected active PEERS member and three appointed trustees. The four elected trustees are selected by vote of the members and retirees of both Systems. Two are elected each even-numbered calendar year to serve four-year terms. The three appointed trustees, one of whom must be a PSRS or a PEERS retiree, are named by the governor to serve four-year terms. The appointed trustees must be residents of school districts included in the System but not employees of such districts nor state employees nor state elected officials.

The Board appoints an executive director who is responsible for employment of the retirement office staff, routine operation of the System, and acts as an advisor to the Board on all matters pertaining to the System.

**Member Participation** – PEERS membership is automatic, regardless of position, for all persons not covered by PSRS who are employed for 20 or more hours a week on a regular basis in a position that normally requires at least 600 hours during the school term by the public school districts in Missouri (except the St. Louis city and the Kansas City school districts), public two-year colleges in Missouri (except St. Louis

Community College), PSRS and statewide non-profit educational associations that have elected to join.

Members working in covered employment are considered active members. Such members contribute 6.86% of their total retirement salary to PEERS. The contributions are deducted by the employer and are credited by PEERS to individual member accounts. PEERS members are also covered by Social Security.

PEERS membership can be elected by employees with Missouri educator certificates who work in any position for 17 or more hours weekly but less than full time; however, PSRS membership is automatic if a PEERS election is not made. The election to join PEERS must be filed with the Board within 90 days after entering first time, part-time employment.

Since July 1, 1989, member contributions have been tax-deferred for federal and state income tax purposes under IRC 414(h)(2). Contributions are not considered as income for federal or state income tax purposes until they are paid in a lump-sum refund or in monthly benefits.

Individual accounts are maintained for all PEERS members. Interest is credited each June 30 on the previous June 30 balance. The interest rate, set annually by the Board, was 1.0% on June 30, 2021. Since PEERS is a defined benefit plan, benefits are based upon the member's final average salary and years of service. The amount of interest credited to a member's account has no bearing on the monthly benefit amount payable at retirement.

In addition to service earned for covered employment, members may purchase service in various categories including several types of leave, out-of-state school service, other public and private employment, active U.S. military duty, and service under the federal Uniformed Services Employment and Re-employment Rights Act of 1994 (USERRA).

Members who have contributions on deposit with PEERS but are not currently working in covered employment are considered inactive members.

**Employer Participation** – The employers served by PEERS withhold members' contributions from salary payments and contribute an amount equal to employee contributions at a current rate of 6.86% of payroll. Employer contributions and investment earnings on those funds are placed in a general reserve account to pay monthly benefits to retirees and to beneficiaries

of deceased members. It is the responsibility of the employers to remit contributions promptly and for furnishing contribution information and new membership information to PEERS. Employers also provide needed data when members apply for benefits or refund of contributions upon termination of employment.

**Survivor Benefits** – When a member dies before retirement, the designated beneficiary becomes eligible for a lump-sum refund of the employee's contributions and interest. In lieu of a lump-sum refund, survivors with an insurable interest and beneficiaries of disability retirees may elect to receive monthly benefits under the Joint-and-Survivor 100% benefit plan. Such benefits are payable when the member would have been eligible for early or normal service retirement.

**Refund of Contributions** – Member contributions and interest are fully refundable upon termination of covered employment or death. All service and benefit rights are forfeited upon voluntary refund or automatic termination of membership.

A member may, upon returning to covered employment, reinstate the service forfeited through termination of a previous membership by repaying the money refunded plus interest.

**Membership Termination** – Membership is terminated by death, retirement, refund of contributions or absence from covered employment by a non-vested member for five consecutive school years.

**Disability Retirement Benefits** – Disability retirement benefits are payable to members who have met service and eligibility requirements and who, because of permanent disability, are unable to earn a livelihood in any occupation. The disability retirement benefit is calculated at 90% of the normal service retirement benefit.

**Service Retirement Benefits** – Service retirement benefits are payable to members who have terminated covered employment and who have met certain eligibility requirements.

**Benefit Formula** – All service retirement benefits are based on a formula which multiplies final average salary by the applicable benefit factor, by the years of service and, in the case of early retirement, by an age-reduction factor. Final average salary is obtained by dividing the total salaries for the three highest consecutive years of service by 36 months to arrive at a monthly

average; the applicable factor is determined by the type of retirement eligibility; total service is the amount accumulated at retirement for covered employment and purchased service; and the age-reduction factor, when applicable, is determined by the age at retirement.

Because of the conversion of the System from a formula integrated with Social Security to the present basis, a special “frozen benefit” is in effect for certain members for service prior to July 1, 1973.

**Normal Retirement** – A member may retire with benefits calculated under the standard (1.61%) formula at age 60 with five years of service, at any age with at least 30 years of service, and at the point where the member’s age plus service equals 80 or more (Rule of 80). A member may retire under the standard (1.61%) formula when the member qualifies for Rule of 80 or 30-and-Out and will receive an additional 0.8% multiplier until reaching minimum eligibility age for Social Security benefits (currently age 62).

**Early Retirement** – A member may retire with benefits calculated under the standard (1.61%) formula with an age-reduction factor applied at age 55 with five years of service, or at any age with 25 years of service, as long as he or she does not qualify for Rule of 80.

A special provision allows members under age 55 with 25.0 to 29.9 years of service to retire with benefits calculated under a modified benefit factor ranging from 1.51% to 1.59% with no age-reduction factor applied.

**Payment Options** – A retiring member may choose to receive the maximum benefits payable under the Single Life benefit plan, or may choose to receive a reduced benefit under one of three Joint-and-Survivor benefit plans or under one of two Term-Certain benefit plans, to provide survivor benefit coverage in varying degrees after the retiree’s death.

Another option, the Accelerated Payment Plan (APP), allows members to receive a higher PEERS benefit prior to minimum Social Security eligibility age (currently age 62). When the minimum Social Security eligibility age is attained, the member’s PEERS benefit is reduced and remains at a reduced level for the remainder of their retirement.

The Partial Lump Sum Option (PLSO) is available to qualified members. This option allows qualified members to choose to have their lifetime monthly benefits actuarially reduced in exchange for the right to also receive a one-time, lump-sum payment at retirement.

**Cost-of-Living Adjustments** – Cost-of-living adjustments (COLAs) are provided starting the fourth January after retirement to service and disability retirees, and to Joint-and-Survivor and Term-Certain beneficiaries of deceased retirees. Lifetime COLAs are limited to 80% of the original retirement benefit.

The Department of Labor Consumer Price Index for Urban Consumers (CPI-U) for the previous fiscal year is used as a guideline for the annual COLA which is set by the Board of Trustees. By law, if the change in CPI-U is 2% or more, the COLA must be at least 2%, but no more than 5%. If the change in CPI-U is between 0% and 2%, the Board may grant a COLA of 0% to 5%. If the change in CPI-U is less than 0%, no increase can be given. If it is more than 5%, the Board is required to give a 5% increase. Under the funding policies adopted by the Board, the following applies:

- 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 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.

**Member Handbook** – A *Member Handbook* containing detailed information concerning the retirement program is available on our website or can be obtained from the retirement office upon request.

# PSRS and PEERS Summary of Actuarial Assumptions and Methods

The Board is responsible for the adoption of the Systems' Funding Policies and assumptions. A summary of the current Funding Policy is included in the Certification of Actuarial Results.

The actuarial assumptions and methods utilized for funding and financial reporting purposes differ slightly. The primary difference between the two methods is the fact that financial reporting requires the recognition of investment gains at market with no smoothing.

## Inflation

Inflation is assumed to be 2.00% per annum. (effective 6/30/21)

## Payroll Growth

Total payroll growth for PSRS is assumed to be 2.25% per annum, consisting of 2.00% inflation, 0.125% real wage growth due to the inclusion of active health care costs in pension earnings, and 0.125% of real wage growth due to productivity. (effective 6/30/21)

Total payroll growth for PEERS is assumed to be 2.50% per annum, consisting of 2.00% inflation, 0.25% real wage growth due to the inclusion of active health care costs in pension earnings, and 0.25% of real wage growth due to productivity. (effective 6/30/21)

## Individual Salary Growth

### PSRS

Individual salaries are assumed to increase each year with inflation of 2.00%, real wage growth generated by the cost of active health care of 0.125% (since health care costs are included in pension earnings), real wage growth due to productivity of 0.125%, and additional real salary growth for merit, promotion, and seniority. (effective 6/30/21)

PSRS - Salary Growth						
Service	Inflation	Health Care Cost	Productivity	Merit, Promotion, Seniority	Total Individual Salary Growth	
0	2.00%	0.125%	0.125%	6.625%	8.875%	
1	2.00%	0.125%	0.125%	3.325%	5.575%	
2	2.00%	0.125%	0.125%	2.775%	5.025%	
3	2.00%	0.125%	0.125%	2.666%	4.916%	
4	2.00%	0.125%	0.125%	2.557%	4.807%	
5	2.00%	0.125%	0.125%	2.447%	4.697%	
6	2.00%	0.125%	0.125%	2.338%	4.588%	
7	2.00%	0.125%	0.125%	2.229%	4.479%	
8	2.00%	0.125%	0.125%	2.120%	4.370%	
9	2.00%	0.125%	0.125%	2.010%	4.260%	
10	2.00%	0.125%	0.125%	1.901%	4.151%	
11	2.00%	0.125%	0.125%	1.792%	4.042%	
12	2.00%	0.125%	0.125%	1.683%	3.933%	
13	2.00%	0.125%	0.125%	1.573%	3.823%	
14	2.00%	0.125%	0.125%	1.464%	3.714%	
15	2.00%	0.125%	0.125%	1.355%	3.605%	
16	2.00%	0.125%	0.125%	1.285%	3.535%	
17	2.00%	0.125%	0.125%	1.215%	3.465%	
18	2.00%	0.125%	0.125%	1.145%	3.395%	
19	2.00%	0.125%	0.125%	1.075%	3.325%	
20	2.00%	0.125%	0.125%	1.005%	3.255%	
21	2.00%	0.125%	0.125%	0.935%	3.185%	
22	2.00%	0.125%	0.125%	0.865%	3.115%	
23	2.00%	0.125%	0.125%	0.795%	3.045%	
24	2.00%	0.125%	0.125%	0.725%	2.975%	
25	2.00%	0.125%	0.125%	0.655%	2.905%	
26	2.00%	0.125%	0.125%	0.585%	2.835%	
27	2.00%	0.125%	0.125%	0.515%	2.765%	
28	2.00%	0.125%	0.125%	0.445%	2.695%	
29	2.00%	0.125%	0.125%	0.375%	2.625%	
30+	2.00%	0.125%	0.125%	0.375%	2.625%	



**PEERS**

Individual salaries are assumed to increase each year with inflation of 2.00%, real wage growth generated by the cost of active health care of 0.25% (since health care costs are included in pension earnings), real wage growth due to productivity of 0.25%, and additional real salary growth for merit, promotion, and seniority. (effective 6/30/21)

PEERS – Salary Growth						
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%	

**Investment Return**

It is assumed that investments of the Systems will return a yield of 7.30% per annum, net of system expenses (investment and administrative). (effective 6/30/21)

**Cost-of-Living Adjustments**

The Board’s cost-of-living adjustment policy is as follows:

- If the June to June change in the CPI-U is less than 2.00% for consecutive one-year periods, a cost-of-living increase of 2.00% will be granted when the cumulative increase is equal to or greater than 2.00%, 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 2.00% cost-of-living increase is granted.
- If the June to June change in the CPI-U is greater than or equal to 2.00%, but less than 5.00%, a cost-of-living increase of 2.00% will be granted.
- If the June to June change in the CPI-U is greater than or equal to 5.00%, a cost-of-living increase of 5.00% will be granted.

The actuarial assumption assumes a 2.0% COLA for the next 3 years and then 1.35% for all years thereafter.

The COLA applies to service retirements and beneficiary annuities. The COLA does not apply to the benefits for in-service death payable to spouses (where the spouse is over age 60), and does not apply to the spouse with children pre-retirement death benefit, the dependent children pre-retirement death benefit, or the dependent parent death benefit. The total lifetime COLA cannot exceed 80% of the original benefit. Future COLAs for current benefit recipients reflect actual cumulative adjustments granted at the time of valuation. (effective 6/30/21)

**Mortality Rates**

**Active Member Mortality**

**PSRS**

Mortality rates for PSRS active members are based on experience-adjusted PubT-2010 (Teachers) base mortality table for employees with generational projection using the MP-2020 improvement scale multiplied by an adjustment factor of 1.10 at all ages for males and 1.04 at all ages for females. The Plan-specific experience adjustments are equivalent to the experience adjustment factors used for the retiree mortality rates. Illustrative rates per 1,000 members at various ages are as follows (effective 6/30/21):

<b>PSRS Active Member Mortality</b>		
Age	Male	Female
20	0.380	0.144
30	0.314	0.186
40	0.543	0.356
50	1.150	0.729
60	3.031	1.758
70	7.345	4.608

**PEERS**

Mortality rates for PEERS active members are based on experience-adjusted PubG-2010(B) (General Employees, Below-Median Income) base mortality table for employees with generational projection using the MP-2020 improvement scale, multiplied by an adjustment factor of 1.13 at all ages for males and 0.94 at all ages for females. The Plan-specific experience adjustments are equivalent to the experience adjustment factors used for the retiree mortality rates. Illustrative rates per 1,000 members at various ages are as follows (effective 6/30/21):

<b>PEERS Active Member Mortality</b>		
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

**Service Retiree Mortality**

**PSRS**

Mortality rates for PSRS non-disabled retirees are based on experience-adjusted PubT-2010 (Teachers) base mortality table for retirees with generational projection using the MP-2020 improvement scale multiplied by an adjustment factor of 1.10 at all ages for males and 1.04 at all ages for females. Illustrative rates per 1,000 members at various ages are as follows (effective 6/30/21):

<b>PSRS Non-Disabled Retiree Mortality</b>		
Age	Male	Female
40	0.543	0.346
50	1.150	0.729
60	4.098	3.134
70	11.085	7.316
80	39.441	27.929
90	139.533	101.816
100	346.404	285.220
110	543.543	491.628

**PEERS**

Mortality rates for PEERS non-disabled retirees are based on experience-adjusted PubG-2010(B) (General Employees, Below-Median Income) base mortality table for retirees with generational projection using the MP-2020 improvement scale multiplied by an adjustment factor of 1.13 at all ages for males and 0.94 at all ages for females. Illustrative rates per 1,000 members at various ages are as follows (effective 6/30/21):

<b>PEERS Non-Disabled Retiree Mortality</b>		
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

**Beneficiary and Survivor Mortality**

**PSRS**

Mortality rates for PSRS beneficiaries and survivors are based on experience-adjusted PubT-2010 (Teachers) base mortality table for contingent survivors with generational projection using the MP-2020 improvement scale multiplied by an adjustment factor of 1.18 at all ages for males and 1.07 at all ages for females. Illustrative rates per 1,000 members at various ages are as follows (effective 6/30/21):

PSRS Beneficiary and Survivor Mortality		
Age	Male	Female
40	0.583	0.366
50	7.788	3.287
60	12.460	6.987
70	23.659	13.226
80	58.963	36.434
90	162.753	117.627
100	371.597	293.448
110	583.073	505.809

**PEERS**

Mortality rates for PEERS beneficiaries and survivors are based on 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 multiplied by an adjustment factor of 1.01 at all ages for males and 1.07 at all ages for females. Illustrative rates per 1,000 members at various ages are as follows (effective 6/30/21):

PEERS Beneficiary and Survivor Mortality		
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	449.071	505.809

**Disability Retiree Mortality**

**PSRS**

Mortality rates for PSRS disabled retirees are based on experience-adjusted PubT-2010 (Teachers) base mortality table for disabled retirees with generational projection using the MP-2020 improvement scale multiplied by an adjustment factor of 1.10 at all ages for males and 1.04 at all ages for females. Illustrative rates per 1,000 members at various ages are as follows (effective 6/30/21):

PSRS Disability Retiree Mortality		
Age	Male	Female
40	8.348	7.221
50	16.622	14.806
60	28.728	21.355
70	40.412	27.194
80	75.352	59.536
90	171.028	137.904
100	346.404	285.220
110	543.543	491.628

**PEERS**

Mortality rates for PEERS disabled retirees are based on experience-adjusted PubG-2010 (General Employees) base mortality table for disabled retirees with generational projection using the MP-2020 improvement scale multiplied by an adjustment factor of 1.13 at all ages for males and 0.94 at all ages for females. Illustrative rates per 1,000 members at various ages are as follows (effective 6/30/21):

PEERS Disability Retiree Mortality		
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

**Retirement Rates**

Retirement is assumed in accordance with the following rates per 1,000 eligible members (effective 6/30/21):

<b>PSRS Active Member Retirement</b>											
Age	Years of Service										
	<=20	21	22	23	24	25	26	27	28	29	>=30
<50	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	3.00%	3.00%	3.00%	3.00%	40.00%
50	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	3.00%	3.00%	3.00%	3.00%	40.00%
51	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	3.00%	3.00%	3.00%	20.00%	40.00%
52	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	3.00%	3.00%	20.00%	20.00%	40.00%
53	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	3.00%	30.00%	20.00%	20.00%	40.00%
54	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	30.00%	20.00%	20.00%	20.00%	40.00%
55	5.00%	3.00%	3.00%	3.00%	3.00%	40.00%	20.00%	20.00%	20.00%	20.00%	40.00%
56	5.00%	3.00%	3.00%	3.00%	40.00%	20.00%	20.00%	20.00%	20.00%	20.00%	40.00%
57	5.00%	3.00%	3.00%	40.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	40.00%
58	5.00%	3.00%	40.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	40.00%
59	5.00%	40.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	40.00%
60	20.00%	20.00%	20.00%	20.00%	20.00%	25.00%	25.00%	25.00%	25.00%	25.00%	40.00%
61	20.00%	20.00%	20.00%	20.00%	20.00%	25.00%	25.00%	25.00%	25.00%	25.00%	40.00%
62	20.00%	20.00%	20.00%	20.00%	20.00%	25.00%	25.00%	25.00%	25.00%	25.00%	40.00%
63	20.00%	20.00%	20.00%	20.00%	20.00%	25.00%	25.00%	25.00%	25.00%	25.00%	40.00%
64	20.00%	20.00%	20.00%	20.00%	20.00%	25.00%	25.00%	25.00%	25.00%	25.00%	40.00%
65	30.00%	30.00%	30.00%	30.00%	30.00%	45.00%	45.00%	45.00%	45.00%	45.00%	40.00%
66	25.00%	25.00%	25.00%	25.00%	25.00%	30.00%	30.00%	30.00%	30.00%	30.00%	40.00%
67	25.00%	25.00%	25.00%	25.00%	25.00%	30.00%	30.00%	30.00%	30.00%	30.00%	40.00%
68	25.00%	25.00%	25.00%	25.00%	25.00%	30.00%	30.00%	30.00%	30.00%	30.00%	40.00%
69	25.00%	25.00%	25.00%	25.00%	25.00%	30.00%	30.00%	30.00%	30.00%	30.00%	40.00%
>=70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

<b>PEERS Active Member Retirement</b>											
Age	Years of Service										
	<=20	21	22	23	24	25	26	27	28	29	>=30
<50	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	30.00%
50	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	20.00%
51	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	30.00%	20.00%
52	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	30.00%	20.00%	20.00%
53	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	5.00%	30.00%	20.00%	20.00%	20.00%
54	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%	30.00%	20.00%	20.00%	20.00%	20.00%
55	5.00%	5.00%	5.00%	5.00%	5.00%	30.00%	20.00%	20.00%	20.00%	20.00%	20.00%
56	5.00%	5.00%	5.00%	5.00%	30.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
57	5.00%	5.00%	5.00%	30.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
58	5.00%	5.00%	30.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
59	5.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
60	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
61	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
62	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
63	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
64	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
65	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
66	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
67	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
68	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
69	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
70	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
71	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
72	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
73	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
74	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%
>=75	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

### Withdrawal Rates

Termination of membership prior to eligibility for retirement from all causes other than death, disability or retirement is assumed in accordance with the following illustrative rates per 1,000 members: (effective 6/30/16):

PSRS Active Member Withdrawal		PEERS Active Member Withdrawal	
Years of Service	Rate	Years of Service	Rate
0	240.0	0	350.0
1	115.0	1	230.0
2	100.0	2	180.0
3	80.0	3	150.0
4	70.0	4	125.0
5	60.0	5	100.0
10	27.5	10	55.0
15	15.0	15	33.0
20	10.0	20	18.0
25+	0.0	25+	0.0

### Refund of Contributions

Active members who terminate employment with less than five years of service and inactive members with less than five years of service are assumed to take an immediate refund of their contributions.

Active members who terminate employment with five or more years of service, but prior to satisfying the age and service requirements for service retirement, and inactive members with five or more years of service are assumed to select the option that has the greater present value between an immediate refund of their contributions and a life annuity deferred to their earliest retirement age. (effective 6/30/16)

Active members who terminate employment with five or more years of service and satisfy the age and service requirements for service retirement upon termination, and inactive members with five or more years of service and currently eligible for service retirement are assumed to select an immediate life annuity. (effective 6/30/16)

### Disability Rates

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

PSRS Active Member Disability (effective 6/30/21)		PEERS Active Member Disability (effective 6/30/16)	
Age	Rates	Age	Rates
25	0.0017%	25	0.0017%
30	0.0080%	30	0.0080%
35	0.0220%	35	0.0016%
40	0.0480%	40	0.0320%
45	0.0880%	45	0.0640%
50	0.1290%	50	0.1220%
55	0.1660%	55	0.2100%

### Interest on Member Accounts

1.00% per annum (effective 6/30/21)

### Service Purchases

A 0.75% load for PSRS (effective 6/30/21) and a 1.50% (effective 6/30/21) load for PEERS 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 is that investment and administrative expenses are paid from investment income in excess of 7.3% per annum. (effective 6/30/21)

### Dependent Assumptions

(effective 6/30/16)

- **Marriage 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 two years older than that of female spouses.
- **Beneficiary Assumptions (Post-retirement)** Retired members, regardless of gender, are assumed to be three years older than their joint annuitant.

### Survivor Benefits (Pre-retirement PSRS Only)

All active members under age 50 are assumed to have two dependent children. Each child is assumed to receive payments of \$860 per month for 18 years if the member is under age 32 and grading down to zero years if the member is age 50. (effective 6/30/16)

### Return of Unused Member Account Balance

A cash refund feature is included in the valuation of annuity benefits to reflect that cumulative annuity payments to members may not be less than the amount of contributions paid by the member. (effective 6/30/16)

### 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. (1947)

### Asset Valuation Method

The Actuarial Value of Assets is a smoothed value of assets. The actuarial value at June 30 of the prior year is projected by increasing the amount by 7.5% interest, adding contributions with 7.5% interest for half the year, and subtracting benefit payments for half the year. Twenty percent of the difference between the actual returns on market value for the year and expected return from the projection of the prior year actuarial value, along with corresponding amounts from each of the prior four years is added to the actuarial value. The Actuarial Value of Assets was reset to market value at June 30, 2003. The methodology remains unchanged. (1994)

### Amortization of Unfunded Actuarial Accrued Liability

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

The method for amortizing the unfunded Actuarial Accrued Liability was changed from a rolling 30-year method to the closed 30-year method described above effective June 30, 2011.

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 (active and inactive). Gains and losses occurring from investment experience different than assumed are amortized into expense over a five-year period. The effect of plan changes on the plan liability are fully recognized in expense in the year in which they occur.

***NOTE:** Dates reflect the effective date as adopted by the Board of Trustees. The most recent assumption revisions were approved by the Board of Trustees at their June 8, 2021 meeting. The revised assumptions were used for the June 30, 2021 valuation.*