



Pennsylvania Public School Employees' Retirement System

Information Required Under Governmental Accounting Standards Board
Statement No. 67 as of June 30, 2021



500 Plaza Drive
Secaucus, NJ 07096

September 9, 2021

Board of Trustees
Pennsylvania Public School Employees'
Retirement System
5 North 5th Street
Harrisburg, Pennsylvania 17101

Members of the Board:

This valuation provides information concerning the Pennsylvania Public School Employees' Retirement System (PSERS) in accordance with the Governmental Accounting Standards Board (GASB) Statement No. 67, effective for the fiscal year ending June 30, 2021.

The Board of Trustees and staff of PSERS may use this report for the review of the operation of the System and as a source of information for the Commonwealth financial statements. The report may also be used in the preparation of the System's audited financial statements.

Use of this report for any other purpose or by anyone other than the Board of Trustees or the staff of PSERS may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for that purpose. Buck should be asked to review any statement to be made on the basis of the results contained in this report. Buck will accept no liability for any such statement made without prior review by Buck.

Future actuarial measurements may differ significantly from current measurements due to System experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in System provisions or applicable law. Liability models necessarily rely on the use of approximations and estimates and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. An analysis of the potential range of such future differences is beyond the scope of this valuation.

Data, Assumptions, Methods and Plan Provisions

This valuation was performed using employee census data, asset information, and System provisions provided by PSERS. Although we did not audit the data, we reviewed the data for reasonableness and consistency. A detailed review of the data and its sources beyond that necessary to develop the analysis was not performed and is beyond the scope of the analysis. The accuracy of the results of the valuation is dependent on the accuracy of the data.

As required under Section 8502(j) of the Retirement Code, experience studies are performed once in every five-year period. This valuation was prepared using demographic and economic assumptions that were selected on the basis of an Experience Review covering the period July 1, 2010 to June 30, 2015. The Board of Trustees, at their June 10, 2016 meeting, approved the use of the Experience Review's recommended demographic and economic assumptions, which include a 7.25% per annum rate of investment return, effective with the June 30, 2016 actuarial valuation. As mandated by the Retirement Code, these assumptions will remain in effect for valuation purposes until such time the Board of Trustees adopts revised assumptions.

For purposes of GASB Statement No. 67, the System's total pension liability as of June 30, 2021 was determined by rolling forward the System's total pension liability as of June 30, 2020 to June 30, 2021. However, we recently completed the July 1, 2015 to June 30, 2020 Experience Review and the Board of Trustees approved the use of the Experience Review's recommended demographic and economic assumptions, which include a 7.00% per annum rate of investment return, effective with the June 30, 2021 actuarial valuation. Paragraph 37 of GASB Statement No. 67 recommends that professional judgment should be used to consider whether the effect of the revised demographic and economic assumptions be included in the System's fiscal year-end total pension liability. Based on discussions with the staff of PSERS, the System's total pension liability as of June 30, 2021 reflects the change in demographic and economic assumptions recommended on the basis of the July 1, 2015 to June 30, 2020 Experience Review.

Use of Models

Actuarial Standard of Practice No. 56 (ASOP 56) provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. Buck uses the following:

- third-party software in the performance of annual actuarial valuations and projections to calculate the liabilities associated with the provisions of the plan using data and assumptions as of the measurement date under the funding methods specified in this report.
- an internally developed model that applies applicable funding methods and policies to the liabilities derived from the output of the third-party software and other inputs, such as System assets and contributions, to generate many of the exhibits found in this report.

Buck has an extensive review process whereby the results of the liability calculations are checked using detailed sample output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other outputs and the internal model are similarly reviewed in detail and at a high level for accuracy, reasonability and consistency with prior results. Buck also reviews the third-party model when significant changes are made to the software or model. The review is performed by experts within the company who are familiar with applicable funding methods as well as the manner in which the model generates its output. If significant changes are made to the internal model, extra checking and review are completed. Significant changes to the internal model that are applicable to multiple clients are generally developed, checked and reviewed by multiple experts within the company who are familiar with the details of the required changes.

Certification

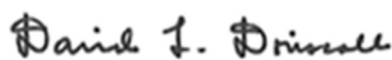
The assumptions used for financial accounting purposes were selected by the Board of the System with our advice. In our opinion, the actuarial assumptions used are appropriate for purposes of the valuation and are reasonably related to the experience of the System and reflect reasonable long-term expectations. The cost results and actuarial exhibits presented in this report were determined on a consistent and objective basis in accordance with applicable Actuarial Standards of Practice and generally accepted actuarial procedures. To the best of our knowledge, the information fairly presents the actuarial position of PSERS in accordance with the requirements of GASB Statement No. 67 as of June 30, 2021.

Where presented, the "net pension liability" and "System fiduciary net position as a percentage of the total pension liability" are measured on a market value of assets basis. These items presented may not be appropriate for evaluating the need and level of future contributions and make no assessment regarding the cost to settle (i.e., purchase annuities to cover) any portion of the Fund's liabilities.

It is important to note that the measurement of benefit obligations is extremely sensitive to the assumptions chosen. The results presented in this report are based upon one set of reasonable assumptions. Other sets of equally reasonable assumptions can yield materially lesser or greater obligations.

This report presents a statement of actuarial opinion by the undersigned actuaries. We are Members of the American Academy of Actuaries. We meet the Academy's Qualification Standards to render the actuarial opinions contained herein. All the undersigned actuaries have reviewed the overall reasonableness and consistency of these results. The report has been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions concerning it.

Respectfully submitted,



David L. Driscoll, FSA, EA, MAAA, FCA
Principal, Consulting Actuary



Edward Quinn, EA, MAAA, FCA
Director, Retirement Actuary



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Senior Consultant, Actuary

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Section 1 – GASB 67 Information

Notes to the Financial Statements for the Year Ended June 30, 2021

Summary of Significant Accounting Policies

Method used to value investments. Investments are reported at fair value.

Actuarial cost method. Entry Age Normal – Level Percent of Pay

System Description

System administration. The administrative staff of the Pennsylvania Public School Employees' Retirement System (PSERS or System) administers the System. The System is a governmental cost-sharing multi-employer defined benefit pension plan that provides retirement benefits to public school employees of the Commonwealth of Pennsylvania (Commonwealth). The members eligible to participate in the System include all full-time public school employees, part-time hourly public school employees who render at least 500 hours of service in the school year, and part-time per diem public school employees who render at least 80 days of service in the school year in any of the reporting entities in Pennsylvania.

The control and management of the System, including the investment of its assets, is vested in the Board of Trustees (Board). The Board consists of 15 members: the Secretary of Education, ex officio; the State Treasurer, ex officio; the Secretary of Banking and Securities, ex officio; two Senators; two members of the House of Representatives; the executive director of the Pennsylvania School Boards Association, ex officio; one Governor appointee, who shall not be a school employee or an officer or employee of the State of Pennsylvania; three who are elected by the active professional members of the System from among their number; one who is elected by annuitants from among their number; one who is elected by the active nonprofessional members of the System from among their number; and one who is elected by members of Pennsylvania public school boards from among their number. The chairman of the Board is elected by the Board members. Each ex officio member of the Board and each legislative member of the Board may appoint a duly authorized designee to act in their stead.

The Commonwealth's General Assembly has the authority to amend the benefit terms of the System by passing bills in the Senate and House of Representatives and sending them to the Governor for approval.

System membership. System membership consists of the following:

	<u>June 30, 2019</u>	<u>June 30, 2020</u>
Inactive System members or beneficiaries currently receiving	237,339	239,614
Inactive System members entitled to but not yet receiving	25,514	25,903
Non-participants valued for accumulated deductions	132,854	135,613
Beneficiaries entitled to a pending lump sum	1,595	1,281
Active System members	<u>255,749</u>	<u>256,246</u>
	653,051	658,657

Benefits provided. Please see Section 3 of the report for a summary of System provisions.

Contributions. The Board establishes contributions based on an actuarially determined contribution recommended by an independent actuary. The actuarially determined contribution is the estimated amount necessary to finance the costs of benefits earned by System members during the year, with an additional amount to finance a portion of any unfunded accrued liability. For the year ended June 30, 2021, the Commonwealth contributed \$4,759,189,000 to the System. The calculation of the actuarially determined contribution is governed by applicable provisions of the Retirement Code, as described in Section 3 of this report.

Receivables

Not applicable.

Net Pension Liability

The components of the net pension liability were as follows:

(Amounts x \$ 1,000)	<u>June 30, 2020</u>	<u>June 30, 2021</u>
Total pension liability	\$ 107,795,802	\$ 113,024,082
System fiduciary net position	<u>(58,556,786)</u>	<u>(71,967,352)</u>
Commonwealth's net position	\$ 49,239,016	\$ 41,056,730
System fiduciary net position as a percentage of the total pension liability	54.32%	63.67%

Actuarial Assumptions and Methods

The total pension liability as of June 30, 2021 was determined by rolling forward the System's total pension liability as of July 1, 2020 to June 30, 2021 using the following actuarial assumptions, applied to all periods included in the measurement. All other methods and assumptions used to determine the total pension liability are set forth in Section 2.

a. Actuarial Cost Method

The actuarial cost method used to develop the total pension liability is the Entry Age Normal Cost - Level Percent of Pay method, as required by GASB Statement No. 67.

b. Long-Term Expected Rate of Return

The long-term expected rate of return on pension System investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension System investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic rates of return for each major asset class included in the System's target asset allocation as of June 30, 2021 were developed by the System's investment consultant, Aon.

c. Discount Rate

The discount rate used to measure the total pension liability was 7.25% as of June 30, 2020, and 7.00% as of June 30, 2021. The projection of cash flows used to determine the discount rate assumed that Commonwealth contributions will continue to follow the current funding policy as prescribed by Act 120 of 2010 and Act 5 of 2017. Based on those assumptions, the System's fiduciary net position was projected to be available to make all projected future benefit payments of current System members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected

benefit payments to determine the total pension liability, in accordance with the method prescribed by GASB Statement No. 67. We believe this assumption is reasonable for the purposes of the measurements required by the Statement. In the event of benefit payments not covered by the System's fiduciary net position, a municipal bond rate of 2.18% would be used to discount the benefit payments not covered by the System's fiduciary net position. The 2.18% rate equals the S&P Municipal Bond 20-Year High Grade Rate Index at June 30, 2021. The rate was 2.66% as of June 30, 2020.

The discount rate is the single rate that reflects (1) the long-term expected rate of return on System investments that are expected to be used to finance the payment of benefits, to the extent that the System's fiduciary net position is projected to be sufficient to make projected benefit payments and System assets are expected to be invested using a strategy to achieve that return, and (2) a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another scale), to the extent that the conditions for use of the long-term expected rate of return are not met.

The projections of the Fiduciary Net Position are based on contributions to the System in accordance with the provisions of Act 120 of 2010 and Act 5 of 2017. Should contributions to the System be reduced from those based on the provisions of Act 120 of 2010 and Act 5 of 2017, the results would reflect the new contribution policy and may result in the Fiduciary Net Position not being sufficient to cover the System's benefit payments at some future date and thus lowering the discount rate used to determine the System's Total Pension Liability.

We believe these assumptions are reasonable for the purposes of the measurements required by the Statement.

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability, calculated using the discount rate of 7.00%, as well as what the Commonwealth's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.00%) or 1-percentage-point higher (8.00%) than the current rate:

(Amounts x \$1,000)	1% Decrease (6.00%)	Current Discount Rate (7.00%)	1% Increase (8.00%)
Net Pension Liability	\$ 53,888,457	\$ 41,056,730	\$ 30,232,534

Schedules of Required Supplementary Information

Schedule of Changes in The Commonwealth's Net Pension Liability and Related Ratios

(Amounts x \$1,000)	Total Pension Liability	Fiduciary Net Position	Net Pension Liability
	(a)	(b)	(a) – (b)
Changes for the year			
Balances as of 6/30/2020	\$ 107,795,802	\$ 58,556,786	\$ 49,239,016
Service Cost	\$ 1,963,645	\$ 0	\$ 1,963,645
Interest Cost	7,703,465	0	7,703,465
Difference between Expected and Actual Experience	40,322	0	40,322
Changes in Assumption	2,655,180	0	2,655,180
Contribution – Employer	0	4,759,189	(4,759,189)
Contribution – Member	0	1,080,701	(1,080,701)
Net Investment Income (actual)	0	14,754,624	(14,754,624)
Benefit Payments (actual)	(7,134,332)	(7,134,332)	0
Plan Administrative Expense (actual)	0	(49,616)	49,616
Other Changes	0	0	0
Net Changes	\$ 5,228,280	\$ 13,410,566	\$ (8,182,286)
Balances as of 6/30/2021	\$ 113,024,082	\$ 71,967,352	\$ 41,056,730
System fiduciary net position as a percentage of the total pension liability			63.67%
Covered payroll as of the July 1, 2020 actuarial valuation			\$13,974,295
Net pension liability as a percentage of covered payroll			293.80%

Notes to Schedule:

Benefit changes. None.

Changes of assumptions: The Total Pension Liability as of June 30, 2020 reflects the demographic and economic assumptions that were selected on the basis of an Experience Review covering the period July 1, 2010 to June 30, 2015. The Board of Trustees, at their June 10, 2016 meeting.

The Total Pension Liability as of June 30, 2021 reflects the change in demographic and economic assumptions, which were recommended on the basis of the July 1, 2015 to June 30, 2020 Experience Review and approved by the Board for use effective with the June 30, 2021 actuarial valuation:

- Non-mortality related demographic assumptions as adopted by the Board of Trustees at its March 5, 2021 Board meeting
- Mortality related demographic assumptions as adopted by the Board of Trustees at its June 11, 2021 Board meeting
- Economic assumptions, which include a 7.00% interest rate, as adopted by the Board of Trustees at its June 11, 2021 Board meeting.

The assumptions are outlined in Section 3.

Schedule of Commonwealth Contributions

(Amounts x \$1,000)	2020	2021
Actuarially determined contributions	\$ 4,671,931	\$ 4,752,338
Contributions related to the actuarially determined contribution*	<u>4,671,931</u>	<u>4,752,338</u>
Contribution deficiency (excess)	\$ 0	\$ 0

* The fiscal year 2020 amount excludes purchase of service contribution amounts of \$4,482 and the fiscal year 2021 amount excludes purchase of service contribution amounts of \$6,851.

Notes to Schedule

1. Valuation date: Actuarially determined contributions are calculated as of the June 30 preceding the fiscal year in which contributions are made. That is, the contribution calculated as of the June 30, 2020 actuarial valuation will be made during the fiscal year ended June 30, 2022.
2. The methods and assumptions used to determine the actuarially determined contributions for the System will be outlined in the PSERS June 30, 2020 actuarial valuation report, which has not yet been published. Until the June 30, 2020 valuation is published, please refer to the PSERS June 30, 2019 actuarial valuation report (published August 7, 2020).

Section 2 – Actuarial Assumptions and Methods

Valuation Date: June 30, 2020

Measurement Date: June 30, 2021

Assumptions - Total Pension Liability as of June 30, 2020

The following is a summary of the demographic and economic assumptions recommended on the basis of the July 1, 2010 to June 30, 2015 Experience Review, which was adopted by the Board of Trustees at their June 10, 2016 meeting.

Interest Rate: 7.25% per annum, compounded annually. The components are 2.75% for inflation and 4.50% for the real rate of return. Actuarial equivalent benefits are determined based on an interest rate of 4% per year (since 1960) except, in accordance with Act 5-2017, an interest rate of 7.25% per year is used for Class T-E, Class T-F, Class T-G and Class T-H members' Option 4 partial withdrawal of accumulated member contributions.

Separation from Service: Illustrative rates of assumed separation from service are shown in the following table.

Age	Annual Rate of:						
	Withdrawal			Death ¹	Disability	Early Retirement ²	Superannuation Retirement
	Less Than Five Years of Service	Five Years but Less Than 10 Years of Service	10 or More Years of Service				
MALES							
25	14.85%	5.70%	2.57%	.041%	.020%		
30	12.74	3.37	2.57	.039	.020		
35	13.39	3.21	1.50	.044	.058		
40	14.49	3.97	1.34	.050	.116		
45	14.42	4.53	1.37	.084	.160		19.16%
50	14.31	4.45	1.92	.138	.284		19.16
55	12.17	4.43	3.38	.233	.442	18.57%	26.59
60	12.43	5.58	5.57	.379	.582	14.42	30.87
65				.700	.087		21.39
69				1.067	.135		19.34
FEMALES							
25	13.41%	7.47%	5.02%	.013%	.018%		
30	13.81	6.05	4.02	.017	.023		
35	14.22	5.53	2.85	.024	.055		
40	11.79	4.87	1.60	.032	.096		
45	11.54	4.51	1.65	.051	.135		15.00%
50	11.66	4.43	2.06	.088	.229		15.00
55	11.75	4.38	3.11	.133	.368	18.59%	10.02
60	12.25	5.97	6.40	.196	.360	17.05	35.77
65				.327	.082		22.23
69				.443	.115		22.79

1. These base mortality tables will then be projected on a generational basis using the Buck Modified 2015 projection scale from 2013 to the valuation date and thereafter.
2. Early Retirement – Age 55 with 25 years of service, but not eligible for Superannuation retirement.

Death after Retirement:

Male annuitants: RP-2014 male mortality table adjusted backward to 2006 with the MP-2014 improvement scale and projected to the valuation date with the Buck Modified 2015 projection scale.

Female Annuitants: RP-2014 female mortality table adjusted backward to 2006 with the MP-2014 mortality improvement scale, projected to 2013 with the Buck Modified 2015 projection scale adjusted for credibility. This base mortality table will then be projected on a generational basis using the Buck Modified 2015 projection scale from 2013 to the valuation date.

Disabled annuitants: RP-2014 male and female disabled mortality tables adjusted backward to 2006 with the MP-2014 mortality improvement scale and projected from 2013 to the valuation date with the Buck Modified 2015 projection scale.

The above base mortality tables are projected on a fully generational basis using the Buck Modified 2015 projection scale from the valuation date.

For determination of actuarial equivalence, a unisex table based on the above base tables, with weightings of 25% of male and 75% of female mortality probabilities, is utilized. This table is then projected on a generational basis to 2020 using the Buck Modified 2015 projection scale.

Salary Increase: Effective average of 5.00% per annum, compounded annually (adopted as of June 30, 2016). The components are 2.75% for inflation, and 2.25% for real wage growth and merit or seniority increases. Representative values are as follows:

Age	Annual Rate of Salary Increase
20	10.25%
30	7.75
40	5.75
50	3.75
55	3.25
60	3.25
65	3.25
70	3.25

Payroll Growth: A 3.50% per annum payroll growth assumption is used to liquidate the unfunded accrued liability based on level-percent-of-pay amortization schedules required by the Retirement Code as amended by Act 2010-120 and Act 2017-5, i.e., a schedule of 24 years for the unfunded accrued liability as of June 30, 2010 and each change in the unfunded accrued liability due to actuarial experience after the June 30, 2010 valuation. Any legislation after June 30, 2010 that increases the liability due to benefit enhancements will be funded over 10 years based on level-percent-of-pay amortization.

MISCELLANEOUS:

Option 4 - Refund of Contributions Elections: 80% of Class T-C, Class T-D, Class T-E, Class T-F, Class T-G and Class T-H members are assumed to elect a refund of contributions and a reduced annuity.

Withdrawal Annuity: 90% of members are assumed to commence payment immediately and 10% are assumed to defer payment to superannuation age.

Optional Forms of Annuity Payment at Retirement: Anticipated active member elections of optional forms of payment at retirement as follows:

- 50% will elect Maximum Straight Life Annuity (MSLA)
- 20% will elect OPTION 1 (Straight life annuity with guaranteed payments equal to present value of MSLA)
- 20% will elect OPTION 2 (100% Joint and Survivor with males 3 years older than females)
- 10% will elect OPTION 3 (50% Joint and Survivor with males 3 years older than females)
- 0% will elect OPTION 4 annuity

Optional Forms of Payment Factors: Actuarial equivalent benefits are determined based on a statutorily specified interest rate of 4% per year (since 1960). The mortality basis is a blend of the healthy annuitant base mortality tables to be used for the June 30, 2016 actuarial valuation projected to 2020 with the Buck Modified 2015 improvement scale assuming the population consists of 25% males and 75% females.

Assumptions - Total Pension Liability as of June 30, 2021

The following is a summary of the demographic and economic assumptions recommended on the basis of the July 1, 2015 to June 30, 2020 Experience Review and approved by the Board for use effective with the June 30, 2021 actuarial valuation:

- Non-mortality related demographic assumptions as adopted by the Board of Trustees at its March 5, 2021 Board meeting
- Mortality related demographic assumptions as adopted by the Board of Trustees at its June 11, 2021 Board meeting
- Economic assumptions, which include a 7.00% interest rate, as adopted by the Board of Trustees at its June 11, 2021 Board meeting.

Interest Rate: 7.00% per annum, compounded annually. The components are 2.50% for inflation and 4.50% for the real rate of return. Actuarial equivalent benefits are determined based on an interest rate of 4% per year (since 1960) except, in accordance with Act 5-2017, an interest rate of 7.00% per year is used for Class T-E, Class T-F, Class T-G and Class T-H members' Option 4 partial withdrawal of accumulated member contributions.

Separation from Service: Illustrative rates of assumed separation from service are shown in the following table.

Age	Class T-C and Class T-D Annual Rate of:						
	Withdrawal			Death ¹	Disability	Early Retirement ²	Superannuation Retirement
	Less Than Five Years of Service	Five Years but Less Than 10 Years of Service	10 or More Years of Service				
MALES							
25	21.83%	9.22%	4.55%	.022%	.01%		
30	14.93	3.84	4.55	.029	.01		
35	15.17	3.77	1.68	.038	.04		
40	16.04	4.44	1.42	.053	.06		
45	15.12	5.17	1.41	.082	.11		19.0%
50	15.81	4.96	1.89	.129	.23		19.0
55	15.54	4.96	3.63	.194	.37	14.5%	25.0
60	13.85	6.37	5.49	.289	.37	14.5	29.0
65				.447	.11		23.0
70				.699	.08		20.0
75				1.076	.08		25.0
79				1.701	.08		25.0
FEMALES							
25	18.33%	7.47%	3.90%	.008%	.01%		
30	15.16	5.92	3.90	.013	.02		
35	14.66	5.68	2.83	.019	.03		
40	12.86	5.16	1.67	.030	.06		
45	12.82	5.25	1.60	.046	.11		16.0%
50	13.02	5.23	2.08	.069	.18		16.0
55	13.43	5.31	3.66	.102	.29	14.5%	16.0
60	13.81	7.53	5.94	.154	.24	15.0	31.0
65				.251	.07		28.0
70				.431	.09		23.0
75				.766	.09		25.0
79				1.239	.09		25.0

1. These base mortality tables will then be projected on a generational basis using the Buck Modified scale MP-2020. Refer to the pre-retirement mortality description below.
2. Early Retirement – Age 55 with 25 years of service, but not eligible for Superannuation retirement.

Age	Class T-E, Class T-F, Class T-G and Class T-H Annual Rate of:					
	Withdrawal		Death ¹	Disability	Early Retirement ²	Superannuation Retirement
	Less Than 10 Years of Service	10 or More Years of Service				
MALES						
25	17.02%	4.55%	.022%	.01%		
30	11.25	4.55	.029	.01		
35	12.09	1.68	.038	.04		
40	13.14	1.42	.053	.06		
45	13.87	1.41	.082	.11		
50	13.67	1.89	.129	.23		
55	11.91	3.63	.194	.37	14.5%	
60	11.19	5.49	.289	.37	14.5	16.3%
65	11.19		.447	.11		16.3
70	11.19		.699	.08		16.3
75	11.19		1.076	.08		16.3
79	11.19		1.701	.08		16.3
FEMALES						
25	14.54%	3.90%	.008%	.01%		
30	11.68	3.90	.013	.02		
35	12.39	2.83	.019	.03		
40	11.53	1.67	.030	.06		
45	10.99	1.60	.046	.11		
50	10.72	2.08	.069	.18		
55	10.75	3.66	.102	.29	14.5%	19.5%
60	11.62	5.94	.154	.24	15.0	19.5
65	11.62		.251	.07		19.5
70	11.62		.431	.09		19.5
75	11.62		.766	.09		19.5
79	11.62		1.239	.09		19.5

1. These base mortality tables will then be projected on a generational basis using the Buck Modified scale MP-2020. Refer to the pre-retirement mortality description below.
2. Early Retirement – prior to eligibility for Superannuation retirement.

Death before Retirement:

Male participants: 50% PubT-2010 Employee (Total Teacher dataset) and 50% PubG-2010 Employee (Total General Employees dataset) Amount Weighted Male Tables, with a 99.0% adjustment, generationally projected with Buck Modified scale MP-2020.

Female participants: 50% PubT-2010 Employee (Total Teacher dataset) and 50% PubG-2010 Employee (Total General Employees dataset) Amount Weighted Female Tables, with a 88.6% adjustment, generationally projected with Buck Modified scale MP-2020.

Death after Retirement:

Male annuitants: 50% PubT-2010 Retiree (Total Teacher dataset) and 50% PubG-2010 Retiree (Total General Employees dataset) Amount Weighted Male Tables, with a 99.7% adjustment, generationally projected with Buck Modified scale MP-2020.

Female annuitants: 50% PubT-2010 Retiree (Total Teacher dataset) and 50% PubG-2010 Retiree (Total General Employees dataset) Amount Weighted Female Tables, with a 95.4% adjustment, generationally projected with Buck Modified scale MP-2020.

Male disabled annuitants: Pub-2010 Disability Mortality Non-Safety Amount Weighted Male Table, with a 105.4% adjustment, generationally projected with Buck Modified scale MP-2020.

Female disabled annuitants: Pub-2010 Disability Mortality Non-Safety Amount Weighted Female Table, with a 95.0% adjustment, generationally projected with Buck Modified scale MP-2020.

Male contingent annuitants: Pub-2010 Contingent Survivor Amount Weighted Male Table, with a 106.0% adjustment, generationally projected with Buck Modified scale MP-2020.

Female contingent annuitants: Pub-2010 Contingent Annuitant Amount Weighted Female Table, with a 116.2% adjustment, generationally projected with Buck Modified scale MP-2020.

For determination of actuarial equivalence, a unisex table based on 25% males and 75% females blend of the Board approved base mortality tables to be used for actuarial valuations beginning June 30, 2021, generationally projected to 2025 with the Buck Modified MP-2020 improvement scale.

Salary Increase: Effective average of 4.50% per annum, compounded annually. The components are 2.50% for inflation, and 2.00% for real wage growth and merit or seniority increases. Representative values are as follows:

Age	Annual Rate of Salary Increase
20	9.65%
30	7.15
40	5.15
50	3.15
55	2.75
60	2.75
65	2.75
Over 65	2.75

Payroll Growth: A 3.25% per annum payroll growth assumption is used to liquidate the unfunded accrued liability based on level-percent-of-pay amortization schedules required by the Retirement Code as amended by Act 2010-120 and Act 2017-5, i.e., a schedule of 24 years for the unfunded accrued liability as of June 30, 2010 and each change in the unfunded accrued liability due to actuarial experience after the June 30, 2010 valuation. Any legislation after June 30, 2010 that increases the liability due to benefit enhancements will be funded over 10 years based on level-percent-of-pay amortization.

MISCELLANEOUS:

Option 4 - Refund of Contributions Elections: 75% of Class T-C and Class T-D and 50% of Class T-E, Class T-F, Class T-G and Class T-H members are assumed to elect a refund of contributions and a reduced annuity.

Withdrawal Annuity: 50% of members are assumed to commence payment immediately and 10% are assumed to defer payment to superannuation age.

Optional Forms of Annuity Payment at Retirement: Anticipated active member elections of optional forms of payment at retirement as follows:

- 45% will elect Maximum Straight Life Annuity (MSLA)
- 25% will elect OPTION 1 (Straight life annuity with guaranteed payments equal to present value of MSLA)
- 20% will elect OPTION 2 (100% Joint and Survivor with males 3 years older than females)
- 10% will elect OPTION 3 (50% Joint and Survivor with males 3 years older than females)
- 0% will elect OPTION 4 annuity

Optional Forms of Payment Factors: Actuarial equivalent benefits are determined based on a statutorily specified interest rate of 4% per year or 7.00% per annum, as applicable. The mortality basis is a blend of 25% males and 75% females blend of the Board approved base mortality tables to be used for actuarial valuations beginning June 30, 2021, generationally projected to 2025 with the Buck Modified MP-2020 improvement scale

Section 3 – Summary of System Provisions

Pennsylvania Statutes, Title 24, PART IV. RETIREMENT FOR SCHOOL EMPLOYEES

Membership

For valuation purposes, all employees are considered to be full coverage members. All employees who become members on and after January 1, 1966 are members of the dual coverage group. Dual coverage members contribute to both PSERS and to Social Security.

Benefits

Superannuation Annuity

Eligibility

Age 62, or age 60 with 30 years of service, or 35 years of service regardless of age. For Class T-E and Class T-F members, age 65 with a minimum of three years of service credit, or any combination of age and service that totals 92 with at least 35 years of credited service. For Class T-G members, age 67 with a minimum of three years of service, or any combination of age and service that totals 97 with at least 35 years of credited service. For Class T-H members, age 67 with a minimum of three years of service credit.

Amount

Class	Accrual	Final Average Salary
T-C	2.00%	For any 3 years of service
T-D	2.50%	For any 3 years of service
T-E	2.00%	For any 3 years of service
T-F	2.50%	For any 3 years of service
T-G	1.25%	For any 5 years of service
T-H	1.00%	For any 5 years of service

Based on the above table, Accrual Rate times the Final Average Salary times years of school service and intervening military service. Minimum of \$100 per year of service. The "final average salary" means the highest average annual salary.

Annual salary is subject to a limit of \$200,000, as adjusted under Section 401(a)(17) of the Internal Revenue Code. As of June 30, 2019, the adjusted limit is \$280,000.

For members who elect coverage under Class T-D, the maximum benefit is equal to the limit established by Section 415 of the Internal Revenue Code.

For Class T-E, Class T-F, Class T-G and Class T-H members, the maximum benefit is equal to the lesser of the limit established by Section 415 of the Internal Revenue Code or 100% of final average salary.

Early Retirement Annuity

Eligibility Age 55 with 25 years of service. For Class T-G members, age 57 with 25 years of service.

Amount Accrued benefit as of date of retirement, reduced 1/4% for each month by which commencement of payments precedes Superannuation Age.

For members who elect coverage under Class T-D, the maximum benefit is equal to the limit established by Section 415 of the Internal Revenue Code.

For Class T-E, Class T-F, Class T-G and Class T-H members, the maximum benefit is equal to the lesser of the limit established by Section 415 of the Internal Revenue Code or 100% of final average salary.

Withdrawal Annuity

Eligibility 5 years of service. For Class T-E, Class T-F, Class T-G and Class T-H members, ten years of service.

Amount Accrued benefit deferred to superannuation retirement age or an actuarially reduced benefit payable immediately. For Class T-C, Class T-D, Class T-E and Class T-F members, PSERS early retirement factors are based on the statutory interest rate of 4%. For Class T-G and T-H members, PSERS early retirement factors from age 62 to superannuation are based on the statutory interest rate of 4%. From commencement age to age 62, PSERS early retirement factors are based on the assumed long term return on plan assets as adopted by the Board.

Disability Annuity

Eligibility 5 years of service.

Amount The standard single life annuity if the total number of years of credited service is greater than 16.667, otherwise the standard single life annuity multiplied by the lesser of the following ratios: (Y^*/Y) or $(16.667/Y)$ where Y is the number of years of credited service and Y* is the total years of credited service if the member were to continue as a school employee until superannuation retirement age (or at current age, if later). For Class T-G and Class T-H members, the standard single life annuity for this provision is based on a 2.0% accrual rate. Minimum of \$100 per year of service.

Return of Contributions

Eligibility	Death or separation from service and member does not qualify for other benefits.
Amount	Refund of accumulated deductions includes interest (less annuity payments received prior to death in the case of a retired member).

Death Benefit

Eligibility	Death of an active member or vestee who was eligible to receive an annuity.
Amount	The present value of the annuity that would have been effective if the member retired on the day before death. Option 1 assumed payable if no other option elected.

Normal and Optional Forms of Benefits

Normal Form (Maximum):	Life annuity with a guaranteed payment equal to member contributions with interest.
Option 1:	Reduced benefit with refund of balance of present value of annuity at retirement over payments received. If balance is less than \$5,000, benefit is paid in lump sum; otherwise, beneficiary may elect annuity and/or lump sum.
Option 2:	Joint and 100% survivorship annuity.
Option 3:	Joint and 50% survivorship annuity.
Option 4:	Benefit of equivalent actuarial value, including lump sum payment of member contributions.

Contributions

By Members

Regular member contribution:

Class	Enrollment	Contribution Rate
Members who did not elect Class T-D	Prior to July 22, 1983	5.25%
Members who did not elect Class T-D	After to July 21, 1983 but prior to July 1, 2001	6.25%
T-D	Prior to July 22, 1983	6.50%
T-D	After to July 21, 1983	7.50%
T-E		7.50%
T-F		10.30%
T-G		5.50%
T-H		4.50%

Shared-Risk contribution:

Class T-E, Class T-F, Class T-G and Class T-H members are subject to a “shared-risk” employee contribution rate. Members benefit when investments of the fund are doing well and share some of the risk when investments underperform. The member contribution rate will stay within the specified range allotted for Class T-E, Class T-F, Class T-G or Class T-H members, but could increase or decrease every three years starting July 1, 2015 depending on investment performance.

1. If the investment rate of return (less investment fees) is equal to or exceeds the assumed rate of return by more than 1.0% based on the prior ten-year period:

Class	Decrease in Contribution Rate	Minimum Contribution Rate
T-E	0.50%	5.50%
T-F	0.50%	8.30%
T-G	0.75%	2.5%
T-H	0.75%	1.5%

Provided the total member contribution rate is less than the member’s basic contribution rate, if the investment rate of return (less investment fees) is less than the assumed rate of return by less than 1.0% based on the prior ten-year period:

Class	Increase in Contribution Rate
T-E	0.50%
T-F	0.50%
T-G	0.75%
T-H	0.75%

2. If the investment rate of return (less investment fees) is less than assumed rate of return by more than 1.0% based on the prior ten-year period:

Class	Increase in Contribution Rate	Maximum Contribution Rate
T-E	0.50%	9.50%
T-F	0.50%	12.30%
T-G	0.75%	8.5%
T-H	0.75%	7.5%

Provided the total member contribution rate is greater than the member's basic contribution rate, if the investment rate of return (less investment fees) is equal to or exceeds the assumed rate of return by less than 1.0% based on the prior ten-year period:

Class	Decrease in Contribution Rate
T-E	0.50%
T-F	0.50%
T-G	0.75%
T-H	0.75%

If the Retirement System is fully funded at the time of the comparison, the increase in member contribution rate shall not be greater than zero. There shall be no increase in the member contribution rate if there has not been an equivalent increase in the employer contribution rate over the previous three-year period.

Until a full ten-year look back period is available, the investment return measurement period will begin on July 1, 2011.

By Commonwealth and School Districts

Balance of required contribution determined as normal contribution, accrued liability contribution, supplemental annuity contribution, experience adjustment factor and premium assistance contribution and the DC Plan contribution, is funded by the Commonwealth and the School District.

Section 4 – Summary of Key Accounting Terms

Actuarially determined contribution

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

Actuarial present value of projected benefit payments

Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.

Actuarial valuation

The determination, as of a point in time (the actuarial valuation date), of the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.

Actuarial valuation date

The date as of which an actuarial valuation is performed.

Ad hoc postemployment benefit changes

Postemployment benefit changes that require a decision to grant by the authority responsible for making such decisions.

Automatic postemployment benefit changes

Postemployment benefit changes that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).

Covered payroll

The compensation to active employees on which the employer bases contributions to the pension plan.

Discount rate

The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following:

1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the pension plan's fiduciary net position is projected (under the requirements of this Statement) to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments.
2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.

Entry age actuarial cost method

A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the actuarial accrued liability.

Net pension liability

The liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.

Projected benefit payments

All benefits estimated to be payable through the pension plan to current active and inactive plan members as a result of their past service and their expected future service.

Real rate of return

The rate of return on an investment after adjustment to eliminate inflation.

Service cost

The portion of the actuarial present value of projected benefit payments that are attributed to valuation years.

Total pension liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service.