BUCK

Pennsylvania Public School Employees' Retirement System

June 30, 2020 Valuation
Board Presentation
December 3, 2020

Disclosures

The information contained herein is developed for the Board of Trustees and Staff of the Pennsylvania Public School Employees' Retirement System (PSERS) by Buck Global, LLC (Buck) using actuarial principles and techniques in accordance with all applicable Actuarial Standards of Practice (ASOPs). This document provides key results of the June 30, 2020 actuarial valuation. Interested parties may refer to the full June 30, 2020 Actuary's Report, which is scheduled to be released in 2021, for a detailed explanation regarding data, assumptions, methods, and plan provisions that underlie the valuation results. In the interim, interested parties may refer to the full Actuary's Report on the June 30, 2019 actuarial valuation for a detailed explanation regarding assumptions, methods, plan provisions, and certain risks that underlie the valuation.

The material contained herein is based on census and financial data, actuarial assumptions and methods, and plan provisions applicable to the June 30, 2020 actuarial valuation of PSERS. Where presented, historical information is based on the parameters of the corresponding actuarial valuation. No third party recipient of Buck's work product should rely upon Buck's work product absent involvement of Buck or without our approval.

Future actuarial measurements may differ significantly from current measurements due 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 methodology used for these measurements, and changes in plan provisions or applicable law. An analysis of the potential range of future results is beyond the scope of this valuation.

Where presented, references to "funded ratio" and "unfunded accrued liability" are to measurements made on the basis of the actuarial value of assets. It should be noted that the same measurements made using the market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratios presented are appropriate for evaluating the need for and level of future contributions but provide no indication of the funded status of the plan if the plan were to settle (i.e., purchase annuities to cover) a portion or all of its liabilities.

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 third-party software in the performance of annual actuarial valuations and projections. The model is intended to calculate the liabilities associated with the provisions of the System using data and assumptions as of the valuation date under the funding standards specified in Actuary's Report. Further, the

Disclosures

model applies those funding standards to the liabilities derived 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 funding outputs are similarly reviewed in detail and at a high level for accuracy, reasonability and consistency with prior results. Buck also reviews the model when significant changes are made to the software. The review is performed by experts within the company who are familiar with applicable accounting rules as well as the manner in which the model generates its output.

David L. Driscoll is a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. Edward Quinn and Salvador Nakar are Members of the American Academy of Actuaries. We meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. We are available to answer any questions on the material contained herein, or to provide explanations or further details as may be appropriate.

Agenda

- Overview of 2019 - 2020 fiscal year
- Review of Shared Risk determination
- Report on June 30, 2020 valuation results
- Experience Study – 2021
- ASOP 51

Overview of 2019/2020 Fiscal Year

- The time-weighted rate of return on the market value of assets was 1.11% *(per Aon)*
  - Expected return for the period July 1, 2019 to June 30, 2020 was 7.25%
  - Due to the asset smoothing method approach for determining the Actuarial Value of Assets (AVA), the AVA rate of return for the year was approximately 6.38%, which reflects continued recognition of past investment gains and losses

- The proportion of eligible participants who are assumed to elect Premium Assistance coverage for determination of the Premium Assistance contribution rate decreased from 63% to 62% in fiscal year 2022/2023 and thereafter.

- The assumed proportions of membership elections under Act 5 among new System members in fiscal year 2021/2022 are:
  - 98% elect Class T-G membership,
  - 1% elect Class T-H membership and
  - 1% elect DC-only membership

Note: These assumptions are based on the class of new members in the System as of June 30, 2020

Shared Risk Determination - July 1, 2021 to June 30, 2024

Act 5-2017 Class T-E, Class T-F, Class T-G and Class T-H Shared Risk Contributions

- Commencing with the annual actuarial valuation for the period ending June 30, 2014, and every three years thereafter, the Board compares the actual investment rate of return, net of fees, to the annual interest rate adopted by the Board for the calculation of the normal contribution rate, based on the market value of assets, for the prior ten-year period.

Until the Retirement System has accumulated a ten-year period of investment rate of return experience following June 30, 2011, the look-back period used in this calculation will begin not earlier than June 30, 2011.

- If the actual time-weighted investment rate of return, net of fees, is less than the annual interest rate adopted by the Board by an amount of 1% or more, the shared risk contribution rate of Class T-E and T-F members will increase by 0.5% and the shared risk contribution rate for Class T-G and Class T-H members will increase by .75%.

- If the actual time-weighted investment rate of return, net of fees, is more than the annual interest rate adopted by the Board by an amount of 1% or more, the shared risk contribution rate of Class T-E and T-F members will decrease by 0.5% and the shared risk contribution rate for Class T-G and Class T-H members will decrease by .75%.

Summary of the Act 5-2017 Shared Risk Provisions

Certain restrictions apply:

- If the Retirement System's total funded ratio based on the actuarial value of assets is at least 100% as of the measurement date, the shared risk contribution rate shall not be greater than zero.
- For any fiscal year in which the employer contribution rate is lower than the final contribution rate under section 8328(h), the total member contribution rate for Class T-E, T-F, T-G and T-H members shall be reset to the basic contribution rate provided the total member contribution rate is at or above the basic contribution rate.
- There shall be no increase in the member contribution rate if there has not been an equivalent increase to the employer contribution rate over the previous three-year period.

None of the above overrides to the Shared Risk Contribution rate are currently in effect.

A summary of the Act 5-2017 Shared Risk provisions is supplied in the Appendix.

Shared Risk Determination - July 1, 2021 to June 30, 2024

Act 5 Class T-E/T-F/T-G/T-H Shared Risk

- Market Rates of Return, net of fees, for the nine years since the effective date of Act 120
  - Fiscal year 2011/2012: 3.44%
  - Fiscal year 2012/2013: 7.95%
  - Fiscal year 2013/2014: 14.82%
  - Fiscal year 2014/2015: 3.41%
  - Fiscal year 2015/2016: 1.33%
  - Fiscal year 2016/2017: 10.20%
  - Fiscal year 2017/2018: 9.26%
  - Fiscal year 2018/2019: 6.66%
  - Fiscal year 2019/2020: 1.11%

The geometric average time-weighted rate of return, net of fees, for the nine-year period ending June 30, 2020 is 6.38% per annum, as calculated by Aon

Shared Risk Determination - July 1, 2021 to June 30, 2024

- Annual interest rates adopted by the Board for the nine annual actuarial valuations since the effective date of Act 120
  - June 30, 2012: 7.50%
  - June 30, 2013: 7.50%
  - June 30, 2014: 7.50%
  - June 30, 2015: 7.50%
  - June 30, 2016: 7.25%
  - June 30, 2017: 7.25%
  - June 30, 2018: 7.25%
  - June 30, 2019: 7.25%
  - June 30, 2020: 7.25%

The geometric average of the annual interest rates adopted by the Board over the 9-year period less 1.00% is 6.36%.

- If the annual interest rate adopted by the Board for the calculation of the normal contribution rate is changed during the period used to determine the Shared Risk contribution rate, the Board, with the advice of the actuary, shall determine the applicable rate during the entire period, expressed as an annual rate.

Shared Risk Determination - July 1, 2021 to June 30, 2024

- The geometric average time-weighted market rate of return, net of fees, of 6.38% is greater than 6.36% (average of the annual interest rates adopted by the Board over the same 9-year period less 1.00%). Therefore, the Shared Risk contribution rate is zero.

- The contribution rates for the defined benefit plan for Class T-E, Class T-F, Class T-G and Class T-H members remain at 7.50%, 10.30%, 5.50% and 4.50%, respectively, for the period 7/1/2021 to 6/30/2024.

- The next Class T-E, Class T-F, Class T-G and Class T-H Shared Risk valuation is to be performed for the ten-year period ending June 30, 2023.

Results of Actuarial Valuation

- Employer contribution rate
  - The fiscal year 2021/2022 actuarially required employer contribution rate is 34.94%
    - 33.99% Pension plus
    - 0.80% Premium Assistance plus
    - 0.15% Act 5 DC contribution*

  - The Act 120 minimum employer pension rate is the normal cost rate of 7.20%

  - The fiscal year 2020/2021 actuarially required employer contribution rate is 34.51%
    - 33.51% Pension plus
    - 0.82% Premium Assistance plus
    - 0.18% Act 5 DC contribution*

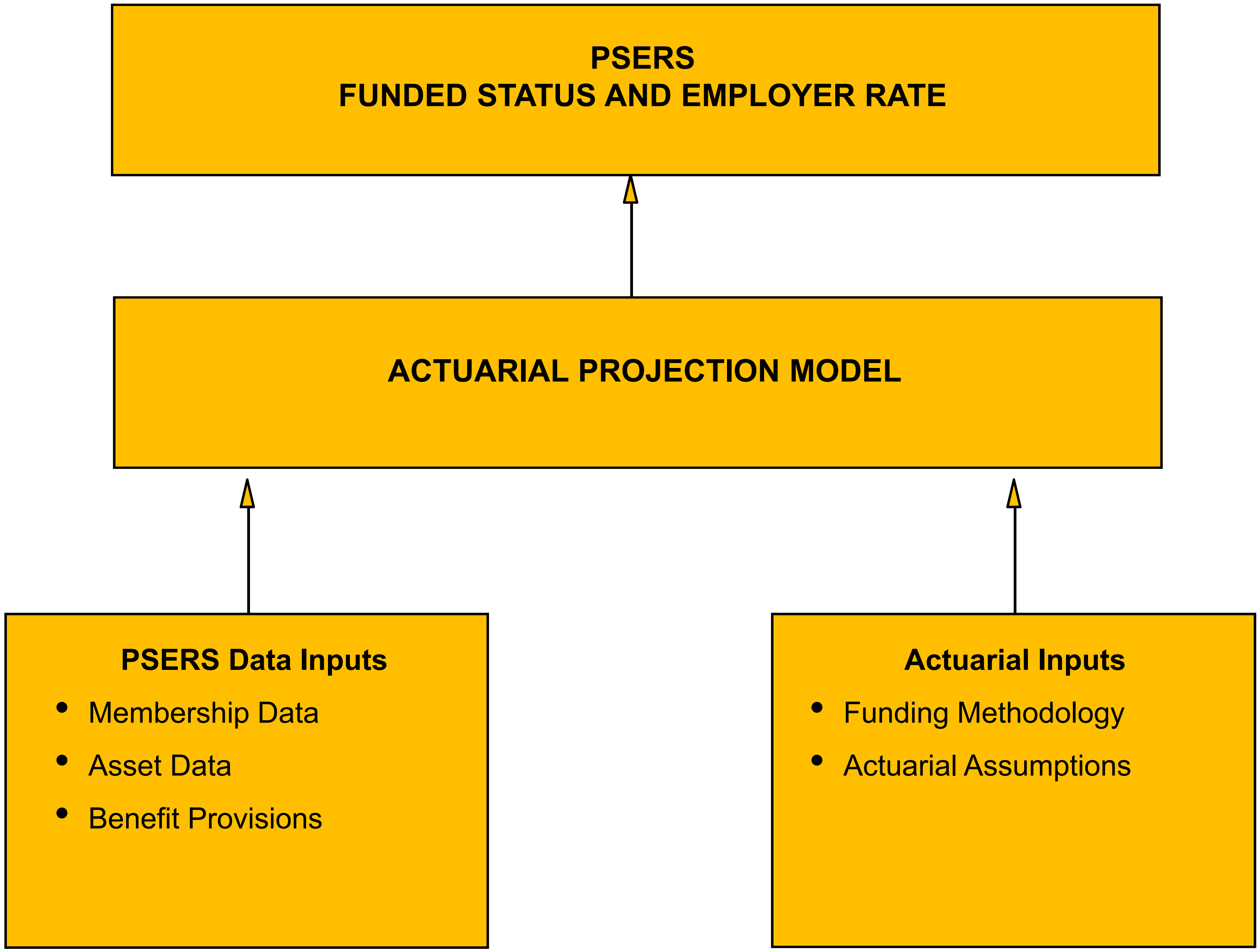
* Estimated average DC contribution rate. The actual employer DC contribution rate will be based on each employer's Class T-G, Class T-H and Class DC-only membership/participation.

Results of Actuarial Valuation

- Security of promised benefits
  - Accrued liability exceeds actuarial value of assets by $44.0 billion
    - As of June 30, 2019, the accrued liability exceeded actuarial value of assets by $44.1 billion
  - Funded status based on the System's actuarial value of assets is 59.2%
    - Funded status as of June 30, 2019 based on the System's actuarial value of assets was 58.1%

    Note: The above funded ratios have no relationship to the possible funded position on a settlement-of-liabilities basis.

- Increase of Unfunded Actuarial Accrued Liability due to 2020 Net Actuarial Loss
  - Comparison of actual experience to expected
  - Experience loss for fiscal year ended June 30, 2020 is $0.291 billion
    - Actuarial asset loss of $0.529 billion
    - Actuarial liability gain of $0.238 billion
  - The fiscal year 2020 actuarially required employer contribution rate was received. There was no actuarial experience due to (over)/under-contribution.


PSERS
FUNDED STATUS AND EMPLOYER RATE
ACTUARIAL PROJECTION MODEL
PSERS Data Inputs
• Membership Data
• Asset Data
• Benefit Provisions
Actuarial Inputs
• Funding Methodology
• Actuarial Assumptions

Active Membership Statistics

Item	June 2020	June 2019
Class T - C	2,845	3,010
Class T - D	158,971	167,118
Class T - E	64,658	70,521
Class T - F	14,559	15,100
Class T - G	15,122	0
Class T - H	91	0
Total Number*	256,246	255,749
	+0.19 %	
Annualized salaries	$ 13.974 Bil	$ 13.672 Bil
(Total salaries)	+2.21 %	
Average compensation	$ 54,535	$ 53,458
	+2.01 %	
Average age	45.5 Yrs.	45.4 Yrs.
Average service	11.8 Yrs.	11.7 Yrs.
Funding year	2021-2022	2020-2021
Total employer payroll (est.)	$ 14.289 Billion	$ 14.078 Billion

* Excludes 60 Class DC-only participants in 2020.

Annuitant Membership Statistics

Item	June 2020	June 2019
Number		
Annuitants	218,478	216,326
Survivors and beneficiaries*	12,072	11,860
Disabled annuitants	9,064	9,153
Total	239,614	237,339
	+0.96 %	
Annual annuities		
Annuitants	$ 5.799 Bil	$ 5.690 Bil
Survivors and beneficiaries	0.182 Bil	0.176 Bil
Disabled annuitants	0.190 Bil	0.186 Bil
Total	$ 6,171 Bil	$ 6.052 Bil
	+1.97 %	
Average annuities		
Annuitants	$ 26,541	$ 26,300
Survivors and beneficiaries	$ 15,099	$ 14,847
Disabled annuitants	$ 20,954	$ 20,348
Total	$ 25,753	$ 25,498
	+1.00 %	

* Excludes 1,281 beneficiaries in 2020 and 1,595 beneficiaries in 2019 who are only entitled to a lump sum distribution.

Market Value of Assets

Item	June 2020	June 2019
Beginning of year	$ 58.859 Bil	$ 56.486 Bil
Contributions	5.862	5.666
Benefits	(6.990)	(6.874)
Investment income**	0.956	3.581
End of year	$ 58.687 Bil	$ 58.859 Bil
Rate of return	1.11 % *(per Aon)*	6.66* % *(per Aon)*
Expected rate of return***	7.25 %	7.25 %

* Amount was revised from 6.68% by Aon

** Net of administrative and investment expenses

*** Based on prior year's valuation interest rate

Actuarial Value of Assets

Ten-year asset smoothing method

1. Market value of assets June 30, 2020 — $ 58.687 Bil

2. Determination of deferred gain (loss)

Fiscal Year	Gain (Loss)	Recognized Amount – FY19/20	Percent Deferred	Deferred Amount
2019/2020	$ (3.440) Bil	$ (0.344) Bil	90.00 %	$ (3.096) Bil
2018/2019	(0.600)	(0.060)	80.00	(0.480)
2017/2018	0.551	0.055	70.00	0.386
2016/2017	0.847	0.085	60.00	0.508
2015/2016	(3.794)	(0.379)	50.00	(1.897)
2014/2015	(2.918)	(0.292)	40.00	(1.167)
2013/2014	2.864	0.286	30.00	0.859
2012/2013	(0.153)	(0.015)	20.00	(0.030)
2011/2012	(3.246)	(0.325)	10.00	(0.325)
2010/2011	4.598	0.460	0.00	0.000
	$ (5.291) Bil	$ (0.529) Bil		$ (5.242) Bil

3. Preliminary actuarial value of assets June 30, 2020: (1) – (2) — $ 63.929 Bil

Actuarial Value of Assets
Ten-year asset smoothing method

- Per Act 5 of 2017, the Actuarial Value of Assets must be in a 30% range of the Market Value of Assets:
  1. Preliminary Actuarial Value of Assets = $63.929 Billion
  2. 70% of the Market Value of Assets = .70 x $58.687 Billion = $41.081 Billion
  3. 130% of the Market Value of Assets = 1.30 x $58.687 Billion = $76.293 Billion
  4. Actuarial Value of Assets = (1) not less than (2) nor greater than (3) = $63.929 Billion

Notes:

- The 30% corridor limits how far the 10-year asset smoothing method can depart from market value of assets.
- The corridor will (decrease)/increase the unfunded accrued liability contribution rate if the actuarial value of assets is (less than 70%)/greater than 130% of the market value of assets.

Actuarial Cost Method

- PSERS Cost Method
    - Entry Age Normal
    - Required by Code
- Entry age normal method: allocation of reserve over members' working lifetimes
    - Pension benefit earned during year (normal cost)
    - Payment toward unfunded accrued liability
- Goal: full reserve at retirement

Accrued Liability

	June 2020	June 2019
Annuitants and Inactives	$ 60.860 Billion	$ 59.672 Billion
Active members	46.973	45.528
Accrued Liability Pension	$ 107.833	$ 105.200
Healthcare payments	0.130	0.125
Total Accrued liability	$ 107.963 Billion	$ 105.325 Billion

Unfunded Accrued Liability and Funded Status

Item	June 2020	June 2019
Accrued Liability Pension	$107.833 Bil	$105.200 Bil
Healthcare Payments	0.130	0.125
Total Accrued liability	$107.963 Bil	$105.325 Bil
Assets		
Market value of assets	$58.687 Bil	$58.859 Bil
Actuarial value of assets	$63.929 Bil	$61.190 Bil
Unfunded accrued liability		
Market value of assets*	$49.276 Bil	$46.466 Bil
Actuarial value of assets**	$44.034 Bil	$44.135 Bil
Funded status		
Market value of assets	54.4%	55.9%
Actuarial value of assets	59.2%	58.1%

* Similar to GASB 67 Net Pension Liability.

** Act 120 amortization is over a period of 24 years with amounts increasing as a level percent of compensation.

Employer Contribution Rate

Item	June 2020 (FY21/22)	June 2019 (FY20/21)
Normal cost rate	14.76%	14.98%
Member rate (average)	(7.56)	(7.61)
Employer normal cost rate	7.20%	7.37%
Unfunded accrued liability rate	26.79	26.14
Total pension rate*	33.99%	33.51%
Health insurance rate	0.80	0.82
Act 5 DC contribution rate**	0.15	0.18
Total***	34.94%	34.51%

* The total pension rate can not be less than the employer normal cost rate .

** Estimated average DC contribution rate. The actual employer DC contribution rate will be based on each employer's Class T-G, Class T-H and Class DC-only membership/participation.

*** The total employer contribution rate is the sum of the final pension rate, health insurance rate and Act 5 DC contribution rate.

Funding Methodology

Goal - Full Reserve at Retirement

Benefit	Annual Cost	Rate Component
Projected Retirement Benefit	Level % Pay	Normal Cost Rate
Accrued Benefit:		
(1) Unfunded accrued liability as of the June 30, 2010 valuation	24-Year Amortization Level % Pay	Accrued Liability Rate
(2) Legislation which increase liability (e.g. COLAs or ERI windows)	10-Year Amortization Level % Pay	Supplemental Liability Rate
(3) Annual Actuarial Gains/Losses and Assumption Changes	24-Year Amortization Level % Pay	Experience Adjustment Factor

Unfunded Accrued Liability Rate

Rate Component	June 2020 (FY21/22)	June 2019 (FY20/21)
Accrued liability rate	11.49%	11.27%
Supplemental liability rate	0.00	0.00
Experience adjustment factor	15.30	14.87
Unfunded accrued liability rate	26.79%	26.14%

2020 Net Actuarial Loss

1.	Investment return loss[1]	$	529 Mil
2.	Experience (gains) and losses[2]		
	- New entrants and pickups		253
	- Individual salary increases		(563)
	- Mortality		(63)
	- Terminations (retirement/disability/terminations)		36
	- Miscellaneous		99
	- Total	$	(238) Mil
3.	Net actuarial experience loss: (1) + (2)	$	291 Mil

1 6.38% actuarial rate of return vs. 7.25% expected. Actuarial rate of return based on 10-year averaging of (gains)/losses.

2 Experience (gains) reduce the System's unfunded accrued liability and experience losses increase the System's unfunded accrued liability.

Health Insurance Account 2021/2022 Employer Rate

Estimated number of eligible annuitants in FY 2022/2023		158,300
Estimated number of eligible annuitants who elect coverage		98,146
1. Estimated balance at 6/30/2021	$	126.8 Mil
2. Disbursements FY 2021/2022	$	120.1
3. Disbursements FY 2022/2023	$	119.8
4. Required contribution: (2) + (3) – (1)	$	113.1
5. FY 2021/2022 membership payroll	$	14,289 Mil
6. Health insurance employer rate: (4) ÷ (5) (rounded up)		0.80%

Notes:

1. Beginning in fiscal year 2022/2023, 62% of eligible annuitants are assumed to elect coverage. For fiscal years 2020/2021 and 2021/2022, the assumption remains at 63%.
2. Actuarial Accrued Liability disclosed under GASB 74 as of June 30, 2020 is $2,291 million, based on a discount rate of 2.66%.

Experience Study - 2021

- An experience study for the 5-year period July 1, 2015 to June 30, 2020 will be performed in early 2021

- All assumptions used in the annual valuation will be reviewed in comparison to the actual experience of the System, including the following:

  - Investment Return
  - Retirement
  - Withdrawal
  - Disability
  - Mortality
  - Act 5 new member elections
  - Lump sum and optional form of payment elections
  - Salary increases

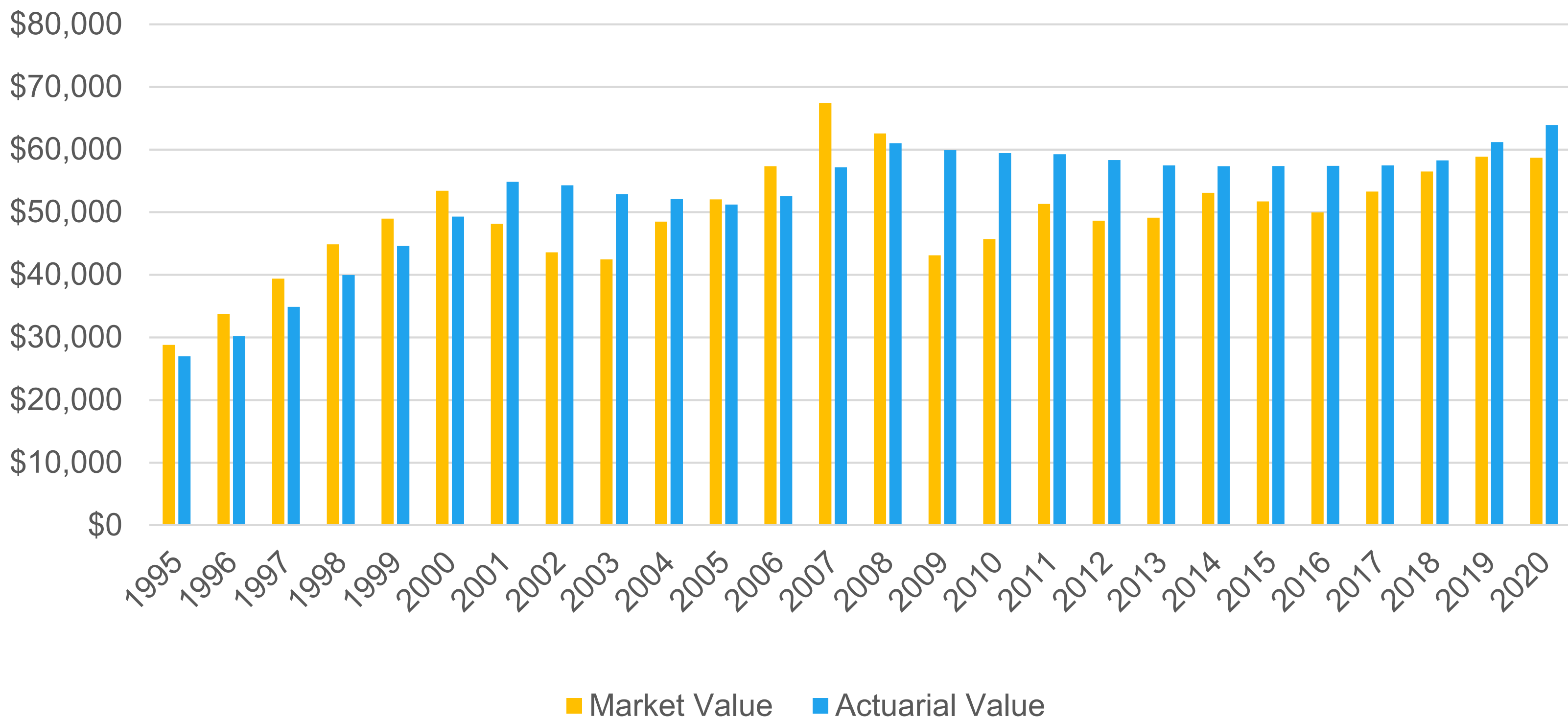
- Results of the experience study will be presented at the June Board meeting to be approved for use in the June 30, 2021 valuation

ASOP 51 Disclosures

- **Investment Risk** – Asset returns less than expected would lead to lower assets, higher unfunded liabilities and larger employer contributions
  - 10 year asset averaging helps to smooth out volatility due to the above mentioned investment risk
- **Salary increases** – Salaries greater than expected would lead to higher liabilities, larger unfunded liabilities and larger employer contributions. Salaries less than expected would lead to lower liabilities but may increase employer contribution rates due to lower employer payroll.
- **Longevity risks** – Members living longer than expected would increase the System's liabilities, the unfunded liability and the employer contributions
  - The mortality assumption uses a mortality improvement scale that mitigates some of the risk associated with members living longer
- **Declining active workforce -** Employer contributions are based on a percentage of participants' salaries. If the required dollar amount of contributions remain level or increase, a declining active workforce will result in higher contribution rates in order to meet required contribution levels.
- **Contribution risk** – Risk of not contributing an actuarially determined contribution. If future contributions are at levels below those presented in this report, the System may not be expected to achieve a fully funded position over the 24-year time horizon as contemplated in the statute based on the data, assumptions and methods used in the valuation

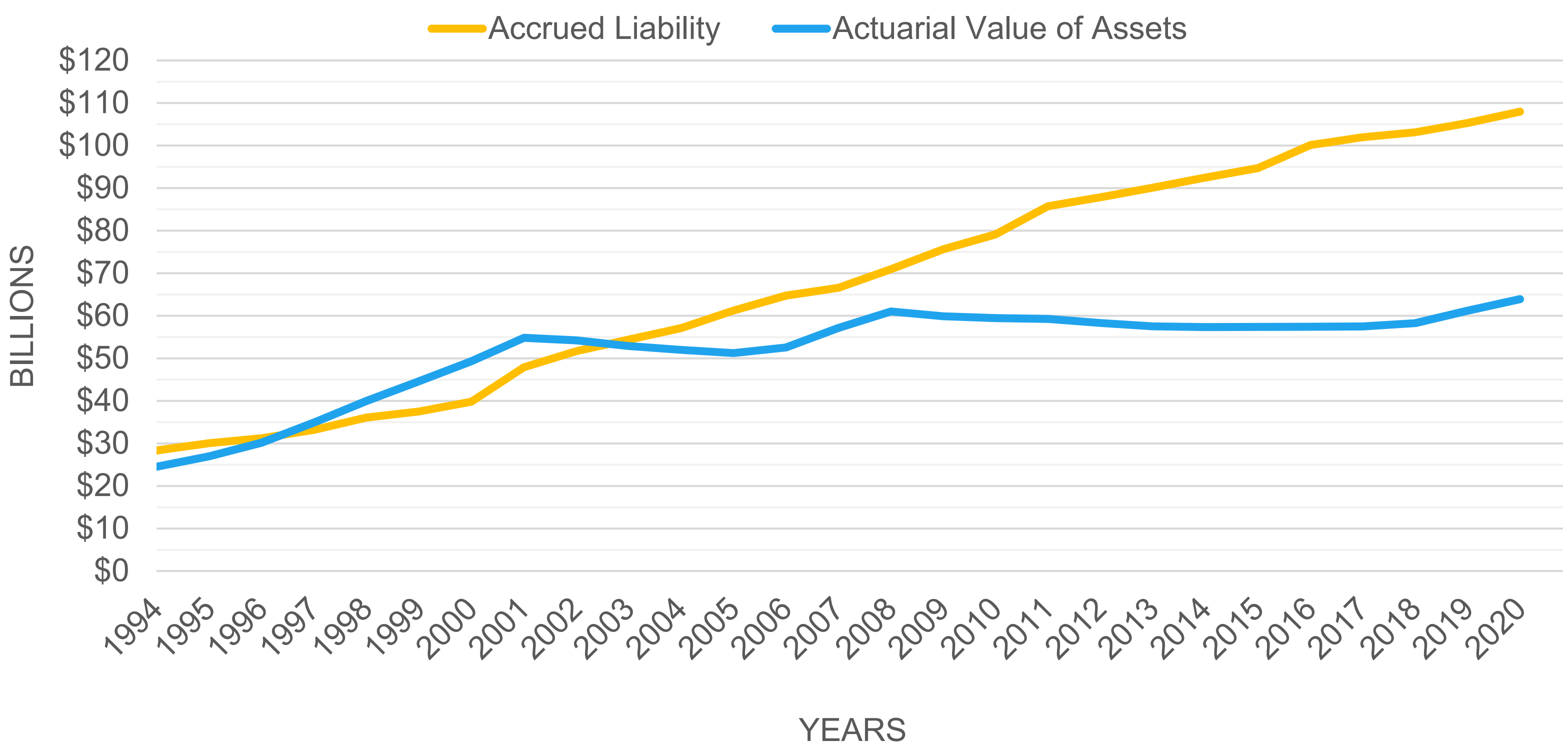
Appendices

Comparison of Asset Values ($ Millions)

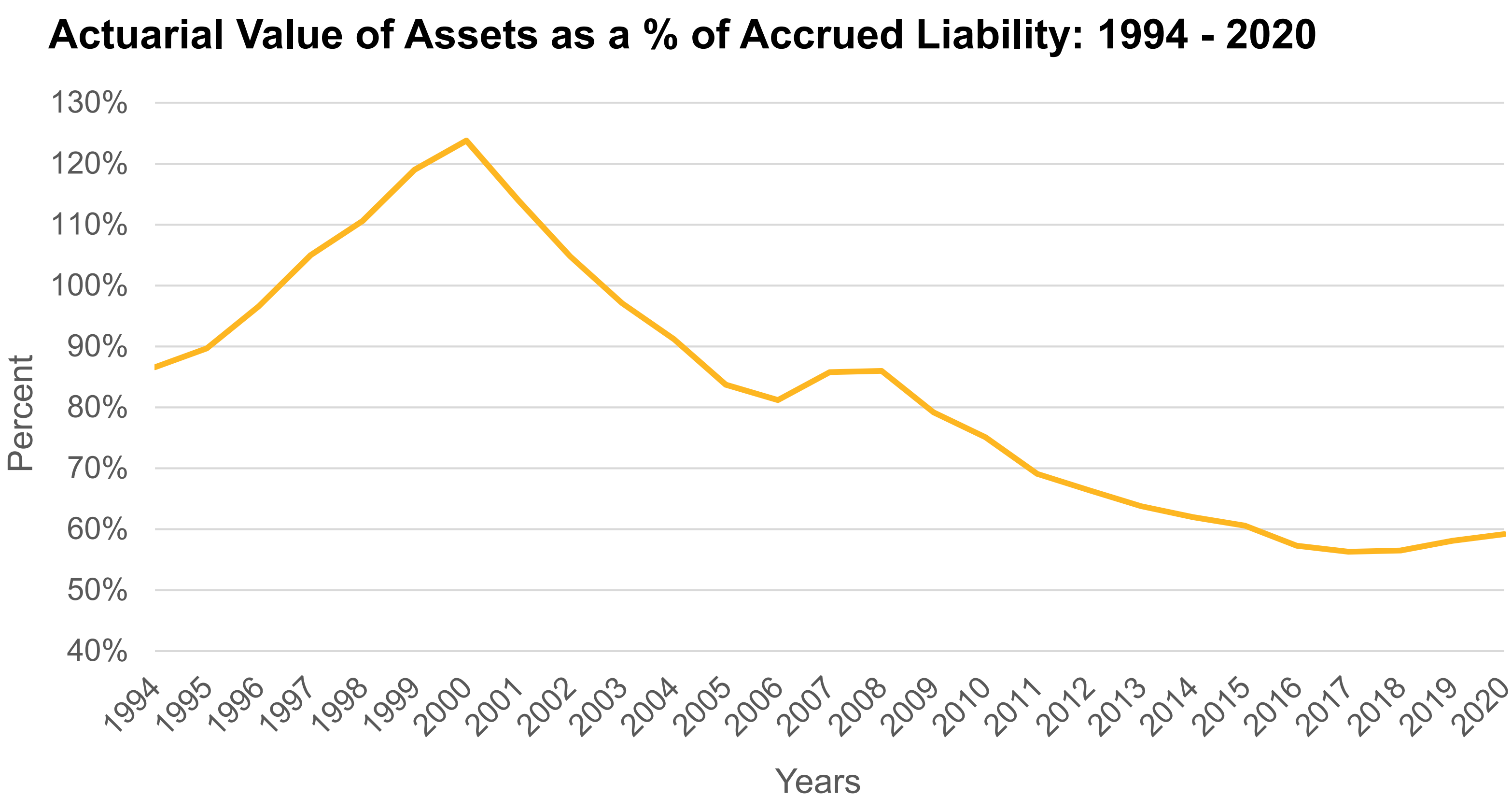


Note: Beginning with the 2010 valuation, the actuarial value of assets reflects the 10-year asset smoothing method enacted by Act 120.

Accrued Liability and Actuarial Value of Assets: 1994 – 2020



Financial Position Funded Status

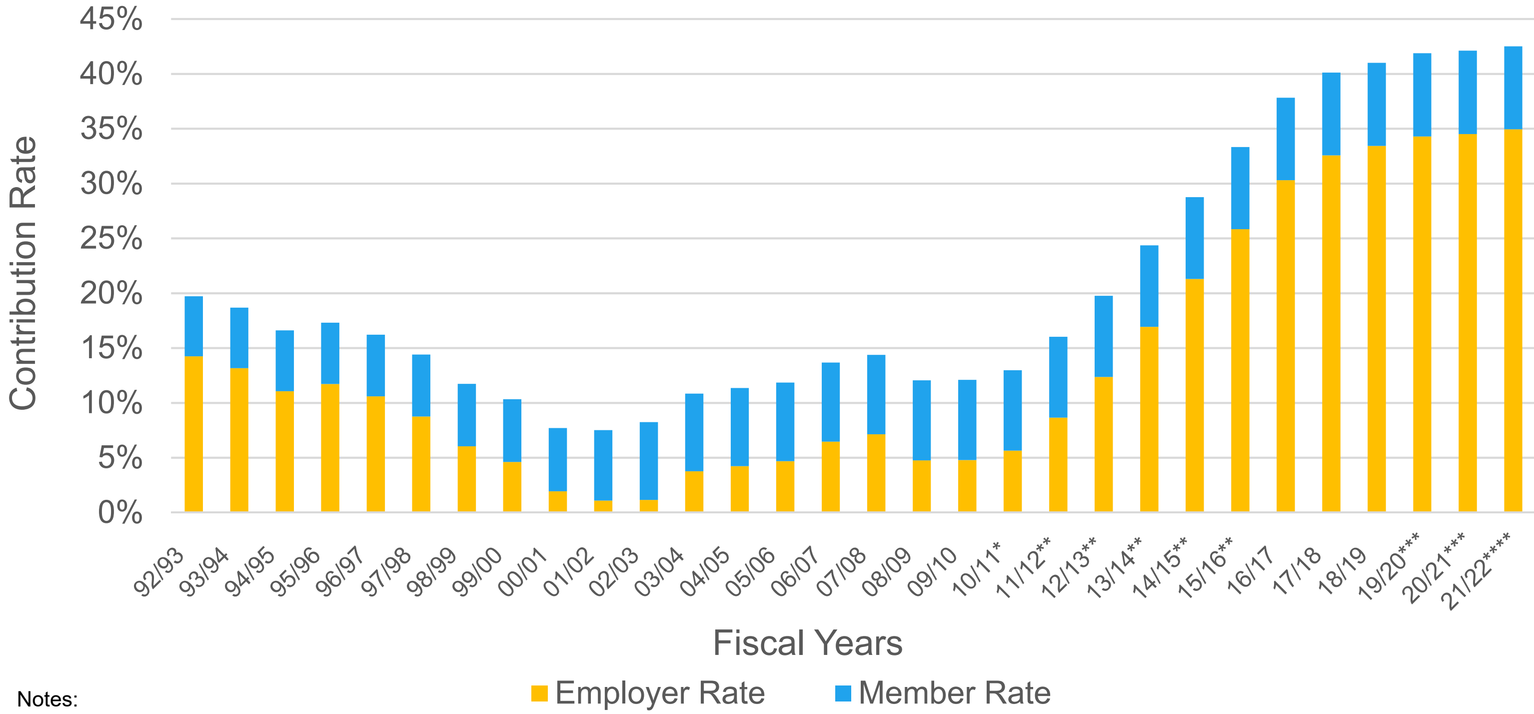


Total Contribution Rate

Fiscal Year	Normal Cost	Unfunded Accrued Liability	Health Care Contribution	DC Contribution (Average)[4]	Total Employer	Member Contribution (Average)[1]	Total Contribution Rate
21/22	7.20%	26.79%	.80%	.15%	34.94%	7.56%	42.50%
20/21	7.37	26.14	.82	.18	34.51	7.61	42.12
19/20	7.49	25.87	.84	.09	34.29	7.59	41.88
18/19	7.59	25.01	.83	N/A	33.43	7.57	41.00
17/18	7.70	24.04	.83	N/A	32.57	7.54	40.11
16/17	8.31	20.89	.83	N/A	30.03	7.52	37.55
15/16	8.38	19.44	.84	N/A	25.84[2]	7.49	33.33
14/15	8.46	17.51	.90	N/A	21.40[2]	7.46	28.86
13/14	8.57	15.25	.93	N/A	16.93[2]	7.43	24.36
12/13	8.66	12.99	.86	N/A	12.36[2]	7.40	19.76
11/12	8.12	10.15	.65	N/A	8.65[2]	7.37	16.02
10/11	8.08	(0.50)	.64	N/A	5.64[3]	7.34	12.98
09/10	7.35	(3.72)	.78	N/A	4.78	7.32	12.10
08/09	6.68	(3.37)	.76	N/A	4.76	7.29	12.05
07/08	6.68	(.24)	.69	N/A	7.13	7.25	14.38
06/07	6.62	(.95)	.74	N/A	6.46	7.21	13.67
05/06	7.61	(4.28)	.69	N/A	4.69	7.16	11.85
04/05	7.48	(7.10)	.23	N/A	4.23	7.12	11.35
03/04	7.25	(4.27)	.79	N/A	3.77	7.08	10.85
02/03	7.20	(10.03)	.97	N/A	1.15	7.10	8.25
01/02	5.63	(6.05)	1.09	N/A	1.09	6.43	7.52
00/01	6.29	(4.65)	.30	N/A	1.94	5.77	7.71
99/00	6.40	(2.04)	.25	N/A	4.61	5.72	10.33
98/99	6.33	(.44)	.15	N/A	6.04	5.69	11.73

1. Act 9 member rate change took effect January 1, 2002. Act 120 member rate change took effect July 1, 2011.
2. Act 120 limited the employer pension contribution of 27.82% to 25.00% for Fiscal Year 15/16 (prior rate of 20.50% + 4.50% collar), 25.97% to 20.50% for Fiscal Year 14/15 (prior rate of 16.00% + 4.50% collar), 23.82% to 16.00% for Fiscal Year 13/14 (prior rate of 11.50% + 4.50% collar), 21.65% to 11.50% for Fiscal Year 12/13 (prior rate of 8.00% + 3.50% collar) and18.27% to 8.00% for Fiscal Year 11/12 (prior rate of 5.00% + 3.00% collar).
3. Act 46 reduced the employer pension contribution from 7.58% to 5.00% for Fiscal Year 10/11.
4. Under Act 5, employers contribute 2.25% of pay for Class T-G members, 2.00% of pay for Class T-H members and 2.00% of pay for DC-only participants to the DC plan.

30-Year History of Member and Employer Contribution Rates



Notes:

* Act 46 reduced the employer pension contribution from 7.58% to 5.00% for Fiscal Year 10/11.

** Act 120 limited the employer pension contribution of 27.82% to 25.00% for Fiscal Year 15/16 (prior rate of 20.50% + 4.50 collar), 25.97% to 20.50% for Fiscal Year 14/15 (prior rate of 16.00% + 4.50% collar), 23.82% to 16.00% for Fiscal Year 13/14 (prior rate of 11.50% + 4.50% collar), 21.65% to 11.50% for Fiscal Year 12/13 (prior rate of 8.00% + 3.50% collar) and 18.27% to 8.00% for Fiscal Year 11/12 (prior rate of 5.00% + 3.00% collar).

*** Fiscal Years 2019/2020 and 2020/2021 include the anticipated Act 5 DC contribution based on the following new System Act 5 membership election: 65% elect Class T-G membership, 30% elect Class T-H membership and 5% elect DC-only participation. Fiscal Years 2021/2022 include the anticipated Act 5 DC contribution based on the following new System Act 5 membership election: 98% elect Class T-G membership, 1% elect Class T-H membership and 1% elect DC-only participation.

Summary of the Act 5-2017 Shared Risk Provisions

Act 5-2017 Class T-E, Class T-F, Class T-G and Class T-H shared risk contributions

- Commencing with the annual actuarial valuation for the period ending June 30, 2014, and every three years thereafter, the Board compares the actual investment rate of return, net of fees, to the annual interest rate adopted by the Board for the calculation of the normal contribution rate, based on the market value of assets, for the prior ten-year period.

Until the Retirement System has accumulated a ten-year period of investment rate of return experience following June 30, 2011, the look-back period used in this calculation will begin not earlier than June 30, 2011.

Summary of the Act 5-2017 Shared Risk Provisions

- If the actual time-weighted investment rate of return, net of fees, is less than the annual interest rate adopted by the Board by an amount of 1% or more, the shared risk contribution rate of Class T-E and T-F members will increase by 0.5% and the shared risk contribution rate for Class T-G and Class T-H members will increase by .75%.

  If the actual time-weighted investment rate of return, net of fees, is equal to or exceeds the annual interest rate adopted by the Board by less than 1%, the shared risk contribution rate of Class T-E and T-F members will decrease by 0.5% and the shared risk contribution rate for Class T-G and Class T-H members will decrease by .75% provided the total member contribution rate on the date of the actuarial valuation is above the member's basic contribution rate.

- If the actual time-weighted investment rate of return, net of fees, is more than the annual interest rate adopted by the Board by an amount of 1% or more, the shared risk contribution rate of Class T-E and T-F members will decrease by 0.5% and the shared risk contribution rate for Class T-G and Class T-H members will decrease by .75%.

  If the actual time-weighted investment rate of return, net of fees, is equal to or below the annual interest rate adopted by the Board by less than 1%, the shared risk contribution rate of Class T-E and T-F members will increase by 0.5% and the shared risk contribution rate for Class T-G and Class T-H members will increase by .75% provided the total member contribution rate on the date of the actuarial valuation is below the member's basic contribution rate.

Summary of the Act 5-2017 Shared Risk Provisions

- The total member contribution rate for:
  - Class T-E members shall not be less than 5.5%, nor more than 9.5%
  - Class T-F members shall not be less than 8.3%, nor more than 12.3%
  - Class T-G members shall not be less than 2.5% nor more than 8.5%
  - Cass T-H members shall not be less than 1.5% nor more than 7.5%

- If the Retirement System's total funded ratio based on the actuarial value of assets is at least 100% as of the measurement date, the shared risk contribution rate shall not be greater than zero.

- If the annual interest rate adopted by the Board for the calculation of the normal contribution rate is changed during the period used to determine the shared risk contribution rate, the Board, with the advice of the actuary, shall determine the applicable rate during the entire period, expressed as an annual rate.

- For any fiscal year in which the employer contribution rate is lower than the final contribution rate under section 8328(h), the total member contribution rate for Class T-E, T-F, T-G and T-H members shall be reset to the basic contribution rate provided the total member contribution rate is at or above the basic contribution rate.

- There shall be no increase in the member contribution rate if there has not been an equivalent increase to the employer contribution rate over the previous three-year period.