Rhode Island Teachers' Survivors Benefit Plan

ACTUARIAL VALUATION REPORT

As of June 30, 2024

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December 19, 2024

Retirement Board
50 Service Avenue, 2nd Floor
Warwick, RI 02886-1021

Subject: Teachers' Survivors Benefit Plan as of June 30, 2024

This is the June 30, 2024 actuarial valuation of the Rhode Island Teachers' Survivors Benefit Plan (TSB). The TSB provides survivor benefits for teachers who do not participate in Social Security. This report describes the current actuarial condition of TSB. The last valuation was prepared as of June 30, 2023.

Current Actuarial Condition

As of June 30, 2024, the market value of TSB assets was $456,634,317. The actuarial present value of future benefits under the plan, measured at this same date, is $247,344,051. Therefore, the plan has an asset surplus of $209,290,266. This surplus ignores the present value of future member and employer contributions. These results are summarized in Table 1.

Therefore, if future plan experience followed exactly the expected experience based on the actuarial assumptions, the plan would have more than enough funds to continue paying benefits for the current membership, even if no further contributions were made. The actuarial present value of future member and employer contributions for the current active membership is $8.9 million, and these contributions will serve to increase this surplus.

Contributions to the Fund now cover only about 10.8% of the benefit payments and refunds. This implies that the funds needed to cover the rest of the benefit payments are coming from investment earnings. This is not necessarily a problem, however, since the intent of prefunding is to use investment earnings to pay part of the cost of the benefit.

Progress toward realization of financing objectives

The actuarial accrued liability (AAL) is $238,430,702. With $456,634,317 in assets, the plan has a funded surplus of $218,203,615, and a funded ratio of 192%. As shown, the plan is very well funded. Please note that the funded status alone is not appropriate for assessing the need for future contributions. The funded status is also not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

The normal cost under the entry age normal method is $1,166,41. Because the plan is over-funded (assets are greater than the liabilities), the 30-year amortization payment is a credit of $17,044,093. Therefore, the Actuarially Determined Employer Contribution (ADEC) is $0 because the sum of the normal cost and the amortization credit is less than zero.

Assets

Exhibit 4 summarizes the TSB assets for the last ten years. All assets are shown at fair market value. The TSB is commingled with the assets of ERSRI for investment purposes. It shows a reconciliation of the assets between years, and it shows the funds net rate of return and the ratio of contributions to benefit payments and refunds.

Benefit Provisions

The plan's provisions are summarized in Appendix B. There were no changes to the benefit provisions since the prior report.

Assumptions and Methods

Assumptions and methods are described in Appendix A. Except for the assumptions specific to this plan, they are the same as the assumptions used for the teachers in the Employees' Retirement System of Rhode Island (ERSRI). In particular, a 7.00% investment return assumption is used.

The assumptions are unchanged from the last actuarial valuation and were approved by the Board on May 17, 2023. We believe the assumptions are internally consistent and are reasonable, based on the actual experience of ERSRI.

The results of the actuarial valuation are dependent upon the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities and the calculated contribution rates.

This report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

We should note that, unlike ERSRI, we used the level-dollar version of the entry age normal actuarial cost method, because the spouse's benefit is $1,375/month for almost all active members, and determining a level dollar normal cost seemed more appropriate for a plan with an essentially level benefit and an essentially fixed $115/year employer contribution. The market value of assets was used as the actuarial value, in part because of the fixed nature of the TSB contributions and the significantly overfunded position of the plan. In determining the ADEC (actuarially determined employer contribution) the UAAL, which is actually a surplus, was amortized as a level dollar amount over 30 years. Because the plan is overfunded, the use of a 30-year amortization period is conservative. Appendix A is a summary of the actuarial assumptions and methods used in this valuation report.

Data

The System's staff supplied member data for covered active members, covered retirees and beneficiaries receiving benefits. This data was prepared as of June 30, 2024. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent. The System's staff also supplied asset data as of June 30, 2024. Exhibits 5 and 6 summarize the member data.

Certification

All of our work conforms with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Rhode Island law, and, where applicable, with the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries. All are Enrolled Actuaries and/or Members of the American Academy of Actuaries. They all meet the Qualification Standards of the American Academy of Actuaries and they are experienced in performing valuations for large public retirement systems.

Respectfully submitted,

Joseph P. Newton, FSA, MAAA, EA
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EXHIBITS

Summary of Actuarial Valuation Results

Exhibit 1

		06/30/2024	06/30/2023
1.	Actuarial present value of future benefits		
	a. Current covered active members	$ 60,058,477	$ 58,567,155
	b. Current covered retired teachers	75,686,106	76,044,720
	c. Beneficiaries receiving benefits	110,191,938	106,289,350
	d. Deferred members	1,135,141	990,289
	e. NonVested Inactive members	272,389	235,185
	f. Totals	$ 247,344,051	$ 242,126,699
2.	Actuarial Accrued Liability		
	a. Present value of benefits for active members (Item 1a)	$ 60,058,477	$ 58,567,155
	b. Less: Present value of future normal costs	(8,913,349)	(9,669,068)
	c. Actuarial accrued liability for active members	$ 51,145,128	$ 48,898,087
	d. Actuarial accrued liability for all other members (Sum of Items 1b, 1c, 1d, and 1e)	187,285,574	183,559,544
	e. Total (Item 2c + Item 2d)	238,430,702	232,457,631
3.	Market value of assets	$ 456,634,317	$ 423,914,539
4.	Unfunded actuarial accrued liability (UAAL) (Item 2.e. - Item 3.)	$ (218,203,615)	$ (191,456,908)
5.	Funded Ratio	192%	182%
6.	Actuarially determined employer contribution		
	a. Normal Cost	$ 1,166,461	$ 1,267,332
	b. Amortization of UAAL	(17,044,093)	(14,954,882)
	c. Total (a + b)	$ (15,877,632)	$ (13,687,550)
	d. Employer Contribution (Item 6c, not less than zero)	$ 0	$ 0

Schedule of Funding Progress

Exhibit 2

Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL) (3) - (2)	Funded Ratio (2)/(3)	Annnual Covered Payroll	UAAL as a Percent of Payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
July 1, 2002	$ 159,723,350	$ 83,399,488	$ (76,323,862)	192%	$ 327,658,099	-23%
July 1, 2005	204,844,810	126,416,468	(78,428,342)	162%	432,219,020	-18%
July 1, 2007	259,851,904	116,599,601	(143,252,303)	223%	466,208,437	-31%
July 1, 2009	186,737,083	129,110,000	(57,627,083)	145%	509,416,780	-11%
July 1, 2011	242,885,805	133,569,376	(109,316,429)	182%	537,264,193	-20%
July 1, 2013	261,365,155	175,233,723	(86,131,432)	149%	544,090,898	-16%
July 1, 2014	293,921,803	192,124,126	(101,797,677)	153%	542,756,917	-19%
July 1, 2016	286,485,057	186,913,175	(99,571,882)	153%	522,968,886	-19%
July 1, 2017	311,960,433	230,838,179	(81,122,254)	135%	544,320,446	-15%
July 1, 2018	327,793,239	219,909,971	(107,883,268)	149%	562,365,576	-19%
July 1, 2019	339,417,231	226,678,677	(112,738,554)	150%	575,889,277	-20%
July 1, 2019[1]	339,417,231	218,083,861	(121,333,370)	156%	575,889,277	-21%
July 1, 2020	342,259,317	222,970,421	(119,288,896)	153%	588,439,146	-20%
July 1, 2021	423,973,743	221,346,139	(202,627,604)	192%	592,624,822	-34%
July 1, 2022[2]	401,796,557	219,188,305	(182,608,252)	183%	612,611,767	-30%
July 1, 2023	423,914,539	232,457,631	(191,456,908)	182%	632,169,479	-30%
July 1, 2024	456,634,317	238,430,702	(218,203,615)	192%	653,404,927	-33%

[1] June 30, 2019 actuarial value after changes of actuarial assumptions

[2] June 30, 2022 actuarial value after changes of actuarial assumptions

Exhibit 3

Valuation Date	June 30, 2024
Actuarial cost method	Entry Age Normal
Amortization method	Level dollar, open
Remaining amortization period	30 Years
Asset valuation method	Market
Actuarial assumptions:	
Investment rate of return *	7.00%
Projected salary increase *	3.00% to 12.50%
* Includes inflation at:	2.50%
Cost-of-living adjustment:	2.50%

Fund Assets

Exhibit 4

Fiscal Year Ended June 30:	2016	2017	2018	2019	2020	2021	2022	2023	2024
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Market value (beginning of year)	$ 293,811,653	$ 286,485,057	$ 311,960,433	$ 327,793,239	$ 339,417,231	$ 342,259,317	$ 423,973,743	$ 401,796,557	$ 423,914,539
Current year prior period adjustments	-	-	-	-	-	1	-	-	-
Adjusted market value of assets at BOY	$ 293,811,653	$ 286,485,057	$ 311,960,433	$ 327,793,239	$ 339,417,231	$ 342,259,318	$ 423,973,743	$ 401,796,557	$ 423,914,539
Member contributions	642,276	589,883	744,035	745,856	745,760	736,193	755,501	755,501	753,265
Employer contributions	642,276	589,883	744,035	745,856	745,760	736,193	755,501	755,501	753,265
Misc.	-	4	-	-	-	-	-	-	-
Total contributions	1,284,552	1,179,770	1,488,070	1,491,712	1,491,520	1,472,386	1,511,002	1,511,002	1,506,530
Benefits paid	(8,097,068)	(8,405,648)	(9,602,180)	(10,236,365)	(10,436,948)	(10,650,980)	(11,259,389)	(12,065,421)	(12,904,413)
Refunds	(195,600)	(266,523)	(275,134)	(454,153)	(592,550)	(805,371)	(753,831)	(797,394)	(1,077,904)
Total benefits and refunds	(8,292,668)	(8,672,171)	(9,877,314)	(10,690,518)	(11,029,498)	(11,456,351)	(12,013,220)	(12,862,815)	(13,982,317)
Net investment income	(318,480)	32,967,777	24,222,050	20,822,798	12,380,064	91,698,390	(11,674,968)	33,469,795	45,195,565
Market value (end of year)	$ 286,485,057	$ 311,960,433	$ 327,793,239	$ 339,417,231	$ 342,259,317	$ 423,973,743	$ 401,796,557	$ 423,914,539	$ 456,634,317
Net return	-0.1%	11.7%	7.9%	6.4%	3.7%	27.2%	-2.8%	8.4%	10.8%
Ratio of contributions to disbursements	15.5%	13.6%	15.1%	14.0%	13.5%	12.9%	12.6%	11.7%	10.8%

Distribution of Covered Active Members by Age and by Years of Service

As of 06/30/2024

Exhibit 5

Attained Age	Years of Credited Service												
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	Total
Under 25	17	41	12	0	0	0	0	0	0	0	0	0	70
25-29	26	108	114	96	57	68	0	0	0	0	0	0	469
30-34	20	49	63	79	53	353	54	0	0	0	0	0	671
35-39	15	30	53	33	29	260	331	47	0	0	0	0	798
40-44	13	41	32	33	32	148	206	366	113	0	0	0	984
45-49	7	21	31	18	19	119	138	240	552	75	0	0	1,220
50-54	11	30	17	12	10	94	105	137	386	429	56	0	1,287
55-59	4	10	12	12	8	56	86	96	218	276	245	34	1,057
60-64	7	7	6	4	1	30	42	71	166	130	95	58	617
65 & Over	3	3	4	4	2	12	17	23	71	71	22	33	265
Total	123	340	344	291	211	1,140	979	980	1,506	981	418	125	7,438

Average:			Number of employees:		
	Age	46.69		Males	1,600
	Service	16.13		Females	5,838

Membership Data

Exhibit 6

	06/30/2024	06/30/2023
1. Covered active members		
a. Number	7,438	7,387
b. Total payroll	$ 653,404,927	$ 632,169,479
c. Average salary	$ 87,847	$ 85,579
d. Average age	46.69	46.58
e. Average service	16.13	16.05
f. Total of member contribution accounts	$ 10,626,442	$ 10,501,662
g. Average contributions	$ 1,429	$ 1,422
2. Covered retired members		
a. Number	3,253	3,222
b. Average age	74.80	74.14
c. Total annual benefits	$ 53,672,850	$ 53,158,050
d. Average annual benefit	$ 16,499	$ 16,498
3. Survivors receiving benefits		
a. Number	637	616
b. Average age	78.80	78.60
c. Total benefits	$ 13,296,906	$ 12,703,568
d. Average benefit	$ 20,874	$ 20,623
4. Inactive, nonretired vested members		
a. Number	995	874
b. Average age	52.32	52.22
c. Total of member contribution accounts	$ 1,135,141	$ 990,289
d. Average contributions	$ 1,141	$ 1,133
5. Inactive, nonretired nonvested members		
a. Number	1,464	1,293
b. Average age	48.27	48.29
c. Total of member contribution accounts	$ 272,389	$ 235,185
d. Average contributions	$ 186	$ 182

APPENDIX A

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

APPENDIX A

Summary of Actuarial Methods and Assumptions

A. Basic Actuarial Assumptions

Except for special assumptions that are specific to the Teachers' Survivors Benefit Plan, described below, the actuarial assumptions used in this valuation are the same as the ones used for Teachers in the June 30, 2024 actuarial valuation of the Employees' Retirement System of Rhode Island (ERSRI). I.e., this valuation uses the same 7.00% investment return rate, the same salary increase rates, the same mortality, disability, and retirement rates used in that valuation.

B. Special TSB Assumptions

1. Family Makeup: The following schedule shows the assumptions about the makeup of the member's family at the time of death:

Family Makeup	Probability (By Attained Age)								
	20	25	30	35	40	45	50	60	65
Spouse Only	5%	14%	14%	10%	11%	15%	32%	75%	70%
Spouse and 1 Child	5%	12%	20%	17%	22%	23%	18%	0%	0%
Spouse and 2 or More Children	4%	13%	36%	46%	41%	35%	24%	0%	0%
One Child Alone	5%	6%	3%	7%	8%	10%	6%	0%	0%
Two Children Alone	3%	7%	4%	7%	6%	3%	1%	0%	0%
Three or More Children Alone	1%	4%	4%	5%	4%	1%	1%	0%	0%
Dependent Parent Alone	0%	0%	0%	0%	0%	0%	0%	0%	0%
No Dependents	77%	44%	19%	8%	8%	13%	18%	25%	30%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

2. Ages: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses. Parents are assumed to be 30 years older than the member, and children are assumed to be 30 years younger than the member. All children are assumed to remain in school until age 23.

3. Remarriage: It was assumed that no spouses would remarry after the member's death.

4. Refunds at Retirement: Please refer to the Family Makeup grid above for the assumed percentage of members will elect a refund at retirement. (it is the proportion of the membership assumed to be without an eligible dependent.)

5. Deferred beneficiaries: No specific data was available for deferred beneficiaries—those spouses of deceased members who are not yet age 60 and who are not receiving family benefits. They will be entitled to receive a spouse's benefit upon reaching age 60. To estimate this liability, we assumed that these members would receive an immediate refund of their TSB contributions.

6. Inactive members with contributions on deposit: It was assumed that 100% of members who are inactive, nonretired, and nonvested would receive an immediate refund of their TSB contributions.

7. Cost-of-living adjustment (COLA): COLAs are assumed to be 2.50% per year, since that is the ERSRI inflation assumption.

C. Actuarial Methods

1. Valuation date: The TSB plan is valued as of June 30, the last day of the plan's fiscal year. Valuations in the future will be done biennially, in every odd year.

2. Actuarial cost method: The Entry Age Normal actuarial cost method is used to determine the normal cost and actuarial accrued liability. The normal cost is the level dollar amount (not the level percentage of pay used for ERSRI) required to fund a members benefit from entry age to ultimate retirement. The level-dollar version of the Entry Age Normal method was used for consistency with the current contribution requirement of $115.00/year for almost all members.

3. Actuarial asset method: The market value of fund assets is used as the actuarial value, rather than using a smoothed value.

D. Participant Data

Participant data was supplied on electronic files. There were separate files for (i) covered active and inactive, nonretired members, (ii) retirees who had left their contributions on deposit, and (iii) survivors receiving benefits. For active and inactive/nonretired members, we used the same participant data that we used for the valuation of ERSRI, but excluded members not covered under the TSB. For covered retirees, we received a file showing each member's date of birth, sex, TSB contribution account balance (without interest), and final average salary. For beneficiaries receiving benefits, we received a file that included for each deceased member the spouse's (or child's) date of birth, sex, the amount of the monthly benefit, and a code indicating the kind of benefit being paid (e.g., spouse's benefit, family benefit with two or more children, child's benefit, etc.).

APPENDIX B

SUMMARY OF BENEFIT PROVISIONS

APPENDIX B

Summary of Benefit Provisions

1. Plan: The Teachers' Survivors Benefit Plan (TSB) is a qualified governmental plan designed to provide death benefits in the form of a monthly annuity to survivors of covered employees and retirees.

2. Authority: Benefits under the TSB are established by the Rhode Island General Laws, Sections 16-16-25 through 16-16-38

3. Administration: The TSB is administered by the Retirement Board for the Employees' Retirement System of Rhode Island (ERSRI). However, the State investment commission is responsible for the investment of the trust assets, including the establishment of the asset allocation policy.

4. Trust Fund: All contributions are credited to the Teachers' Survivors Benefits Fund, and all benefit payments and refunds are paid from this fund. The fund is commingled with ERSRI for investment purposes.

5. Plan Year: A twelve-month period ending June 30.

6. Coverage and Eligibility: The TSB covers Rhode Island teachers who are (i) covered by the Employees' Retirement System of Rhode Island (ERSRI) but (ii) are not covered under Social Security. State employees, school support personnel, and teachers whose employment is covered by Social Security may not participate. Participation is mandatory for eligible teachers, and all teachers covered by the plan must make contributions. Survivors are eligible for benefits if the member has made contributions for at least six months prior to death or retirement. A covered teacher remains covered after retirement unless the teacher withdraws his or her contributions.

7. Districts Covered: The following school districts are not covered under Social Security, so all of their teachers participate in this plan:

Barrington	Johnston
Bristol/Warren Regional	Lincoln
Burrillville	Little Compton
Central Falls Collaborative	Middletown
Coventry	Newport
Cranston	North Smithfield
Cumberland	Northern RI Collaborative
East Greenwich	Portsmouth
East Providence	Scituate
Foster	Smithfield
Foster-Glocester	Tiverton
Glocester	Westerly

In addition, there are a number of active teachers who teach for districts that are now covered by Social Security, but at one time were not covered. When the district elected to be covered by Social Security, some teachers opted to remain outside that system. These teachers continue to participate in the TSB.

8. Contributions: An annual contribution of 2% of salary, up to $230 per year, is required. This contribution is divided equally between members and their employers. I.e., members contribute 1.00% of salary, up to $115 per year.

9. Salary: For TSB, the salary used for contribution purposes and to determine the amount of the survivor benefit is the same salary used for ERSRI.

10. Benefit Schedule: Benefits are paid as a monthly annuity to survivors upon the death of a covered active teacher or a covered retiree. To determine the benefit payable in any situation, the basic monthly spouse's benefit must first be determined. The basic monthly spouse's benefit is a function of the member's highest annual salary, as shown in the following schedule:

Highest Annual Salary	Basic Monthly Spouse's Benefit
$17,000 or less	$ 825.00
$17,001 - $25,000	$ 962.50
$25,001 - $33,000	$ 1,100.00
$33,001 - $40,000	$ 1,237.50
More than $40,000	$ 1,375.00

If the member is retired at the time of death, the salary used is the highest annual salary that the member earned while teaching.

11. Spouse's benefit: If a covered, married, active or retired member dies, the spouse is entitled to receive the basic monthly spouse's benefit. If there are other survivors entitled to benefits, as described below, this benefit may be increased. The benefit paid to the spouse may not begin prior to age 60, unless family benefits are payable. Benefits to the spouse cease if the spouse remarries.

12. Family Benefit: If at the time of the member's death, the member is married and there are one or more eligible children, then a monthly benefit is payable to the spouse, even if younger than age 60. An eligible child is one under age 18, or under age 23 if a full-time student, or any age, if disabled prior to age 18. The family benefit is a multiple of the basic monthly spouse's benefit. If there is only one eligible child, then the multiple is 150%. If there are two or more eligible children, the multiple is 175%. The benefit continues as long as the spouse is alive and there is at least one eligible child. If the spouse remarries, benefits cease, although children's benefits will be due if there are still eligible children. If family benefits cease because there are no children who remain eligible, spouse's benefits will be paid when the spouse reaches age 60, if he or she has not remarried.

13. Children's Benefits: If a covered member dies, and there is no eligible spouse but there are one or more eligible children, then a child's benefit is payable. The amount payable by the plan is a multiple of the basic monthly spouse's benefit: 75% if there is only one eligible child, 150% if there are two eligible children, and 175% if there are three or more eligible children. Benefits cease when there are no children eligible.

14. Dependent Parent's Benefits: If a member dies with no surviving spouse and no eligible children, but the member has a dependent parent, a benefit equal to the basic monthly spouse's benefit is paid to the dependent parent for life. For this purpose, a dependent parent is one who:

    a. Is at least 60 years of age,
    b. Was dependent on the member for at least half his or her support,
    c. Has not remarried since the member's death, and
    d. Is not entitled to Social Security benefit from his or her own earnings equal to or greater the TSB benefit

15. Summary of benefits: The following table summarizes the benefit multiples that apply in the different family situations:

Recipients	Multiple of Basic Spouse's Benefit
Spouse alone	100%
Spouse and 1 Child	150%
Spouse and 2 or More Children	175%
One Child Alone	75%
Two Children Alone	150%
Three or More Children Alone	175%
Dependent Parent	100%

16. Refunds: If, prior to retirement, a member terminates service in ERSRI or ceases to be covered under TSB for any other reason, a refund equal to the sum of the member's TSB contributions will be paid to him or her. No interest is credited on these contributions.

    If a covered, active teacher dies without an eligible spouse, eligible child or dependent parent, the accumulated member contribution balance, with interest credited at 5.00%, is refunded to the member's beneficiary or estate.

    At the time a member retires, the member must choose whether or not to remain covered under the TSB during retirement. If the member chooses not to remain covered, then a refund of the member's contributions, accumulated with interest at 5.00%, is paid to the member. If the member chooses to remain covered, no action is necessary. Retired members who do not elect a refund at the time of retirement may not later elect a refund.

    If a covered retired teacher dies without an eligible spouse, eligible child or dependent parent, no benefit is payable, and the member's contribution account remains in the fund.

17. Post-retirement Benefit Increases: Spouses over age 60 receive a cost-of-living adjustment (COLA), each year, in January. The COLA is expressed as a percentage increase in the benefit, equal to the percentage cost-of-living increase provided to Social Security recipients. This increase is a function of increases in the Consumer Price Index. No COLA is paid on children's or family benefits.

APPENDIX C

RISKS ASSOCIATED WITH MEASURING THE ACCRUED LIABILITY AND ACTUARIALLY DETERMINED CONTRIBUTION

APPENDIX C

Risks Associated with Measuring the Accrued Liability and Actuarially Determined Contribution

The determination of the accrued liability and the actuarially determined contribution requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability and the actuarially determined contribution that result from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology 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); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. Investment risk – actual investment returns may differ from the expected returns;
2. Asset/Liability mismatch – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. Salary and Payroll risk – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
5. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
6. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The computed contribution rate shown on page 9 may be considered as a minimum contribution rate that complies with the Board's funding policy. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	June 30, 2024	June 30, 2023	June 30, 2022
Ratio of the market value of assets to total payroll	0.7	0.7	0.7
Ratio of actuarial accrued liability to payroll	0.4	0.4	0.4
Ratio of actives to retirees and beneficiaries	1.9	1.9	1.9
Ratio of net cash flows to market value of assets	-2.9%	-2.8%	-2.5%
Duration of the present value of benefits	13.2	14.0	14.3

RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 4.0 times the payroll, a return on assets 5% different than assumed would equal 20% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 5.5 times the payroll, a change in liability 2% other than assumed would equal 11% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

APPENDIX C (Continued)

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of active to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

DURATION OF ACTUARIAL ACCRUED LIABILITY

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

ADDITIONAL RISK ASSESSMENT

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability

Low-Default-Risk Obligation Measure

Actuarial Standards of Practice No. 4 (ASOP No. 4) was revised and reissued in December 2021 by the Actuarial Standards Board (ASB). It includes a new calculation called a low-default-risk obligation measure (LDROM) to be prepared and issued annually for defined benefit pension plans. The transmittal memorandum for ASOP No. 4 includes the following explanation:

> *"The ASB believes that the calculation and disclosure of this measure provides appropriate, useful information for the intended user regarding the funded status of a pension plan. The calculation and disclosure of this additional measure is not intended to suggest that this is the "right" liability measure for a pension plan. However, the ASB does believe that this additional disclosure provides a more complete assessment of a plan's funded status and provides additional information regarding the security of benefits that members have earned as of the measurement date."*

The LDROM estimates the amount of money the plan would need to invest in low risk securities to provide the benefits with greater certainty. The current model expects lower costs but with higher risk, which creates less certainty and a possibility of higher costs. The LDROM model creates higher expected costs but more predictability when compared to the current model. Thus, the difference between the two measures (Valuation and LDROM) is one illustration of the possible costs the sponsor could incur if there was a reduction in the investment risk in comparison to the current diversified portfolio. However, the downside risk would be limited in the scenarios where the current portfolio would fail to achieve returns in excess of the low-default-risk discount, in this case 5.32%.

APPENDIX C (Continued)

The following information has been prepared in compliance with this new requirement. Unless otherwise noted, the measurement date, actuarial cost methods, and assumptions used are the same as for the funding valuation covered in this actuarial valuation report.

LDROM measure of benefits earned as of the measurement date:	$297 million
Valuation liability (IEAN) at 7% on measurement date:	238 million
Cost to mitigate investment risk in the System's portfolio:	$ 59 million

The ERSRI benefit structure has several risk sharing provisions that are contingent on the investment returns of the portfolio and thus if the portfolio was changed to expect lower returns, the expected liabilities that are contingent on those returns would also decrease.

ASOP 4 requires commentary to help the intended user understand the significance of the LDROM with respect to the funded status of the plan, plan contributions, and the security of participant benefits. Specifically, if plan assets were changed to be invested exclusively in low-default-risk securities, the funded status would be lower and the contributions would have to immediately be higher. In addition, since the future benefit adjustments are depending on funded status and investment performance, the benefit payments would also be lower. While investing in a portfolio with low-default-risk securities may be more likely to reduce the standard deviation of investment volatility, the higher necessary contributions would produce a larger ratio of assets to payroll, and thus it is not self-evident that the volatility of the employer contributions would be any lower. In addition, the portfolio would be expected to generate less investment earnings over time, thus it also would be more likely to result in higher employer contributions and/or lower benefits.

Disclosures: Discount rate used to calculate LDROM: 5.32% Intermediate FTSE Pension Discount Curve as of June 30, 2024. This measure is not appropriate for assessing the need for or amount of future contributions as the current portfolio is expected to generate significantly more investment earnings than the low-default-risk portfolio. This measure is also not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligation as this measure includes projections of salary increases and the ability for current members to continue to accrue eligibility and vesting service.

GLOSSARY

Glossary

Actuarial Accrued Liability (AAL): That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

Actuarial Assumptions: Assumptions as to future experience under the Fund. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

Actuarial Cost Method or ***Funding Method:*** A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ARC.

Actuarial Gain or ***Actuarial Loss:*** A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the Fund's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

Glossary (Continued)

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)

b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and

c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations of items needed reporting purposes, such as the funded ratio and the ADEC.

Actuarial Value of Assets or ***Valuation Assets:*** The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ARC.

Actuarially Determined: Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

Amortization Method: A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

Glossary (Continued)

Amortization Payment: That portion of the pension plan contribution or ARC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Actuarially Determined Employer Contribution (ADEC): The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation. The ADEC consists of the Employer Normal Cost and the Amortization Payment

Closed Amortization Period: A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

Decrements: Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

Defined Benefit Plan: A retirement plan that is not a Defined Contribution Plan. Typically a defined benefit plan is one in which benefits are defined by a formula applied to the member's compensation and/or years of service.

Defined Contribution Plan: A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

Employer Normal Cost: The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

Experience Study: A periodic review and analysis of the actual experience of the Fund which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.

Funding Period or ***Amortization Period:*** The term "Funding Period" is used it two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ARC. This funding period is chosen by the Board of Trustees. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on the statutory employer contribution rate, and assuming no future actuarial gains or losses.

Glossary (Continued)

GASB: Governmental Accounting Standards Board.

GASB 67 and ***GASB 68***: Governmental Accounting Standards Board Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.

Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

Open Amortization Period: An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.

Unfunded Actuarial Accrued Liability: The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

Valuation Date or Actuarial Valuation Date: The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.