STATE POLICE RETIREMENT BENEFITS TRUST STATE OF RHODE ISLAND

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

Dear Members of the Board:

Subject: Actuarial Valuation of the SPRBT as of June 30, 2024

This is the June 30, 2024 actuarial valuation of the State Police Retirement Benefits Trust (SPRBT). This report describes the current actuarial condition of the SPRBT, determines the recommended employer contribution rate, and analyzes changes in the contribution rate. Valuations are prepared annually, as of June 30, the last day of the SPRBT plan year. Benefits for State police officers hired before July 1, 1987 are funded by the State from general assets, on a pay-as-you-go basis, and are not included in this valuation.

Under Rhode Island General Laws, the employer contribution rate for the SPRBT is certified annually by the State of Rhode Island Retirement Board. This rate is determined actuarially, based on the plan provisions in effect as of the valuation date and the actuarial assumptions and methods adopted by the Board or set by statute. The Board's current policy is that the contribution rate determined by a given actuarial valuation becomes effective two years after the valuation date. For example, the rate determined by the June 30, 2024 actuarial valuation will be applicable for the year beginning July 1, 2026 and ending June 30, 2027.

Financing objectives and funding policy

The actuarial cost method and the amortization periods are set by statute. Normal cost rate (as a percent of pay) and actuarial accrued liabilities are computed using the Entry Age Normal actuarial cost method. The employer contribution rate is the sum of two pieces: the employer normal cost rate and the amortization rate. The employer normal cost rate is the difference between the normal cost rate and the member contribution rate. The amortization rate, also determined as a level percent of pay, is the amount required to amortize the unfunded actuarial accrued liability over a closed period. The amortization rate is adjusted for the two-year deferral in contribution rates.

Progress toward realization of financing objectives

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. 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 funded ratio, as can be seen in Table 4 of this report, increased from 85.5% to 87.4% between the valuations. This is due to a gain on the actuarial value of assets with the return on the actuarial value of assets of 8.3% compared to the 7.0% assumption and individual salary increases less than expected. These gains were offset partially by the plan changes resulting from the passage of HB No. 7225 SUB A as Amended. If the market value of assets were used, rather than the actuarial value, the funded ratio would be 90.4%.

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.00% on the actuarial valuation of assets), it is expected that:

1. The amortization payment as a percentage of pay will remain level through fiscal year 2037,
2. The unfunded actuarial accrued liability will be fully amortized after 19 years from fiscal year 2027, and
3. In the absence of benefit improvements, the funded ratio should increase over time, until it reaches 100%.

The employer contribution rate decreased from 22.98% to 20.59% for fiscal year 2027.

An analysis of the changes in the employer contribution rate appears on Table 11a of this report. An analysis of the changes in the unfunded actuarial accrued liability appears on Table 11c.

Benefit provisions

The benefit provisions reflected in this valuation are those which were in effect on June 30, 2024 and there have been no changes in benefits since the preceding valuation exept for lowering the threshold for full COLA form 80% to 75%. All benefit provisions are summarized in Appendix B..

Assumptions and methods

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 SPRBT. The combined effect of the assumptions used in this valuation is expected to have no significant bias.

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.

All assumptions and methods are described in Appendix A. The actuarial assumptions and methods used in this report comply with the parameters for disclosure that appear in Governmental Accounting Standards Board (GASB) Statement Number 67.

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.

Data

The System's staff supplied data for active, inactive, and retired members 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 with the prior year's data. The System's staff also supplied asset data as of June 30, 2024.

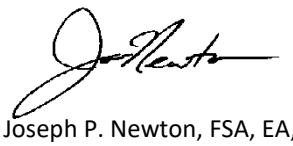
Certification

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 state law and, where applicable, the Internal Revenue Code, ERISA, and the

Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries. All are 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,
Gabriel, Roeder, Smith & Company



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Actuarial Standards of Practice Disclosure Statements

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; 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.

This report should not be relied on for any purpose other than the purpose described above. Determinations of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results.

The valuation was based upon information furnished by the System's staff, concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not otherwise audit the data. We are not responsible for the accuracy or completeness of the information provided by the System's staff.

The developed findings included in this report consider data or other information through June 30, 2024.

This is one of multiple documents comprising the actuarial report. The other document comprising the actuarial report is a PowerPoint presentation presented to the Board of Trustees following the publication of this report.

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SECTION I

EXECUTIVE SUMMARY

Executive Summary

Item	June 30, 2024	June 30, 2023
Membership		
• Number of		
- Active members	264	238
- Retirees and beneficiaries	116	116
- Inactive members	76	73
- Total	456	427
• Payroll for benefits	$ 32,026,217	$ 29,680,436
Contribution rates		
• Member	8.75%	8.75%
• State	20.59%	22.98%
Assets		
• Market value	$ 226,439,790	$ 206,014,590
• Actuarial value	218,947,544	202,820,349
• Return on market value	10.2%	8.4%
• Return on actuarial value	8.3%	7.6%
• Employer contribution	$ 6,437,409	$ 6,209,247
• Ratio of actuarial value to market value	96.7%	98.4%
Actuarial Information		
• Employer normal cost %	12.03%	12.59%
• Unfunded actuarial accrued liability (UAAL)	$ 27,052,495	$ 34,288,303
• Amortization rate	8.56%	10.39%
• Funding period	14 years	16 years
• Funded ratio	89.0%	85.5%
Projected employer contribution		
• Fiscal year ending June 30,	2027	2026
• Projected payroll for contributions	$ 32,290,821	$ 31,969,829
• Projected employer contribution	6,648,680	7,346,667

SECTION II

DISCUSSIONS

Discussion (Contribution Rates)

The employer contribution rate for the SPRBT is determined actuarially. The rate determined in each valuation becomes effective two years after the valuation date, in this case as of July 1, 2026.

The rate consists of two pieces: the normal cost rate and the amortization rate. The normal cost rate is the employer's Entry Age normal cost, expressed as a percentage of active member payroll. The amortization rate is the contribution required to amortize each of the laddered bases that comprise the unfunded actuarial accrued liability over closed periods as a level percentage of payroll. Payment for each base is generally calculated based on a 20 year amortization period beginning 2 years after they are established. The amortization rate is adjusted for the fact that the contribution rate set by this valuation is deferred for two years Should the SPRBT become overfunded, the UAAL will be amortized using a single base. Accordingly, the Actuarially Determined Contribution under the funding policy can be considered a "Reasonable Actuarially Determined Contribution" as required by the Actuarial Standards of Practice.

The decrease in the employer contribution rate from 22.98% to 20.59% of payroll was primarily due to a gain on the actuarial value of assets with the return on the actuarial value of assets of 8.3% being higher than the assumed rate of 7.0% and individual salary increases that were less than expected. These gains were partially offset by the plan changes.

An analysis of the changes in the employer contribution rate appears in Table 11a of this report and a history of the employer contribution rates appears in Table 11b. Table 11c shows a reconciliation of the UAAL.

Discussion (Financial Data and Experience)

Assets for the SPRBT are held in trust and are commingled with those of several other plans and programs—including the Employees' Retirement System of Rhode Island—for investment purposes. The State Treasurer is responsible for setting the asset allocation policy and for investing the funds.

Table 6 shows the net plan assets for the SPRBT. Table 7 shows a reconciliation of the assets between the previous valuation and this valuation. Table 8 shows the development of the actuarial value of assets. Table 9 shows the distribution of investments by category — 60% of assets are held in equities, including real estate and private equity — and Table 10 shows a historical summary of the return rates. As can be seen, the market value rate of return was 10.2% for the year ended June 30, 2024, and the return on an actuarial asset basis was 8.3%.

The average annual return based on the market value of assets over the last ten years (July 1, 2014 – June 30, 2024) was 7.2%. This is more than the current 7.00% annual investment return assumption. The average annual return based on the actuarial value of assets over the same period was 7.4%.

All returns above are net of both investment and administrative expenses, and may differ from other information provided by the General Treasurer's office or the investment managers and advisors.

The System's staff provided all of the financial information used in this report.

Discussion (Member Data)

The System's staff supplied member data as of June 30, 2024. While we did not audit this data, we did perform various tests to ensure that it was internally consistent, consistent with the prior year's data, and was reasonable overall. Information provided for active members includes: name, identification number, sex, a code indicating whether the member was active or inactive, date of birth, service, salary, date of last contribution, and accumulated member contributions without interest. For retired members, data includes: name, an identification number, sex, date of birth, date of retirement, amount of benefit (original, COLA, gross), a code indicating the option elected and the type of retiree (service retiree, disabled retiree, beneficiary), and if applicable, the joint pensioner's date of birth and sex.

Table 12 and Table 13 show information and statistics about the members. Table 14 shows the distribution of active members by age and service.

The total number of active members is 264 which is an increase of 26 active members compared to this time last year. Total compensation used for determining benefits increased from $29.7 million to $32.0 million.

Since the last valuation, there have been the following changes in active membership:

- 4 members terminated
- No members retired

The total payroll shown on the statistical tables as of June 30, 2012 is the amount that is used for determining benefits, and includes 400 hours of overtime and other adjustments. Effective June 30, 2013, the total payroll shown on the statistical tables is the amount only including holiday pay and clothing allowance but excluding 400 hours of overtime and other adjustments. An overtime adjustment (if applicable) was applied when determining benefits.

Discussion (Benefit Provisions)

Appendix B includes a summary of the benefit provisions for the SPRBT. There were no changes in the benefit provisions since the preceding valuation except for the lowering of the COLA threshold from 80% to 75%.

There are no ancillary benefits—e.g., cost of living benefits—that are currently provided by a source independent of the SPRBT but that might be deemed a liability of the SPRBT if continued beyond the availability of funding by the current funding source.

The COLA provided to retired members is contingent on the investment performance, the annual change in the CPI-U, and funded status of the System. The amount of the COLA is determined based on 50% of the plan's five-year average investment rate of return minus 5.0% and will range from zero to 4.0%, and 50% of the lesser of 3% or last year's CPI-U increase for a total maximum increase of 3.50%. This calculation produces a 2.84% COLA for Calendar Year 2024 and 2.89% for Calendar Year 2025. The COLA will be limited and this limit will be indexed annually to increase in the same manner as COLAs, with the known values as follows:

Year	COLA Limit
2014	$ 25,000
2015	$ 25,168
2016	$ 25,855
2017	$ 26,098
2018	$ 26,291
2019	$ 26,687
2020	$ 27,184
2021	$ 27,608
2022	$ 27,901
2023	$ 28,878
2024	$ 29,776
2025	$ 30,622
2026	$ 31,507

Prior to the passage of H5200Aaa Article 12 the COLA was suspended for all state employees, teachers, BHDDH nurses, correctional officers, judges and state police until the aggregate funding level of their plans exceeds 80%; however, an interim COLA will be granted in four-year intervals while the COLA is suspended. The first interim COLA was during the Calendar Year beginning January 1, 2017 and another for 2021. Also, for current retirees and beneficiaries retired on or before July 1, 2015 the $25,000 cap will be increased to $30,000 (indexed) for any COLA payable based on the every fourth year provision. Effective with the passage of HB No. 7225 SUB A as Amended, this reduction only applies to retirees with retirement dates after June 30, 2012 and the 80% threshold for full COLAs has been reduced to 75%.

Actuarial Methods and Assumptions

Appendix A of this report includes a summary of the actuarial assumptions and methods used in this valuation. Costs are determined using the Entry Age Normal actuarial cost method. This method was initially adopted effective June 30, 1999 and was modified, effective June 30, 2011, to be consistent with the Act and the standards outlined in the GASB Statement No. 67 exposure draft, which has now been finalized.

The method used to determine the actuarial value of assets is the five-year smoothed market method. This technique is further described in Section III of Appendix A. The development of the actuarial value of assets utilizing this method is shown on Table 8.

The assumptions were adopted by the Board on May 17, 2023, we believe the assumptions are internally consistent and are reasonable, based on the actual experience of the SPRBT.

SECTION III

TABLES

Table 1

Development of Contribution Rate (State Police)

		June 30, 2024 (1)	June 30, 2023 (2)
1.	Base Pay from prior fiscal year supplied by ERSRI	$ 29,985,238	$ 29,687,165
2.	Compensation projected to next fiscal year	30,734,868	30,429,344
3.	Actuarial accrued liability	246,000,039	237,108,652
4.	Actuarial value of assets	218,947,544	202,820,349
5.	Unfunded actuarial accrued liability (UAAL) (3 - 4)	27,052,495	34,288,303
6.	Remaining amortization period at valuation date	14	16
7.	Contribution effective for fiscal year ending:	June 30, 2027	June 30, 2026
8.	Total pay projected for two-year delay	32,290,821	31,969,829
9.	Amortization of UAAL	2,764,537	3,321,291
10.	Normal cost		
	(a) Total normal cost rate	20.78%	21.34%
	(b) Employee contribution rate	8.75%	8.75%
	(c) Employer normal cost rate (a - b)	12.03%	12.59%
11.	Employer contribution rate as percent of payroll		
	(a) Employer normal cost rate	12.03%	12.59%
	(b) Amortization payments (9 / 8)	8.56%	10.39%
	(c) Total (a + b)	20.59%	22.98%
12.	Estimated employer contribution amount (8 * 11(c))	$ 6,648,680	$ 7,346,667

Table 2

Summary of Unfunded Liability

Purpose	Remaining Balance as of June 30, 2024	Fiscal Year 2025 Amortization Payment *	Fiscal Year 2026 Amortization Payment *	Fiscal Year 2027 Amortization Payment *	Years Remaining Beginning with Fiscal Year 2027
Original 2011 RIRSA Base	7,882,155	890,286	935,777	959,171	9
2014 Experience Base	(4,642,913)	(489,281)	(515,356)	(528,240)	10
2014 Mediation Settlement	(1,267,432)	(133,566)	(140,683)	(144,200)	10
2015 Experience Base	(1,628,661)	(161,233)	(170,176)	(174,430)	11
2016 Experience Base	11,471,134	1,073,032	1,134,845	1,163,216	12
2016 Assumption Change - FY21 Stagger **	2,877,271	255,587	270,850	277,621	13
2016 Assumption Change - FY22 Stagger **	3,102,409	275,586	292,043	299,344	13
2016 Assumption Change - FY23 Stagger **	3,355,124	298,036	315,832	323,728	13
2016 Assumption Change - FY24 Stagger **	3,640,592	323,393	342,705	351,273	13
2017 Experience Base	2,756,826	244,887	259,512	266,000	13
2018 Experience Base	1,230,450	104,246	110,688	113,455	14
2019 Experience Base	(2,210,787)	(179,318)	(190,768)	(195,537)	15
2019 Assumption Change - FY23 Stagger**	820,976	72,927	77,282	79,214	13
2019 Assumption Change - FY24 Stagger**	890,828	79,132	83,858	85,954	13
2020 Experience Base	919,891	71,672	76,393	78,303	16
2021 Experience Base	(6,725,469)	(504,853)	(539,114)	(552,592)	17
2022 Experience Base	(3,132,559)	(227,155)	(243,017)	(249,092)	18
2022 Assumption Change	64,111	-	5,176	5,305	19
2023 Experience Base	15,054,500	-	1,215,440	1,245,826	19
New Experience Base This Fiscal Year	(7,405,951)	-	-	(639,782)	20
Unfunded Actuarial Accrued Liability	$ 27,052,495	$ 1,993,378	$ 3,321,287	$ 2,764,537	

* Assuming payment made at the middle of the year.

** Assumption change staggers will begin in the fiscal year indicated.

Table 3

Actuarial Present Value of Future Benefits

		June 30, 2024 (1)	June 30, 2023 (2)
1.	Active members		
	a. Service retirement benefits	$ 160,385,930	$ 149,716,425
	b. Deferred termination benefits	0	0
	c. Refunds	646,915	526,804
	d. Pre-retirement death benefits	1,248,845	1,111,865
	e. Disability retirement benefits	19,807,839	17,584,393
	f. Total	$ 182,089,529	$ 168,939,487
2.	Retired members		
	a. Service retirements	$ 117,346,327	$ 117,706,554
	b. Disability retirements	6,174,743	6,184,344
	c. Beneficiaries	4,452,981	4,461,154
	d. Post-retirement death benefits	0	0
	e. Total	$ 127,974,051	$ 128,352,052
3.	Inactive members	$ 3,806,120	$ 3,628,023
4.	Total actuarial present value of future benefits	$ 313,869,700	$ 300,919,562
5.	Determination of actuarial accrued liability		
	a. Total actuarial present value of future benefits	$ 313,869,700	$ 300,919,562
	b. Less present value of future normal costs	(67,869,661)	(63,810,910)
	c. Actuarial accrued liability (a + b)	$ 246,000,039	$ 237,108,652

Table 4

Schedule of Funding Progress

Valuation Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability (UAAL) (3)-(2)	Funded Ratio (2)/(3)	Annual Covered Payroll	UAAL as % of Payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
June 30, 2007[1]	45,996,910	60,427,947	14,431,037	76.1%	15,836,354	91.1%
June 30, 2008	54,927,390	69,029,513	14,102,123	79.6%	16,698,764	84.5%
June 30, 2009	60,232,045	75,480,005	15,247,960	79.8%	17,096,202	89.2%
June 30, 2010	65,760,284	94,300,302	28,540,018	69.7%	19,715,070	144.8%
June 30, 2010[2]	65,760,284	73,048,680	7,288,396	90.0%	19,715,070	37.0%
June 30, 2011	73,151,768	74,185,705	1,033,937	98.6%	19,711,694	5.2%
June 30, 2012	84,293,968	94,031,687	9,737,719	89.6%	23,669,619	41.1%
June 30, 2013	92,916,758	102,259,438	9,342,680	90.9%	19,904,363	46.9%
June 30, 2014[3]	104,781,384	108,363,537	3,582,153	96.7%	20,814,621	17.2%
June 30, 2015	115,585,013	117,056,727	1,471,714	98.7%	19,940,052	7.4%
June 30, 2016	123,788,498	135,505,152	11,716,654	91.4%	22,555,315	51.9%
June 30, 2017	131,320,263	156,060,856	24,740,593	84.1%	22,612,234	109.4%
June 30, 2018	139,008,754	166,507,483	27,498,729	83.5%	23,455,654	117.2%
June 30, 2019	148,085,853	174,511,310	26,425,457	84.9%	26,467,266	99.8%
June 30, 2019[4]	148,085,853	175,894,929	27,809,076	84.2%	26,467,266	105.1%
June 30, 2020	158,212,175	187,510,891	29,298,716	84.4%	26,805,499	109.3%
June 30, 2021	175,036,771	198,842,972	23,806,201	88.0%	26,080,257	91.3%
June 30, 2022[5]	189,031,357	210,044,008	21,012,651	90.0%	26,401,081	79.6%
June 30, 2023	202,820,349	237,108,652	34,288,303	85.5%	29,680,436	115.5%
June 30, 2024	218,947,544	246,000,039	27,052,495	89.0%	32,026,217	84.5%

[1] Restated for Article 22 (2008).

[2] Restated after reflecting the Rhode Island Retirement Security Act of 2011.

[3] Restated after reflecting impact of Article 21.

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

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

Table 5

Notes to Required Supplementary Information

Valuation date	June 30, 2024
Actuarial cost method	Entry Age Normal
Amortization method	Level percentage, closed
Remaining amortization period	14 years
Asset valuation method	5-Year smoothed market
Actuarial assumptions:	
Investment rate of return *	7.00%
Projected salary increase *	4.00% to 12.00%
Cost of living adjustment	2.10%

* Includes inflation at 2.50%.

Table 6

Plan Net Assets
(Assets at Market or Fair Value)

Item	June 30, 2024	June 30, 2023
(1)	(2)	(3)
1. Cash and cash equivalents	$ 169,709	$ 210,824
2. Receivables:		
a. Employer and member contributions	$ 360,587	$ 6,293
b. Transfers receivable	0	0
c. Miscellaneous	14,759	22,138
d. Total receivables	$ 375,346	$ 28,431
3. Investments		
a. Pooled trust	$ 225,965,401	$ 205,853,697
b. Plan specific investments	0	0
c. Total	$ 225,965,401	$ 205,853,697
4. Invested securities lending collateral	$ 0	$ 0
5. Property and equipment (net of depreciation)	$ 0	$ 0
6. Total assets	$ 226,510,456	$ 206,092,952
7. Liabilities		
a. Other post-employment benefit liability, net	$ 0	$ 0
b. Securities lending liability	0	0
c. Other reserves and payables	70,666	74,902
d. Total liabilities	$ 70,666	$ 74,902
8. Total market value of assets available for benefits		
Total (Item 6 - Item 7)	$ 226,439,790	$ 206,018,050

Table 7

Reconciliation of Plan Net Assets

	June 30, 2024	June 30, 2023
1. Market value of assets as of beginning of year		
a. Market value of assets as of beginning of year	$ 206,014,590	$ 190,522,713
b. Adjustment for market value of assets	3,461	0
c. Adjusted market value of assets as of beginning of year	$ 206,018,051	$ 190,522,713
2. Contributions		
a. Members	$ 2,726,384	$ 2,593,367
b. State	6,437,409	6,209,247
c. Service purchases	8,201	7,134
d. Miscellaneous revenue	311	24
e. Total	$ 9,172,305	$ 8,809,772
3. Investment earnings, net of investment and administrative expenses	$ 21,076,065	$ 16,066,484
4. Expenditures for the year		
a. Benefit payments	$ (9,573,988)	$ (9,298,964)
b. Cost-of-living adjustments	(56,579)	(56,579)
c. Death benefits	0	0
d. Social security supplements	0	0
e. Supplemental pensions	0	0
f. Refunds	(196,064)	(28,836)
g. Total expenditures	$ (9,826,631)	$ (9,384,379)
5. Transfers and other adjustments	$ 0	$ 0
6. Market value of assets at end of year	$ 226,439,790	$ 206,014,590

Table 8

Development of Actuarial Value of Assets

	Year Ending June 30, 2024
1. Market value of assets at beginning of year	$ 206,014,590
2. Net new investments	
a. Contributions (includes misc revenues)	$ 9,172,305
b. Benefits paid	(9,630,567)
c. Refunds	(196,064)
e. Subtotal	(654,326)
3. Market value of assets at end of year	$ 226,439,790
4. Net earnings (3-1-2)	$ 21,079,526
5. Assumed investment return rate for fiscal year	7.00%
6. Expected return	$ 14,398,120
7. Excess return (4-6)	$ 6,681,406

8. Development of amounts to be recognized as of June 30, 2024:

Fiscal Year End	Remaining Deferrals of Excess (Shortfall) of Investment Income*	Offsetting of Gains/(Losses)	Net Deferrals Remaining	Years Remaining	Recognized for this valuation	Remaining after this valuation
	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)
2020	$ 0	$ 0	$ 0	1	$ 0	$ 0
2021	994,237	0	994,237	2	497,119	497,118
2022	0	0	0	3	0	0
2023	2,200,004	0	2,200,004	4	550,001	1,650,003
2024	6,681,406	0	6,681,406	5	1,336,281	5,345,125
Total	$ 9,875,647	$ 0	$ 9,875,647		$ 2,383,401	$ 7,492,246

9. Actuarial value of assets as of June 30, 2024 (Item 3 - Item 8)	$ 218,947,544
10. Ratio of actuarial value to market value	96.7%

*Values of $0 result from the beginning balance being offset by future gains or losses in the opposite direction.

Table 9

Distribution of Assets at Market Value
(Percentage of Total Investments)

Item	June 30, 2024
(1)	(2)
US Equity	25.90%
International Developed Equity	10.00%
Emerging Markets Equity	4.10%
Private Equity and Opportunistic Private Credit	12.50%
Non-Core Real Estate	2.50%
Equity Options	2.00%
EMD (50/50 Blend)	0.00%
Liquid Credit	5.00%
Private Credit	3.00%
CLOs	2.00%
Treasury Duration	5.00%
Systematic Trend	5.00%
Core Real Estate	4.00%
Private Infrastructure	4.00%
IG Corp Credit	3.25%
Securitized Credit	3.25%
Absolute Return	6.50%
Cash	2.00%
Total investments	100.00%

Table 10

History of Investment Return Rates

Year Ending June 30 of (1)	Market (2)	Actuarial (3)
1996	13.7%	13.7%
1997	19.1%	19.1%
1998	16.1%	16.5%
1999	10.1%	14.7%
2000	9.1%	8.8%
2001	-11.0%	4.9%
2002	-8.4%	0.9%
2003	4.5%	1.5%
2004	18.0%	4.2%
2005	10.2%	5.9%
2006	11.6%	8.8%
2007	18.1%	12.2%
2008	-5.9%	9.0%
2009	-19.1%	2.0%
2010	12.8%	1.6%
2011	19.0%	3.8%
2012	1.8%	5.9%
2013	10.7%	6.8%
2014	15.0%	8.7%
2015	2.2%	7.7%
2016	0.0%	5.8%
2017	11.7%	6.2%
2018	7.9%	6.8%
2019	6.5%	6.8%
2020	3.7%	6.1%
2021	27.0%	10.2%
2022	-2.8%	8.1%
2023	8.4%	7.6%
2024	10.2%	8.3%
Average Returns:		
Last 5 Years	8.9%	8.1%
Last 10 Years	7.2%	7.4%

Table 11a

Analysis of Change in Employer Cost

	Basis	Employer Cost
1.	Employer contribution rates from prior valuation	22.98%
2.	Impact of changes, gains and losses	
	a. Non-salary liability experience (gain)/loss	-1.01%
	b. Salary (gain)/loss	-0.82%
	c. Total payroll growth (gain)/loss	0.14%
	d. Investment experience (gain)/loss	-0.70%
	e. Changes in assumptions	0.00%
	f. Changes in plan provisions	0.00%
	g. Total	-2.39%
3.	Employer contribution rates from current valuation	20.59%

Table 11b

History of Employer Contribution Rates

Valuation Date as of June 30, (1)	Effective for Fiscal Year Ending June 30, (2)	Employer Contribution Rate (3)
1999	2002	27.67%
2000	2003	27.48%
2001	2004	26.77%
2002	2005	28.87%
2003	2006	31.35%
2004	2007	31.78%
2005	2008	31.00%
2006	2009	26.03%[1]
2007	2010	26.03%[1]
2008	2011	24.58%
2009	2012	25.39%
2010	2013	11.07%[2]
2011	2014	14.45%
2012	2015	17.24%
2013	2016	17.22%
2014	2017	12.66%[3]
2015	2018	12.22%
2016	2019	14.74%
2017	2020	18.48%
2018	2021	19.82%
2019	2022	19.24%
2020	2023	20.87%
2021	2024	20.66%
2022	2025	19.65%
2023	2026	22.98%
2024	2027	20.59%

[1] Revised pursuant to Article 22 (2008).

[2] Restated after reflecting the Rhode Island Retirement Security Act of 2011.

[3] Restated to reflect impact of Article 21.

Table 11c

Analysis of Change in UAAL

Basis	June 30, 2024
(1)	(2)
1. UAAL as of June 30, 2023	$ 34,288
2. Impact of changes, gains and losses	
a. Interest at 7.00% for one year	2,325
b. Expected amortization payments	(2,155)
c. Investment experience (gain)/loss	(2,607)
d. Salary (gain)/loss	(3,098)
e. Non-salary liability experience (gain)/loss	(1,701)
f. Changes in assumptions	0
g. Changes in plan provisions	0
i. Total	$ (7,236)
3. UAAL as of June 30, 2024	$ 27,052

Note: All dollar figures are shown in thousands.

Table 12

Membership Data (State Police)

	June 30, 2024 (1)	June 30, 2023 (2)
1. Active members		
a. Number	264	238
b. Number eligible to retire	55	55
c. Total payroll supplied by State (for benefits)	$ 32,026,217	$ 29,680,436
d. Average salary	$ 121,311	$ 124,708
e. Average age	38.3	38.7
f Average service	11.7	11.9
2. Inactive members		
a. Number	76	73
3. Service retirees		
a. Number	100	100
b. Total annual benefits	$ 8,839,473	$ 8,822,394
c. Average annual benefit	88,395	88,224
d. Average age	59.1	58.1
4. Disabled retirees		
a. Number	6	6
b. Total annual benefits	$ 445,175	$ 445,175
c. Average annual benefit	74,196	74,196
d. Average age	57.2	56.2
5. Beneficiaries and spouses		
a. Number	10	10
b. Total annual benefits	$ 326,503	$ 326,503
c. Average annual benefit	32,650	32,650
d. Average age	59.2	58.2

Table 13

Historical Summary of Active Member Data

	Active Members		Covered Payroll*		Average Salary*			
Valuation as of June 30,	Number	Percent Increase	Amount	Percent Increase	Amount	Percent Increase	Average Age	Average Service
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2000	152	16.9%	$8,916,914	18.9%	$58,664	1.7%	33.7	5.5
2001	151	-0.7%	$9,139,418	2.5%	$60,526	3.2%	34.7	6.6
2002	150	-0.7%	$10,933,360	19.6%	$72,889	20.4%	35.5	7.5
2003	150	0.0%	$11,286,365	3.2%	$75,242	3.2%	36.6	8.4
2004	148	-1.3%	$11,421,880	1.2%	$77,175	2.6%	37.6	9.5
2005	181	22.3%	$13,225,400	15.8%	$73,069	-5.3%	36.9	8.6
2006	179	-1.1%	$13,474,588	1.9%	$75,277	3.0%	37.9	9.6
2007	179	0.0%	$15,836,354	17.5%	$88,471	17.5%	38.9	10.6
2008	177	-1.1%	$16,698,764	5.4%	$94,343	6.6%	39.9	11.6
2009	176	-0.6%	$17,096,202	2.4%	$97,138	3.0%	40.9	12.6
2010	211	19.9%	$19,715,070	15.3%	$93,436	-3.8%	39.5	11.5
2011	206	-2.4%	$19,711,694	0.0%	$95,688	2.4%	40.7	12.6
2012	231	12.1%	$23,669,619	20.1%	$102,466	7.1%	39.6	12.0
2013	222	-3.9%	$19,904,363	-15.9%	$89,659	-12.5%	40.3	12.6
2014	250	12.6%	$20,814,621	4.6%	$83,258	-7.1%	39.1	11.6
2015	237	-5.2%	$19,940,052	-4.2%	$84,135	1.1%	39.5	12.0
2016	246	3.8%	$22,555,315	13.1%	$91,688	9.0%	38.2	10.9
2017	232	-5.7%	$22,612,234	0.3%	$97,467	6.3%	38.5	11.1
2018	226	-2.6%	$23,455,654	3.7%	$103,786	6.5%	39.5	12.1
2019	260	15.0%	$26,467,266	12.8%	$101,797	-1.9%	38.7	11.4
2020	251	-3.5%	$26,805,499	1.3%	$106,795	4.9%	39.5	12.2
2021	242	-3.6%	$26,080,257	-2.7%	$107,770	0.9%	40.1	12.8
2022	267	10.3%	$26,401,081	1.2%	$98,880	-8.2%	38.1	11.2
2023	238	-10.9%	$29,680,436	12.4%	$124,708	26.1%	38.7	11.9
2024	264	10.9%	$32,026,217	7.9%	$121,311	-2.7%	38.3	11.7

*Based on salary used for benefits prior to year 2012. Effective 2013, only base salary, holiday pay and clothing allowance are recorded in salary.

Table 14

Distribution of Active Members by Age and by Years of Service
As of June 30, 2024

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
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.
Under 25	9	1	6	0	0	0	0	0	0	0	0	0	16
	$72,530	$84,281	$84,281	$0	$0	$0	$0	$0	$0	$0	$0	$0	$77,671
25-29	17	0	13	0	0	12	0	0	0	0	0	0	42
	$72,530	$0	$84,791	$0	$0	$96,877	$0	$0	$0	$0	$0	$0	$83,281
30-34	2	0	7	0	0	32	14	0	0	0	0	0	55
	$72,530	$0	$87,208	$0	$0	$98,972	$110,287	$0	$0	$0	$0	$0	$99,393
35-39	1	1	1	0	0	10	31	1	0	0	0	0	45
	$72,530	$84,281	$80,978	$0	$0	$98,606	$114,728	$124,289	$0	$0	$0	$0	$108,994
40-44	0	0	0	0	0	2	26	8	0	0	0	0	36
	$0	$0	$0	$0	$0	$101,747	$121,251	$159,004	$0	$0	$0	$0	$128,557
45-49	0	0	0	0	0	0	7	10	4	0	0	0	21
	$0	$0	$0	$0	$0	$0	$133,508	$167,170	$173,143	$0	$0	$0	$157,087
50-54	0	0	0	0	0	0	0	14	6	7	0	0	27
	$0	$0	$0	$0	$0	$0	$0	$140,428	$190,490	$209,068	$0	$0	$169,349
55-59	0	0	0	0	0	0	0	2	4	13	0	0	19
	$0	$0	$0	$0	$0	$0	$0	$139,811	$185,301	$211,556	$0	$0	$198,476
60-64	0	0	0	0	0	0	0	0	0	3	0	0	3
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$214,653	$0	$0	$214,653
65 & Over	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	29	2	27	0	0	56	78	35	14	23	0	0	264
	$72,530	$84,281	$85,163	$0	$0	$98,557	$117,791	$151,818	$184,051	$211,203	$0	$0	$121,311

APPENDIX A

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

APPENDIX A

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

I. Valuation Date

The valuation date is June 30th of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

II. Actuarial Cost Method

The actuarial valuation uses the Entry Age Normal actuarial cost method. Under this method, the employer contribution rate is the sum of (i) the employer normal cost rate, and (ii) a rate that will amortize the unfunded actuarial accrued liability (UAAL).

1. First, the actuarial present value of future benefits is determined by discounting the projected benefits for each member back to the valuation date using the assumed investment return rate as the discount rate. For active members, the projected benefits are based on the member's age, service, sex and compensation, and based on the actuarial assumptions. The calculations take into account the probability of the member's death, disability, or termination of employment prior to becoming eligible for a retirement benefit, as well as the possibility of the member will remain in service and receive a service retirement benefit. Future salary increases are anticipated. The present value of the expected benefits payable to all active members is added to the present value of the expected future payments to retired participants and beneficiaries to obtain the present value of all expected benefits. Liabilities for future members are not included.

2. The employer contributions required to support the benefits are determined as a level percentage of salary, and consist of a normal contribution and an amortization contribution.

3. The normal contribution is determined using the Entry Age Normal method. Under this method, a calculation is made to determine the rate of contribution which, if applied to the compensation of each individual member during the entire period of anticipated covered service, would be required to meet the cost of all benefits payable on his behalf. The salary-weighted average of these rates is the normal cost rate. This calculation reflects the plan provisions that apply to each individual member.

4. The employer normal cost rate is equal to (i) the normal cost rate, minus (ii) the member contribution rate.

5. The actuarial accrued liability is equal to the present value of all benefits less the present value of future normal costs. The unfunded actuarial accrued liability (UAAL) is then determined as (i) the actuarial accrued liability, minus (ii) the actuarial value of assets.

6. The amortization contribution rate is the level percentage of payroll required to reduce the UAAL to zero over the remaining amortization period. The employer contribution rate determined by this valuation will not be effective until two years after the valuation date. The determination of the contribution rate reflects this deferral. The amortization payment for the applicable fiscal year is first determined based on the individual amortization bases. The covered payroll is projected forward for two years, and we then determine the amortization rate by dividing the amortization payment by the projected payroll. Contributions are assumed to be made monthly throughout the year.

   (a) In conjunction with The Rhode Island Retirement Security Act of 2011, the amortization period was reset to 25 years as of June 30, 2010 for the UAAL that existed at that time. New gains and losses each year will be amortized over individual 20 year periods. At any time that the System is in an overfunded status, the amortization schedule will be a rolling 20 year amortization of any surplus.

III. Actuarial Value of Assets

The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment return in excess of (less than) expected investment income. Offsetting unrecognized gains and losses are immediately recognized, with the shortest remaining bases recognized first and the net remaining bases continue to be recognized on their original timeframe. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of administrative and investment expenses.

IV. Actuarial Assumptions

A. Economic Assumptions

1. Investment return: 7.00% per year, compounded annually, composed of an assumed 2.50% inflation rate and a 4.50% net real rate of return. This rate represents the assumed return, net of all investment and administrative expenses.

2. Salary increase rate: The sum of (i) a 3.25% wage inflation assumption (composed of a 2.75% price inflation assumption and a 0.50% additional general increase), and (ii) a service-related component as shown below:

Years of Service	Service-Related Componer	Total Increase
0	5.00%	8.25%
1	4.75	8.00
2	4.75	8.00
3	8.75	12.00
4	5.75	9.00
5	4.00	7.25
6	2.00	5.25
7	2.00	5.25
8	1.75	5.00
9	1.50	4.75
10-14	1.50	4.75
15-19	1.25	4.50
20-24	1.00	4.25
25&up	0.75	4.00

Salary increases are assumed to occur once a year, on July 1. Therefore the pay used for the period between the valuation date and the first anniversary of the valuation date is equal to the reported pay for the prior year, increased by the salary increase assumption.

3. Payroll growth rate: In the amortization of the unfunded frozen liability, payroll is assumed to increase 2.50% per year. This assumption includes no allowance for future membership growth.

4. Post-retirement Benefit Increase: Post-retirement benefit increases are assumed to be 2.10%, per annum while the plan has a funding level that exceeds 75%. The actual amount of the COLA is determined based on 50% of the plan's five-year average investment rate of return minus 5.00% which will range from zero to 4.0%, and 50% of the lesser of 3% or last year's CPI-U increase for a total maximum increase of 3.50%.

B. Demographic Assumptions

1. Post-termination mortality rates

   a. Healthy males – PUB(10) Median Table for Healthy General Employee Males, loaded by 115%, projected with Scale MP21 with immediate convergence.

   b. Healthy females - PUB(10) Median Table for Healthy General Employee Females, loaded by 111%, projected with Scale MP21 with immediate convergence.

   c. Disabled males – PUB(10) Tables for Disabled Retirees by Occupation for males, projected with Scale MP21 with immediate convergence.

   d. Disabled females – PUB(10) Tables for Disabled Retirees by Occupation for females, projected with Scale MP21 with immediate convergence.

2. Pre-retirement mortality

   a. Males – PUB(10) Tables for Employees by Occupation for males, projected with Scale MP21 with immediate convergence

   b.. Females - PUB(10) Tables for Employees by Occupation for females, projected with Scale MP21 with immediate convergence.

3. Disability rates – Rates are applied, with 75% of disabilities considered work related, and no recoveries assumed once disabled:

Age	Rate
20	0.12%
25	0.17
30	0.22
35	0.29
40	0.44
45	0.72
50	1.21

   Disabilities that are not work-related are assumed to result in a refund. The disability rates for non work-related causes stop once the member is eligible for retirement.

4. Termination rates – None

5. Retirement rates – State police are assumed to retire in accordance with the probabilities as shown below. Any member of the State police, other than the superintendent of State police may retire at any time subsequent to the date the member's retirement allowance equals or exceeds 50% of average compensation, provided that a member may retire at or after the date of the attainment of a 50% benefit multiplier. 100% are assumed to retire upon the first to occur of (i) the date the member's retirement allowance equals 65%; or (ii)the age 70 if still active.

State Police Employed Before July 1, 2007	
Service	Ret. Rate
20	5.0%
21	8.0%
22	11.0%
23	14.0%
24	17.0%
25+	45.0%

State Police Employed On or After July 1, 2007	
Service	Ret. Rate
25	35.0%
26	25.0%
27	20.0%
28	30.0%
29+	40.0%

C. Other Assumptions

1. Percent married: 85% of employees are assumed to be married.

2. Age difference: 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.

3. Remarriage: It is assumed that no surviving spouse will remarry and there will be no children's benefit.

4. Investment and administrative expenses: The assumed investment return rate represents the anticipated net return after payment of all investment and administrative expenses.

5. Overtime: Members eligible for overtime are assumed to work and contribute on 400 hours of overtime during their final averaging period.

V. Participant Data

Participant data was supplied in electronic files for active and retired members. The data for active members included birth date, sex, service, salary and employee contribution account balance. For retired members and beneficiaries, the data included date of birth, sex, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and a form of payment code.

APPENDIX B

SUMMARY OF BENEFIT PROVISIONS

APPENDIX B
Summary of Benefit Provisions

1. Effective Date and Authority: The State Police Retirement Benefits Trust (SPRBT) became effective on July 1, 1989 for State police officers originally hired on or after July 1, 1987. Benefits are described in Rhode Island General Laws, Title 42, Chapter 28.

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

3. Administration: The State Police Retirement Benefits Trust is administered by the State of Rhode Island Retirement Board. However, the State Treasurer is responsible for the investment of the trust assets, including the establishment of the asset allocation policy. Assets are commingled for investment purposes with those of the Employees' Retirement System of Rhode Island and various other plans and programs.

4. Type of Plan: The State Police Retirement Benefits Trust is a qualified governmental defined benefit retirement plan. For Governmental Accounting Standards Board purposes, it is a single-employer plan.

5. Eligibility: All State police officers, and the Superintendent of State Police, hired on or after July 1, 1987, participate in this plan. Benefits for State police officers hired before July 1, 1987 are being paid by the State from the general assets of the State, on a pay-as-you-go basis. Eligible employees become members at their date of employment.

6. Salary for Contribution Purposes: Salary includes the member's base earnings plus any payments under a regular longevity or incentive plan. Salary excludes, unused sick and vacation leave, severance pay, and other extraordinary compensation. Members may contribute on up to 400 hours of overtime during their final averaging period to be included in the determination of their benefit. Certain amounts that are excluded from taxable wages, such as amounts sheltered under a Section 125 plan or amounts picked up by the employer under IRC Section 414(h), are not excluded from salary.

7. Employee Contributions: State police officers contribute 8.75% of their salary per year. The State "picks up" the members' contributions for its employees under the provisions of Internal Revenue Code (IRC) Section 414(h).

8. Employer Contributions: The State contributes an actuarially determined percentage of the member's annual salary. Contributions determined in a given actuarial valuation go into effect two years after the actuarial valuation.

9. Service: Employees receive credit for service while a member. In addition, a member may purchase credit for certain periods by making an additional contribution to purchase the additional service. Special rules and limits govern the purchase of additional service and the contribution required.

10. Final Salary (Salary for Benefit Purposes): Final Salary includes base pay, longevity increases, up to 400 hours of overtime pay, holiday pay and the member's clothing allowance. For members who work more than 25 years, their Final Salary shall not be more than the Final Salary in the 25th year.

APPENDIX B (Continued)

11. Final Average Compensation (FAC): For members eligible to retire after June 30, 2012, their FAC will be based on the average of the highest five consecutive years of compensation, which includes base pay, longevity, up to 400 hours of overtime pay and holiday pay.

12. Retirement

    a. Eligibility:
        (i) Members other than Superintendent of State Police can retire on or after the attainment of a 50% benefit multiplier.
        (ii) The Superintendent of State Police may retire on or after age 60 if he has credit for 10 years of service.

    b. Monthly Benefit:
        (i) For members hired before June 30, 2007:
            (1) For members eligible to retire as of June 30, 2012, their benefit multiplier will be two and one half percent (2.5%) for a member's first twenty (20) total years, plus three percent (3%) for years after 20. Their monthly benefit will be Final Salary times the benefit multiplier divided by 12.
            (2) For members who become eligible to retire after July 1, 2012, their benefit multiplier will be two and one half percent (2.5%) for a member's years of service prior to July 1, 2012, plus two percent (2%) for years thereafter. Their monthly benefit will be FAC times the benefit multiplier divided by 12.
        (ii) For members hired after June 30, 2007: Their benefit multiplier is two percent (2.0%) for all years of service. Their monthly benefit will be FAC times the benefit multiplier divided by 12.
        (iii) The Superintendent of State Police receives a minimum benefit of 50% of FAC. The member also earns an additional 3% of FAC for each year of service in excess of 25.
        (iv) In no event shall a member's original retirement allowance exceed sixty-five percent (65%) of FAC.
        (v) Benefits accrued as of June 30, 2012 are protected.

    c. Payment Form: Benefits are paid as a monthly life annuity. There are no optional forms of payment available.

    d. Death benefit: After the death of a retired member, if the member was married, a benefit will be paid to the spouse equal to 2.00% of the member's Final Salary for each year of service. There is a minimum benefit of 25% of Final Salary. Benefits are increased one-third for each dependent child. The maximum benefit is 50% of Final Salary. Benefits may not begin before the spouse is age 40, and benefits stop upon the spouse's death or remarriage. Effective July 1, 2012, death benefits will be based on FAC, and not Final Salary.

APPENDIX B (Continued)

13. Disability Retirement

    a. Eligibility: A member is eligible if the disability is work-related. (Non work-related disabilities result in a refund.)

    b. Occupational Disability Benefit: 75% of Final Salary.

    c. Payment Form: The disability benefit commences immediately upon the member's retirement. Benefits cease upon recovery or reemployment. Disability benefits are payable as a monthly life annuity. The same provisions that apply upon the death of a retired member apply upon the death of a disabled member.

14. Refunds

    a. Eligibility: All members leaving covered employment prior to eligibility for other benefits.

    b. Benefit: A lump-sum payment equal to the sum of his/her employee contributions. No interest is credited on these contributions.

15. Death Benefit of Active Members

    a. Eligibility: Death must have occurred from a service-related cause, or the member must have 10 or more years of service.

    b. Ordinary Benefit: After the death of an active member, if the member was married, a benefit will be paid to the spouse equal to 2.00% of the member's Final Salary for each year of service. There is a minimum benefit of 25% of Final Salary. Benefits are increased one-third for each dependent child. The maximum benefit is 50% of Final Salary. Benefits may not begin before the spouse is age 40 without a dependent child, and benefits stop upon the spouse's death or remarriage. Effective July 1, 2012, death benefits will be based on FAC, and not Final Salary.

    c. Duty-related Death Benefit: 75% of Final Salary, paid to the spouse or other dependent relative. Benefits cease when the spouse or other relatives die or are no longer dependent.

16. Post-retirement Benefit Increase:

a. The first COLA will be granted at the later of age 55 and the member's third anniversary of retirement for retirees as of June 30, 2012 and the later of SSNRA and the member's third anniversary of retirement for all other current and future retirees.

b. Effective July 1, 2012, the following provisions will apply to all members:

(i) The COLA will be 25% of the full COLA for all state employees, teachers, BHDDH nurses, correctional officers, judges and state police until the aggregate funding level of their plans exceeds 75%.

(ii) The COLA is determined based on 50% of the plan's five-year average investment rate of return less 5.5% limited to a range of 0.0% to 4.0%, plus 50% of the lesser of 3.0% or last year's CPI-U increase for a total maximum increase of 3.50%.

(iii) The COLA will be limited to the first $25,000 of the member's annual pension benefit. For retirees and beneficiaries who retired on or before July 1, 2015, years in which a COLA is payable during the suspension described in (i) above will be limited to the first $30,000. These limits will be indexed annually to increase in the same manner as COLAs, with the known values as follows:

Year	COLA Limit
2014	$ 25,000
2015	$ 25,168
2016	$ 25,855
2017	$ 26,098
2018	$ 26,291
2019	$ 26,687
2020	$ 27,184
2021	$ 27,608
2022	$ 27,901
2023	$ 28,878
2024	$ 29,776
2025	$ 30,622
2026	$ 31,507

c. In addition to the increases described in section (b) above, there will be a one-time 2% COLA paid in FY2016 on the first $25,000 of pension benefit for all retirees and beneficiaries who retired on or before June 30, 2012. There will also be two one-time stipends of $500 payable in FY2016 and FY2017 to retirees and beneficiaries who retired on or before June 30, 2015.

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	June 30, 2021
Ratio of the market value of assets to total payroll	7.1	6.9	7.2	9.2
Ratio of actuarial accrued liability to payroll	7.7	8.0	8.0	7.6
Ratio of actives to retirees and beneficiaries	2.3	2.1	2.6	2.8
Ratio of net cash flows to market value of assets	-0.3%	-0.3%	-0.1%	0.4%
Duration of the present value of benefits	11.3	11.3	11.3	11.3

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.

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 PRESENT VALUE OF BENEFITS

The duration of the present value of benefits (PVB) 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 PVB 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%.

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:	$298 million
Valuation liability (IEAN) at 7% on measurement date:	246 million
Cost to mitigate investment risk in the System's portfolio:	$ 52 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. If these provisions were not contingent on the investment performance, it would have increased the LDROM by another $8.6 million, meaning these provisions reduced the impact of lowering the discount rate from 7.0% to 5.32%, which is an illustration that a portion of the investment risk is currently being borne by the Members and not the Employers.

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. Other significant assumptions that differ from those used for the funding valuation: Future assumed COLAs would decrease from 2.1% per year to 1.1% per year. 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.

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.

Glossary (Continued)

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 for compliance with GASB 67, such as the funded ratio and the ADC.

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 ADC.

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.

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 Contribution (ADC): The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, calculated to systematically fund the Plan following the funding policy adopted by the Plan. The ADC 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.

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.