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CONNECTICUT STATE EMPLOYEES RETIREMENT SYSTEM

REPORT OF THE ACTUARY ON THE VALUATION PREPARED AS OF JUNE 30, 2023

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November 30, 2023

State of Connecticut
State Employees Retirement Commission
55 Elm Street
Hartford, CT 06106

Members of the Commission:

Connecticut General Statutes Section 5-155a governs the operation of the Connecticut State Employees Retirement System (SERS). The actuary makes periodic valuations of the contingent assets and liabilities of the Retirement System at the direction of the Commission. We are pleased to submit the report giving the results of the actuarial valuation of the Retirement System prepared as of June 30, 2023.

The purpose of the report is to provide a summary of the funded status of SERS as of June 30, 2023 and to recommend an actuarially determined contribution rate for the fiscal year ending June 30, 2025. The report indicates that an annual actuarially determined employer contribution of approximately $ 2.014 billion (at the rate of 48.31% of compensation) for the fiscal year ending June 30, 2025 is sufficient to support the benefits of the System.

In preparing the valuation, the actuary relied on data provided by the Comptroller's Office. While not verifying data at the source, the actuary performed tests for consistency and reasonableness.

The System is funded on an actuarial reserve basis. The actuarial assumptions recommended by the actuary and adopted by the Commission are reasonably related to the experience under the System and to reasonable expectations of anticipated experience under the System. The funding objective of the System is that contribution amounts will be sufficient to fully fund the liabilities of System over a reasonable funding period. The funding method determines the unfunded actuarial accrued liability (UAAL) as the excess of actuarial accrued liability over the actuarial value of assets. See page 8 of this report for the allocation of the UAAL.

This is to certify that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement system and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System.

In order to prepare the results in this report, we have utilized actuarial models that were developed to measure liabilities and develop actuarial costs. These models include tools that we have produced and tested, along with commercially available valuation software that we have reviewed to confirm the appropriateness and accuracy of the output. In utilizing these models, we develop and use input parameters and assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

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Future actuarial results may differ significantly from the current results 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. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

The actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the System. Use of these computations for purposes other than meeting these requirements may not be appropriate.

The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sincerely yours,

John J. Garrett, ASA, FCA, MAAA
Principal and Consulting Actuary

Edward J. Koebel, FCA, MAAA, EA
Chief Executive Officer

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Section I – Summary of Principal Results

1. For convenience of reference, the principal results of the current and preceding valuations are summarized below:

Valuation Date	**June 30, 2023**	**June 30, 2022**
Number of active members	47,269	46,661
Annual compensation	$ 4,168,949,877	$ 3,787,015,802
Retired members and beneficiaries:		
Number	57,327	56,778
Annual allowances	$ 2,619,341,158	$ 2,525,749,497
Deferred Vested Members:		
Number	3,417	2,862
Annual allowances	$ 45,462,483	$ 37,556,865
Assets:		
Market Value*	$ 21,165,596,554	$ 18,532,120,770
Actuarial Value*	$ 21,846,666,981	$ 19,726,002,486
Unfunded actuarial accrued liability	$ 20,134,400,392	$ 20,930,961,862
Funded Ratio based on Actuarial Assets	52.0%	48.5%
Funded Ratio based on Market Assets	50.4%	45.6%
For Fiscal Year Ending	**June 30, 2025**	**June 30, 2024**
Actuarially Determined Employer Contribution (ADEC):		
Normal	$ 232,596,911	$ 223,160,005
Accrued liability	1,781,192,643	1,817,213,773
Total	$ 2,013,789,554	$ 2,040,373,778
Actuarially Determined Employer Contribution (ADEC) Rate:		
Normal	5.58%	5.89%
Accrued liability	42.73%	47.99%
Total	48.31%	53.88%

* The June 30, 2023 amounts include the transfer of $1,046,548,093 made subsequent to June 30, 2023.
The June 30, 2022 amounts include the transfer of $3,203,691,833 made subsequent to June 30, 2022.

2. Comments on the valuation results are given in Section IV, comments on the experience and actuarial gains and losses during the valuation year are given in Section VII and the rates of contribution payable by employers are given in Section V.
3. The results of the valuation are given in Schedule A.
4. Schedule B of this report presents the development of the actuarial value of assets. We have included an adjustment to both the market and actuarial value of assets of $1,028,801,271 to reflect the discounted value of the amounts transferred subsequent to June 30, 2023. Without these transfers, the unfunded actuarial accrued liability would be correspondingly larger, the funded ratio would be 49.6% and the ADEC for FYE25 would be approximately $87.5M larger.
5. Schedule D details the actuarial assumptions and methods employed. There were no changes to the actuarial assumptions or methods since the last valuation.
6. Schedule F gives a summary of the benefit and contribution provisions of the plan. There were no changes to the plan provisions since the last valuation.
7. The Governmental Accounting Standards Board issued Statement No. 67 (GASB 67) in June 2012 and is effective for plan years beginning after June 15, 2013. GASB 67 replaced GASB 25 for plans and a separate GASB 67 report will be prepared for the Commission. We have provided some supplemental disclosure information and tables in Section VI.
8. As shown in the Summary of Principal Results, the funded ratio of 52.0% is the ratio of the actuarial value of assets to the accrued liability. The funded ratio is an indication of progress in funding the promised benefits using a long-term, stable funding approach. Since the ratio is less than 100%, there is a need for contributions in addition to the plan's normal cost. The funded ratio based on the market value of assets is also provided for informational purposes.
9. The table on the following page provides a history of pertinent census and valuation result figures.

Comparative Schedule

Valuation Date June 30	Active Members				Retired Lives				Valuation Results ($ thousands)		
	Number	Payroll ($ 000)	Average Salary	% increase from previous valuation	Number	Active/ Retired Ratio	Annual Benefits ($ 000)	Benefits as % of Payroll	Accrued Liability	Valuation Assets	UAAL
2014	49,976	$3,487,577	$69,785	(0.4)%	45,803	1.09	$1,576,606	45.2%	$25,505,610	$10,584,795	$14,920,815
2016	50,019	3,720,751	74,387	6.6	48,191	1.04	1,745,785	46.9	32,310,335	11,922,966	20,387,369
2018	49,153	3,428,068	69,743	(6.2)	50,441	0.97	1,931,098	56.3	34,214,163	12,990,400	21,223,763
2019	49,429	3,686,365	74,579	6.9	51,745	0.96	2,051,605	55.7	36,087,938	13,795,389	22,292,549
2020	47,662	3,672,443	77,052	3.3	52,498	0.91	2,158,277	58.8	36,971,136	14,242,897	22,728,239
2021	48,014	3,847,146	80,126	4.0	53,699	0.89	2,280,127	59.3	38,344,444	15,946,862	22,397,582
2022	46,661	3,787,016	81,160	1.3	56,778	0.82	2,525,749	66.7	40,656,964	19,726,002	20,930,962
2023	47,269	4,168,950	88,196	8.7	57,327	0.82	2,619,341	62.8	41,981,067	21,846,667	20,134,400

Section II – Membership

Data regarding the membership of the System for use as a basis for the valuation were furnished by the Comptroller's office. The following tables summarize the membership of the Retirement System as of June 30, 2023 upon which the valuation was based. Detailed tabulations of the data are given in Schedule G.

Active Members

			Group Averages		
Group	**Number**	**Payroll**	**Salary**	**Age***	**Service***
Tier I – Plan B	59	$ 7,571,503	$ 128,331	68.8	42.1
Tier I – Plan C	3	295,648	98,549	68.3	43.3
Tier II – Hazardous	120	14,023,543	116,863	55.2	26.6
Tier II – Hybrid Plan	223	33,364,003	149,614	61.2	28.5
Tier II – Others	4,576	502,803,595	109,878	57.6	30.6
Tier IIA – Hazardous	3,273	375,887,443	114,845	47.6	17.0
Tier IIA – Hybrid Plan	712	90,555,433	127,185	55.1	19.0
Tier IIA – Others	11,275	1,106,235,167	98,114	51.8	18.3
Tier III – Hazardous	2,170	207,414,021	95,582	41.2	9.8
Tier III – Hybrid Plan	534	52,053,177	97,478	47.2	8.9
Tier III – Others	6,607	557,965,638	84,451	46.2	9.4
Tier IV – Hazardous	3,068	236,471,803	77,077	35.3	2.8
Tier IV – Hybrid Plan	1,217	89,245,429	73,332	40.3	2.3
Tier IV – Others	13,432	895,063,474	66,637	39.4	2.4
Total	47,269	$4,168,949,877	$ 88,196	46.0	11.8

*Years

Of the 47,269 active members, 23,331 are vested and 23,938 are non-vested.

Section II – Membership

Retired Lives

Type of Benefit Payment	No.	Annual Benefits	Group Averages Benefit	Group Averages Age*
Retired – Pre 1980	360	$ 14,852,676	$ 41,257	91.3
Retired – 1980 - 1997	9,189	399,801,335	43,509	83.5
Retired – 1997 - 2011	21,089	1,052,904,094	49,927	73.2
Retired – 2011 - 2022	24,589	1,070,118,295	43,520	65.1
Retired – 2022+	2,100	81,664,758	38,888	61.9
Total	57,327	$ 2,619,341,158	$ 45,691	71.1

*Years

Valuation also includes 3,417 deferred vested members with estimated annual benefits of $45,462,483.

Section III – Assets

1. As of June 30, 2023, the total market value of assets amounted to $20,136,795,283 as reported by the Comptroller's Office. The estimated investment return for the plan year since the last valuation was 8.95%. Subsequent to June 30, 2023, the State deposited one General fund surplus transfer totaling $1,046,548,093 and this is treated as a receivable amount for the plan year. For valuation purposes, we discounted this amount using the 6.90% expected return on assets to the valuation date which results in an increase in the plan's assets of $1,028,801,271 as of June 30, 2023. The June 30, 2023 market value of assets is $21,165,596,554 including this transfer. Schedule C shows receipts and disbursements of the System for the year preceding the valuation date and a reconciliation of the fund balances at market value.

2. The actuarial value of assets used for the current valuation using a smoothed method was $21,846,666,981 (as adjusted for the subsequent transfer). The estimated investment return for the plan year on an actuarial value of assets basis was 5.88%, which can be compared to the investment return assumed over the period of 6.90%. Schedule B shows the development of the actuarial value of assets as of June 30, 2023.

Section IV – Comments on Valuation

1. Schedule A of this report outlines the results of the valuation of the Retirement System as of June 30, 2023. The valuation was prepared in accordance with the actuarial assumptions and methods set forth in Schedule D and the actuarial cost method which is described in Schedule E.

2. The valuation shows that the System has a total actuarial accrued liability of $41,981,067,373, of which $32,716,281,725 is for the benefits payable on account of present retired members, beneficiaries of deceased members, and inactive members entitled to deferred vested benefits, and $9,264,785,648 is for the benefits expected to be payable on account of present active members, based on service to the valuation date. Against these liabilities, the System has total present assets for valuation purposes of $21,846,666,981 as of June 30, 2023. When this amount is deducted from the actuarial accrued liability of $41,981,067,373, there remains $20,134,400,392 as the unfunded actuarial accrued liability (UAAL).

3. The employer's contributions to the System consist of normal cost contributions and accrued liability contributions. The normal cost represents the ultimate cost of the benefits, and the accrued liability contribution is an addition (reduction in case of a surplus) due to the amortization of the unfunded accrued liability. The valuation indicates that annual employer normal cost contributions at the rate of 5.58% of active members' compensation are required to provide the currently accruing benefits of the System.

Section IV – Comments on Valuation

4. The following table provides the components of the total UAAL, and the derivation of the amortization amounts required in accordance with the Memorandum of Understanding (MOU) between the State and SEBAC effective December 8, 2016.

Total UAAL Amortization Schedule
($ thousands)

	Initial UAAL	Remaining UAAL	Remaining Amortization Period (years)	Amortization Payment*
Statutory Base (1984 UAAL)	$ 4,138,969	$ 3,797,317	23	$ 334,003
2016 Base	16,248,400	15,963,298	23	1,404,096
2018 Base	570,349	534,350	20	50,048
2019 Base	1,014,250	956,574	21	87,573
2020 Base	516,320	492,254	22	44,134
2021 Base	(105,787)	(102,276)	23	(8,996)
2022 Base	(1,101,195)	(1,083,533)	24	(93,644)
2023 Base	(423,584)	(423,584)	25	(36,021)
Total UAAL		$20,134,400		$ 1,781,193
Annual Valuation Payroll				$ 4,168,950
UAAL Amortization Rate				42.73%

* Amortization payment method is level dollar methodology.

5. We have determined that a contribution of 42.73% of payroll is required to amortize the unfunded actuarial accrued liability of $20,134,400,392 over the scheduled amortization periods in accordance with the MOU.

6. Schedule J of this report shows the amortization schedule for the total UAAL.

Section V – Contributions Payable By Employer

The following table shows the amount and rate of contribution payable by the employer as determined from the present valuation for the 2024/2025 fiscal year.

Contribution for	Contribution Amount	Contribution Rate
A. Normal Cost:		
Service retirement benefits	$ 405,879,121	9.74%
Disability benefits	24,364,230	0.58%
Survivor benefits	3,466,982	0.08%
Total Normal Cost	$ 433,710,333	10.40%
B. Less Member Contributions	(201,113,422)	(4.82)%
C. Employer Normal Cost	$ 232,596,911	5.58%
D. Unfunded Actuarial Accrued Liabilities (22.7 year weighted average amortization period)	$1,781,192,643	42.73%
E. Total (C. + D.)	$2,013,789,554	48.31%

Section V – Contributions Payable By Employer

The following table shows a breakdown by group of the normal cost amount and rate payable by the employer as determined from the present valuation for the 2024/2025 fiscal year.

Group	Employer Normal Cost	Employer Normal Cost Rate
Tier I – Plan B	$ 333,707	4.41%
Tier I – Plan C	12,375	4.19
Tier II – Hazardous	2,204,723	15.72
Tier II – Hybrid Plan	990,872	2.97
Tier II – Others	23,296,487	4.63
Tier IIA – Hazardous	55,918,633	14.88
Tier IIA – Hybrid Plan	1,495,028	1.65
Tier IIA – Others	49,668,550	4.49
Tier III – Hazardous	27,705,078	13.36
Tier III – Hybrid Plan	897,626	1.72
Tier III – Others	22,015,865	3.95
Tier IV – Hazardous	23,333,434	9.87
Tier IV – Hybrid Plan	803,324	0.90
Tier IV – Others	23,921,209	2.67
Total	$ 232,596,911	5.58%

Section V – Contributions Payable By Employer

The official contribution requirement for the fiscal year ending June 30, 2026 will be determined in the June 30, 2024 valuation. However, we have estimated the contribution requirement for the fiscal year ending June 30, 2026 using standard roll forward techniques from this valuation. These results assume the market value of assets will earn 6.90% and the active member population will remain static.

Projected Contributions Required for Fiscal Year Ending June 30, 2026	Roll Forward of June 30, 2023 Valuation	
	As % of Pay	$
Employer Normal Cost	5.58%	$ 239,750,000
Unfunded Actuarial Accrued Liabilities	41.77%	1,793,575,000
Total	47.35%	$ 2,033,325,000

Section VI – Accounting Information

1. The information required under Governmental Accounting Standards Board (GASB) will be issued in separate reports. The following is a distribution of the number of employees by type of membership:

NUMBER OF ACTIVE AND RETIRED MEMBERS
AS OF JUNE 30, 2023

GROUP	NUMBER
Retirees and beneficiaries currently receiving benefits	57,327
Terminated employees entitled to benefits but not yet receiving benefits	3,417
Active plan members	47,269
Total	108,013

2. Another such item is the schedule of funding progress as shown below.

SCHEDULE OF FUNDING PROGRESS
(Dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) EAN (b)	Unfunded AAL (UAAL) (b – a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b – a) / c)
6/30/2016#	$11,922,966	$32,310,335	$20,387,369	36.9%	$3,720,751	547.9%
6/30/2018	12,990,400	34,214,163	21,223,763	38.0	3,428,068	619.1
6/30/2019	13,795,389	36,087,938	22,292,549	38.2	3,686,365	604.7
6/30/2020	14,242,897	36,971,136	22,728,239	38.5	3,672,443	618.9
6/30/2021	15,946,862	38,344,444	22,397,582	41.6	3,847,146	582.2
6/30/2022	19,726,002	40,656,964	20,930,962	48.5	3,787,016	552.7
6/30/2023	21,846,667	41,981,067	20,134,400	52.0	4,168,950	483.0

Reflects change in discount rate.

Section VI – Accounting Information

3. The following shows the schedule of employer contributions (all dollar amounts are in thousands).

Fiscal Year Ending June 30	Valuation Date Ending June 30	Actuarially Determined Contribution	Actual Contribution	Percentage Contributed
2016	2014	$1,514,467	$1,501,805	99.2%
2017	2014	1,569,142	1,542,298	98.3%
2018	2016	1,443,110	1,444,053	100.1%
2019	2016	1,574,537	1,578,323	100.2%
2020	2018	1,616,312	1,616,312	100.0%
2021*	2019	1,806,708	1,848,524	102.3%
2022*	2020	1,993,151	2,014,154	101.1%
2023	2021	2,143,325	2,215,325	103.4%
2024	2022	2,040,374	N/A	N/A
2025	2023	2,013,790	N/A	N/A

* Does not reflect the General Fund surplus transfers.

4. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2023. Additional information as of the latest actuarial valuation follows.

Valuation date	6/30/2023
Actuarial cost method	Entry Age Normal
Amortization method	Level dollar, closed
Weighted amortization period	22.7 years
Asset valuation method	Smoothed market with 20% recognition of investment gains and losses
Actuarial assumptions:	
Investment rate of return*	6.90%
Projected salary increases*	3.00% - 11.50%
Cost-of-living adjustments	1.95% - 3.25%
Social Security Wage Base	3.50%
*Includes assumed price inflation at	2.50%

Section VII – Experience

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain/(loss) for the period ended June 30, 2023 is shown below. Schedule H provides detailed gain/(loss) by source.

		$ Millions
(1)	UAAL* as of June 30, 2022	$ 20,931.0
(2)	Total Normal cost for 2023 fiscal year	400.7
(3)	Actual Employer and Employee contributions	2,438.4
(4)	Interest accrual: [[(1) + (2)] x .069] - [(3) x .0345]	1,387.7
(5)	Expected UAAL as of June 30, 2023: (1) + (2) - (3) + (4)	$ 20,281.0
(6)	Assumption/Method Changes	0.0
(7)	Expected UAAL as of June 30, 2023: (5) + (6)	$ 20,281.0
(8)	Actual UAAL as of June 30, 2023	$ 20,134.4
(9)	Gain/(loss): (7) – (8) (See Schedule H)	$ 146.6
(10)	Gain/(loss) as percent of actuarial accrued liabilities at June 30, 2022 ($40,657.0)	0.4%

*Unfunded actuarial accrued liability.

Valuation Date June 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2021	0.5%
2022	3.0%
2023	0.4%

Section VIII – Risk Assessment

Overview

Actuarial Standards of Practice (ASOP) No. 51, issued by the Actuarial Standards Board, provides guidance on assessing and disclosing risks related to pension plan funding. This guidance is binding on all credentialed actuaries practicing in the United States. This standard was issued as final in September 2017 with application to measurement dates on or after November 1, 2018.

The term "risk" frequently has a negative connotation, but from an actuarial perspective, it may be thought of as simply the fact that what actually happens in the real world will not always match what was expected, based on actuarial assumptions. Of course, when actual experience is better than expected, the favorable risk is easily absorbed. The risk of unfavorable experience will likely be unpleasant, and so there is an understandable focus on aspects of risk that are negative.

Risk usually can be reduced or eliminated at some cost. Consumers, for example, buy auto and home insurance to reduce the risk of accidents or catastrophes. Another way to express this concept, however, is that there is generally some reward for assuming risk. Thus, retirement plans invest not just in US Treasury bonds which have almost no risk, but also in equities which are considerably riskier – because they have an expected reward of a higher return that justifies the risk.

Under ASOP 51, the actuary is called on to identify the significant risks to the pension plan and provide information to help those sponsoring and administering the plan understand the implications of these risks. In this section, we identify some of the key risks for the System and provide information to help interested parties better understand these risks.

Section VIII – Risk Assessment

Investment Risk

The investment return on assets is the most obvious risk – and usually the largest risk – to funding a pension plan. To illustrate the magnitude of this risk, please review the following chart showing the Asset Volatility Ratio (AVR), defined as the market value of assets divided by covered payroll.

($ in thousands)

Valuation Date June 30	Market Value of Assets	Covered Payroll	Asset Volatility Ratio
2021	$16,365,976	$3,847,146	4.25
2022	18,532,121	3,787,016	4.89
2023	20,136,795	4,168,950	4.83

The asset volatility ratio is especially useful to compare across plans or through time. It is also frequently useful to consider how the AVR translates into changes in the Required Contribution Rate (actuarially determined employer contribution rate). For example, the following table demonstrates that with an AVR of 4.00, if the market value return is 10% below assumed, or -3.10% for the System, there will be an increase in the Required Contribution Rate of 0.66% payroll in the first year. Without asset smoothing or without returns above the expected return in the next four years, the impact on the Required Contribution Rate would be 3.29%. A higher AVR would produce more volatility in the Required Contribution Rate.

AVR	Unsmoothed Amortization Increase due to 10% Market Loss	Smoothed Amortization Increase
3.00	2.47%	0.49%
4.00	**3.29%**	**0.66%**
5.00	4.11%	0.82%

Section VIII – Risk Assessment

Sensitivity Measures

Valuations are generally performed with a single set of assumptions that reflects the best estimate of future conditions, in the opinion of the actuary and typically the governing board. Note that under actuarial standards of practice, the set of economic assumptions used for funding must be consistent. To enhance the understanding of the importance of an assumption, a sensitivity test can be performed where the valuation results are recalculated using a different assumption or set of assumptions.

The following tables contains the key measures for the System using the valuation assumption for investment return of 6.90%, along with the results if the assumption were 5.90% or 7.90%. In this analysis, only the investment return assumption is changed. Consequently, there may be inconsistencies between the investment return and other economic assumptions such as inflation or payroll increases. In addition, simply because the valuation results under alternative assumptions are shown here, it should not be implied that CMC believes that either assumption (5.90% or 7.90%) would comply with actuarial standards of practice.

($ in thousands)

As of June 30, 2021	-1% Discount Rate (5.90%)	Current Discount Rate (6.90%)	+1 Discount Rate (7.90%)
Accrued Liability	$46,984,594	$41,981,067	$37,810,073
Unfunded Liability	$25,137,927	$20,134,400	$15,963,406
Funded Ratio (AVA)	46.5%	52.0%	57.8%
ADEC Amount	$2,378,017	$2,013,790	$1,687,068

Section VIII – Risk Assessment

Mortality Risk

The mortality assumption is a significant assumption for valuation results, second only to the investment assumption in most situations. The System's mortality assumption utilizes a mortality table (with separate rates for males and females, as well as different rates by status) with static projection of future mortality improvement to establish a margin in actual vs. expected mortality experience to recognize improvement in mortality experience through the next experience study.

The valuation uses a generational improvement approach to anticipate future trends in mortality experience. Still, the future is unknown, and actual mortality improvements may occur at a faster rate than expected under a generational improvement approach. Periodic studies of the mortality experience will allow for adjustments to the mortality improvement scale to reflect emerging experience and reduce the plan's exposure to mortality risk.

Contribution Risk

The System is primarily funded by member and employer contributions to the trust fund, together with the earnings on those accumulated contributions. Each year in the valuation, the Actuarial Determined Employer Contribution is determined, based on the System's funding policy. This amount is the sum of the employer's share of the normal cost for the plan and the amortization of the UAAL. Since the System is obligated to make 100% of the ADEC by agreement, there is little contribution risk.

Section VIII – Risk Assessment

Low-Default-Risk Obligation Measure

Under the revised Actuarial Standards of Practice (ASOP) No. 4 effective for valuations after February 15, 2023, we are required to include a low-default-risk obligation measure of the system's liability in our funding valuation report. This is an informational disclosure as described below and would not be appropriate for assessing the funding progress or health of the plan. This measure uses the unit credit cost method and reflects all the assumptions and provisions of the funding valuation (including the assumed COLA paid), except that the discount rate is derived from considering low-default-risk fixed income securities. We considered the FTSE Pension Discount Curve based on market bond rates published by the Society of Actuaries as of June 30, 2023 and with the 30-year spot rate used for all durations beyond 30 because this provides an appropriate set of discount rates for this intended purpose.

Using these assumptions, we calculate a liability of approximately $49.5 billion. This amount approximates the termination liability if the plan (or all covered employment) ended on the valuation date and all of the accrued benefits had to be paid with cash-flow matched bonds. If the plan were funded with the intent of being able to be terminated at any valuation date, contribution requirements may need to increase and would also be more volatile. This assurance of funded status and benefit security is typically more relevant for corporate plans than for governmental plans since governments rarely have the need or option to completely terminate a plan. However, this informational disclosure is required for all plans whether corporate or governmental and care should be taken to ensure the one size fits all metric is not misconstrued.

Schedule A – Results of Valuation

	JUNE 30, 2023	JUNE 30, 2022
1. ACTUARIAL ACCRUED LIABILITY		
Present value of prospective benefits payable in respect of:		
(a) Present active members		
- Tier I – Plan B	$ 54,898,305	$ 103,590,689
- Tier I – Plan C	2,490,748	3,418,157
- Tier II – Hazardous Duty	110,230,188	135,040,605
- Tier II – Hybrid Plan	135,013,235	149,539,064
- Tier II – All Others	2,413,272,799	2,593,620,740
- Tier IIA – Hazardous Duty	1,961,068,666	1,855,508,817
- Tier IIA – Hybrid Plan	233,530,953	217,557,306
- Tier IIA – All Others	2,816,246,300	2,600,751,904
- Tier III – Hazardous Duty	513,945,091	408,814,361
- Tier III – Hybrid Plan	54,368,670	45,988,835
- Tier III – All Others	597,027,438	508,196,515
- Tier IV – Hazardous Duty	136,799,994	85,806,101
- Tier IV – Hybrid Plan	23,567,838	18,310,153
- Tier IV – All Others	212,325,423	137,482,259
- Total actives	$ 9,264,785,648	$ 8,863,625,506
(b) Present inactive members and members entitled to deferred vested benefits:	466,977,565	363,185,803
(c) Present annuitants and beneficiaries	32,249,304,160	31,430,153,039
(d) Total actuarial accrued liability [1(a) + 1(b) + 1(c)]	$ 41,981,067,373	$ 40,656,964,348
2. ACTUARIAL VALUE OF ASSETS	$ 21,846,666,981	$ 19,726,002,486
3. UNFUNDED ACTUARIAL ACCRUED LIABILITY [1(d) – 2]	$ 20,134,400,392	$ 20,930,961,862

Schedule B – Development of Actuarial Value of Assets

	June 30, 2023
(1) Actuarial Value Beginning of Year*	$19,726,002,486
(2) Market Value End of Year* (Before Adjustment)	20,136,795,283
(3) Market Value Beginning of Year	18,532,120,770
(4) Cash Flow	
(a) Contributions**	$ 2,438,387,558
(b) Other	71,603,896
(c) Disbursements	(2,605,654,422)
(d) Net: (4)(a) + (4)(b) + (4)(c)	$ (95,662,968)
(5) Investment Income	
(a) Market Total: (2) – (3) – (4)(d)	$ 1,700,337,481
(b) Assumed Rate	6.90%
(c) Amount for Immediate Recognition: [(1) x (5)(b)] + [(4)(d)] x (5)(b) x 0.5	1,357,793,799
(6) Expected Actuarial Value End of Year (With Adjustment): (1) + (4)(c) + (5)(c) + Adjustment**	$22,016,934,588
(7) Phased-In Recognition of Investment Income	
(a) Difference between Adjusted Market & Expected Actuarial Value: (2) + $1,028,801,271 – (6)	(851,338,034)
(b) 20% of Difference: 0.2 x (7)(a)	(170,267,607)
(8) Preliminary Actuarial Value End of Year: (6) + (7)(b)	21,846,666,981
(9) Final Actuarial Value End of Year Using 20% Corridor: Greater of [(8) and .8 x (2) with adjustment], but no more than 1.2 x (2) with adjustment	21,846,666,981
(10) Difference Between Adjusted Market & Actuarial Values: (2) + Adjustment – (9)	$ (681,070,427)

* Before corridor constraints, if applicable.

** Adjustment = $1,028,801,271 discounted value of subsequent transfer amounts

Schedule C – Summary of Receipts and Disbursements

MARKET VALUE OF ASSETS	Year Ending June 30, 2023
Receipts for the Year	
Contributions:	
Members	$ 223,062,469
State	1,752,930,775
Federal (Net of Transfers)	462,394,314
Subtotal	$ 2,438,387,558
Investment Earnings (net of expenses)	1,700,337,481
Other	71,603,896
TOTAL	$ 4,210,328,935
Disbursements for the Year	
Benefit Payments	$ 2,590,943,443
Refunds to Members	11,631,946
Interest Awarded	2,646,012
Administrative Expense	433,021
Other	0
Total	$ 2,605,654,422
Excess of Receipts over Disbursements	$ 1,604,674,513
Reconciliation of Asset Balances	
Asset Balance as of the Beginning of Year	$ 18,532,120,770
Excess of Receipts over Disbursements	1,604,674,513
Asset Balance as of the End of Year	$ 20,136,795,283
Rate of Return	8.95%
Adjusted Market Value of Assets *	$ 21,165,596,554

* Includes $1,028,801,271 discounted value of subsequent transfer amounts.

Schedule D – Outline of Actuarial Assumptions and Methods

Adopted or reaffirmed by the Commission on September 16, 2021 for the June 30, 2021 and later valuations based on the experience investigation report for the five-year period ending June 30, 2020 which can be found at on the Office of the State Comptroller - Retirement Services Division website.

VALUATION INTEREST RATE: 6.90% per annum, compounded annually, net of expenses, comprised of a 2.50% price inflation assumption and a 4.40% real return assumption.

SALARY INCREASES: **T**he assumptions for salary increases are as follows:

Years of Service	Hazardous Rate*	Non-Hazardous Rate*
0	11.50%	10.50%
1	11.50%	10.50%
2	7.50%	7.50%
3	5.50%	5.50%
4	5.25%	5.25%
5	5.00%	5.00%
6	4.75%	4.75%
7	4.75%	4.75%
8	4.75%	4.75%
9	4.75%	4.75%
10	4.50%	4.50%
11	4.50%	4.25%
12	4.25%	4.25%
13	4.25%	4.25%
14	4.00%	4.00%
15	3.50%	3.50%
16	3.50%	3.25%
17	3.50%	3.25%
18	3.25%	3.25%
19	3.25%	3.25%
20+	3.00%	3.00%

*includes Wage Inflation of 3.00%

Schedule D – Outline of Actuarial Assumptions and Methods

COST OF LIVING ADJUSTMENTS (COLA):

Group	Rate
Pre July 1, 1980 Retirees	3.25%
July 1, 1980 – June 30, 1997 Retirees	3.00%
July 1, 1997 – October 1, 2011 Retirees	2.60%
October 2, 2011 – June 30, 2022 Retirees	2.25%
Post July 1, 2022 Retirees	1.95%

We have also assumed a COLA moratorium for those retiring on or after July 1, 2022 for the first 30 months of retirement. We assume the first COLA received is increased by 0.15% to reflect the possible additional COLA in the event the annualized rate of increase in the CPI-W is greater than 5.5% during the first 18 months of retirement.

SOCIAL SECURITY WAGE BASE INCREASES: 3.50% per annum.

PAYROLL GROWTH ASSUMPTION: Level dollar amortization method.

SPOUSES: For members who have elected spouse coverage, husbands are assumed to be three years older than their wives.

PERCENT MARRIED: 80% of active members are assumed to be married with an average of two children who are on average age 12.

Schedule D – Outline of Actuarial Assumptions and Methods

SEPARATIONS BEFORE SERVICE RETIREMENT: Representative values of the assumed annual rates of separation before service retirement are as follows:

WITHDRAWAL

Annual Rates of Withdrawal								
	Years of Service							
Age	0	1	2	3	4	5	6-9	10+
Hazardous Males								
20	8.00%	4.25%	4.25%	4.00%	3.00%	2.50%	1.25%	1.00%
25	8.00	4.25	4.25	4.00	3.00	2.50	1.25	1.00
30	8.00	4.25	4.25	3.50	2.75	2.50	1.25	1.00
35	8.00	4.00	4.00	3.25	2.75	2.50	1.25	1.00
40	8.00	4.00	4.00	3.00	2.50	2.50	1.25	0.80
45	8.00	4.00	4.00	3.00	2.50	2.50	1.25	0.80
50	8.00	4.00	4.00	3.00	2.50	2.50	1.25	0.80
55+	8.00	4.00	4.00	3.00	2.50	2.50	1.25	0.80
Hazardous Females								
20	11.00%	7.00%	7.00%	7.00%	4.00%	3.30%	2.50%	1.75%
25	11.00	7.00	7.00	7.00	4.00	3.30	2.50	1.75
30	11.00	6.00	6.00	6.00	4.00	3.30	2.50	1.75
35	11.00	5.50	5.50	5.50	4.00	3.30	2.50	1.75
40	11.00	5.50	5.50	5.50	4.00	3.30	2.00	1.00
45	11.00	5.50	5.50	5.50	4.00	3.30	2.00	1.00
50	11.00	5.50	5.50	5.50	4.00	3.30	2.00	1.00
55+	11.00	5.50	5.50	5.50	4.00	3.30	2.00	1.00
Nonhazardous Males								
20	45.00%	35.00%	17.00%	13.00%	11.00%	11.00%	4.50%	4.50%
25	25.00	22.00	17.00	13.00	11.00	11.00	4.50	4.50
30	20.00	15.00	14.00	10.00	7.50	7.50	4.50	4.50
35	17.00	10.00	12.00	9.00	6.50	5.00	4.50	3.00
40	17.00	10.00	10.00	8.00	6.50	5.00	4.00	2.75
45	17.00	10.00	9.00	8.00	6.50	5.00	4.00	2.50
50	17.00	10.00	9.00	8.00	6.50	5.00	3.00	2.50
55+	17.00	10.00	9.00	8.00	6.50	5.00	3.00	2.00
Nonhazardous Females								
20	40.00%	40.00%	40.00%	35.00%	20.00%	20.00%	10.00%	5.00%
25	25.00	22.00	17.00	12.00	10.00	10.00	7.00	5.00
30	18.00	15.00	12.00	10.00	8.00	7.00	5.00	4.50
35	16.00	10.00	11.00	9.00	6.00	5.00	4.00	3.25
40	16.00	10.00	10.00	8.00	6.00	5.00	3.50	2.00
45	16.00	10.00	10.00	7.00	6.00	5.00	3.25	2.00
50	16.00	10.00	10.00	7.00	6.00	4.00	3.25	2.00
55+	16.00	10.00	10.00	7.00	6.00	4.00	3.25	2.00

DISABILITY

Annual Rates of Disability		
Age	**Hazardous**	**Non-Hazardous**
30	0.05%	0.04%
35	0.09	0.05
40	0.15	0.07
45	0.25	0.12
50	0.33	0.22
55	0.42	0.40
60	0.50	0.50
65	0.60	0.50
70	0.80	0.50
75	1.00	0.50

RETIREMENT: The assumed annual rates of retirement are shown below.

Annual Rates of Retirement						
Hazardous						
Age	**Tier I, II & IIA**		**Tier III & IV**			
			Years of Service			
	First Year Eligible	**All Years After**	**20**	**21 - 24**	**25**	**26+**
40 - 49	45%	25%			45%	25%
50	45	25	45%	45%	45	25
51 - 56	45	25	45	25	25	25
57	60	25	60	25	25	25
58 – 61	60	30	60	30	30	30
62	65	30	65	30	30	30
63	65	30	65	30	30	30
64	65	40	65	40	40	40
65 – 66	75	50	75	50	50	50
67	75	45	75	45	45	45
68	75	40	75	40	40	40
69	75	35	75	35	35	35
70 - 73	75	30	75	30	30	30
74 - 79	100	30	100	30	30	30
80	100	100	100	100	100	100

Schedule D – Outline of Actuarial Assumptions and Methods

Annual Rates of Retirement						
Nonhazardous						
Age	Tier I		Tier II & IIA		Tier III & IV	
	Early	Other Years	Early	Other Years	Early	Other Years
55	12.0%	30.0%	4.0%			
56	12.0	30.0	4.0			
57	12.0	30.0	4.0			
58	12.0	30.0	4.0		4.0%	
59	12.0	30.0	4.0		4.0	
60		30.0	4.0	20.0%	4.0	
61		30.0	4.0	20.0	4.0	
62		30.0		20.0	4.0	
63		30.0		20.0	4.0	25.0%
64		30.0		20.0	4.0	25.0
65		30.0		20.0		25.0
66 - 70		30.0		25.0		25.0
71 - 79		30.0		22.5		25.0
80		100.0		100.0		100.0

Schedule D – Outline of Actuarial Assumptions and Methods

MORTALITY: The Pub-2010 Mortality Tables projected generationally with scale MP-2020:

Non-Hazardous

- Service Retirees: General, Above-Median, Healthy Retiree Mortality Table.
- Disabled Retirees: General, Disabled Retiree Mortality Table.
- Beneficiaries: General, Above-Median Contingent Annuitant Mortality Table.
- Active Employees: General, Above-Median, Employee Mortality Table.

Hazardous

- Service Retirees: Public Safety, Above-Median, Healthy Retiree Mortality Table.
- Disabled Retirees: Public Safety, Disabled Retiree Mortality Table.
- Beneficiaries: Public Safety, Above-Median Contingent Annuitant Mortality Table.
- Active Employees: Public Safety, Above-Median, Employee Mortality Table.

In our opinion, the generational projection of the mortality rates with scale MP-2020 provide a sufficient margin in the assumed rates of mortality to allow for additional improvement in mortality experience.

ASSET METHOD: Actuarial Value, as developed in Schedule B. The actuarial value of assets recognizes 20% of the difference between actual market value and expected actuarial value as of the valuation date. In addition, the actuarial value of assets cannot be less than 80% or more than 120% of the market value of assets.

VALUATION METHOD: Entry Age Normal cost method. See Schedule E for a brief description of this method.

IMPACT OF LONGLEY DECISION: Benefits for members retiring from service on or after the *Longley* decision date are assumed to increase by 0.084% as a result of the revised treatment of longevity pay. Retroactive application of *Longley* has been reflected in this valuation to the extent impacted retiree benefits have been recalculated.

OTHER ASSUMPTIONS:

- Pre-Retirement deaths and disabilities assumed to be service related:
  - 30% for non-hazardous duty members
  - 60% for hazardous duty members

- To take into account State Police Supplemental Benefits and the offset of Workers Compensation, Social Security, and Non-Rehabilitation Earnings, the following minimum and maximum benefits as a percent of salary are assumed for disability benefits:

	Minimum	Maximum
Tier I State Police	60%	80%
All Other Members	40%	60%

Schedule E – Actuarial Cost Method

The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable at retirement, disability, or death. The calculations are based on the member's age, years of service, sex, compensation, expected future salary increases, and an assumed future interest earnings rate (currently 6.90%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to current benefit recipients to obtain the present value of all expected benefits payable to the present group of members and survivors.

The employer contributions required to support the benefits of the System are determined following a level funding approach and consist of a normal contribution and an accrued liability contribution.

Under the entry age normal cost method, the actuarial present value of each member's projected benefits is allocated on a level basis over the member's compensation between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The actuarial present value of benefits allocated to prior years of service is called the actuarial accrued liability. The unfunded actuarial accrued liability represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is determined by subtracting the actuarial value of assets from the actuarial accrued liability. The UAAL is amortized according to the MOU between the State and SEBAC which established separate UAAL bases. Each base is rolled forward to the beginning of the fiscal year for which the amortization payment is applicable. The amortization amounts are adjusted with interest to the middle of the applicable fiscal year. The employer required contribution amount is the sum of the normal cost contribution and the UAAL amortization payment.

Schedule F – Summary of Main System Provisions

AS INTERPRETED FOR VALUATION PURPOSES

The Connecticut State Employees Retirement System (CT SERS) is a defined benefit pension plan established by the Connecticut General Assembly for the purpose of providing retirement allowances and other benefits for State employees in Connecticut, and their survivors and other beneficiaries.

Eligibility Requirements

Tier I	All State Employees, Elected Officials and their Appointees hired prior to July 1, 1984. Those employees hired between July 1, 1982 and January 1, 1984 could elect to move to Tier II.
Tier II	All State Employees, Elected Officials and their Appointees hired on or after July 1, 1984.
Tier IIA	All State Employees, Elected Officials and their Appointees hired on or after July 1, 1997.
Tier III	All State Employees, Elected Officials and their Appointees hired on or after July 1, 2011.
Tier IV	All State Employees, Elected Officials and their Appointees hired on or after July 1, 2017.

Final Average Earnings (FAE)

Tier I, II, and IIA	Average Salary of the three highest paid years of service. Effective January 1, 1986, no one year's earnings can be greater than 130% of the average of the two preceding years in calculating the Final Average Earnings.
Tier III and IV	Average Salary of the five highest paid years of service. No one year's earnings can be greater than 130% of the average of the two preceding years in calculating the Final Average Earnings.

Normal Retirement Benefit

Eligibility

Tier I Hazardous – 20 years of credited service.

Tier I Plans B and C – Earliest of age 55 with 25 years of service, age 60 with 10 years of service, or age 70 with 5 years of service.

Tier II Hazardous – 20 years of credited service.

Schedule F – Summary of Main System Provisions

Tier II and IIA – For those who will be eligible for retirement on or before July 1, 2022, the earliest of age 62 with 10 years of vesting service (effective July 1, 1992), age 60 with 25 years of vesting service, age 70 with 5 years of vesting service, or age 62 with 5 years of actual state service for terminations on or after July 1, 1997.

For those who will not be eligible for retirement on or before July 1, 2022, the earliest of age 65 with 10 years of vesting service, age 63 with 25 years of vesting service, age 70 with 5 years of vesting service.

Tier III Hazardous – Earlier of Age 50 and 20 years of benefit service or 25 years of benefit service.

Tier III and IV – Age 63 and 25 years of benefit service or Age 65 and 10 years of benefit service.

Tier IV Hazardous – 25 years of benefit service.

Benefit

Tier I Hazardous – 50% of FAE plus 2% for each year of service in excess of 20.

Tier I Plan B – 2% of FAE times years of service up to age 65. Thereafter, 1% of FAE up to $4,800, plus 2% of FAE in excess of $4,800 times years of service. At age 70, greater of 1.25% of FAE up to $4,800 plus 2.5% of FAE in excess of $4,800 times years of service (maximum 20 years) or 1.0% of FAE up to $4,800 plus 2% of FAE in excess of $4,800 times year of service. Minimum benefit with 25 years is $833.34 per month.

Tier I Plan C – 2% of FAE times years of service. At age 70, greater of 2.5% of FAE times years of service (maximum 20 years) or 2.0% of FAE times years of service. Minimum benefit with 25 years is $833.34 per month.

Tier II, IIA, III and IV Hazardous – 2.5% of FAE times years of service up to 20 years plus 2.0% of FAE times years of service in excess of 20 years, if any. Minimum benefit with 25 years is $360 per month.

Tier II, IIA and III All Others – 1.40% of FAE plus 0.433% of FAE in excess of year's breakpoint*, times years of service from October 1, 1982 up to 35 years plus 1.625% of FAE times years of service in excess of 35 years, if any. Minimum benefit with 25 years if $360 per month.

* $10,700 increased by 6% each year after 1982, rounded to nearest $100 but not greater than Social Security Covered Compensation.

	Tier IV All Others – 1.30% of FAE times years of service. Minimum benefit with 25 years if $360 per month.

Early Retirement Benefit

Eligibility	*Hazardous* – None. *Tier I* – Age 55 with 10 years of service. *Tier II and IIA* – Age 55 with 10 years of service. *Tier III and IV* – Age 58 with 10 years of service.
Benefit	*Tier I* – Benefit is Normal Retirement Benefit reduced for retirement prior to age 60 with less than 25 years of service. *Tier II, IIA, III and IV* – Benefit is Normal Retirement Benefit reduced 0.25% (effective July 1, 1991) for each month prior to age 60 if at least 25 years of service or age 62 if at least 10 but less than 25 years of service. For those who retire on or after October 2, 2011 but prior to meeting the age and service requirements for a normal retirement, will be subject to a benefit reduced by 0.50% for each month prior to Normal Retirement.

Disability Retirement Benefit

Tier I	For non-service disabilities occurring prior to age 60 with at least 5 years of service, benefit is 3% of FAE times years of service; maximum benefit is 1.667% of FAE times year of service projected to age 65. For service disabilities occurring prior to age 60, benefit is 1.667% of Salary times years of service projected to age 65 (maximum 30 years). Exception: State Police benefit is equal to the normal retirement benefit if more than 20 years of service. State Police also receives an additional benefit of $360 per month plus $300 to spouse plus $300 to a surviving dependent child.
Tier II, IIA, III and IV	Prior to age 65 for service related disability or at any age with at least 10 years of service, benefit is 1.333% of FAE plus 0.50% of FAE in excess of the year’s breakpoint, times service projected to age 65 (maximum 30 years).

Schedule F – Summary of Main System Provisions

Deferred Vested Retirement Benefit

Eligibility	_Tier I_ - 10 years of service.
	Tier II and IIA – Effective July 1, 1997, 5 years of actual state service, 10 years of vesting service, or age 70 with 5 years of service.
	Tier III and IV – 10 years of benefit service.
Benefit	_Tier I_ – Benefit is payable at Normal Retirement Age or an Early Retirement Benefit is payable at age 55.
	Tier II and IIA – Benefit is payable at Normal Retirement Age or an Early Retirement Benefit is payable at age 55.
	Tier III and IV – Benefit is payable at Normal Retirement Age or an Early Retirement Benefit is payable at age 58.

Pre-Retirement Spouse's Benefit

Tier I	State Police – Survivor benefits to spouse of $670 per month plus $300 to a surviving dependent child.
	If eligible for early or normal retirement, 50% of the average of the Life Benefit and the 50% Joint & Survivor Benefit the member would have received.
	If not eligible for retirement but with 25 years of service, the same benefit calculated as though age 55 using service and earnings at death.
	If not eligible for retirement, return of contributions (5% interest).
Tier II, IIA, III and IV	If eligible for early or normal retirement, 50% of the 50% Joint & Survivor Benefit the member would have received.
	If not eligible for retirement but with 25 years of service, the same benefit calculated as though age 55 using service and earnings at death.
	If not eligible for retirement, return of contributions (5% interest).
Tiers I, II, IIA, III and IV	If death is due to employment and there are dependent children under age 18, spouse will be paid $100,000 in 10 annual installments while living and not remarried. In addition, $50 per month will be paid to each child while under age 18.
	If death is due to employment and there are no dependent children under age 18, spouse will be paid $50,000 in not less than 10 annual installments.

Schedule F – Summary of Main System Provisions

Payment Options	50% or 100% Joint and Survivor (Normal Form if married). Straight life annuity (Normal Form if not married). 10 or 20 year certain and life annuity.
Cost of Living Adjustments (COLA)	Annual adjustments each July 1 of up to 5% for retirements prior to July 1, 1980; 3% for retirements after July 1, 1980. For members (and beneficiaries) not covered by Social Security and age 62 and over, the maximum increase is 6%.

For employees retiring after June 30, 1999, the annual adjustment will be 60% of the increase in CPI up to 6% and 75% of the increase in the CPI over 6%. This adjustment will be no less than 2.5% and no greater than 6%.

Employees retiring between July 1, 1997 and June 30, 1999 made an irrevocable choice between the above formula and a fixed 3% annual adjustment.

An employee from Tier IIA must have at least 10 years of actual state service or directly make the transition into retirement in order to be eligible for annual adjustments.

For employees retiring on or after October 2, 2011, the minimum COLA shall be 2.0% and the maximum COLA shall be 7.5%.

For employees retiring on or after July 1, 2022, the annual rate of increase will be the CPI-W from 0.00% to 2.00%, plus 60% of the annual rate of increase in CPI-W from 3.33% to 6.00%, plus 75% of the annual rate of increase in CPI-W above 6.00%, with a cap on the COLA rate of 7.50%. In addition, a COLA moratorium for those retiring on or after July 1, 2022 will be on the first 30 months of retirement. If rate of increase in CPI-W exceeds an annualized rate of 5.5% during the initial 18 month period of receiving retirement benefits, the COLA provided beginning with the 31st monthly benefit includes an additional adjustment based on the annual COLA rate as determined above using the annualized rate over the 18 month period. The COLA rate applied would but reduced by 2.5% and then multiplied by 1.5 to reflect the 18 month period.

Schedule F – Summary of Main System Provisions

Member Contributions*

Tier I – Hazardous	6% of earnings up to Social Security Taxable Wage Base plus 7% of earnings above that level.
Tier I – Plan B	4% of earnings up to Social Security Taxable Wage Base plus 7% of earnings above that level.
Tier I – Plan C	7% of earnings.
Tier II – Hazardous	6% of earnings.
Tier II – All Others	2% of earnings.
Tier IIA & III – Hazardous	7% of earnings.
Tier IIA & III – All Others	4% of earnings.
Tier IV – Hazardous	8% of earnings.
Tier IV – All Others	5% of earnings.

* In years where asset losses require further increases in contributions, Tier IV employees' contributions may increase by half the necessary increase in rates (up to 2.0%). Finally, all Tier IV employees must contribute 1% to the Defined Contributions (DC) portion of the Hybrid Plan and may elect additional contribution of up to 3% of salary to the DC portion.

Hybrid Defined Benefit/Defined Contribution Plan for Employees of Higher Learning

Individuals hired on or after July 1, 2011 otherwise eligible for the Alternate Retirement Plan ("ARP") shall be eligible to be members of the new Hybrid Plan in addition to their existing choices. Individuals who are currently members of the ARP shall be eligible to join the Hybrid Plan on a one time option at the full actuarial cost. The Hybrid Plan shall have defined benefits identical to Tier II/IIA and Tier III for individuals hired on or after July 1, 2011 but shall require employee contributions 3% higher than the contribution required from the Applicable Tier II/IIA/III Plan. An employee shall have the option, upon leaving state service, of accepting the defined benefit amount, or electing to receive a return of his/her contributions to the Hybrid Plan, plus a 5% employer match, plus 4% interest ("cash out option"). In the event the employee elects the cash out option, he/she shall permanently waive any entitlement they may have to health insurance as a retired state employee unless they convert the cash out option to a periodic payment as would be required under the current ARP Plan.

Schedule G – Tables of Membership Data

STATUS RECONCILIATION OF ACTIVE MEMBERS

	Total
As of June 30, 2022	46,661
Retirements	(1,689)
Disability	(141)
Terminated	(2,526)
Deaths	(56)
Rehires	382
New Participants	5,999
Refunds	(1,361)
As of June 30, 2023	47,269

STATUS RECONCILIATION OF RETIRED MEMBERS

	Retirees	Disability	Survivor	Total
As of June 30, 2022	47,042	4,249	5,487	56,778
Retirements	25	(25)		0
Disability	(6)	6		0
Survivors	(280)	(32)	312	0
Deaths with no Survivors	(1,161)	(129)	(338)	(1,628)
Rehires	(4)			(4)
Refunds				0
Certain Period Ended	(2)		(24)	(26)
Data Corrections	211	9	63	283
From Term Deferred	66	15		81
From Active	1,689	141	13	1,843
As of June 30, 2023	47,580	4,234	5,513	57,327

Schedule G – Tables of Membership Data

TIER I – PLAN B

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

	Years of Service							Total	
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25									$ 0
25 to 29									0
30 to 34									0
35 to 39									0
40 to 44									0
45 to 49									0
50 to 54									0
55 to 59						1		1	81,523
60 to 64						1	12	13	1,361,950
65 to 69						1	24	25	2,669,922
70 & Up							20	20	3,458,108
Total						3	56	59	$ 7,571,503

Average Age: 68.8
Average Service: 42.1

Average Salary: $128,331

Schedule G – Tables of Membership Data

TIER I – PLAN C

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

Age	Years of Service							Total	
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25									$ 0
25 to 29									0
30 to 34									0
35 to 39									0
40 to 44									0
45 to 49									0
50 to 54									0
55 to 59									0
60 to 64							1	1	104,137
65 to 69							1	1	112,046
70 & Up							1	1	79,465
Total							3	3	$ 295,648

Average Age: 68.3
Average Service: 43.3

Average Salary: $98,549

Schedule G – Tables of Membership Data

TIER II – HAZARDOUS DUTY

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

	Years of Service							Total	
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25									$ 0
25 to 29									0
30 to 34			1					1	120,916
35 to 39			1					1	93,843
40 to 44			1	1	2			4	667,660
45 to 49					2	2		4	587,513
50 to 54	1		2	3	4	26	7	43	4,968,174
55 to 59	1			4	4	19	16	44	4,852,651
60 to 64			1	1	4	7	5	18	2,172,277
65 to 69					1	2		3	397,798
70 & Up						1	1	2	162,711
Total	2		6	9	17	57	29	120	$ 14,023,543

Average Age: 55.2
Average Service: 26.6

Average Salary: $116,863

Schedule G – Tables of Membership Data

TIER II – HYBRID PLAN

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

	Years of Service							Total	
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25									$ 0
25 to 29									0
30 to 34									0
35 to 39									0
40 to 44									0
45 to 49				1		1		2	445,281
50 to 54			1	2	4	13	6	26	3,088,488
55 to 59			4	4	13	31	17	69	9,138,757
60 to 64					4	33	31	68	10,507,715
65 to 69			1	4	3	8	14	30	5,343,717
70 & Up			3	3	1	4	17	28	4,840,045
Total			9	14	25	90	85	223	$ 33,364,003

Average Age: 61.2
Average Service: 28.5

Average Salary: $149,614

Schedule G – Tables of Membership Data

TIER II – ALL OTHERS

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

	Years of Service							Total	
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25									$ 0
25 to 29									0
30 to 34	1							1	83,690
35 to 39				1				1	60,017
40 to 44		1	1	2	10	1		15	1,213,160
45 to 49	1	1	1	8	20	58		89	8,650,402
50 to 54	8	4	12	35	84	582	287	1,012	108,393,676
55 to 59	8	11	22	34	71	615	1,462	2,223	242,347,220
60 to 64	2	3	13	14	37	226	602	897	103,569,440
65 to 69	1	4	13	9	13	60	129	229	26,465,830
70 & Up	1	1	7	6	8	23	63	109	12,020,160
Total	22	25	69	109	243	1,565	2,543	4,576	$ 502,803,595

Average Age: 57.6
Average Service: 30.6

Average Salary: $109,878

Schedule G – Tables of Membership Data

TIER IIA – HAZARDOUS DUTY

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

	Years of Service							Total	
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25									$ 0
25 to 29			1					1	58,723
30 to 34			4	3				7	624,430
35 to 39	2	2	200	198	5			407	46,395,829
40 to 44	10	3	230	624	66			933	106,097,776
45 to 49	5	4	130	506	108	9		762	88,743,476
50 to 54	8	4	98	364	96	10		580	67,889,351
55 to 59			56	201	37	4		298	33,658,387
60 to 64			38	120	32	1		191	22,101,809
65 to 69			5	63	8	2		78	8,573,828
70 & Up			2	12	2			16	1,743,834
Total	25	13	764	2,091	354	26		3,273	$ 375,887,443

Average Age: 47.6
Average Service: 17.0

Average Salary: $114,845

Schedule G – Tables of Membership Data

TIER IIA – HYBRID PLAN

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

Age	Years of Service: 0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	Total: No.	Payroll
Under 25									$ 0
25 to 29									0
30 to 34									0
35 to 39	2		3	2				7	674,141
40 to 44	1	3	16	18	7			45	4,511,661
45 to 49	3	1	28	38	24	6		100	11,632,526
50 to 54		4	30	64	62	11		171	22,416,290
55 to 59	1	5	18	63	80	17	1	185	25,124,435
60 to 64	1	2	14	42	66	14		139	17,164,148
65 to 69	2		6	16	21	1	1	47	6,523,412
70 & Up		2	4	4	7	1		18	2,508,820
Total	10	17	119	247	267	50	2	712	$ 90,555,433

Average Age: 55.1
Average Service: 19.0

Average Salary: $127,185

Schedule G – Tables of Membership Data

TIER IIA – ALL OTHERS

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

Age	Years of Service							Total	
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25									$ 0
25 to 29									0
30 to 34	8	5	27	7				47	3,117,721
35 to 39	13	34	259	318	14			638	56,283,621
40 to 44	26	41	365	926	212	11		1,581	149,946,708
45 to 49	44	39	323	1,028	701	113		2,248	220,586,208
50 to 54	41	33	316	1,023	882	211	3	2,509	254,498,395
55 to 59	23	34	337	858	751	181	45	2,229	223,332,825
60 to 64	14	29	251	606	443	98	28	1,469	143,999,765
65 to 69	9	20	82	169	93	27	3	403	40,402,596
70 & Up	7	16	35	55	25	12	1	151	14,067,328
Total	185	251	1,995	4,990	3,121	653	80	11,275	$ 1,106,235,167

Average Age: 51.8
Average Service: 18.3

Average Salary: $98,114

Schedule G – Tables of Membership Data

TIER III – HAZARDOUS DUTY

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

	Years of Service							Total	
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25								0	$ 0
25 to 29	4	11	1					16	1,447,528
30 to 34	5	324	100	6				435	40,832,703
35 to 39	6	391	232	57	2	1		689	65,545,723
40 to 44	9	269	142	24	9			453	43,668,927
45 to 49	5	138	62	8				213	20,658,331
50 to 54	5	114	46	7				172	16,120,489
55 to 59	2	70	41	3	2			118	11,722,730
60 to 64	1	33	17	1				52	5,333,711
65 to 69		15	3					18	1,682,077
70 & Up		2	2					4	401,802
Total	37	1,367	646	106	13	1		2,170	$ 207,414,021

Average Age: 41.2
Average Service: 9.8

Average Salary: $95,582

Schedule G – Tables of Membership Data

TIER III – HYBRID PLAN

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

Age	Years of Service 0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	Total No.	Total Payroll
Under 25									$ 0
25 to 29	3	1						4	236,172
30 to 34	6	36	10					52	3,957,247
35 to 39	7	42	19	8				76	6,427,701
40 to 44	13	73	27	1				114	10,870,270
45 to 49	7	45	23	5				80	8,584,866
50 to 54	7	39	23	3				72	7,677,615
55 to 59	4	33	19	2	1			59	6,559,466
60 to 64	5	25	15	1		1		47	4,773,846
65 to 69	1	10	12					23	2,300,424
70 & Up	1	4	2					7	665,570
Total	54	308	150	20	1	1		534	$ 52,053,177

Average Age: 47.2
Average Service: 8.9

Average Salary: $97,478

Schedule G – Tables of Membership Data

TIER III – ALL OTHERS

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

Age	Years of Service							Total	
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25		4						4	$ 93,791
25 to 29	28	83	8					119	7,582,763
30 to 34	80	523	196	21				820	64,176,957
35 to 39	57	681	359	140	9			1,246	105,044,930
40 to 44	49	632	330	61	40			1,112	96,401,764
45 to 49	45	519	237	35	14			850	75,540,155
50 to 54	44	496	253	21	9			823	70,871,030
55 to 59	27	448	235	10	5	1	1	727	64,498,148
60 to 64	19	366	160	8	3		1	557	46,410,358
65 to 69	8	140	104	5		1		258	20,086,094
70 & Up	6	48	35	2				91	7,259,648
Total	363	3,940	1,917	303	80	2	2	6,607	$ 557,965,638

Average Age: 46.2
Average Service: 9.4

Average Salary: $84,451

Schedule G – Tables of Membership Data

TIER IV – HAZARDOUS DUTY

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

Age	Years of Service							Total	
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25	147							147	$ 8,883,148
25 to 29	761	22						783	57,928,623
30 to 34	754	82	5	2				843	62,773,171
35 to 39	471	53	3		1			528	41,546,439
40 to 44	262	32						294	23,217,857
45 to 49	151	18	1					170	13,984,425
50 to 54	151	15		1				167	14,900,307
55 to 59	76	12	1					89	8,499,976
60 to 64	29	4						33	2,813,604
65 to 69	8	2		1				11	1,480,830
70 & Up	3							3	443,423
Total	2,813	240	10	4	1			3,068	$ 236,471,803

Average Age: 35.3
Average Service: 2.8

Average Salary: $77,077

Schedule G – Tables of Membership Data

TIER IV – HYBRID PLAN

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

	Years of Service							Total	
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25	42							42	$ 2,326,159
25 to 29	186	5						191	11,268,465
30 to 34	197	8	1					206	14,111,804
35 to 39	194	8	1					203	15,598,691
40 to 44	166	10		1				177	13,606,885
45 to 49	108	11						119	9,094,560
50 to 54	121	11	1					133	11,158,475
55 to 59	63	6						69	5,255,424
60 to 64	40	5	1					46	3,808,798
65 to 69	25	3						28	2,982,600
70 & Up	3							3	33,568
Total	1,145	67	4	1				1,217	$ 89,245,429

Average Age: 40.3
Average Service: 2.3

Average Salary: $73,332

Schedule G – Tables of Membership Data

TIER IV – ALL OTHERS

The Number and Average Annual Compensation of Active Employees
By Age and Service as of June 30, 2023

	Years of Service							Total	
Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 30	30 & Up	No.	Payroll
Under 25	1,048							1,048	$ 35,980,226
25 to 29	2,021	79	1					2,101	126,185,441
30 to 34	2,066	184	18					2,268	150,769,729
35 to 39	1,813	168	4	14	1			2,000	143,415,597
40 to 44	1,553	145	1	8	2			1,709	125,773,666
45 to 49	1,214	109	1	2				1,326	97,966,617
50 to 54	1,109	83	3	4				1,199	86,505,372
55 to 59	911	69	4				2	986	73,016,782
60 to 64	507	64	2	2	1		1	577	41,670,996
65 to 69	147	18		1				166	11,158,791
70 & Up	38	9						47	2,620,257
Total	12,427	933	34	31	4		3	13,432	$ 895,063,474

Average Age: 39.4
Average Service: 2.4

Average Salary: $66,637

Schedule G – Tables of Membership Data

NUMBER OF RETIRED MEMBERS AND THEIR BENEFITS BY AGE

Age	Number	Total Annual Benefits	Average Annual Benefits
Under 50	793	$ 44,525,829	$ 56,149
50 – 54	1,762	109,432,147	62,107
55 – 59	3,747	191,437,414	51,091
60 – 64	7,838	361,251,845	46,090
65 – 69	10,308	473,322,127	45,918
70 – 74	10,021	478,402,658	47,740
75 – 79	7,923	376,268,587	47,491
80 – 84	4,989	230,425,027	46,187
85 – 89	2,694	123,644,771	45,896
90 – 94	1,284	51,759,969	40,312
95 & Over	455	14,468,445	31,799
Total	51,814	$ 2,454,938,819	$ 47,380

NUMBER OF BENEFICIARIES AND THEIR BENEFITS BY AGE

Age	Number	Total Annual Benefits	Average Annual Benefits
Under 50	256	$ 6,713,880	$ 26,226
50 – 54	110	3,285,236	29,866
55 – 59	180	6,126,991	34,039
60 – 64	347	9,944,308	28,658
65 – 69	533	16,150,282	30,301
70 – 74	701	24,124,431	34,414
75 – 79	908	26,762,536	29,474
80 – 84	961	28,551,417	29,710
85 – 89	781	21,785,038	27,894
90 – 94	501	14,368,616	28,680
95 & Over	235	6,589,604	28,041
Total	5,513	$ 164,402,339	$ 28,821

Schedule G – Tables of Membership Data

NUMBER OF DEFERRED VESTED MEMBERS AND THEIR BENEFITS BY AGE

Age	Number	Total Annual Benefits	Average Annual Benefits
Under 50	1,459	$ 15,806,708	$ 10,834
50 – 54	607	9,520,404	15,684
55 – 59	533	9,768,249	18,327
60 – 64	330	4,663,659	14,132
65 & Over	488	5,703,463	11,687
Total	3,417	$ 45,462,483	$ 13,305

Schedule H – Analysis of Financial Experience

Gains & Losses in Accrued Liabilities Resulting from Difference Between Assumed Experience & Actual Experience ($ Millions)

Type of Activity	$ Gain (or Loss) For One-Year Period Ending 6/30/2023
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	$ (116.7)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(27.8)
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(7.1)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	7.1
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	(396.6)
New Members. Additional unfunded accrued liability will produce a loss.	(30.1)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	(170.3)
Death After Retirement. If retirants live longer than assumed, there is a loss. If not as long, a gain.	116.9
Cost of Living Adjustments: If COLA increase more than expected there is a loss.	(165.0)
Other. Miscellaneous gains and losses resulting from changes in valuation software, data or asset adjustments, timing of financial transactions, etc.	(92.6)
Gain (or Loss) During Year From Financial Experience	$ (882.2)
Receivable Transfer Amounts: Discounted value of amounts transferred subsequent to the end of the fiscal year.	1,028.8
Composite Gain (or Loss) During Year	$ 146.6

Schedule I – Actuarial Surplus Test

Section 5-162(h) of the General Statutes of Connecticut provides that the Retirement Commission may grant additional Cost-of-Living Adjustments (COLAs) for retired members if an actuarial surplus exists. An actuarial surplus is deemed to exist if three criteria are met.

I. ***Investment Income:*** The actual rate of return for the Fiscal Year ending on the valuation date must exceed the actuarial interest rate assumption.

Market Value of Assets on June 30, 2022: (A)	$18,532,120,770
Market Value of Assets on June 30, 2023: (B)	$21,165,596,554
Investment Income for FY 2022-2023: (I)	$1,700,337,481
Actual Rate of Return for FY 2022-2023: 2I / (A + B – I)	8.95%
Actuarial Interest Rate Assumption:	6.90%

Actual return of 8.95% is more than the assumed 6.90%, so the first criterion is met.

II. ***Assets vs. Liabilities:*** Market value of assets must exceed 50% of specified liabilities.

Adjusted Market Value of Assets on June 30, 2023:	$21,165,596,554
Specified Liabilities on June 30, 2023:	
Liability for Retired Members	$32,249,304,160
Liability for Terminated Vested Members	$466,977,564
Liability for Member Contributions with Interest	$1,845,838,129
Total	$34,562,119,853
50% of Specified Liabilities	$17,281,059,926

Market Value exceeds 50% of specified liabilities so the second criterion is met.

III. ***Unfunded Liability***: Actual unfunded liability must be less than the projected unfunded liability five years from the determination date.

Actual Unfunded Liability on June 30, 2023:	$20,134,400,392
Projected Unfunded Liability on June 30, 2028 (see next page):	$ 3,944,463,000

Actual Unfunded Liability is not less than Projected Unfunded Liability, so the third criterion is not met and therefore, no actuarial surplus exists.

Schedule I – Actuarial Surplus Test

ACTUARIAL SURPLUS TEST
PROJECTION OF UNFUNDED LIABILITY

Section 5-162-h(b)(2) of the General Statutes of Connecticut specifies the means of calculating the Projected Unfunded Liability used in the third criterion of the Actuarial Surplus Test. The projection reflects the actual unfunded liability as of December 31, 1983 adjusted for changes in actuarial assumptions and cost methods through the determination date. No provision is made in the Statute for reflecting the impact of plan changes. The projection below reflects the following changes: data correction (June 30, 1987); change in actuarial assumptions (June 30, 1987); change in actuarial cost method (June 30, 1988); change in actuarial assumptions - interest rate only (June 30, 1989); change in actuarial cost method – amortization period only (June 30, 1992); change in actuarial assumptions (June 30, 1993); change in actuarial cost method – level percent amortization (June 30, 1997); change in actuarial methods and assumptions (June 30, 2000); change in actuarial assumptions (June 30, 2004); change in actuarial assumptions (June 30, 2008); change in actuarial assumptions (June 30, 2012); change in actuarial assumptions (June 30, 2016); change in actuarial assumptions (June 30, 2021).

Year	($000) June 30 Unfunded Liability	Year	($000) June 30 Unfunded Liability	Year	($000) June 30 Unfunded Liability
1987	$2,524,556	2002	$2,360,589	2017	$9,951,987
1988	1,954,257	2003	2,429,273	2018	9,659,917
1989	1,432,333	2004	2,502,591	2019	9,424,079
1990	1,939,758	2005	2,569,504	2020	9,140,386
1991	1,930,524	2006	2,634,814	2021	8,756,187
1992	1,920,505	2007	2,698,021	2022	8,198,476
1993	1,794,192	2008	2,823,251	2023	7,602,282
1994	1,787,586	2009	2,861,884	2024	6,964,951
1995	1,780,419	2010	2,895,933	2025	6,283,644
1996	1,772,643	2011	2,924,709	2026	5,555,326
1997	1,764,205	2012	4,160,465	2027	4,776,755
1998	1,835,087	2013	4,172,971	2028	3,944,463
1999	1,907,249	2014	4,174,465	2029	3,054,742
2000	2,222,296	2015	4,163,616	2030	2,103,631
2001	2,291,494	2016	10,057,733	2031	1,086,893
				2032	0

Schedule J – Projection of Unfunded Accrued Liability

An amortization payment schedule of the June 30, 2023 Unfunded Accrued Liability is provided in the table below. No future gains and losses are included in this table.

Valuation Year	Unfunded Accrued Liability ($ in thousands)	Amortization Payment ($ in thousands)
2023	20,134,400	1,781,193
2024	19,742,481	1,781,193
2025	19,323,520	1,781,193
2026	18,875,650	1,781,193
2027	18,396,877	1,781,193
2028	17,885,069	1,781,193
2029	17,337,946	1,781,193
2030	16,753,072	1,781,193
2031	16,127,841	1,781,193
2032	15,459,470	1,781,193
2033	14,744,981	1,781,193
2034	13,981,192	1,781,193
2035	13,164,701	1,781,193
2036	12,291,873	1,781,193
2037	11,358,820	1,781,193
2038	10,361,385	1,781,193
2039	9,295,128	1,781,193
2040	8,155,300	1,781,193
2041	6,936,823	1,781,193
2042	5,634,271	1,781,193
2043	4,241,843	1,731,145
2044	2,803,385	1,643,572
2045	1,353,246	1,599,438
2046	(152,817)	(129,666)
2047	(33,696)	(36,021)
2048	0	0