CHEIRON Classic Values, Innovative Advice

Maine Public Employees Retirement System

State Employee and Teacher Retirement Program

Actuarial Valuation Report as of June 30, 2022

Produced by Cheiron
October 2022

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October 13, 2022

Board of Trustees
Maine Public Employees Retirement System
PO Box 349
Augusta, Maine 04332-0349

Dear Members of the Board:

We are pleased to submit the June 30, 2022 Actuarial Valuation Report for the State Employee and Teacher Retirement Program (Program) of the Maine Public Employees Retirement System (MainePERS or System).

The purpose of this report is to present the annual actuarial valuation of the State Employee and Teacher Retirement Program (Program) of the Maine Public Employees Retirement System. This report is for the sole use of the MainePERS Board and its auditors in preparing financial reports in accordance with applicable law and accounting requirements. This report contains information on assets, liabilities, and contributions of the Program, as well as required accounting statement disclosures under the Governmental Accounting Standards Board (GASB) Statement No. 67.

In preparing our report, we relied on information, some oral and some written, supplied by the System's staff. This information includes, but is not limited to, the Plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

Future results may differ significantly from the current results presented in this report due to such factors as the following: Program experience differing from that anticipated by the assumptions, changes in assumptions, and changes in plan provisions or applicable law.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

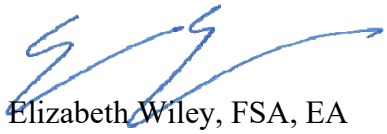
This actuarial report was prepared exclusively for MainePERS for the purposes described herein and for the use by the Program auditor in completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

This report does not contain any adjustments for the potential impact of COVID-19 on either economic or demographic assumptions. We anticipate that the pandemic may have implications in both the short and long term, but the net impact of these is not determinable at this time.

Sincerely,
Cheiron

Gene Kalwarski, FSA, EA
Principal Consulting Actuary

Fiona E. Liston, FSA, EA
Principal Consulting Actuary



Elizabeth Wiley, FSA, EA
Consulting Actuary

FOREWORD

Cheiron has completed the Actuarial Valuation Report for the Maine Public Employees Retirement System (MainePERS or System) State Employee and Teacher Program (Program) of the as of June 30, 2022. The purpose of this report is to:

1) Measure and disclose, as of the valuation date, the financial condition of the Program,
2) Examine trends, both historical and prospective, in the condition of the Program,
3) Assess and disclose actuarial risks of the Program,
4) Report on the contribution rates developed in this valuation for informational purposes (Note: the actual contributions paid by the employers for fiscal year (FY) 2022 were developed in the budgeting process in July 2020, based on a roll-forward of the June 30, 2019 valuation), and
5) Provide specific information required for MainePERS's financial disclosures.

An actuarial valuation establishes and analyzes assets and liabilities on a consistent basis and tracks the progress of both from one year to the next. It includes measurement of investment performance as well as an analysis of actuarial liability gains and losses.

Section I presents a summary containing our key findings, disclosing important Program trends in recent years, and providing analysis relating to the future status of the Program.

Section II assesses and discloses various actuarial risk measures of the Program.

Section III contains details on various asset measures, together with pertinent performance measurements.

Section IV shows similar information on liability measures for various purposes, including analysis of key changes in the measures.

Section V develops informational employer contribution rates to be compared to those established during the ratemaking process.

Section VI includes financial disclosure information.

Finally, we present appendices containing the following summaries:

- Program membership information at the valuation date (Appendix A),
- Major benefit provisions of the Program (Appendix B),
- Actuarial assumptions and methods used in the current valuation (Appendix C), and
- Terminology used in the Governmental Accounting Standards Board (GASB) disclosures (Appendix D).

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General Comments

The annual employer contributions to this Program are determined on a biennial basis in even years. The contributions for fiscal year (FY) 2022 and FY 2023 were developed through this ratemaking process in 2020. The assets used in developing these rates were the preliminary June 30, 2020 assets. These were then combined with liability measures as of June 30, 2020, developed as an adjustment (i.e., roll-forward) of the liabilities of the June 30, 2019 actuarial valuation. This adjustment included updating to reflect anticipated growth in benefits, reductions due to benefit payouts, and any changes in assumptions or benefits between the June 30, 2019 valuation date and the June 30, 2020 measurement date. Similarly, the contributions for FY 2024 and FY 2025 were developed in 2022 and were based on estimated assets as of June 30, 2022 and liabilities based on the June 30, 2021 actuarial valuation liabilities adjusted to our best estimate of the June 30, 2022 liabilities.

The results of this June 30, 2022 valuation will be used primarily for accounting disclosures. Next year's June 30, 2023 valuation, adjusted to a June 30, 2024 measurement date and combined with preliminary assets as of June 30, 2024, will be used as the basis for the applicable FY 2026 and FY 2027 employer contributions.

Experience from July 1, 2021 through June 30, 2022 (FY 2022)

With respect to investment experience, measured on a market value of asset (MVA) basis, MainePERS experienced an investment return of negative 0.62% for the fiscal year ending June 30, 2022. However, given the three-year asset smoothing method in place, only one-third of that loss is recognized in this valuation on an actuarial value of assets (AVA) basis. Furthermore, asset smoothing also resulted in recognizing one-third of prior deferred assets gains of $1.44 billion during FY 2022 for this Program. As a result, the investment return measured on a smoothed, actuarial value of assets basis was 7.70%. This is greater than the 6.50% assumed rate of return in effect for FY 2022, resulting in a gain on investments for the year of $161 million in addition to the expected increase of $521 million had the assumed 6.50% been exactly achieved on an AVA basis.

With respect to liability experience, the Program's liabilities grew by $213 million more than the expected growth of $377 million (a 1.3% growth in total liabilities beyond expected growth). Of this increase, approximately $170 million was attributable to the payment of cost-of-living adjustments (COLA) exceeding the assumed COLA, with the $43 million balance of the liability loss primarily attributable to salaries being greater than expected and fewer terminations than expected. It is important to note that approximately $105 million of the $170 million liability growth attributable to COLA was due to Program changes in the COLA and was fully offset by additional employer contributions of the same amount.

Combining the investment and liability experience produced an informational total employer contribution of 20.65% of payroll as of June 30, 2022. This is a decrease of 1.07% compared to the June 30, 2021 informational valuation contribution rate of 21.72% of payroll.

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Finally, as of the June 30, 2022 valuation, the Program has an unfunded actuarial liability (UAL) of $2.734 billion based on the AVA. This represents a decrease of $197 million from the $2.931 billion AVA UAL measured as of June 30, 2021. This compares to an expected decrease in the UAL of $144 million. The specific factors contributing to this change are presented in Table I-1 that follows. This table has separate columns showing the components of the changes in liabilities and investments during FY 2022 as well as their combined effect on the UAL.

Table I-1
(Amounts in Billions)

	Liabilities	Assets*	UAL
Value as of June 30, 2021	$ 16.392	$ 13.461	$ 2.931
Expected Change	0.377	0.521	(0.144)
Impact of Program Changes	0.105	0.105	0.000
Impact of Assumption Changes	0.000	0.000	0.000
Recognized Investment Gain	0.000	0.161	(0.161)
Recognized Liability Loss	0.108	0.000	0.108
Value as of June 30, 2022	$ 16.982	$ 14.248	$ 2.734

* This table uses actuarial value of assets. Results would be different if the market value were used.

The remainder of this Board Summary section summarizes the Program's historical trends, provides baseline projections of the Program's future status, and summarizes the principal results of the valuation. These principal results compare key results between this and last years' valuations for member counts, assets and liabilities, and contribution rates.

Trends

It is important to take a step back from the latest results and view them in the context of the Program's history. On the next few pages, we present a series of graphs that display key historical trends relating to the Program's condition. In addition to considering the past, examining future possible trajectories of the Program is also vital to understanding the current results. Baseline projections are provided in this Board Summary, and the potential variability of these results is explored further in the risk section of this report.

Assets and Liabilities

The following graph illustrates the progress of assets and liabilities for the Program since June 30, 1991 as well as the Program's funded ratio on an actuarial value of assets (AVA) basis.

Liability measures are shown as bars as of June 30 of the indicated years. The actuarial liability (AL), the liability measure used for the Program's funding purposes, is represented by the top of the grey bars. The blue bars represent the present value of accrued benefits (PVAB). These liability measures are discussed further in Section IV. Measures of the assets are shown as lines. The AVA is shown with a teal line, while the market value of assets (MVA) is shown as a yellow line. The AVA divided by the AL is the AVA funded ratio that is often used in evaluating the Program's funded status. The values of this metric as of each valuation date are shown as the

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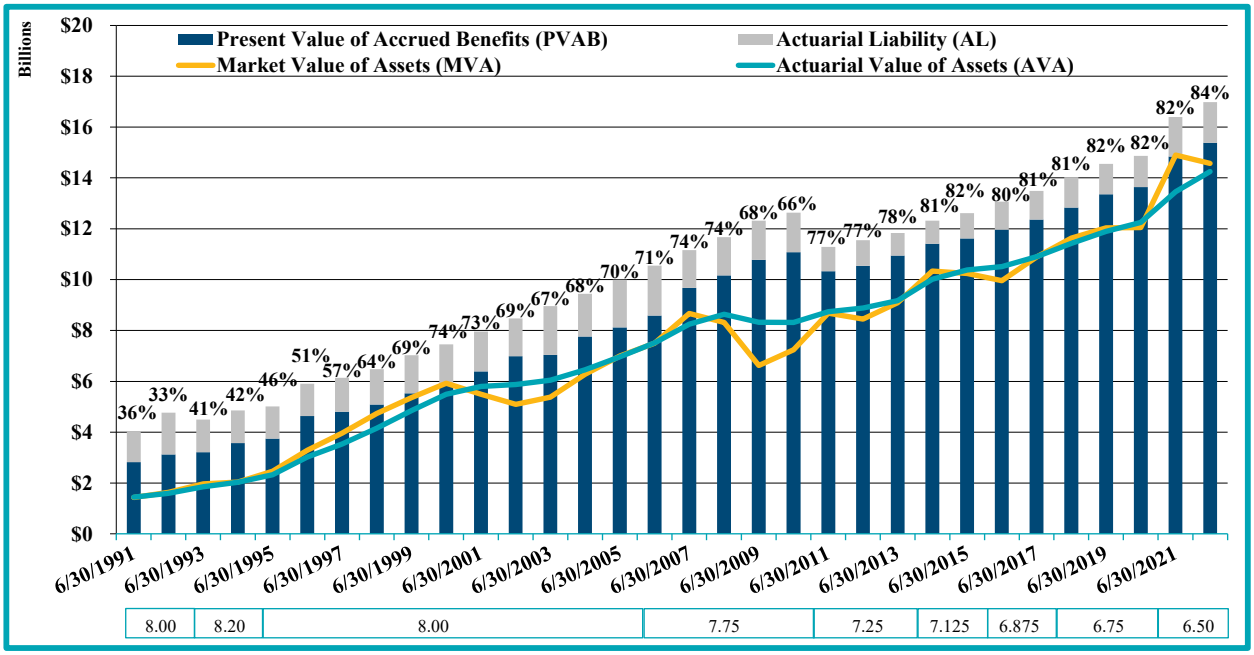
percentages in the graph labels. The values shown below the dates are the discount rates in effect for each year and should be read as percentages, i.e., 8.00 represents an 8.00% discount rate.



Plan changes were legislated during 2010 and first reflected in the 2011 valuation, resulting in the reduction in liability seen for that year. As of June 30, 2022, the Program is funded 83.9% based on the AVA funded ratio, which represents a slight increase from the 82.1% ratio reported in the prior valuation. Measured on an MVA basis, the funded ratio is 85.8% as of June 30, 2022, a significant decrease over last year's 90.9% MVA funded ratio.

Contributions

The next graph shows the history of contributions to the Program, both as dollar amounts and as percentages of payroll. The bars in this graph show the contributions made by both the employers and the members in dollar terms for each fiscal year (FY) as indicated by the horizontal axis since 1995. These bars are read using the left-hand axis. The black line shows the total appropriated employer contribution rate for the FY indicated as a percentage of payroll and references the right-hand axis. These rates are those determined by the ratemaking process rather than the informational rates determined in the annual valuations. The FY 2023 through FY 2025 contribution rates have already been determined based on the ratemaking process, so three additional years of the contribution rate are shown versus dollars received. The total employer contribution for FY 2022 includes the approximately $104.5 million extra payment to fund the COLA benefit change.

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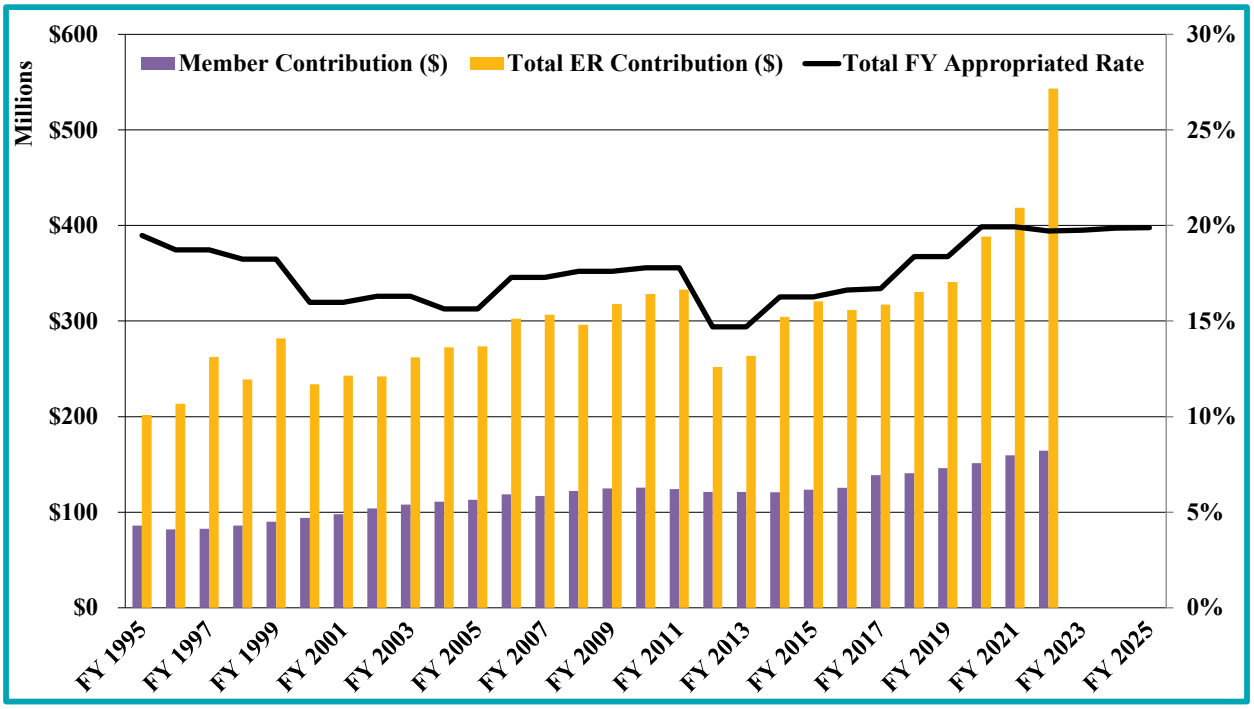

The member contribution rates are set by statute, based on the Plan within the Program in which each member participates. The total employer contribution rate is set by the ratemaking process on a biennial basis. The contribution rate for FY 2022 was based on a roll-forward of the June 30, 2019 valuation to June 30, 2020, as previously described in this Board Summary.

The most important information to be gleaned from this chart is that the Program, as evidenced in the prior chart, has successfully and significantly improved its funded status over the past 30 years, while maintaining a remarkably stable State contribution rate between approximately 15% and 20%.

Baseline Projections

Our analysis of the projected financial trends for the Program is an important part of this valuation. In this section, we project future valuation results, focusing on the previously referenced AVA funded ratio (AVA over AL) and the expected employer contributions that will be developed through the ratemaking process in future biennia. Here we present a baseline projection of these metrics based on all actuarial assumptions being exactly met during the projection period, including the assumed 6.50% investment return being achieved each year. In the risk section of the report, we demonstrate the sensitivity of future valuation results to deviations in actual returns from the assumed investment returns by presenting similar projections based on investment returns averaging similar to the assumed returns but deviating from the assumed rate in the individual years of the 20-year projection period.

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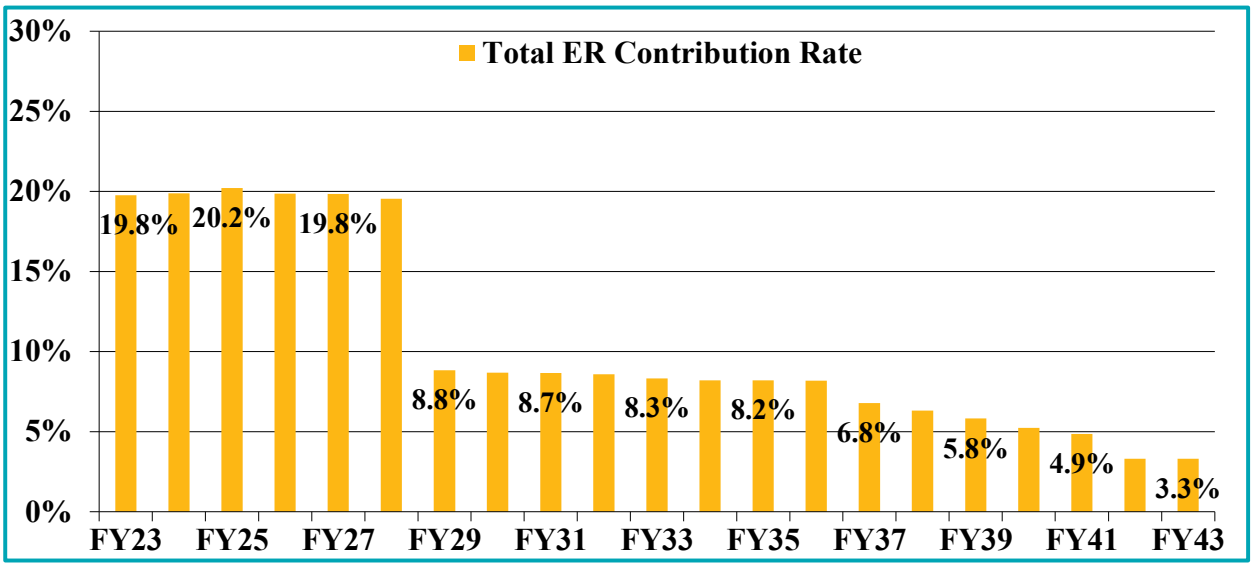

This baseline projection shows that the overall composite employer contribution rate for the Program is projected to remain within 0.5% of the current rate of 19.75% applicable for FY 2023 through FY 2028, then dramatically drop off in FY 2029 once the 1996 UAL balance is fully paid off. At that point, the employer contribution rates under this baseline scenario drop substantially, initially to 8.8%, with small further changes thereafter as additional bases are recognized, with a general downward trend, dropping to 3.3% by the end of the projection period. Note that this baseline projection is based on all assumptions being met each and every year where the reality is that there will be gains and losses each and every year, resulting in new amortization layers, negative or positive, occurring every year. This concept is explored further in the risk section of this report.

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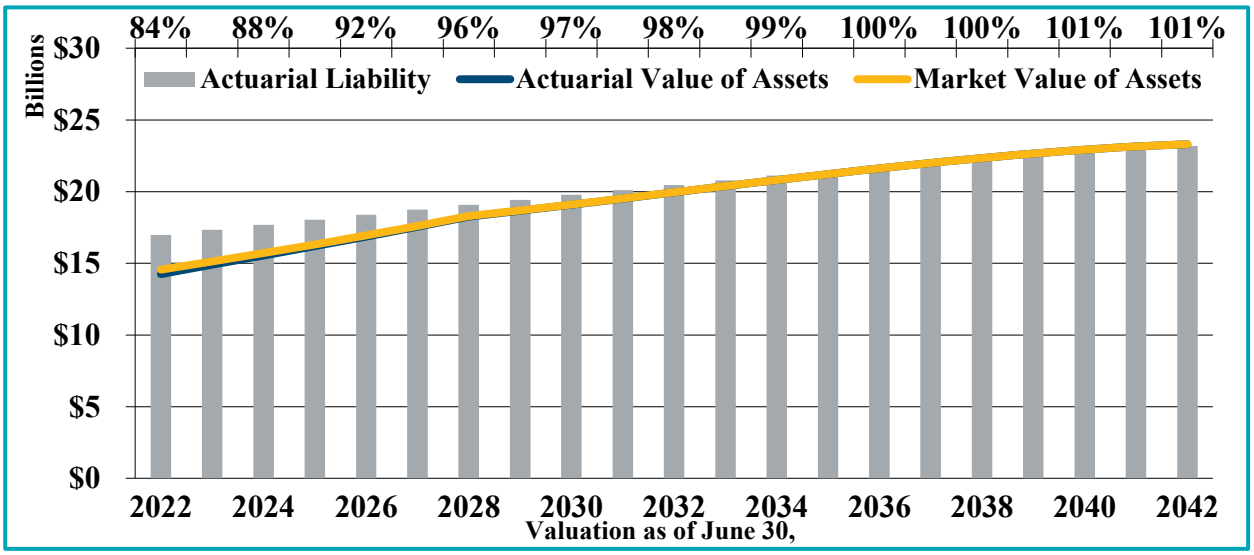

The graph above shows the projected AVA funded ratio (AVA divided by AL) over the next 20 years based on this baseline scenario. It shows that the Program's AVA funded ratio is projected to improve from the current 84% as of FY 2022 to over 100% starting in FY 2036. Under this baseline scenario where all underlying assumptions are exactly met, the AVA funded ratio increases to 101% by the end of the projection period. Note that the timing of contribution development and payment based on the biennial ratemaking process, as well as the combination of the amortization layers, results in the funded status being projected to exceed full funding during the projection period. Note that if the ratios used market value of assets (MVA), the funded ratios would be different.

Principal Results Summary

The last section of this Board Summary presents a summary of the principal results of the valuation, comparing key results between this and last years' valuations for member counts, assets and liabilities, and contribution rates. These summary results are shown for the total State Employee and Teacher Program, and then for each of these subgroups as well as the division of the State Employee Program into the Regular and Special Plans.

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Table I-2
Summary of Principal Results
Total State Employee and Teacher Program

	Valuation as of June 30, 2021	Valuation as of June 30, 2022	% Change
Member Counts			
Active Members	40,099	40,121	0.1%
Retired Members	29,301	30,036	2.5%
Beneficiaries of Retired Members	6,249	6,281	0.5%
Survivors of Deceased Members	580	584	0.7%
Disabled Members	1,560	1,507	(3.4)%
Terminated Vested Members	8,387	8,843	5.4%
Inactives Due Refunds	38,393	38,807	1.1%
Total Membership	124,569	126,179	1.3%
Annual Payroll of Active Members	$ 2,199,458,213	$ 2,265,365,936	3.0%
Annual Payments to Benefit Recipients	$ 884,049,653	$ 931,378,044	5.4%
Assets and Liabilities			
Actuarial Liability (AL)	$ 16,392,351,328	$ 16,981,792,082	3.6%
Actuarial Value of Assets (AVA)	13,460,870,272	14,248,105,921	5.8%
Unfunded AL (UAL)	$ 2,931,481,056	$ 2,733,686,161	(6.7)%
AVA Funded Ratio (AVA/AL)	82.1%	83.9%	
MVA Funded Ratio (MVA/AL)	90.9%	85.8%	
Accrued Benefit Liability (PVAB)	$ 14,840,603,750	$ 15,382,801,444	3.7%
Market Value of Assets (MVA)	14,900,644,020	14,568,691,334	(2.2)%
Unfunded PVAB	$ (60,040,270)	$ 814,110,110	N/A
MVA Accrued Benefit Funded Ratio	100.4%	94.7%	
Contributions as a Percentage of Payroll			
Employer Normal Cost Rate	4.64%	4.58%	
UAL Amortization Rate	17.08%	16.07%	
Total Employer Calculated Rate	21.72%	20.65%	

	2020 Ratemaking		2022 Ratemaking	
Total Employer Budgeted Rates	FY 2022	19.71%	FY 2024	19.87%
Total Employer Budgeted Rates	FY 2023	19.75%	FY 2025	19.89%

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Table I-3
Summary of Principal Results
Teacher Program

	Valuation as of June 30, 2021	Valuation as of June 30, 2022	% Change
Member Counts			
Active Members	27,444	27,718	1.0%
Retired Members	18,231	18,738	2.8%
Beneficiaries of Retired Members	2,970	2,997	0.9%
Survivors of Deceased Members	280	286	2.1%
Disabled Members	680	659	(3.1)%
Terminated Vested Members	5,368	5,693	6.1%
Inactives Due Refunds	29,934	29,784	(0.5)%
Total Membership	84,907	85,875	1.1%
Annual Payroll of Active Members	$ 1,414,446,640	$ 1,473,733,403	4.2%
Annual Payments to Benefit Recipients	$ 563,008,592	$ 592,819,578	5.3%
Assets and Liabilities			
Actuarial Liability (AL)	$ 10,736,439,623	$ 11,149,845,760	3.9%
Actuarial Value of Assets (AVA)	8,934,933,743	9,452,256,233	5.8%
Unfunded Actuarial Liability (UAL)	$ 1,801,505,880	$ 1,697,589,527	(5.8)%
AVA Funded Ratio (AVA/AL)	83.2%	84.8%	
MVA Funded Ratio (MVA/AL)	92.1%	86.7%	
Accrued Benefit Liability (PVAB)	$ 9,646,954,676	$ 10,012,727,541	3.8%
Market Value of Assets (MVA)	9,890,613,635	9,664,934,008	(2.3)%
Unfunded PVAB	$ (243,658,959)	$ 347,793,533	N/A
MVA Accrued Benefit Funded Ratio	102.5%	96.5%	
Contributions as a Percentage of Payroll			
Employer Normal Cost Rate	4.44%	4.41%	
UAL Rate	16.21%	15.05%	
Total Employer Rate	20.65%	19.46%	
	2020 Ratemaking	2022 Ratemaking	
Total Employer Budgeted Rates	FY 2022 18.13%	FY 2024 18.98%	
Total Employer Budgeted Rates	FY 2023 18.13%	FY 2025 18.98%	

SECTION I – BOARD SUMMARY

Table I-4
Summary of Principal Results
State Program (Regular and Special Plans)

	Valuation as of June 30, 2021	Valuation as of June 30, 2022	% Change
Member Counts			
Active Members	12,655	12,403	(2.0)%
Retired Members	11,070	11,298	2.1%
Beneficiaries of Retired Members	3,279	3,284	0.2%
Survivors of Deceased Members	300	298	(0.7)%
Disabled Members	880	848	(3.6)%
Terminated Vested Members	3,019	3,150	4.3%
Inactives Due Refunds	8,459	9,023	6.7%
Total Membership	39,662	40,304	1.6%
Annual Payroll of Active Members	$ 785,011,573	$ 791,632,533	0.8%
Annual Payments to Benefit Recipients	$ 321,041,061	$ 338,558,466	5.5%
Assets and Liabilities			
Actuarial Liability (AL)	$ 5,655,911,705	$ 5,831,946,322	3.1%
Actuarial Value of Assets (AVA)	4,525,936,529	4,795,849,688	6.0%
Unfunded Actuarial Liability (UAL)	$ 1,129,975,176	$ 1,036,096,634	(8.3)%
AVA Funded Ratio (AVA/AL)	80.0%	82.2%	
MVA Funded Ratio (MVA/AL)	88.6%	84.1%	
Accrued Benefit Liability (PVAB)	$ 5,193,649,074	$ 5,370,073,903	3.4%
Market Value of Assets (MVA)	5,010,030,385	4,903,757,326	(2.1)%
Unfunded PVAB	$ 183,618,689	$ 466,316,577	154.0%
MVA Accrued Benefit Funded Ratio	96.5%	91.3%	
Contributions as a Percentage of Payroll			
Employer Normal Cost Rate	5.01%	4.90%	
UAL Rate	18.67%	18.00%	
Total Employer Rate	23.68%	22.90%	

	2020 Ratemaking		2022 Ratemaking	
Total Employer Budgeted Rates	FY 2022	22.74%	FY 2024	21.51%
Total Employer Budgeted Rates	FY 2023	22.88%	FY 2025	21.58%

SECTION I – BOARD SUMMARY

Table I-5
Summary of Principal Results
State Program – Regular Plans Only

	Valuation as of June 30, 2021	Valuation as of June 30, 2022	% Change
Member Counts			
Active Members	10,968	10,787	(1.7)%
Retired Members	10,012	10,224	2.1%
Beneficiaries of Retired Members	2,880	2,899	0.7%
Survivors of Deceased Members	284	281	(1.1)%
Disabled Members	802	772	(3.7)%
Terminated Vested Members	2,662	2,759	3.6%
Inactives Due Refunds	7,404	7,837	5.8%
Total Membership	35,012	35,559	1.6%
Annual Payroll of Active Members	$ 659,392,341	$ 666,124,924	1.0%
Annual Payments to Benefit Recipients	$ 279,034,216	$ 294,619,012	5.6%
Assets and Liabilities			
Actuarial Liability (AL)	$ 4,760,482,177	$ 4,907,347,328	3.1%
Actuarial Value of Assets (AVA)	3,837,853,657	4,053,902,852	5.6%
Unfunded Actuarial Liability (UAL)	$ 922,628,520	$ 853,444,476	(7.5)%
AVA Funded Ratio (AVA/AL)	80.6%	82.6%	
MVA Funded Ratio (MVA/AL)	89.2%	84.5%	
Accrued Benefit Liability (PVAB)	$ 4,377,395,170	$ 4,529,855,680	3.5%
Market Value of Assets (MVA)	4,248,350,217	4,145,116,528	(2.4)%
Unfunded PVAB	$ 129,044,953	$ 384,739,152	198.1%
MVA Accrued Benefit Funded Ratio	97.1%	91.5%	
Contributions as a Percentage of Payroll			
Employer Normal Cost Rate	4.81%	4.79%	
UAL Rate	18.13%	17.59%	
Total Employer Rate	22.94%	22.38%	

	2020 Ratemaking		2022 Ratemaking	
Total Employer Budgeted Rates	FY 2022	22.11%	FY 2024	21.07%
Total Employer Budgeted Rates	FY 2023	22.24%	FY 2025	21.14%

SECTION I – BOARD SUMMARY

Table I-6
Summary of Principal Results
State Program – Special Plans Only

	Valuation as of June 30, 2021	Valuation as of June 30, 2022	% Change
Member Counts			
Active Members	1,687	1,616	(4.2)%
Retired Members	1,058	1,074	1.5%
Beneficiaries of Retired Members	399	385	(3.5)%
Survivors of Deceased Members	16	17	6.3%
Disabled Members	78	76	(2.6)%
Terminated Vested Members	357	391	9.5%
Inactives Due Refunds	1,055	1,186	12.4%
Total Membership	4,650	4,745	2.0%
Annual Payroll of Active Members	$ 125,619,232	$ 125,507,609	(0.1)%
Annual Payments to Benefit Recipients	$ 42,006,845	$ 43,939,454	4.6%
Assets and Liabilities			
Actuarial Liability (AL)	$ 895,429,528	$ 924,598,994	3.3%
Actuarial Value of Assets (AVA)	688,082,872	741,946,836	7.8%
Unfunded Actuarial Liability (UAL)	$ 207,346,656	$ 182,652,158	(11.9)%
AVA Funded Ratio (AVA/AL)	76.8%	80.2%	
MVA Funded Ratio (MVA/AL)	85.1%	82.1%	
Accrued Benefit Liability (PVAB)	$ 816,253,904	$ 840,218,223	2.9%
Market Value of Assets (MVA)	761,680,168	758,640,798	(0.4)%
Unfunded PVAB	$ 54,573,736	$ 81,577,425	49.5%
Accrued Benefit Funded Ratio	93.3%	90.3%	
Contributions as a Percentage of Payroll			
Employer Normal Cost Rate	6.05%	5.48%	
UAL Rate	21.41%	20.00%	
Total Employer Rate	27.46%	25.48%	
	2020 Ratemaking	2022 Ratemaking	
Total Employer Budgeted Rates	FY 2022 25.82%	FY 2024 23.83%	
Total Employer Budgeted Rates	FY 2023 25.98%	FY 2025 23.92%	

SECTION II – RISK ASSESSMENT AND DISCLOSURE

Introduction

The Program's actuarial valuation results are dependent on assumptions about future economic and demographic experience. Based on actuarial standards of practice, these assumptions represent a reasonable estimate for future experience. However, actual future experience will never conform exactly to these assumptions and may differ significantly from the assumptions. This deviation is a risk that pension plan sponsors bear in relying on a pension plan's actuarial valuation results.

This section of this report is intended to identify the primary drivers of these risks, provide background information and assessments about these identified risks, and communicate the significance of these risks to this Program.

Identification of Risks

For this Program, the three primary valuation results that can significantly differ from those expected are the assets, the liabilities, and the employer contributions. While there are several factors that could lead to these results being different, we believe the primary risks for this Program are:

- Investment risk,
- Longevity and other demographic risks,
- Plan change risk, and
- Assumption change risk

Other risks that we have not identified may also turn out to be significant.

SECTION II – RISK ASSESSMENT AND DISCLOSURE

Investment Risk is the potential for investment returns to deviate from what is expected. When actual investment returns are lower than the investment assumption used in the actuarial valuation, the unfunded liability will increase from what was expected and will require higher contributions than otherwise anticipated. But when actual returns exceed those assumed, the resulting unfunded liability measurements and actuarially determined contributions will be lower than anticipated. As seen in the historical section that follows, this has been a significant driver of deviations in the actual measurements for this Program from those expected by the prior valuations.

Longevity and Other Demographic Risk is the potential for mortality or other demographic experience to be different than expected. Generally, longevity and other demographic risks emerge slowly over time as the actual experience deviates from expectations. In addition, the extensive number of assumptions related to longevity and other demographic experience often result in offsetting deviations contributing to the Program's overall liability experience. As such, these risks are often dwarfed by other risks, particularly those due to the investment returns. The historical section that follows shows that this has been true for this Program in most individual years, with the magnitude of the gains and losses from investment experience often significantly larger than the gains and losses from liability experience. In addition, during the past 10 years, the offsetting effects of the longevity and other demographic risk gains and losses have been such that the cumulative effect of this longevity and other demographic risk as seen in the liability gains and losses has only been about a third of the investment gains and losses over this same period.

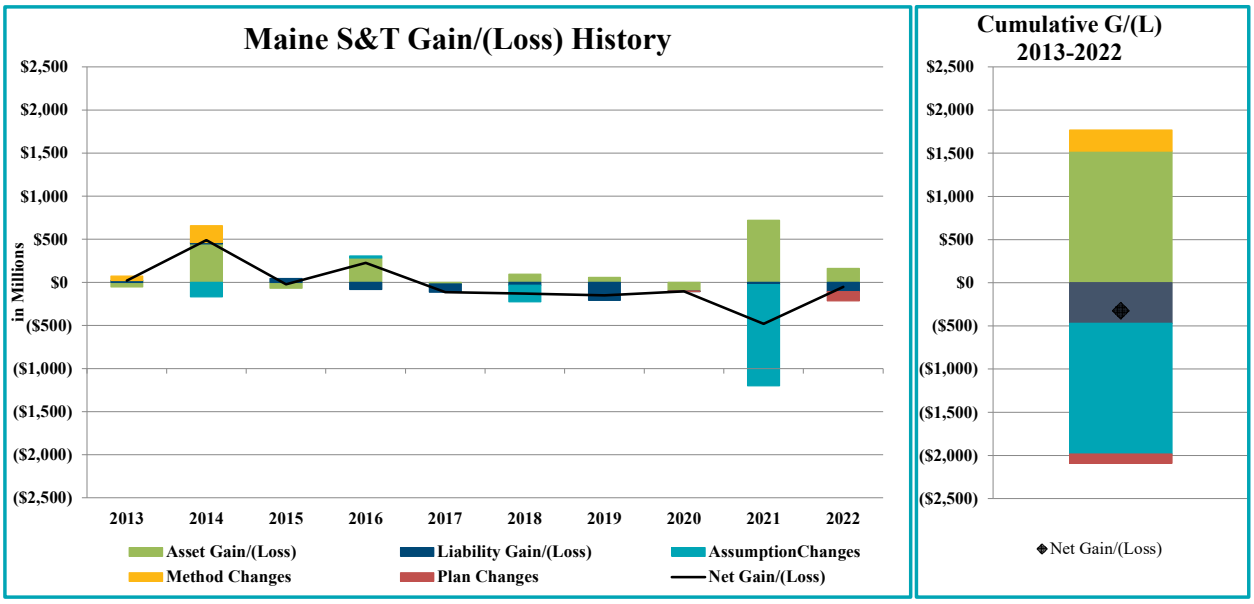
Plan Change Risk is the potential for the provisions of the Program to be changed such that the funding or benefits are changed materially. In addition to the actual payments to and from the Program being changed, future valuation measurements can also be impacted, with Program changes leading to deviations between actual future measurements and those expected by prior valuations. For this Program, this risk is partially mitigated by the constitutional requirement that any Program changes creating new actuarial liabilities must be fully funded. Over the period shown in the 10 years of the historical section, the only significant plan change for this Program was the additional COLA paid and increase in the COLA base related to the September 1, 2021 COLA. However, it is worth noting that there have been significant plan changes in other periods, in particular, changes in 2011, which produced a large gain.

Assumption Change Risk is the potential for the environment to change such that future valuation assumptions are adjusted to be different than the current assumptions. For example, declines in interest rates over time may result in a change in the assumed rates of return used in the valuation. A healthier workforce may result in changes in employee behavior such that retirement rates are adjusted to reflect employees working longer. Assumption change risk is an extension of the risks previously identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in the environment resulting in the current assumption no longer being reasonable. The historical review section will show that assumption change risk has been the second most significant risk for this Program over the period. In addition to changes in individual assumptions, changes to the methods used in valuing the

Program can have a significant impact on the valuation results as can be seen based on the method change items in the Program's historical experience, where these changes have produced a gain for the Program over the period shown.

Historical Experience Deviations

In understanding the impact of some of these risks, it is useful to look at past experience deviations. These deviations are commonly referred to as actuarial gains and losses. The following chart shows the gains/(losses) at each valuation date between the actual and expected experience broken down by cause for the last 10 years.



As described previously and is evident in this chart, assumption changes and asset gains and losses have been the most significant risks for the Program over this 10-year period on a cumulative basis. The next two causes of experience deviations, the liability gains/(losses) and the method changes, were much less significant over this period. Over this period, plan changes were relatively insignificant.

Plan Maturity Measures

As pension plans become more mature, the primary risks of adverse investments, demographic deviations, plan changes, and assumption/method changes become of more significant concern as the resulting impacts on the Program's condition are more pronounced. As a result, it has become increasingly important to examine measures that indicate a pension plan's maturity level. With shrinking workforces, aging Baby Boomers, and retirees living longer, plans pay out more in benefits than they receive in contributions – leading to negative cash flows, excluding investment income, making it harder for a plan to recover from losses since contributions are generally made based on active payroll.

SECTION II – RISK ASSESSMENT AND DISCLOSURE

One of the main reasons risks are more amplified with a mature plan is that when plans with negative cash flows suffer investment losses, they need to liquidate enough assets to pay for benefits in excess of contributions. That means these plans will need to earn higher returns to rebuild their assets to the previous levels. Plans with negative cash flows exceeding five percent of assets are especially vulnerable to asset losses.

The balance of this section discloses and examines three maturity measures: the asset leverage ratio, the support ratio, and the net cash flow ratio.

Asset Leverage Ratio

One important plan maturity measure is the asset leverage ratio, the market value of assets divided by the plan's payroll, which represents the percentage of payroll that would need to be contributed to make up a given change in the plan's assets. As a plan matures, its assets increase, and a greater proportion of the assets are paid out in benefit payments to members. The greater the plan's assets are relative to payroll, the more vulnerable the plan is to investment volatility in terms of the resulting contribution requirement changes.

As an example, here are two plans that both experience a 10% investment loss equaling $500 million on their existing assets of five billion dollars. Plan A's asset leverage ratio is 10 and Plan B's ratio is five. This means that Plan A has to spread, or amortize, that loss over a payroll that is half as large as Plan B's. As seen in the chart below, this results in the percentage of payroll that Plan A would need to contribute to make up the loss being double what would be required for Plan B.

	($ in millions)	
	Plan A	**Plan B**
Plan Assets	**$ 5,000**	**$ 5,000**
Payroll	**$ 500**	**$ 1,000**
Asset Leverage Ratio	**10.0**	**5.0**
10% Loss	**$ 500**	**$ 500**
10% Loss as % of Payroll	**100%**	**50%**

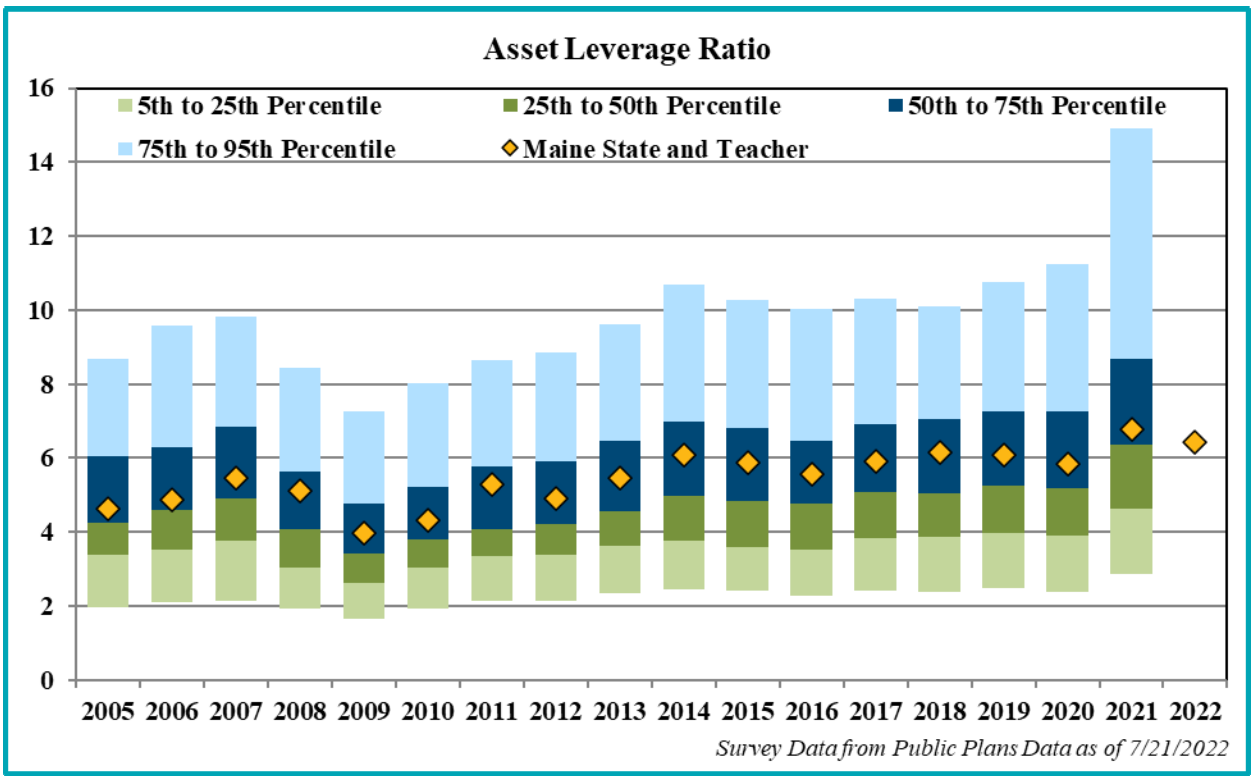
The Government Finance Officers Association (GFOA), MissionSquare Research Institute, the National Association of State Retirement Administrators (NASRA), and the Center for Retirement Research at Boston College maintain the Public Plans Data database that contains almost all state plans as well as many large municipal plans, covering over 95% of the membership in public plans as well as over 95% of the assets held by public pension plans.

The chart that follows shows the asset leverage ratios for the Program and the plans in this database since 2005. The colored bars represent the central 90% of the asset leverage ratios of the plans in the database for each year. The Maine State Employee and Teacher Program is

SECTION II – RISK ASSESSMENT AND DISCLOSURE

represented by the gold diamonds. This chart shows that the Program's asset leverage ratio has generally increased over this period, both in absolute terms and relative to the universe of other systems, although it had remained steady, within approximately 50% of 600% of salary, for the eight years prior to 2021, when it increased to 677%, or 6.77 times salary. Due to the market loss in FY 2022, the rate is now back within the previous range, at 643%, or 6.43 times salary.

Note that the charts showing the Program versus this universe of public plans in this section show one more year for the Program than the universe as the 2022 numbers are not yet available for the database. When these numbers are available, we anticipate that the universe of public plans will also show a similar increase in this ratio given the significant decrease in the market value of assets that most of these plans experienced during 2022.



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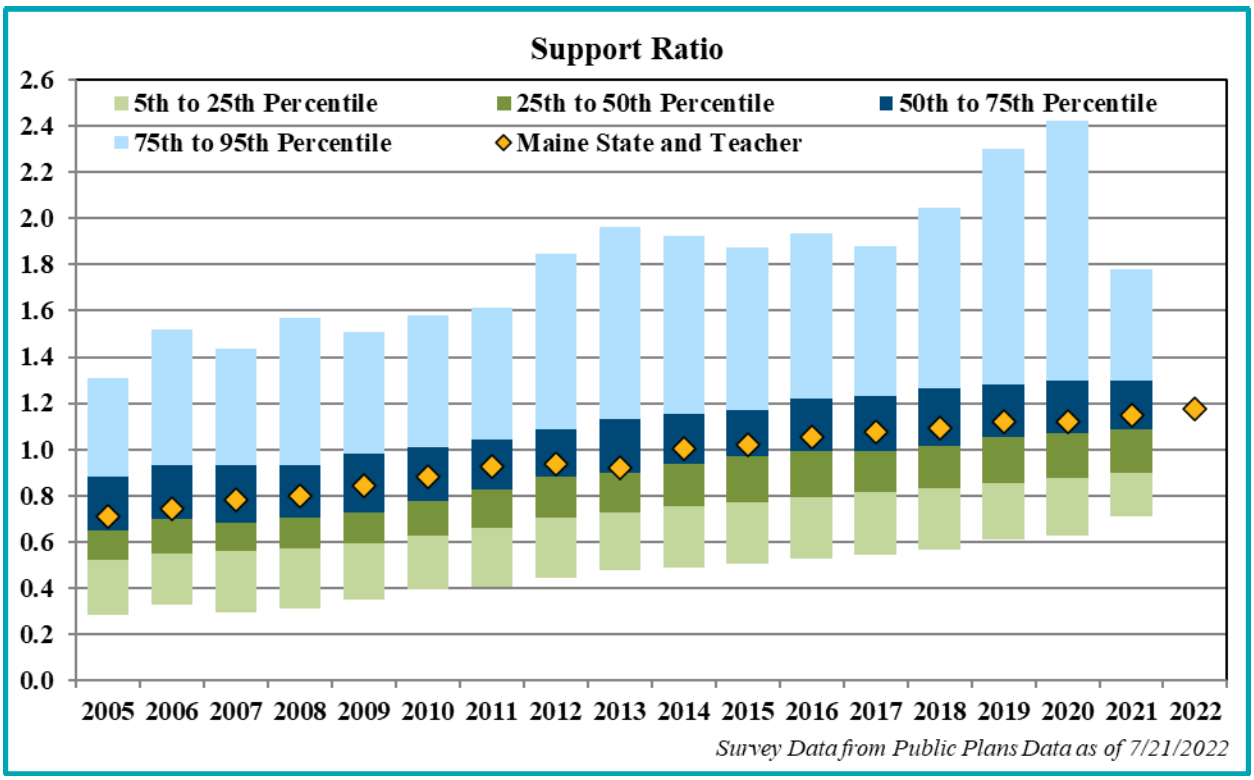
Support Ratios

Another commonly used measure of plan maturity is the support ratio, the ratio of in-pay and inactive members, or those receiving benefits or entitled to a deferred benefit, to the number of active members, or those currently accruing benefits in the plan. The greater this ratio, the more mature a plan is considered, with the proportion of the plan's liability represented by actives generally declining.

The chart that follows shows the support ratio over time for the Program compared to the Public Plans Data database.



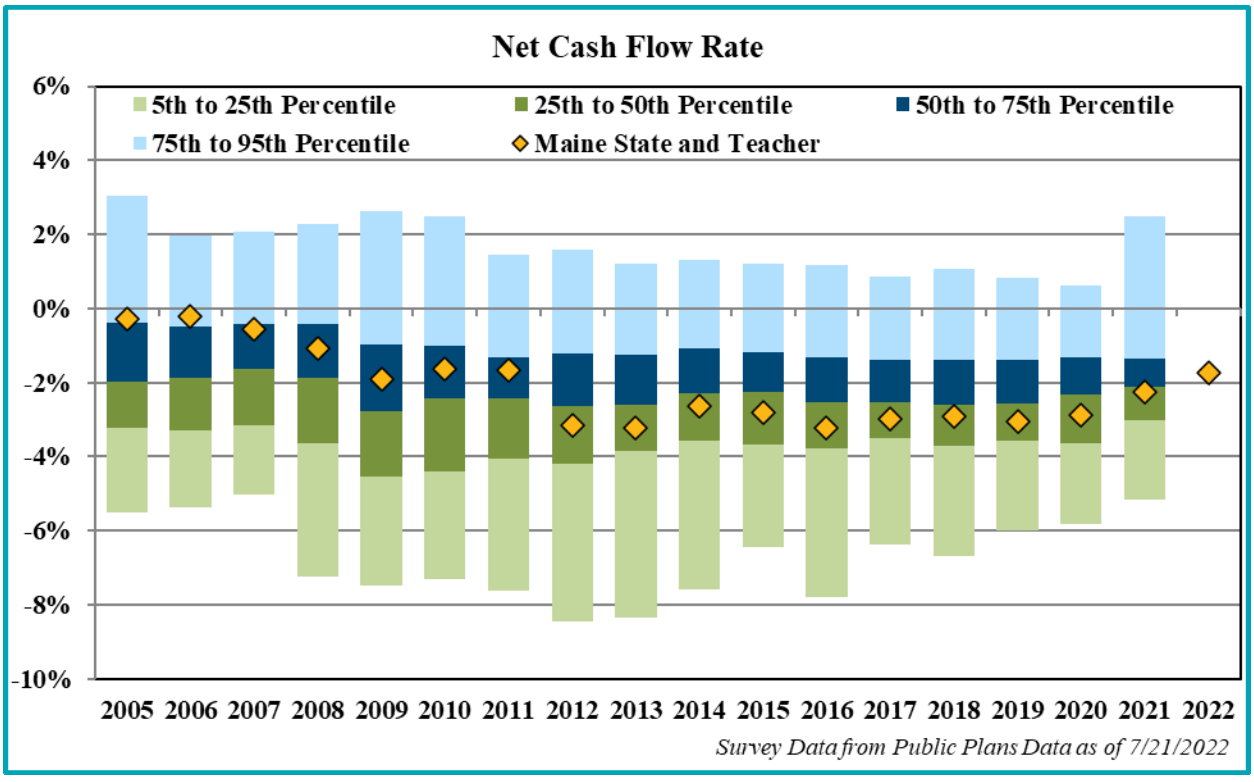
The gold diamonds in this chart show that the Program's support ratio for each year has generally increased over time in absolute terms while staying in relatively the same position relative to the universe of systems. This indicates that the Program is maturing, as have most plans in this database over the years and has done so at a rate similar to that of the universe of public plans as a whole.

SECTION II – RISK ASSESSMENT AND DISCLOSURE

Net Cash Flow Ratio

Another measure of plan maturity is the ratio of the net cash flow (excluding investment returns) for a plan – contributions less benefits and expenses – divided by the market value of plan assets. When this ratio is significantly negative, a plan is very vulnerable to market declines. This vulnerability increases as this ratio becomes more negative.

This chart shows that the Program's net cash flow ratio in 2005 was about negative 0.3% and generally trended towards more negative values through 2012. Since then, it has been relatively stable within 0.35% of negative 2.95% in all years except for the most recent two years where this ratio has significantly increased. In FY 2021, the Program's negative cash flow improved to negative 2.3%, largely due to the significant asset gains in FY 2021. And in FY 2022, the Program's negative cash flow again improved, to negative 1.7%, due largely to the extra contributions made to the Trust to fund the COLA benefit change enacted in FY 2022. Relative to the public plans universe, the Program had smaller negative cash flows than the median plan in the database at the beginning of this period, but in recent years has had net cash flows that have been generally trending closer to those of the median plan in this universe. Since the results for other systems as of 2022 are not yet available, we do not yet know how the improvement in the net cash flow ratio for this System in 2022 will compare relative to that of other systems. However, the overall pattern of this measure becoming more negative for the Program relative to the universe of public pensions does provide some indication that this Program may be maturing at a pace somewhat faster than the typical public plan.



SECTION II – RISK ASSESSMENT AND DISCLOSURE

Assessing Future Risk

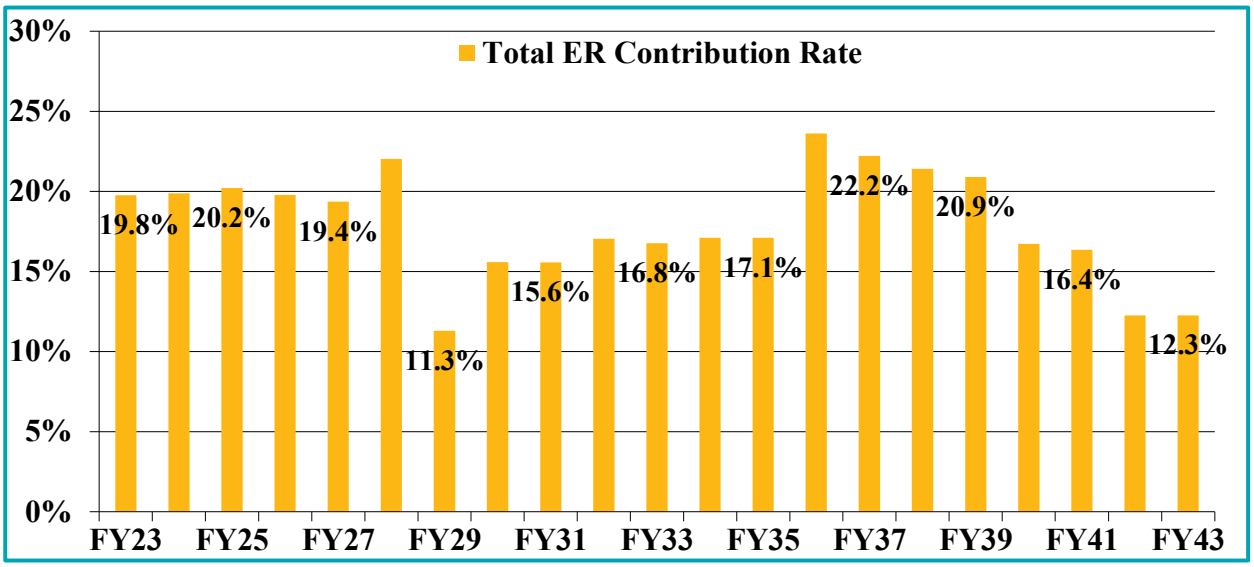
Assessing the future risk that the expected measurements produced by the actuarial valuations will deviate from the actual values over time is complex and can never be exactly known. However, to try to assist the Board in its utilization of this report, we have attempted to develop some basic assessments of this risk in the remainder of this section, focusing on risks related to investment returns.

Pages 4-6 have additional detail on the baseline projection produced from this valuation. It is important to note that baseline projections, while valid, **are not going to occur** as experience never conforms exactly to assumptions every year. As discussed in the plan maturity section, as plans become more mature, it typically becomes more difficult for them to recover from market declines even when the average investment return over an extended period is equal to the expected return. As a demonstration of this, on the following pages we show a scenario that is based on assuming varying returns in the future. We based this varying return scenario on assuming the returns for the next 20 years would equal what a portfolio invested 75% in the SP-500 index and 25% in the Lehman Brothers bond index would have earned for the 20-year period July 1, 1999 through June 30, 2019 as a rough proxy for the Program's asset allocation. This period produced an arithmetic average return of 6.90% for this hypothetical portfolio and a geometric average return of 6.32%. The arithmetic return under this scenario is thus slightly greater than the assumed 6.50% annual return reflected in the baseline scenario while the geometric return for this scenario is slightly less than this assumed rate. The rates assumed for this scenario are shown below.

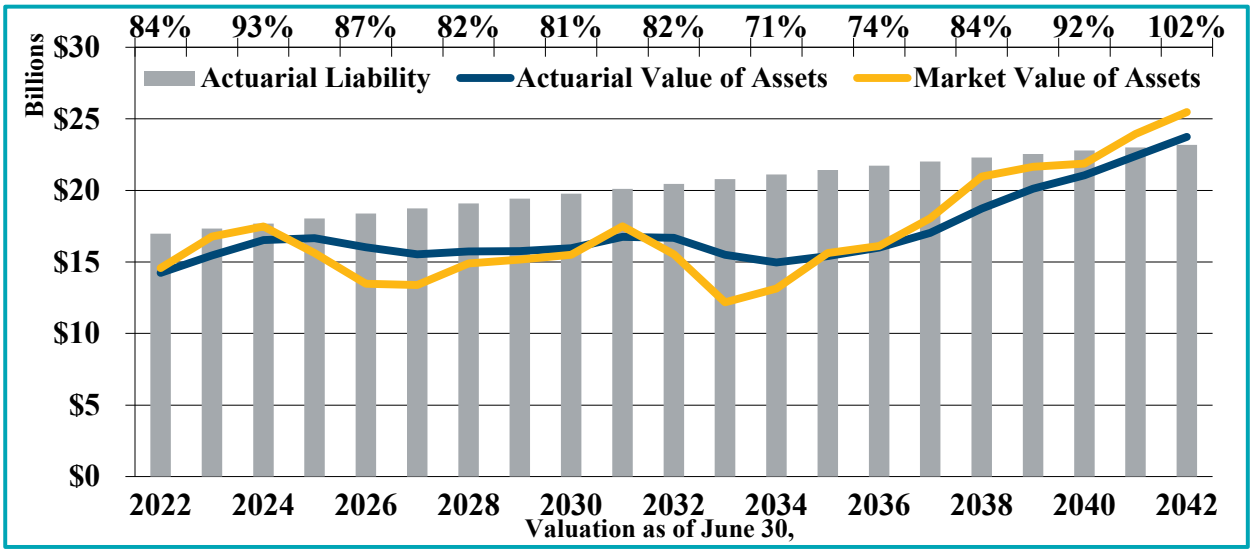
FY	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Return	17.9%	6.6%	-8.3%	-11.3%	2.8%	14.4%	6.4%	6.3%	17.0%	-8.1%
FY	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Return	-18.1%	13.2%	24.0%	6.0%	15.3%	19.6%	6.0%	4.5%	13.3%	10.7%

With varying annual earnings, one can see the volatility in the employer contributions in the first chart. Where the near-term contributions in the baseline scenario were relatively stable, staying within approximately 0.5% of the current rate until the 1996 UAL is paid off, under this scenario with varying returns, the contributions during that period are much more volatile, increasing to a maximum of over 22% as well as a minimum of 11.3% during this period through FY 2028. Also note that in the period after the 1996 UAL is paid off, the contribution rates are much more volatile in this scenario, including ranging to rates of almost 24% and with all years remaining higher than those anticipated in the baseline scenario. Note that this chart reflects an illustrative scenario and is not intended to reflect future expectations as the volatility of the contributions will vary with the volatility of the returns. It is provided simply to demonstrate the magnitude of this potential volatility.

SECTION II – RISK ASSESSMENT AND DISCLOSURE



The actuarial value funded ratio of the Program is also more volatile with varied returns as seen in the following graph based on this illustrative varying returns scenario. These two scenarios end at approximately the same funded ratio, 101% in the baseline and 102% in the illustrative varying returns scenario. However, where the baseline projection has the funded ratio steadily increasing from the current 84% to 101% over the forecasted period, in this illustrative varying returns scenario, the funded ratio is much more volatile, reflecting the volatility of the assumed returns. Note also that the timing of contribution development and payment, as well as the combination of the amortization layers, results in the Plan being funded over 100% at times in both scenarios.



SECTION III – ASSETS

Pension plan assets play a key role in the financial operation of plans and in the decisions that Trustees make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely affect benefit levels, employer contribution rates, and the ultimate security of members' benefits.

The assets for all Defined Benefit (DB) Programs administered by MainePERS are invested together. These Programs are the State Employee and Teacher Retirement Program that is valued in this report, the Judicial Retirement Program, the Legislative Retirement Program, and the Participating Local District (PLD) Retirement Program, including both the Consolidated Plan and the several Nonconsolidated PLDs. The assets of these Programs are entirely commingled for investment purposes, so the actuarial value of assets (AVA) for each of these Programs is developed by first developing it for the entire asset pool and then subsequently allocating that total AVA to each of the specific Programs.

In this section, we present detailed information on the Program's assets including:

- Disclosure of total MainePERS DB assets at June 30, 2021 and June 30, 2022,
- Statement of changes in total MainePERS DB market values during the year,
- Development of the total MainePERS DB actuarial value of assets,
- Allocation of the total actuarial value to MainePERS DB Programs,
- Assessment of the total MainePERS DB investment performance, and
- Projection of expected cash flows for the Program for the next 10 years.

Disclosure

The market value of assets (MVA) represents a "snap-shot" or "cash-out" value, which provides the principal basis for measuring financial performance from one year to the next. However, market values can fluctuate widely with corresponding swings in the marketplace, resulting in volatility in the resulting contributions if the unadjusted market value is used in the valuation process that develops the contributions. Therefore, a smoothed actuarial value of assets is developed for use in the valuation process and for evaluating the Program's ongoing ability to meet its obligations. The actuarial value of the Program's assets is developed by allocating the actuarial value of the total MainePERS DB assets to each Program. This section discloses the market and actuarial values of the MainePERS DB assets both in total and for each Program.

SECTION III – ASSETS

Table III-1 that follows develops the change in the market value of assets for the total MainePERS DB assets during FY 2022.

Table III-1
Changes in Market Value of Total MainePERS Defined Benefit (DB) Assets

Market Value of Total MainePERS DB Assets – June 30, 2021		**$ 18,768,097,954**
Additions		
Contributions:		
Employer Contributions	$ 623,238,478	
Member Contributions	230,265,185	
Transfers	(227,555)	
Total Contributions	$ 853,276,108	
Investment Income:		
Net Appreciation (Depreciation) in Fair Value of Investments	$ 30,962,372	
Interest on Bank Balances	299,311	
Total Investment Income	$ 31,261,683	
Investment Activity Expenses:		
Management Fees	$ (125,930,618)	
Investment Related Expense	(5,177,112)	
Banking Fees	(34,677)	
Total Investment Activity Expenses	$ (131,142,407)	
Net Income from Investing Activities	$ (99,880,724)	
Total Additions		$ 753,395,384
Deductions		
Retirement Benefits	$(1,070,744,688)	
Disability Benefits	(27,833,411)	
Survivor Benefits	(26,237,094)	
Refunds	(24,312,164)	
Administrative Expenses	(15,067,128)	
Total Deductions		$ (1,164,194,485)
Total		
Net Increase (Decrease)		$ (410,799,101)
Market Value of Total MainePERS DB Assets – June 30, 2022		**$ 18,357,298,853**

SECTION III – ASSETS

Table III-2 that follows develops the actuarial value of assets for the total MainePERS DB assets as of June 30, 2022 using the adopted actuarial valuation methodology.

Table III-2
Development of Actuarial Value of Total MainePERS Defined Benefit (DB) Assets as of June 30, 2022

1.	Actuarial Value of Total MainePERS DB Assets at June 30, 2021	$ 16,954,631,725
2.	Amount in (1) with Interest to June 30, 2022	18,056,682,787
3.	Employer and Member Contributions for FY 2022	853,276,108
4.	Interest on Contributions in (3), Assuming Received Uniformly throughout FY 2022	27,294,914
5.	Total Disbursements without Administrative Expenses, for FY 2022	(1,149,127,357)
6.	Interest on Disbursements in (5), Assuming Payments made Uniformly throughout FY 2022	(36,758,713)
7.	Expected Value of Total MainePERS DB Assets at June 30, 2022 = (2) + (3) + (4) + (5) + (6)	$ 17,751,367,739
8.	Actual Market Value of Total MainePERS DB Assets at June 30, 2022	18,357,298,853
9.	Excess of (8) Over (7)	605,931,114
10.	Actuarial Value of Total MainePERS DB Assets at June 30, 2022 = (7) + [33⅓% of (9)]	$ 17,953,344,777

Actuarial Value of Total MainePERS DB Assets

As discussed in the disclosure portion of this section, the actuarial value of assets for the Program represents a "smoothed" value developed by the actuary to reduce, or eliminate, volatility in valuation results, particularly contribution rates, that could develop from short-term fluctuations in the market value of assets. Current actuarial methods employed in this Program use an allocated portion of the total actuarial value of assets for the total MainePERS DB assets based on the Program's market value of assets to develop the actuarial value of assets for the Program. The methodology for the total MainePERS DB assets sets the actuarial value of assets equal to the expected value of the actuarial value of assets plus one-third of the difference between the actual market value of assets and the expected actuarial value of assets. The expected value of the actuarial value of assets takes the prior year's actuarial value of assets and adjusts it for contributions, disbursements, and expected interest earnings at the investment return assumption that was in effect for the previous year, 6.50% for this valuation. The previous table, Table III-2, illustrates the calculation of the actuarial value of assets for the total MainePERS DB assets as of June 30, 2022.

SECTION III – ASSETS

Allocation of Actuarial Value of Assets to the Program

The assets for the defined benefit (DB) Programs administered by MainePERS are commingled for investment purposes with the actuarial value of assets for the total assets allocated to the individual Programs on the basis of the market value of the assets for each Program. An asset ratio (total MainePERS DB actuarial value of assets divided by total MainePERS DB market value of assets) is applied to the market value of assets attributable to each of the Programs to determine their actuarial value of assets as of the valuation date. The asset ratio derived in this June 30, 2022 valuation, as shown in Table III-2 above, is 0.977995 ($17,953,344,777 ÷ $18,357,298,853). The allocation of actuarial value of the total MainePERS DB assets to each of the MainePERS DB Programs based on this asset ratio is shown in the following chart.

Table III-3
Allocation of Actuarial Value of Total MainePERS DB Assets as of June 30, 2022

Program	Market Value	Actuarial Value
Teacher	$ 9,664,934,008	$ 9,452,256,233
State (Regular & Special)	4,903,757,326	4,795,849,688
Judicial	85,821,158	83,932,655
Legislative	16,142,942	15,787,715
Participating Local Districts (Consolidated & Non-Consolidated)	3,686,643,419	3,605,518,486
Total	$18,357,298,853	$ 17,953,344,777

Investment Performance

The market value of assets for the total MainePERS DB assets returned a negative 0.62% during FY 2022. This is lower than the assumed return of 6.50% for FY 2022. The equivalent market value returns for the total MainePERS DB assets for FY 2021 and FY 2020 were positive 26.76% and positive 2.89%, respectively.

On an actuarial value of assets basis, the return for FY 2022 was a positive 7.70% for the total MainePERS DB assets. This return is greater than both the return on a market value basis and the 6.50% assumption in effect for FY 2022. Therefore, this return gave rise to an investment gain on the total MainePERS DB assets this year.

SECTION III – ASSETS

Cash Flow Projections

Table III-4
Projection of State Employee and Teacher Program
Benefit Payments and Contributions

FY Ending June 30,	Expected Benefit Payments	Expected Employer Contributions	Expected Member Contributions	Total Expected Contributions
2023	$1,003,174,000	$ 453,520,000	$ 177,045,000	$ 630,565,000
2024	1,037,225,000	468,823,000	181,914,000	650,737,000
2025	1,071,047,000	482,201,000	186,916,000	669,117,000
2026	1,104,490,000	494,686,000	192,057,000	686,743,000
2027	1,136,995,000	507,963,000	197,338,000	705,301,000
2028	1,168,548,000	514,191,000	202,765,000	716,956,000
2029	1,199,924,000	238,518,000	208,341,000	446,859,000
2030	1,231,512,000	240,692,000	214,070,000	454,762,000
2031	1,261,904,000	247,037,000	219,957,000	466,994,000
2032	1,290,896,000	251,498,000	226,006,000	477,504,000

In Table III-4 above, we provide a projection of expected cash flows in and out of the Program for the next 10 years for informational purposes. The Board may share these projections with its investment advisor for consideration of the gap shown between the cash expected to come into the Program through employer and member contributions and the cash expected to be paid out of the Program to provide benefit payments.

The expected benefit payments in Table III-4 were developed using the data currently included in this valuation and on the assumption that the actuarial assumptions disclosed in Appendix C will be exactly met. Actual benefit payments will vary if members retire sooner or later than assumed, if salary increases and actual future post-retirement COLAs differ from those assumed, or if other assumptions differ from the actual experience seen. These benefit projections exclude any assumption about new Program participants, whose experience will eventually lead to increased benefit payments. However, we do not feel this exclusion will materially impact the projections for the period shown.

Expected employer contributions in this table use the budgeted contributions for FY 2023 through FY 2025. Future contributions beyond that point are developed based on the assumption that all actuarial assumptions will be exactly met in the projection period, including that the market value of assets will earn 6.50% per year, that payroll grows at 2.75% per year, and that these rates are based on following the biennial budgeting process. These future employer contributions are shown graphically in the baseline projection on page five.

The expected member contributions are similarly based on a 2.75% per year assumed increase in covered payroll multiplied by the current average aggregate member contribution rate of 7.71% for FY 2023.

SECTION IV – LIABILITIES

In this section, we present detailed information on Program liabilities including:

- Disclosure of the Program's liabilities as of June 30, 2021 and June 30, 2022,
- Statement of changes in these liabilities during the year, and
- An allocation of liabilities to the Teacher, State Regular, and State Special Plans.

Disclosure

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the purpose for which the figures are ultimately used.

- Present Value of Future Benefits (PVB): Used for analyzing the overall financial obligations of the Program, this represents the amount of money needed today to fully fund all future benefits of the Program, assuming no new members, that active members continue to earn salary increases and accrue benefits under their current Program provisions, and that all actuarial assumptions are exactly met, including the 6.50% per year investment return.

- Actuarial Liability (AL): Used for funding calculations and GASB disclosures, this liability is calculated taking the PVB above and subtracting the value of accruals that are assigned to future years on a person-by-person basis. This offset is equal to the present value of future member contributions and future employer normal cost contributions under an acceptable actuarial cost method. For this Program and the other MainePERS DB Programs, the method used is referred to as the entry age normal (EAN) cost method, which is the only permitted actuarial cost method for GASB disclosures.

- Present Value of Accrued Benefits (PVAB): Used for communicating the liabilities for benefits accrued as of the valuation date. Note that last year, the amount of assets exceeded this liability basis, so there was a surplus of the MVA compared to the PVAB, but for the current year the MVA is once again less than this liability basis so there is a net unfunded amount of the PVAB compared to the MVA.

Table IV-1 that follows discloses each of these liabilities for the current and prior years' valuations. With respect to the actuarial liability and the present value of accrued benefits, a subtraction of the appropriate value of the Program's assets yields, for each respective type, a net surplus or an unfunded liability. For the PVB measure, it is compared to the market value of assets plus the expected future value of contributions to the Program. The future employer contributions are calculated as the expected rates for each year times the expected future payroll as of each date. The future member contributions are calculated assuming the current average rate of 7.71% will be continued for all future years and applied to the expected future payroll as of each date. The difference between the PVB and these anticipated resources indicates either an expected shortfall or an expected surplus representing either additional funding required or excess funding and indicates the size of the Program's stored gains or losses that remain outside of the valuation process currently.

SECTION IV – LIABILITIES

We note that none of the liabilities presented in this report is an appropriate measure of a settlement liability.

The liability measures are compared to appropriate measures of assets, along with the expected future value of member and employer contributions where appropriate. The difference between the liability measure and the anticipated resources indicates either an expected shortfall or an expected surplus related to that liability measure. The surplus or shortfall on the present value of benefits (PVB) measure indicates the size of the Program's stored gains or losses that remain outside of the valuation process.

Table IV-1
Disclosure of Liabilities

	June 30, 2021	June 30, 2022
Present Value of Benefits (PVB)		
Active Member Benefits	$ 8,232,539,040	$ 8,366,730,693
Retired, Disabled, Survivor, and Beneficiary Benefits	9,633,181,638	10,061,113,007
Terminated Vested Benefits	672,216,005	764,170,145
Terminated Nonvested Benefits	81,709,816	85,668,598
Total PVB	**$ 18,619,646,499**	**$ 19,277,682,443**
Market Value of Assets (MVA)	$ 14,900,644,020	$ 14,568,691,334
Future Member Contributions	1,465,479,203	1,517,909,749
Future Employer Contributions	3,814,725,520	3,636,826,533
Projected (Surplus)/Shortfall	(1,561,202,244)	(445,745,173)
Total Resources	**$ 18,619,646,499**	**$ 19,277,682,443**
Actuarial Liability (AL)		
Present Value of Benefits (PVB)	$ 18,619,646,499	$ 19,277,682,443
Present Value of Future Normal Costs (PVFNC)		
Employer Portion	761,815,968	777,980,612
Member Portion	1,465,479,203	1,517,909,749
Actuarial Liability (AL = PVB – PVFNC)	$ 16,392,351,328	$ 16,981,792,082
Actuarial Value of Assets (AVA)	13,460,870,272	14,248,105,921
Net (Surplus)/Unfunded (AL – AVA)	$ 2,931,481,056	$ 2,733,686,161
Present Value of Accrued Benefits		
Present Value of Future Benefits (PVB)	$ 18,619,646,499	$ 19,277,682,443
Present Value of Future Benefit Accruals (PVFBA)	3,779,042,749	3,894,880,999
Accrued Liability (PVAB = PVB – PVFBA)	$ 14,840,603,750	$ 15,382,801,444
Market Value of Assets (MVA)	14,900,644,020	14,568,691,334
Net (Surplus)/Unfunded (PVAB – MVA)	**$ (60,040,270)**	**$ 814,110,110**

SECTION IV – LIABILITIES

Changes in Liabilities

Each of the liabilities disclosed in the prior table is expected to change at each subsequent valuation. The components of these changes, depending upon which liability is analyzed, can include:

- New Program members since the last valuation
- Benefits accrued since the last valuation
- Program amendments changing benefits since the last valuation
- Passage of time, which adds interest to the prior liability
- Benefits paid to members since the last valuation
- Members retiring, terminating, or dying at rates different than expected since the last valuation
- Salaries changing at rates different than expected since the last valuation
- A change in actuarial assumptions since the last valuation
- A change in the actuarial cost method since the last valuation

Unfunded liability measurements will change because of all of the above, as well as due to changes in the Program's asset measurements resulting from:

- Contributions being different than expected
- Investment earnings being different than expected
- A change in the method used to measure the Program's assets in developing the unfunded liability measure since the last valuation

In each valuation, we report on those elements of change in the Program's liability measures that are of particular significance, potentially affecting the long-term financial outlook of the Program. In Table IV-2 that follows, we present key changes in the Program's liability measures since the last valuation.

Table IV-2

	Present Value of Future Benefits	Actuarial Liability	Present Value of Accrued Benefits
Liability Measurement – June 30, 2021	$ 18,619,646,499	$ 16,392,351,328	$ 14,840,603,750
Liability Measurement – June 30, 2022	19,277,682,443	16,981,792,082	15,382,801,444
Liability Measurement Increase/ (Decrease) Due to:	$ 658,035,944	$ 589,440,754	$ 542,197,694
Program Amendment	$ 108,666,200	$ 104,916,162	$ 90,520,043
Assumption Change	0	0	0
Actuarial (Gain)/Loss	N/C	107,921,791	N/C
Benefits Accumulated and Other Sources	$ 549,369,744	$ 376,602,801	$ 451,677,651

N/C = Not calculated

SECTION IV – LIABILITIES

Table IV-3 below presents the actuarial liability information for the Program in total as well as divided into the Teacher Program, the State Regular Plans, and the State Special Plans.

Table IV-3
Allocation of Actuarial Liability as of June 30, 2022

	Total Program	Teacher Program	State Regular Plans	State Special Plans
1. Actuarial Liabilities for:				
a. Active Members	$ 6,070,840,332	$4,121,167,637	$ 1,582,532,767	$ 367,139,928
b. Retired, Disabled, Survivor, and Beneficiary Members	10,061,113,007	6,433,639,301	3,091,511,253	535,962,453
c. Terminated (Vested & Nonvested) Members	849,838,743	595,038,822	233,303,308	21,496,613
2. Total Actuarial Liability [1(a) + 1(b) + 1(c)]	$ 16,981,792,082	$11,149,845,760	$ 4,907,347,328	$ 924,598,994
3. Actuarial Value of Assets	14,248,105,921	9,452,256,233	4,053,902,852	741,946,836
4. Unfunded Actuarial Liability (2 – 3)	$ 2,733,686,161	$1,697,589,527	$ 853,444,476	$ 182,652,158

SECTION V – CONTRIBUTIONS

In this section, we present detailed information on informational employer contribution rates as developed in this June 30, 2022 valuation for the Program, including:

- Development of the composite total employer contribution rate, including the composite employer normal cost rate (NC rate) and the composite unfunded actuarial liability (UAL) amortization rate (UAL amortization rate),
- Summary of the employer normal cost rate, the UAL rate, and the total employer rate by Plan,
- Derivation and division of the composite UAL rate into the two component Programs, Teacher and State, and
- Allocation of the UAL rate for the total State Program into each State Regular and Special Plan.

Note that these contribution rates are only informational, and the actual contribution rates are set by the budgeting process described in the Board Summary at the beginning of this report.

Description of Rate Components

For the Plans in this Program, the funding methodology employed to determine the employer contribution rates is the entry age normal (EAN) cost method. Under this method, there are two components to the total employer contribution rate: the NC rate and the UAL amortization rate. Both of these rates are developed separately for each Plan within the Program, consisting of the Teacher Plan, the State Regular Plan, and several State Special Plans.

An individual EAN cost rate is determined for each active member. The normal cost is determined by the following steps. First, an individual normal cost rate for each member is determined by taking the value of their projected future benefits, as of entry age into the Program. Second, this value is then divided by the value, also at entry age, of the member's expected future salary. Finally, the resulting total normal cost rate is reduced by the member contribution rate to produce the employer's normal cost rate for the member. These rates are then multiplied by each member's salary as of the valuation date and added together to get the total employer normal cost dollars as of the valuation date for the Program, which is then divided by the total payroll at the valuation date for the Program to get the employer normal cost rate for the Program. This process results in specific total and employer normal cost rates for each of the Plans in the Program.

The unfunded actuarial liability under the EAN cost method equals the present value, at the time of valuation, of the future benefit payments less the present value of future employer normal cost contributions, future member contributions, and current assets. The UAL amortization rate is the percentage that applied to member payroll, which is assumed to increase 2.75% per year, is expected to amortize the UAL according to the Program's amortization policy. Specifically, the remaining original UAL from 1996 has six years of its amortization period remaining, the UAL amount for the period from 1997 through 2011 has six years of its amortization period

remaining, and all other gains, losses, and changes since then are amortized over individual twenty-year periods beginning on the date as of which they were first measured with the exception of the gain base related to FY 2014, for which the amortization was accelerated by six years beginning with the 2022 ratemaking. As such, we have similarly accelerated the amortization of this base in developing the informational rates contained in this report with a remaining period of six years as of June 30, 2022. This June 30, 2022 valuation is the first valuation reflecting the accelerated amortization of the FY 2014 base.

Contribution Calculations

Table V-1 below presents and compares the composite total employer contribution rate, as well as its two components, for all Plans in the Program in aggregate as developed in this valuation and the prior one.

Table V-1
Composite Total Employer Rate

Valuation Date	June 30, 2021	June 30, 2022
Composite Employer NC Rate	4.64%	4.58%
Composite UAL Amortization Rate	17.08%	16.07%
Composite Total Employer Rate	21.72%	20.65%

The rates developed in this section are for valuation purposes only. Actual budgeted rates are set based on the ratemaking process described in the Board Summary section.

Table V-2 that follows shows the employer NC rate, the UAL amortization rate, and the total employer rate for each Plan in the Program as well as the Program in total and divided into the Teacher and State Programs.

The liability and resulting necessary contributions associated with groups that no longer have any active participants as of the current valuation date are included with the State Regular Program. With this valuation, the Forest Ranger Plan no longer has any active participants and as such is no longer included within Table V-2.

SECTION V – CONTRIBUTIONS

Table V-2
Total Employer Contribution Rates by Plan

Valuation Date June 30, 2022	Total NC Rate	Employee Contribution Rate	Employer NC Rate	UAL Contribution Rate	Total Employer Contribution Rate
Total Program	12.29%	7.71%	4.58%	16.07%	20.65%
Teacher Program	12.06%	7.65%	4.41%	15.05%	19.46%
State Program	12.71%	7.81%	4.90%	18.00%	22.90%
State Regular	12.44%	7.65%	4.79%	17.59%	22.38%
25 & Out Plan	14.15%	8.65%	5.50%	20.03%	25.53%
1998 Special Plan	13.99%	8.65%	5.34%	19.80%	25.14%
Fire Marshals	20.56%	8.65%	11.91%	29.11%	41.02%
State Police*	19.87%	8.65%	11.22%	28.16%	39.38%
Inland F&W*	23.25%	8.65%	14.60%	32.92%	47.52%

* Closed plan

Table V-3 that follows provides the development of the 16.07% UAL amortization rate for the Program as a whole and divided between the Teacher and State Programs.

SECTION V – CONTRIBUTIONS

Table V-3
Derivation of Unfunded Actuarial Liability Rates

Valuation Date June 30, 2022	Teacher Program	State Program (Regular and Special Plans)	Total Program
1. Actuarial Liability (AL)	$ 11,149,845,760	$ 5,831,946,322	$ 16,981,792,082
2. Actuarial Value of Assets (AVA)	9,452,256,233	4,795,849,688	14,248,105,921
3. Unfunded Actuarial Liability (UAL)	$ 1,697,589,527	$ 1,036,096,634	$ 2,733,686,161
4. Remaining Balances of Prior Amortization Bases			
a. 1996 UAL Amount	$ 1,612,965,480	$ 928,788,952	$ 2,541,754,432
b. 1997-2011 UAL Base	(615,030,326)	(354,151,021)	(969,181,347)
c. 2012 (Gain)/Loss Base	25,118,978	22,378,587	47,497,565
d. 2013 (Gain)/Loss Base	(112,005,287)	125,893,422	13,888,135
e. 2014 (Gain)/Loss Base	(180,631,240)	(81,687,993)	(262,319,233)
f. 2015 (Gain)/Loss Base	3,458,907	(5,539,148)	(2,080,241)
g. 2016 (Gain)/Loss Base	164,315,059	184,109,613	348,424,672
h. 2017 (Gain)/Loss Base	100,533,683	18,280,150	118,813,833
i. 2018 (Gain)/Loss Base	108,607,708	28,434,618	137,042,326
j. 2019 (Gain)/Loss Base	143,450,290	23,948,338	167,398,628
k. 2020 (Gain)/Loss Base	26,608,732	84,285,633	110,894,365
l. 2021 (Gain)/Loss Base	404,522,537	77,451,169	481,973,706
m. 2022 (Gain)/Loss Base	15,675,006	(16,095,686)	(420,680)
n. Sum of the Bases	$ 1,697,589,527	$ 1,036,096,634	$ 2,733,686,161
5. UAL Amortizations			
a. 1996 UAL Amount 6 Years	$ 302,868,828	$ 174,400,026	$ 477,268,854
b. 1997-2011 UAL Base 6 Years	(115,485,121)	(66,499,442)	(181,984,563)
c. 2012 (Gain)/Loss Base 10 Years	3,029,928	2,699,374	5,729,302
d. 2013 (Gain)/Loss Base 11 Years	(12,490,302)	14,039,041	1,548,739
e. 2014 (Gain)/Loss Base 6 Years*	(33,917,385)	(15,338,671)	(49,256,056)
f. 2015 (Gain)/Loss Base 13 Years	337,425	(540,358)	(202,933)
g. 2016 (Gain)/Loss Base 14 Years	15,131,783	16,954,664	32,086,447
h. 2017 (Gain)/Loss Base 15 Years	8,783,623	1,597,136	10,380,759
i. 2018 (Gain)/Loss Base 16 Years	9,041,923	2,367,269	11,409,192
j. 2019 (Gain)/Loss Base 17 Years	11,423,355	1,907,074	13,330,429
k. 2020 (Gain)/Loss Base 18 Years	2,033,612	6,441,657	8,475,269
l. 2021 (Gain)/Loss Base 19 Years	29,760,174	5,697,977	35,458,151
m. 2022 (Gain)/Loss Base 20 Years	1,113,034	(1,142,905)	(29,871)
n. Sum of Amortization Payments	$ 221,630,877	$ 142,582,842	$ 364,213,719

* The amortization of the FY 2014 base was accelerated by six years beginning with the 2022 ratemaking.

SECTION V – CONTRIBUTIONS

Table V-3 (continued)
Derivation of Unfunded Actuarial Liability Rates

Valuation Date June 30, 2022	Teacher Program	State Program (Regular and Special Plans)	Total Program
6. Covered Payroll	$ 1,473,733,403	$ 791,632,533	$ 2,265,365,936
7. UAL Amortization Rates			
a. 1996 UAL Amount 6 Years	20.55%	22.03%	21.05%
b. 1997-2011 UAL Base 6 Years	(7.84)%	(8.40)%	(8.03)%
c. 2012 (Gain)/Loss Base 10 Years	0.21%	0.34%	0.25%
d. 2013 (Gain)/Loss Base 11 Years	(0.85)%	1.77%	0.07%
e. 2014 (Gain)/Loss Base 6 Years	(2.30)%	(1.94)%	(2.17)%
f. 2015 (Gain)/Loss Base 13 Years	0.02%	(0.07)%	(0.01)%
g. 2016 (Gain)/Loss Base 14 Years	1.03%	2.14%	1.42%
h. 2017 (Gain)/Loss Base 15 Years	0.60%	0.20%	0.46%
i. 2018 (Gain)/Loss Base 16 Years	0.61%	0.30%	0.50%
j. 2019 (Gain)/Loss Base 17 Years	0.78%	0.24%	0.59%
k. 2020 (Gain)/Loss Base 18 Years	0.14%	0.81%	0.37%
l. 2021 (Gain)/Loss Base 19 Years	2.02%	0.72%	1.57%
m. 2022 (Gain)/Loss Base 20 Years	0.08%	(0.14)%	0.00%
n. Sum of UAL Amortization Rates	**15.05%**	**18.00%**	**16.07%**

SECTION V – CONTRIBUTIONS

Table V-4 below shows the development of the UAL amortization rate for each specific Plan within the State Program.

Table V-4
Allocation of Unfunded Actuarial Liability Amortization Rate within State Program
(Regular & Special Plans)

Valuation Date June 30, 2022	Total State Program	State Regular Plan	25 & Out Plan	1998 Special Plan	Fire Marshals	State Police (Closed)	Inland F&W (Closed)
1. Employer NC Rate	4.90%	4.79%	5.50%	5.34%	11.91%	11.22%	14.60%
2. Member Contribution Rate	7.81%	7.65%	8.65%	8.65%	8.65%	8.65%	8.65%
3. Total NC Rate	12.71%	12.44%	14.15%	13.99%	20.56%	19.87%	23.25%
4. UAL Amortization Rates*							
a. 1996 UAL Amount	22.03%	21.56%	24.53%	24.25%	35.64%	34.44%	40.30%
b. 1997-2011 UAL Base	(8.40)%	(8.22)%	(9.35)%	(9.25)%	(13.59)%	(13.13)%	(15.37)%
c. 2012 Loss Base	0.34%	0.33%	0.38%	0.37%	0.55%	0.53%	0.62%
d. 2013 Loss Base	1.77%	1.73%	1.97%	1.95%	2.86%	2.77%	3.24%
e. 2014 Gain Base	(1.94)%	(1.90)%	(2.16)%	(2.14)%	(3.14)%	(3.03)%	(3.55)%
f. 2015 Gain Base	(0.07)%	(0.07)%	(0.08)%	(0.08)%	(0.11)%	(0.11)%	(0.13)%
g. 2016 Loss Base	2.14%	2.09%	2.38%	2.36%	3.46%	3.35%	3.91%
h. 2017 Loss Base	0.20%	0.20%	0.22%	0.22%	0.32%	0.31%	0.37%
i. 2018 Loss Base	0.30%	0.29%	0.33%	0.33%	0.49%	0.47%	0.55%
j. 2019 Loss Base	0.24%	0.23%	0.27%	0.26%	0.39%	0.38%	0.44%
k. 2020 Loss Base	0.81%	0.79%	0.90%	0.89%	1.31%	1.27%	1.48%
l. 2021 Gain Base	0.72%	0.70%	0.80%	0.79%	1.16%	1.13%	1.32%
m. 2022 Gain Base	(0.14)%	(0.14)%	(0.16)%	(0.15)%	(0.23)%	(0.22)%	(0.26)%
n. Sum of Amortization Rates	**18.00%**	**17.59%**	**20.03%**	**19.80%**	**29.11%**	**28.16%**	**32.92%**

* The UAL amortization rate for the State Program in total is allocated to each of the Plans within the Program based on the ratio of that Plan's total NC rate to the 12.71% total NC rate for the State Program in total.

SECTION V – CONTRIBUTIONS

The rates developed in this section are for informational purposes only. Actual budgeted rates are set based on the ratemaking process described in the Board Summary section.

Table V-5 shows the anticipated future amortization through FY 2028 of the UAL attributable to periods before FY 2012. This chart assumes that the current discount rate of 6.50% and the aggregate, or across-the-board, payroll increase of 2.75% applies to each year in the future.

Table V-5
Original UAL Amortization
Total Program

June 30,	UAL Balance	UAL Payment
2022	$1,572,573,085	$295,284,291
2023	1,370,060,380	303,404,607
2024	1,146,004,278	311,748,234
2025	898,774,004	320,321,311
2026	626,626,446	329,130,148
2027	327,698,679	338,181,226
2028	0	

SECTION VI – FINANCIAL DISCLOSURE INFORMATION

This section contains financial disclosure information regarding the Program developed under a number of accounting standards and guidance.

First, for informational purposes, we show the Program's funded status under the Financial Accounting Standards Board (FASB) ASC Topic 960, which discloses how the market value of assets would compare to accrued liabilities if contributions were to stop and accrued benefit claims had to be satisfied as of the valuation date. However, due to potential legal requirements and the possibility that alternative interest rates would have to be used to determine the liabilities, these values may not be a good indication of the amount of money it would take to buy the benefits for all members if all provisions of the Program were to terminate. We have prepared the following exhibit in this section based on FASB ASC Topic 960:

- Table VI-1: Accrued Benefits Information

The Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68 establish standards for disclosure of pension information by public employee retirement systems (PERS) and governmental employers in financial statements, notes to financial statements, and supplementary information. We have prepared the following exhibits reflecting provisions of GASB Statement Nos. 67 and 68:

- Table VI-2: Schedule of Changes in Net Pension Liability and Related Ratios
- Table VI-3: Sensitivity of Net Pension Liability to Changes in Discount Rate
- Table VI-4: Schedule of Employer Contributions
- Table VI-5: Average Expected Remaining Service Lives

A summary of the terminology used in GASB Statement Nos. 67 and 68 is provided in Appendix D of this report. Note that while much of the information provided in this report under GASB No. 67 is also utilized in GASB No. 68, Table VI-5 included in this section is only applicable to GASB No. 68.

Finally, we have also developed disclosure information in this section based on additional guidance relating to the Annual Comprehensive Financial Reports (ACFR) of PERS provided by the Government Finance Officers Association (GFOA) in their publication, *Governmental Accounting, Auditing, and Financial Reporting* (GAAFR). We have prepared the following exhibits reflecting guidance in the GAAFR:

- Table VI-6: Analysis of Financial Experience
- Table VI-7: Schedule of Funded Liabilities by Type

The present value of accrued benefits, the total pension liability (GASB 67/68), and the actuarial liability (GAAFR) disclosures in this section are all determined assuming that the Program is ongoing and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions. Liabilities as of June 30, 2022 are discounted at the assumed valuation interest rate of 6.50% per annum in all of these disclosures.

SECTION VI – FINANCIAL DISCLOSURE INFORMATION

Table VI-1 below includes the relevant amounts as of June 30, 2021 and June 30, 2022 as well as a reconciliation between the two dates under FASB ASC Topic 960.

Table VI-1
Accrued Benefits Information

	June 30, 2021	June 30, 2022
FASB ASC Topic 960 Basis		
1. Present Value of Benefits Accrued to Date (PVAB)		
a. Members Currently Receiving Payments	$ 9,633,181,638	$ 10,061,113,007
b. Terminated Vested Members	672,216,005	764,170,145
c. Terminated Nonvested Members	81,709,816	85,668,598
d. Active Members	4,453,496,291	4,471,849,694
e. Total PVAB	$ 14,840,603,750	$ 15,382,801,444
2. Market Value of Assets (MVA)	14,900,644,020	14,568,691,334
3. Unfunded Present Value of Accrued Benefits, but not less than Zero	$ 0	$ 814,110,110
4. Ratio of MVA to PVAB (2)/(1)(e)	100.4%	94.7%
Change in Present Value of Benefits Accrued to Date during FY 2022		
Increase/(Decrease) during Year Attributable to:		
Passage of Time		$ 934,316,043
Benefits Paid		(947,944,497)
Assumption Changes		0
Program Changes		90,520,043
Benefits Accrued, Other Gains/Losses		465,306,105
Net Increase (Decrease)		$ 542,197,694

Table VI-2 that follows shows the changes in the total pension liability (TPL), the Program's fiduciary net position (FNP) (i.e., fair value of the Program's net assets), and the net pension liability (NPL) during the measurement year ending June 30, 2022 as well as related ratios calculated under the provisions of GASB Statement No. 67 for the Program.

As of the June 30, 2022 valuation, the fiduciary net position for this Program was projected to be available to make all projected future benefit payments for current Program members. As such, the long-term expected rate of return on the Program's investments was applied to all periods of projected benefit payments in determining the total pension liability under GASB Nos. 67 and 68. The projection of cash flows used to determine the discount rate assumed that member contributions will be made at the current contribution rates, and the employer contributions will be made according to the actuarial calculations developed in the biennial ratemaking process.

SECTION VI – FINANCIAL DISCLOSURE INFORMATION

Table VI-2
Schedule of Changes in Net Pension Liability and Related Ratios
FY 2022

	Teacher Program	State Program	Total State and Teacher Program
Total Pension Liability (TPL)			
Service Cost (SC)	$ 171,069,104	$ 100,637,622	$ 271,706,726
Interest (includes Interest on SC)	689,646,382	363,194,190	1,052,840,572
Changes of Benefit Terms	67,065,824	37,850,338	104,916,162
Differences Between Actual and Expected Experience	90,272,203	17,649,588	107,921,791
Changes of Assumptions	0	0	0
Benefit Payments, including Refunds of Member Contributions	(604,647,376)	(343,297,121)	(947,944,497)
Net Change in TPL	**413,406,137**	**176,034,617**	**589,440,754**
Beginning of Year (BOY) TPL	**10,736,439,623**	**5,655,911,705**	**16,392,351,328**
End of Year (EOY) TPL	**$ 11,149,845,760**	**$ 5,831,946,322**	**$ 16,981,792,082**
Program Fiduciary Net Position (FNP)			
Employer Contributions	$ 330,099,527	$ 213,242,452	$ 543,341,979
Member Contributions	109,154,966	55,193,806	164,348,772
Transfers	(7)	(346,619)	(346,626)
Net Investment Income	(52,346,497)	(27,043,492)	(79,389,989)
Benefit Payments, including Refunds of Member Contributions	(604,647,376)	(343,297,121)	(947,944,497)
Administrative Expense	(7,940,239)	(4,022,085)	(11,962,324)
Net Change in FNP	(225,679,626)	(106,273,059)	(331,952,685)
BOY FNP	**9,890,613,634**	**5,010,030,385**	**14,900,644,019**
EOY FNP	**$ 9,664,934,008**	**$ 4,903,757,326**	**$ 14,568,691,334**
EOY Net Pension Liability (NPL)	**$ 1,484,911,752**	**$ 928,188,996**	**$ 2,413,100,748**
FNP as a Percentage of TPL	86.7%	84.1%	85.8%
Covered Payroll*	1,450,116,723	771,293,470	2,221,410,193
NPL as a Percentage of Covered Payroll	102.4%	120.3%	108.6%

* For FY 2022

Notes to Schedule of Changes in Net Pension Liability and Related Ratios

None.

SECTION VI – FINANCIAL DISCLOSURE INFORMATION

A 10-year schedule of changes in NPL and related ratios is to be included within the ACFR for PERS. However, based on GASB guidance, this 10-year history can be built one year at a time following implementation. We have shown only the current year of this *Schedule of Changes in Net Pension Liability and Related Ratios* above and believe that you can accumulate the individual years in the MainePERS ACFRs to build this schedule to show the full 10-year schedule over time. Notes to this schedule should be included for any factors significantly impacting the trends reported within the period shown in this schedule at that time. As of June 30, 2022, we have not included suggested information for such a note in the *Notes to Schedule of Changes in Net Pension Liability and Related Ratios* above. However, it is our expectation that the System's staff will make the final determination regarding any notes needed for this schedule, and we are available to provide any information they may need for this purpose.

Table VI-3 below illustrates the sensitivity of the net pension liability (NPL) to the discount rate. Changes in the discount rate affect the measurement of the total pension liability (TPL) for the Program. Lower discount rates produce a higher TPL, and higher discount rates produce a lower TPL. Because the discount rate does not affect the measurement of assets, the percentage change in the Net Pension Liability (NPL) can be very significant for relatively small changes in the discount rate.

Table VI-3
Sensitivity of Net Pension Liability to Changes in Discount Rate
FY 2022

	1% Decrease 5.50%	Discount Rate 6.50%	1% Increase 7.50%
Teacher Program			
Total Pension Liability (TPL)	$ 12,572,744,940	$ 11,149,845,760	$ 9,965,134,876
Program Fiduciary Net Position (FNP)	9,664,934,008	9,664,934,008	9,664,934,008
Net Pension Liability (NPL)	$ 2,907,810,932	$ 1,484,911,752	$ 300,200,868
FNP as a Percentage of TPL	76.9%	86.7%	97.0%
State Program			
Total Pension Liability (TPL)	$ 6,535,806,225	$ 5,831,946,322	$ 5,271,836,606
Program Fiduciary Net Position (FNP)	4,903,757,326	4,903,757,326	4,903,757,326
Net Pension Liability (NPL)	$ 1,632,048,899	$ 928,188,996	$ 368,079,280
FNP as a Percentage of TPL	75.0%	84.1%	93.0%
Total State Employee and Teacher Program			
Total Pension Liability (TPL)	$ 19,108,551,165	$ 16,981,792,082	$ 15,236,971,482
Program Fiduciary Net Position (FNP)	14,568,691,334	14,568,691,334	14,568,691,334
Net Pension Liability (NPL)	$ 4,539,859,831	$ 2,413,100,748	$ 668,280,148
FNP as a Percentage of TPL	76.2%	85.8%	95.6%

A one percent decrease in the discount rate increases the TPL for the total Program by approximately 13% and increases the NPL by approximately 88%. A one percent increase in the discount rate decreases the TPL by approximately 10% and decreases the NPL by approximately 72%.

SECTION VI – FINANCIAL DISCLOSURE INFORMATION

Table VI-4 that follows provides information relating to the employer contributions for the Program. Under GASB Statement No. 67, if an actuarially determined contribution (ADC) or a contractually or statutorily required contribution (CRC) is developed for a single employer or cost-sharing plan, the following schedule is required. For purposes of this schedule, an ADC is a contribution amount determined in accordance with Actuarial Standards of Practice, and a CRC is based on statutory or contractual requirements. Both should exclude any amounts to finance specific liabilities of individual employers of the Program. If an ADC is available, the schedule of employer contributions should be developed on that basis. If there is no ADC, but there is a CRC, the schedule should be developed on that basis. Only if neither an ADC nor a CRC is developed can this schedule be omitted from the PERS's ACFR.

The Program's rates set in the ratemaking process meet the definition of an ADC, so for this Program, this schedule should be developed on that basis. Based on GASB guidance, a full 10 years of information should be shown in this schedule if it is available, but this 10-year history can be built one year at a time following implementation. We have shown only the current year of this *Schedule of Employer Contributions* below and believe that you can accumulate these in the MainePERS ACFR to build this schedule to show the full 10-year schedule over time.

Only the current year of the *Notes to Schedule of Employer Contributions* below needs to be included in the notes to this schedule. However, any factors that significantly affect trends in the *Schedule of Employer Contributions* at any point in the 10-year period should also be included in the notes to this schedule. As of June 30, 2022, we have not included such a note in the *Notes to Schedule of Employer Contributions* below. However, it is our expectation that the System's staff will make the final determination regarding any notes needed for this schedule and we are available to provide any additional information that they may need for this purpose.

Table VI-4
Schedule of Employer Contributions
FY 2022

	Teacher Program	State Program	Total State and Teacher Program
Actuarially Determined Contribution (ADC)	$ 262,906,162	$ 175,392,135	$ 438,298,297
Contributions in Relation to the ADC	262,906,162	175,392,135	438,298,297
Contribution Deficiency/(Excess)	$ 0	$ 0	$ 0
Covered Payroll (Payroll)*	$ 1,450,116,723	$ 771,293,470	$ 2,221,410,193
Contributions as a Percentage of Payroll	18.13%	22.74%	19.73%

* For FY 2022

SECTION VI – FINANCIAL DISCLOSURE INFORMATION

Notes to Schedule of Employer Contributions

Valuation Date:	June 30, 2019
Timing:	June 30, 2022 ADC rates are calculated based on 2020 liabilities developed as a roll-forward of the 2019 valuation liability, adjusted for expected experience and any assumption or methodology changes during FY 2020 using preliminary actual assets as of June 30, 2020.

Key Methods and Assumptions Used to Determine Contribution Rates

Actuarial Cost Method:	Entry age normal
Asset Valuation Method:	Three-year smoothed market
Amortization Method:	Level percentage of payroll, closed periods. Cumulative UAL from prior to 2012 amortized over a remaining seven years from July 1, 2021. Subsequent layers of UAL amortized over individual 20-year periods.
Discount Rate:	6.75%
Amortization Growth Rate:	2.75%
Price Inflation:	2.75%
Salary Increases:	2.75% plus merit component based on employee's years of service
Mortality:	State Employee Program: 104% and 120% of the RP-2014 Total Dataset Healthy Annuitant Mortality Table, respectively, for males and females, using the RP-2014 Total Dataset Employee Mortality Table for ages prior to the start of the Healthy Annuitant Mortality Table, both projected from the 2006 base rates using MP_2015 model with an ultimate rate of 0.85% for ages 20-85 grading down to an ultimate rate of 0.00% for ages 111-120, and convergence to the ultimate rate in the year 2020. Teacher Program: 99% of the RP-2014 Total Dataset Healthy Annuitant Mortality Table for both males and females, using the RP-2014 Total Dataset Employee Mortality Table for ages prior to the start of the Healthy Annuitant Mortality Table, respectively, both projected using the RPEC_2015 model, with an ultimate rate of 0.85% for ages 20-85, grading down to an ultimate rate of 0.00% for ages 111-120, and convergence to the ultimate rate in the year 2020.

SECTION VI – FINANCIAL DISCLOSURE INFORMATION

A complete description of the methods and assumptions used to determine contribution rates for the year ending June 30, 2022 can be found in the June 30, 2020 actuarial valuation report.

Other Information

None.

Table VI-5 that follows is provided in this report at the request of MainePERS staff, showing the development of the average remaining service life for the Program. GASB No. 68 requires some items be recognized by employers into pension expense over a period "equal to the average of the expected remaining service lives of all employees that are provided with pensions through the pension plan (active employees and inactive employees) determined as of the beginning of the measurement period." For the current measurement year ending on June 30, 2022, these values are thus developed as of June 30, 2021. Note that the decision was made to apply GASB No. 68 separately to the Teacher Program and the State Program based upon paragraph 19 of that statement, so this value has been provided separately for these Programs. Also note that the decision was made to use these averages based on rounding to the nearest whole year, so the values are thus shown as such.

Table VI-5
Average Expected Remaining Service Lives
For Measurement Year Ending June 30, 2022

Teacher Program

Status	Total Expected Future Service	Count	Average Remaining Service Lives
Active Members	314,802	27,444	11
In-Pay Members	0	22,161	0
Terminated Vested Members	0	5,368	0
Inactives Due Refunds	0	29,934	0
Total Membership	314,802	84,907	4

State Program

Status	Total Expected Future Service	Count	Average Remaining Service Life
Actives	120,334	12,655	10
In-Pay Members	0	15,529	0
Terminated Vested Members	0	3,019	0
Inactives Due Refunds	0	8,459	0
Total Membership	120,334	39,662	3

SECTION VI – FINANCIAL DISCLOSURE INFORMATION

Table VI-6 below is a gain/loss analysis of the changes in the actuarial liability over the past six years, reflecting variances between actual experience and assumed experience for different kinds of risk as specified in the GFOA GAAFR.

Table VI-6
Analysis of Financial Experience
Gain and Loss in Actuarial Liability During Fiscal Years Ended June 30
Resulting from Differences Between Assumed Experience and Actual Experience

Type of Activity	Gain (or Loss) For Fiscal Year Ended June 30, 2017	Gain (or Loss) For Fiscal Year Ended June 30, 2018	Gain (or Loss) For Fiscal Year Ended June 30, 2019	Gain (or Loss) For Fiscal Year Ended June 30, 2020	Gain (or Loss) For Fiscal Year Ended June 30, 2021	Gain (or Loss) For Fiscal Year Ended June 30, 2022
Investment Income	$ (18,117,992)	$ 94,329,730	$ 57,985,155	$ (102,951,302)	$ 720,053,045	$ 160,575,868
Combined Liability Experience	(95,207,531)	(34,151,279)	(208,719,412)	(162,293)	(25,575,263)	(107,921,791)
Gain (or Loss) during Year from Financial Experience	$ (113,325,523)	$ 60,178,451	$ (150,734,257)	$ (103,113,595)	$ 694,477,782	$ 52,654,077
Non-Recurring Items	0	(191,998,939)	0	(1,223,156)	(1,175,893,728)	(104,916,162)
Composite Gain (or Loss) During Year	**$ (113,325,523)**	**$ (131,820,488)**	**$ (150,734,257)**	**$ (104,336,751)**	**$ (481,415,946)**	**$ (52,262,085)**

SECTION VI – FINANCIAL DISCLOSURE INFORMATION

Table VI-7 below compares the Program's assets as of each valuation date shown to the Program's actuarial liability divided into three separate groups: liabilities for contributions on deposit for current active members, liabilities for future benefits for inactive members, and employer-financed liabilities for current active members. This Schedule of Funded Liabilities by Type is used to assess funding progress based on what percentage of the liabilities for each of these groups the Program's assets are sufficient to cover. Per GFOA guidance, this schedule is to include this assessment for the 10 most recent years, and notes to this schedule should be provided to explain any factors that affect the comparability of the data. We do not believe such a note is needed for the measurement year ending June 30, 2022, but it is our expectation that the System's staff will make the final determination regarding any notes needed for this schedule.

Table VI-7
Schedule of Funded Liabilities by Type

	Aggregate Actuarial Liabilities for:						
Valuation Date June 30,	(1) Active Member Contributions	(2) Retirees, Vested Terms, Beneficiaries	(3) Active Members (Employer Financed Portion)	Reported Assets*	Portion of Actuarial Liabilities Covered by Reported Assets (1)	(2)	(3)
2022	$2,659,590,270	$10,910,951,750	$ 3,411,250,062	$ 14,248,105,921	100%	100%	20%
2021	2,588,064,433	10,387,107,459	3,417,179,436	13,460,870,272	100	100	14
2020	2,600,834,192	9,668,292,329	2,596,333,609	12,249,961,306	100	100	0
2019	2,499,498,544	9,460,680,994	2,587,043,375	11,894,672,150	100	99	0
2018	2,453,797,249	9,030,789,541	2,546,601,055	11,419,986,652	100	99	0
2017	2,402,112,525	8,727,549,999	2,355,223,988	10,904,082,221	100	97	0
2016	2,359,818,665	8,399,121,582	2,311,014,701	10,512,524,178	100	97	0
2015	2,339,138,044	7,831,348,903	2,445,800,107	10,375,552,497	100	100	8
2014	2,315,075,905	7,572,038,284	2,433,044,594	10,017,512,006	100	100	5
2013	2,290,505,939	7,181,259,077	2,358,884,866	9,177,749,627	100	96	0

* Reported assets are measured at actuarial value. Results would be different if the market value of assets were used. Despite the name of this exhibit, the liabilities presented in this schedule are not an appropriate measurement of the settlement liability of the Program.

APPENDIX A – MEMBERSHIP INFORMATION

Active Member Data as of June 30, 2022	
Teacher Plan	
Count	27,718
Average Current Age	45.8
Average Benefit Service	12.0
Average Vesting Service	12.2
Average Valuation Pay	$ 53,169
State Employee Regular Plan	
Count	10,787
Average Current Age	48.1
Average Benefit Service	11.5
Average Vesting Service	11.9
Average Valuation Pay	$ 61,753
Inland Fisheries & Wildlife Officers Special Plan (Closed Plan)	
Count	1
Average Current Age	66.9
Average Benefit Service	44.2
Average Vesting Service	44.2
Average Valuation Pay	$ 82,595
State Police Special Plan (Closed Plan)	
Count	1
Average Current Age	68.8
Average Benefit Service	45.0
Average Vesting Service	45.0
Average Valuation Pay	$162,998

APPENDIX A – MEMBERSHIP INFORMATION

Active Member Data as of June 30, 2022	
State Employee Special 25 & Out Plan	
Count	455
Average Current Age	40.7
Average Benefit Service	13.8
Average Vesting Service	14.3
Average Valuation Pay	$ 93,157
State Employee 1998 Special Plan	
Count	1,144
Average Current Age	43.4
Average Benefit Service	11.3
Average Vesting Service	11.7
Average Valuation Pay	$ 71,193
Fire Marshal Special Plan	
Count	15
Average Current Age	44.4
Average Benefit Service	9.6
Average Vesting Service	12.8
Average Valuation Pay	$ 95,372
State Employee Totals (Excludes Teachers)	
Count	12,403
Average Current Age	47.4
Average Benefit Service	11.5
Average Vesting Service	12.0
Average Valuation Pay	$ 63,826

Non-Active Member Data as of June 30, 2022
Teachers

	Count	Average Age	Total Annual Benefit	Average Annual Benefit
Retired	18,738	74.0	$ 531,312,129	$ 28,355
Retired – Concurrent Beneficiary	1,314	74.8	8,278,739	6,300
Disability – Section 1122	0		0	0
Disability – Section 3 and 3A	659	69.7	20,119,813	30,531
Beneficiary of Above	1,683	74.2	31,215,271	18,547
Pre-Retirement Death Beneficiary	286	62.7	1,893,626	6,621
Terminated Vested	5,693	52.5	54,672,403	9,603
Inactive Due Refund	29,784	NA	NA	NA

APPENDIX A – MEMBERSHIP INFORMATION

Non-Active Member Data as of June 30, 2022
State Regular

	Count	Average Age	Total Annual Benefit	Average Annual Benefit
Retired	10,224	73.7	$ 236,957,176	$ 23,177
Retired – Concurrent Beneficiary	907	73.1	5,066,776	5,586
Disability – Section 1122	0		0	N/A
Disability – Section 3 and 3A	772	68.1	19,949,989	25,842
Beneficiary of Above	1,992	64.8	30,788,908	15,456
Pre-Retirement Death Beneficiary	281	68.1	1,856,163	6,606
Terminated Vested	2,759	52.9	23,172,023	8,399
Inactive Due Refund	7,837	NA	NA	NA

Non-Active Member Data as of June 30, 2022
State Special

	Count	Average Age	Total Annual Benefit	Average Annual Benefit
Retired	1,074	68.5	$ 36,121,789	$ 33,633
Retired – Concurrent Beneficiary	148	67.1	1,054,751	7,127
Disability – Section 1122	1	91.6	21,299	21,299
Disability – Section 3 and 3A	75	61.4	2,297,942	30,639
Beneficiary of Above	237	72.9	4,337,475	18,302
Pre-Retirement Death Beneficiary	17	47.0	106,198	6,247
Terminated Vested	391	45.9	3,056,055	7,816
Inactive Due Refund	1,186	NA	NA	NA

In preparing this report, we relied on data provided by MainePERS as modified following the procedures outlined in the State of Maine Data Processing Notebook. Adjustments to the data are made based on this processing notebook. Accuracy of the results is dependent on the completeness of the underlying information. The plan sponsor is responsible for the validity and completeness of the information provided. We believe the data provided as modified as documented in the Processing Notebook is sufficient for the actuarial analysis performed.

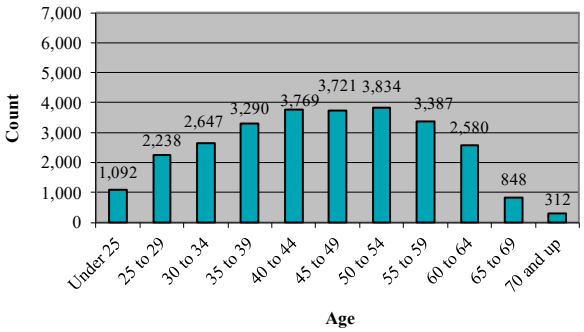
APPENDIX A – MEMBERSHIP INFORMATION

Distribution of Active Members
As of June 30, 2022

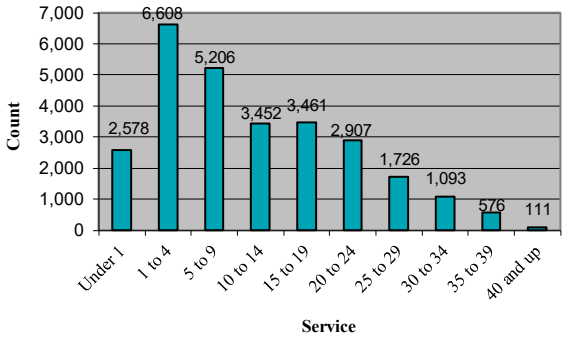
Teachers

	Years of Service										
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up	Totals
Under 25	607	484	1	0	0	0	0	0	0	0	1,092
25 to 29	373	1,373	492	0	0	0	0	0	0	0	2,238
30 to 34	282	944	1,106	315	0	0	0	0	0	0	2,647
35 to 39	292	899	855	858	386	0	0	0	0	0	3,290
40 to 44	306	862	737	564	984	316	0	0	0	0	3,769
45 to 49	228	657	682	493	572	852	237	0	0	0	3,721
50 to 54	173	520	572	496	579	567	723	203	1	0	3,834
55 to 59	120	416	355	369	488	508	370	568	191	2	3,387
60 to 64	94	289	276	256	327	489	274	230	315	30	2,580
65 to 69	59	110	90	77	104	141	90	65	60	52	848
70 and up	44	54	40	24	21	34	32	27	9	27	312
Total	2,578	6,608	5,206	3,452	3,461	2,907	1,726	1,093	576	111	27,718

Age Distribution



Service Distribution



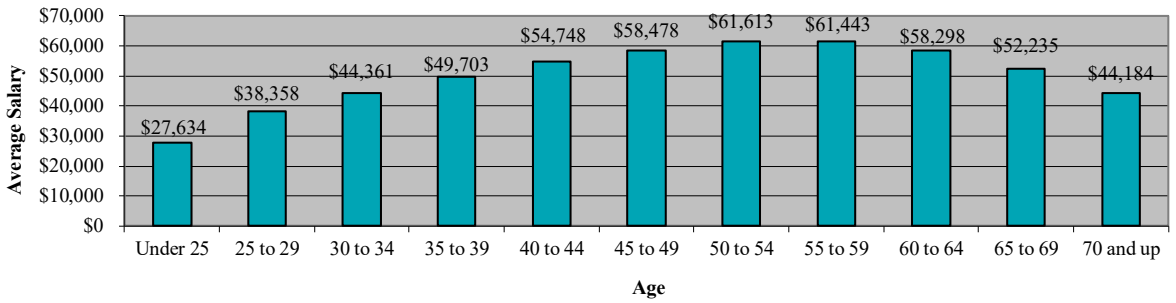
APPENDIX A – MEMBERSHIP INFORMATION

Distribution of Active Members
As of June 30, 2022

Teachers

	Average Salary Years of Service										
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up	Average
Under 25	22,514	34,035	37,500	0	0	0	0	0	0	0	27,634
25 to 29	27,076	38,732	45,867	0	0	0	0	0	0	0	38,358
30 to 34	29,116	39,272	49,391	55,601	0	0	0	0	0	0	44,361
35 to 39	28,225	41,738	49,572	58,764	64,652	0	0	0	0	0	49,703
40 to 44	29,035	41,273	50,214	61,308	68,583	72,191	0	0	0	0	54,748
45 to 49	28,351	41,377	50,448	58,173	67,480	74,504	79,273	0	0	0	58,478
50 to 54	29,089	40,529	47,887	58,020	67,030	73,152	79,101	80,759	74,082	0	61,613
55 to 59	29,253	41,696	45,212	53,161	59,007	66,831	77,780	79,299	78,216	40,694	61,443
60 to 64	26,246	38,165	42,032	49,921	55,575	61,349	71,159	76,576	79,210	76,544	58,298
65 to 69	29,497	34,225	39,167	47,634	47,863	56,623	64,042	70,617	71,442	76,836	52,235
70 and up	22,253	26,386	31,234	36,458	57,790	54,703	55,015	67,547	62,918	75,300	44,184
Average	26,880	39,596	48,184	57,042	64,435	69,336	76,349	78,191	77,807	75,732	53,169

Average Salary Distribution



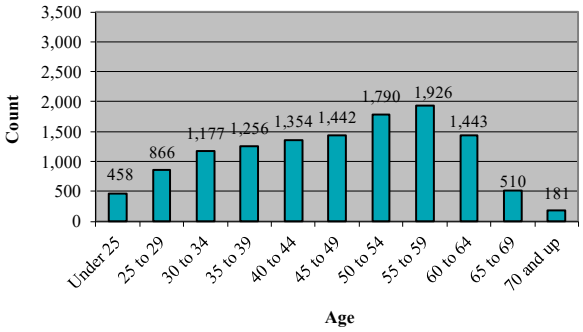
APPENDIX A – MEMBERSHIP INFORMATION

Distribution of Active Members
As of June 30, 2022

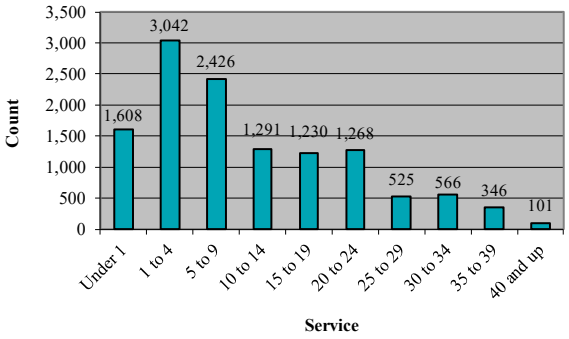
State

	Years of Service										
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up	Totals
Under 25	297	156	5	0	0	0	0	0	0	0	458
25 to 29	244	466	154	2	0	0	0	0	0	0	866
30 to 34	221	511	387	58	0	0	0	0	0	0	1,177
35 to 39	183	383	382	209	91	8	0	0	0	0	1,256
40 to 44	165	326	321	205	242	95	0	0	0	0	1,354
45 to 49	137	298	264	174	227	283	59	0	0	0	1,442
50 to 54	152	319	304	185	220	287	184	123	16	0	1,790
55 to 59	117	299	281	205	192	288	137	240	159	8	1,926
60 to 64	57	197	217	183	174	203	101	155	128	28	1,443
65 to 69	19	60	85	61	57	85	32	35	33	43	510
70 and up	16	27	26	9	27	19	12	13	10	22	181
Total	1,608	3,042	2,426	1,291	1,230	1,268	525	566	346	101	12,403

Age Distribution



Service Distribution



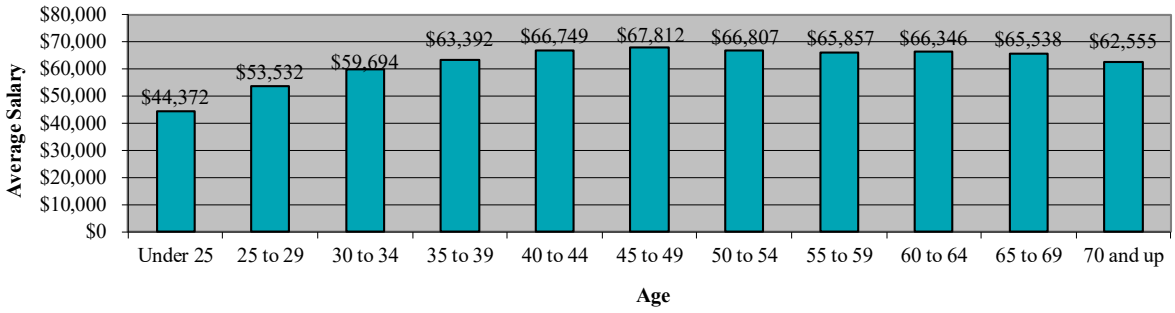
APPENDIX A – MEMBERSHIP INFORMATION

Distribution of Active Members
As of June 30, 2022

State

	Average Salary Years of Service										
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up	Average
Under 25	39,899	52,444	58,206	0	0	0	0	0	0	0	44,372
25 to 29	44,231	55,089	63,513	56,905	0	0	0	0	0	0	53,532
30 to 34	46,704	57,847	68,056	69,663	0	0	0	0	0	0	59,694
35 to 39	50,068	58,474	67,644	71,820	71,962	82,968	0	0	0	0	63,392
40 to 44	50,097	61,227	67,716	72,847	75,413	76,129	0	0	0	0	66,749
45 to 49	52,107	58,917	65,037	68,854	73,541	79,214	81,811	0	0	0	67,812
50 to 54	51,053	56,064	63,204	68,251	71,724	73,779	80,952	73,265	77,400	0	66,807
55 to 59	47,118	55,043	62,074	65,053	67,077	71,388	77,884	74,487	72,871	64,878	65,857
60 to 64	45,518	54,768	61,026	65,584	68,155	69,630	76,456	74,949	77,039	68,380	66,346
65 to 69	51,784	57,554	58,963	62,135	66,089	66,130	69,287	74,392	82,483	75,682	65,538
70 and up	41,503	51,343	69,984	66,392	63,674	54,163	63,182	87,471	75,495	66,202	62,555
Average	46,671	56,968	65,081	68,498	71,134	73,212	78,266	74,640	75,615	70,737	63,826

Average Salary Distribution

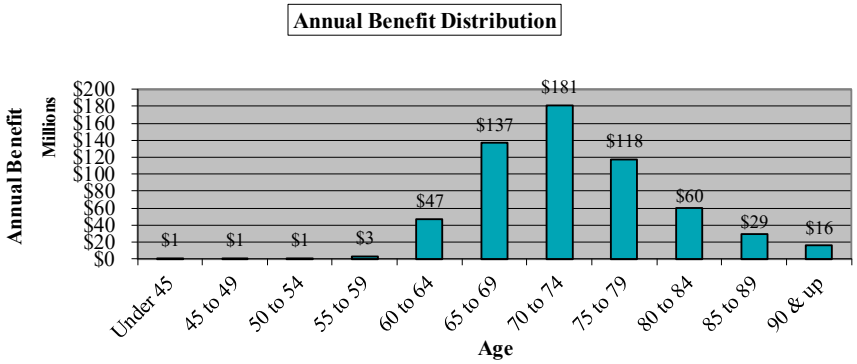


APPENDIX A – MEMBERSHIP INFORMATION

Distribution of Retirees, Disabled Members, Beneficiaries, and Survivors As of June 30, 2022

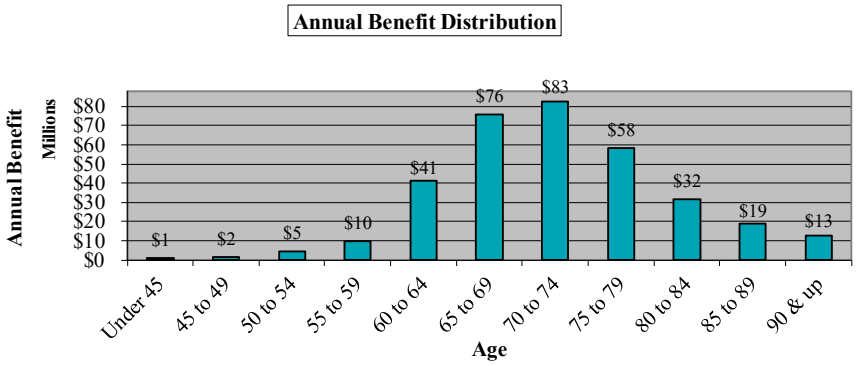
Teachers

Age	Count	Annual Benefit
Under 45	149	$ 987,714
45 to 49	53	530,826
50 to 54	92	1,174,845
55 to 59	174	2,999,185
60 to 64	1,598	47,188,625
65 to 69	4,907	136,983,143
70 to 74	6,691	180,984,818
75 to 79	4,612	117,692,631
80 to 84	2,398	59,685,064
85 to 89	1,254	28,961,943
90 & up	752	15,630,784
Total	22,680	$ 592,819,578



State

Age	Count	Annual Benefit
Under 45	129	$ 1,128,859
45 to 49	102	1,612,206
50 to 54	232	4,563,015
55 to 59	458	9,832,606
60 to 64	1,703	41,256,644
65 to 69	3,490	75,743,842
70 to 74	3,772	82,750,114
75 to 79	2,682	58,158,651
80 to 84	1,511	31,642,670
85 to 89	971	19,214,307
90 & up	678	12,655,552
Total	15,728	$ 338,558,466



APPENDIX A – MEMBERSHIP INFORMATION

Status Reconciliation - Teachers	Active Members	Retired Members	Beneficiaries of Retired Members	Survivors of Deceased Members	Disabled Members[1]	Terminated Vested Members[2]
As of June 30, 2021	**27,444**	**18,231**	**2,970**	**280**	**680**	**5,368**
New hires	2,534					
Rehires	609				-	(243)
Movement between plans	(1)					(3)
New retirees	(468)	899				(430)
New beneficiaries due to retirements			49			
New disabled retirees	(9)				15	(6)
New deferred vested members	(1,064)					1,126
Non-vested terminations	(1,117)					
Refunds	(193)					(97)
Deaths, no future benefits	(4)	(307)	(107)	(7)	(24)	(14)
Deaths with a survivor or beneficiary	(11)	(91)	84	18	(11)	(6)
Benefits expired				(5)		
Data correction	(2)	6	1	-	(1)	(2)
As of June 30, 2022	**27,718**	**18,738**	**2,997**	**286**	**659**	**5,693**

1. Former disabled retirees who have changed to service retirement as mandated by the Plan are still included as disabled members.
2. Terminated vested members includes those indicated to us in the data who have terminated and are eligible for a future annuity.

Status Reconciliation - State Regular and Special Groups	Active Members	Retired Members	Beneficiaries of Retired Members	Survivors of Deceased Members	Disabled Members[1]	Terminated Vested Members[2]
As of June 30, 2021	**12,655**	**11,070**	**3,279**	**300**	**880**	**3,019**
New hires	1,448					
Rehires	163					(58)
Movement between plans	(3)					(2)
New retirees	(472)	624				(152)
New beneficiaries due to retirements			51			
New disabled retirees	(17)				28	(9)
New deferred vested members	(358)					421
Non-vested terminations	(771)					
Refunds	(222)					(60)
Deaths, no future benefits	(7)	(291)	(146)	(15)	(35)	(2)
Deaths with a survivor or beneficiary	(10)	(107)	101	14	(20)	(9)
Benefits expired				(1)		
Data correction	(3)	2	(1)	-	(5)	2
As of June 30, 2022	**12,403**	**11,298**	**3,284**	**298**	**848**	**3,150**

1. Former disabled retirees who have changed to service retirement as mandated by the Plan are still included as disabled members.
2. Terminated vested members includes those indicated to us in the data who have terminated and are eligible for a future annuity.

APPENDIX B – SUMMARY OF PROGRAM PROVISIONS

1. Membership

Membership is a condition of employment for state employees and teachers, and optional for elected and appointed officials.

Membership ceases on the earlier of withdrawal of contributions, retirement, or death.

2. Member Contributions

Except as otherwise described below, members are required to contribute 7.65% of earnable compensation. Member contributions earn annual interest at the rate adopted by the Board of Trustees each February.

Contribution Requirements for Special State Employee Groups

State police and inland fisheries and wildlife officers employed before September 1, 1984: required to contribute 8.65% of earnable compensation for 20 years of service and 7.65% thereafter.

Forest rangers employed before September 1, 1984: required to contribute 8.65% of earnable compensation until eligible for retirement and 7.65% thereafter.

1998 Special Plan employees, which includes state prison employees, airplane pilots, forest rangers, defense, veterans and emergency management firefighters employed at Bangor International Airport, corrections employees, Baxter State Park Authority rangers, State Fire Marshal, assistant state fire marshal - inspections and state fire marshal inspectors, oil and hazardous materials emergency response workers, capitol security officers, attorney general detectives, emergency communications employees, motor vehicle detectives, crime laboratory and computer crimes unit employees: required to contribute 8.65% of earnable compensation for 25 years and 7.65% thereafter.

State police employed on or after September 16, 1984 and special agent investigators hired before June 21, 1982: required to contribute 8.65% of earnable compensation for 25 years and 7.65% thereafter.

Inland fisheries and wildlife officers and marine resources officers employed on or after September 1, 1984: required to contribute 8.65% of earnable compensation for 25 years and 7.65% thereafter.

APPENDIX B – SUMMARY OF PROGRAM PROVISIONS

Fire marshal investigators, fire marshal sergeants and assistant state fire marshal - investigations: required to contribute 8.65% of earnable compensation until eligible for retirement and 7.65% thereafter.

3. Average Final Compensation

For purposes of determining benefits payable, average final compensation is the average annual rate of earnable compensation for the three years of creditable service (not necessarily consecutive) that produce the highest such average.

For compensation paid on or after July 1, 1993, increases in earnable compensation of greater than 5% per year or greater than 10% over the highest three years are not included in calculating average final compensation unless the employer pays the cost of including such compensation. Earnable compensation does not include sick and vacation pay for those members who had less than 10 years of service on July 1, 1993. For members for whom sick and vacation pay is includable in earnable compensation, these payments are included in applying the caps described above.

4. Creditable Service

Creditable service includes service while a member, certain service prior to the establishment of the Program, purchased service credit of which there are several types, and service while receiving disability benefits under the Program.

5. Service Retirement Benefits

A. Regular Plan (State Employees and Teachers)

i. Provisions for Members with at Least 10 Years of Creditable Service on July 1, 1993

Normal Retirement Age: 60

Eligibility for Members in Active Service and Inactive Members: 25 years of creditable service.

Eligibility Alternative for Members in Active Service: At least one year of creditable service immediately before retirement and at least normal retirement age.

Eligibility for Members not in Active Service at Retirement and not in Active Service on or after October 1, 1999: At least 10 years of creditable service and at least normal retirement age.

APPENDIX B – SUMMARY OF PROGRAM PROVISIONS

Eligibility for Members not in Active Service at Retirement, but in Active Service on or after October 1, 1999: At least five years of creditable service and at least normal retirement age.

Benefit: 1/50 of average final compensation multiplied by years of creditable service and up to 25 years of prior service, reduced by the following approximate percentages for each year retirement age is less than age 60.

Age	Reduction	Age	Reduction
45	29.3%	53	16.6%
46	28.0	54	14.6
47	26.6	55	12.5
48	25.2	56	10.3
49	23.6	57	7.9
50	22.0	58	5.4
51	20.3	59	2.8
52	18.5	60	0.0

Form of Payment: Life annuity.

ii. Provisions for Members with Less Than 10 Years of Creditable Service on July 1, 1993

Normal Retirement Age: 62

Eligibility for Members in Active Service and Inactive Members: 25 years of creditable service.

Eligibility Alternative for Members in Active Service: At least one year of creditable service immediately before retirement age and at least normal retirement age.

Eligibility for Members not in Active Service at Retirement and not in Active Service on or after October 1, 1999: At least 10 years of creditable service and at least normal retirement age.

Eligibility for Members not in Active Service at Retirement, but in Active Service on or after October 1, 1999: At least five years of creditable service and at least normal retirement age.

APPENDIX B – SUMMARY OF PROGRAM PROVISIONS

Benefit: 1/50 of average final compensation multiplied by years of membership service and up to 25 years of prior service, reduced by 6% for each year retirement age is less than age 62.

Form of Payment: Life annuity.

iii. Provisions for Members with Less Than Five Years of Creditable Service on July 1, 2011

Normal Retirement Age: 65

Eligibility for Members in Active Service and Inactive Members: 25 years of creditable service.

Eligibility Alternative for Members in Active Service: At least one year of creditable service immediately before retirement age and at least normal retirement age.

Eligibility for Members not in Active Service at Retirement and not in Active Service on or after October 1, 1999: At least 10 years of creditable service and at least normal retirement age.

Eligibility for Members not in Active Service at Retirement, but in Active Service on or after October 1, 1999: At least five years of creditable service and at least normal retirement age.

Benefit: 1/50 of average final compensation multiplied by years of membership service and up to 25 years of prior service, reduced by 6% for each year retirement age is less than age 65.

Form of Payment: Life annuity.

B. Special Plans (State Employees)

i. State Police Employed Before September 16, 1984 and Inland Fisheries and Wildlife Officers Employed Before September 1, 1984

Eligibility: 20 years of creditable service in named positions.

APPENDIX B – SUMMARY OF PROGRAM PROVISIONS

Benefit: One-half of average final compensation plus 2% for each year of service in excess of 20. If greater, the pro-rated portion of the benefit for service before July 1, 1976, is based on annual pay instead of average final pay.

Form of Payment: 50% joint and survivor annuity or life annuity.

ii. Forest Rangers Employed Before September 1, 1984

Eligibility: Age 50 with 25 years of creditable service as a forest ranger.

Benefit: One-half of average final compensation plus 2% for each year of service earned after qualification for retirement. If greater, the pro-rated portion of the benefit for service before July 1, 1976, is based on annual pay instead of average final pay.

Form of Payment: Life annuity.

iii. 1998 Special Plan

1998 Entrants: State prison employees, airline pilots, forest rangers, and liquor inspectors, employed after August 31, 1984; defense, veterans, and emergency management firefighters employed on and after July 1, 1998.

2000 Entrants: Baxter State Park Authority rangers, correctional employees, and State Fire Marshal and state fire marshal inspectors employed on or after January 1, 2000.

2002 Entrants: Capitol Police and oil and hazardous materials emergency response workers.

2020 Entrants: Emergency communications employees, motor vehicle detectives and attorney general detectives.

2021 Entrants: Crime laboratory and computer crimes unit employees.

Eligibility: 10 years of creditable service under the 1998 Special Plan in one or a combination of the covered capacities and the attainment of age 55 – OR – 25 years of creditable service in one or a combination of the covered capacities.

Benefit: For service prior to coverage in the 1998 Special Plan, 1/50 of average final compensation multiplied by years of service reduced for retirement before age 60, 62, or 65 (as determined by the applicable Regular Plan provisions described in 5.A.),

APPENDIX B – SUMMARY OF PROGRAM PROVISIONS

except oil and hazardous materials emergency response workers, certain prison employees, Capitol Police, and certain Department of Corrections employees benefits are reduced for retirement before age 55.

-PLUS-

For service under the 1998 Special Plan, 1/50 of average final compensation multiplied by years of service reduced for retirement before age 55.

Form of Payment: Life annuity.

iv. 25 & Out Plan

1998 Entrants: State police employed on or after September 16, 1984 and special agent investigators hired before June 21, 1982.

2002 Entrants: Inland fisheries and wildlife officers and marine resources officers employed on and after August 31, 1984.

Eligibility: 25 years of creditable service in named positions.

Benefit: 1/50 of average final compensation multiplied by years of service.

Form of Payment: Life annuity.

Members in Special Plans who fail to qualify for Special Plan benefits can receive Regular Plan benefits when and as eligible and qualified.

v. Fire Marshals

Eligibility: 20 years of creditable service in named positions.

Benefit: One-half of average final compensation plus 2% for each year of service in excess of 20.

Form of Payment: Life annuity.

Members in Special Plans who fail to qualify for Special Plan benefits can receive Regular Plan benefits when and as eligible and qualified.

vi. Minimum Service Retirement Benefit

$100 per month.

APPENDIX B – SUMMARY OF PROGRAM PROVISIONS

6. Disability Retirement Benefits Other Than No-Age Benefits (See Item 7)

Eligibility: Disabled as defined in the MainePERS statutes prior to applicable normal retirement age, employed prior to October 16, 1992, and did not elect No-Age Disability Benefits, and either disabled in the line-of-duty or disabled with at least five years of creditable service.

Benefit: 66⅔% of average final compensation, reduced by employment earnings over the specified statutory limit, and to the extent that the benefit, in combination with Workers' Compensation and Social Security, exceeds 80% of average final compensation.

Form of Payment: Payment begins upon the termination of service and ceases on cessation of disability or after two years, unless the member is unable to engage in any substantially gainful activity, in which case payments cease on the earlier of 10 years following normal retirement age or the date that the service retirement benefit equals or exceeds the disability benefit.

Conversion to Service Retirement: During the period of disability, service is credited and average final compensation is increased at the same rate as any cost-of-living adjustments for which the member is eligible (not subject to the COLA Cap) (see item 12). On the date when service benefits reach a level of 66⅔% of average final compensation or 10 years after the normal retirement date if earlier, the disability converts to a service retirement benefit based on service and average final compensation at that time.

7. No-Age Disability Retirement Benefits

Eligibility: Disabled as defined in the MainePERS statutes, employed on or after October 16, 1992 or employed prior to October 16, 1992 and elected the provisions of No-Age Disability, and either disabled in the line-of-duty or disabled with at least five years of creditable service.

Benefit: 59% of average final compensation, reduced by employment earnings over the specified statutory limit, and to the extent that the benefit, in combination with Workers' Compensation and Social Security, exceeds 80% of average final compensation.

Form of Payment: Payment begins upon the termination of service and ceases on cessation of disability or after two years, unless the member is unable to engage in any substantially gainful activity, in which case payments cease on the date the service retirement benefit equals or exceeds the disability benefit.

Conversion to Service Retirement: During the period of disability, service is credited and average final compensation is increased at the same rate as any cost-of-living adjustments for which the member is eligible (not subject to the COLA Cap) (see item 12). On the date when

service benefits reach a level of 59% of average final compensation, the disability benefit converts to a service retirement benefit based on service and average final compensation at that time.

8. Pre-Retirement Ordinary Death Benefits

Eligibility: Death while active, inactive eligible to retire, or disabled not resulting from an injury received in the line-of-duty.

Benefit: Designated beneficiary, spouse, children, or parents entitled to benefit calculated as if the deceased member had retired under Option 2 (see item 13); however, the beneficiary may elect survivor benefits payable to a surviving spouse, dependent children, parent, or other designated beneficiaries in monthly amounts varying by the status of beneficiary and number of eligible survivors. Otherwise, accumulated contributions with interest are payable to the designated beneficiary, spouse, children, older parents, or estate.

9. Pre-Retirement Accidental Death Benefits

Eligibility: Death while active or disabled resulting from an injury received in the line-of-duty.

Benefit:

- If the member leaves no dependent children, two-thirds of the member's average final compensation to the surviving spouse until death.

- If the member is survived by a spouse who has the care of dependent children of the member, the surviving spouse shall receive an annual sum equal to the member's average final compensation while having the care of dependent children. When there are no longer any dependent children, the surviving spouse shall receive two-thirds of the member's average final compensation until death.

- If the member is survived by a spouse who does not have the care of the member's dependent children, the surviving spouse and dependent children shall share equally an annual sum equal to the member's average final compensation. When there are no longer any dependent children, the surviving spouse shall receive two-thirds of the member's average final compensation until death.

- If the member leaves no spouse, the dependent children shall share an annual amount equal to the member's average final compensation. Benefits will cease when the last dependent child no longer meets the definition of "dependent child."

APPENDIX B – SUMMARY OF PROGRAM PROVISIONS

10. Termination Benefit

Eligibility: Termination of service other than by retirement or death with at least five years of creditable service.

Benefit: The member's choice of a refund of the accumulated contributions with interest or a retirement benefit using creditable service and average final compensation as of the date of termination, deferred to normal retirement age.

11. Refund of Contributions

Eligibility: Termination of service other than by retirement or death with less than five years of creditable service.

Benefit: Refund of member's accumulated contributions with interest.

12. Cost-of-Living Adjustments (COLA)

All service and disability retirement and survivor benefits are adjusted each year that there is a percentage change in the Consumer Price Index (CPI), based on the Index. If the percentage change is negative, then no adjustment is made in that year. In subsequent years, the adjustment that would have been made will be adjusted downward to the extent necessary to recoup the full actuarial value of not having made the previous year's negative adjustment. This process of adjustment may occur over a multi-year period if needed to recoup the full value of negative changes in the Index.

Cost-of-living adjustments (COLA) are effective September 1 of each year and are applied to that portion of the benefit that is not in excess of a COLA Base whose value grows annually with the same adjustment as the COLA (see values below) for all benefits that have been in payment for at least twelve months as of that date. The maximum annual increase, or COLA Cap, is three percent. Average final compensation used in determining disability benefits for disabled members is similarly adjusted for purposes of determining the recipient's service retirement benefit if and when the recipient moves to service retirement.

APPENDIX B – SUMMARY OF PROGRAM PROVISIONS

COLA Base History: (value as of September 1 of listed year when COLA effective):

2014 - $20,000.00
2015 - $20,420.00
2016 - $20,940.71
2017 - $21,474.70
2018 - $21,818.30
2019 - $22,451.03
2020 - $22,810.25
2021 - $22,947.11
2022 - $24,186.25*

* Special legislation was passed to pay an additional one percent COLA above the maximum COLA Cap of three percent. In addition, the COLA Base was increased by the full CPI change of 5.4%.

Members who did not have 10 years of service on July 1, 1993, will begin receiving cost-of-living adjustments at the later of 12 months after their normal retirement age and the first September 1 following a minimum of 12 months of being in receipt of their benefit.

13. Methods of Payment of Service Retirement Benefits

At retirement, a member who retires with a benefit must choose from the following methods of payment:

Full Benefit: Unadjusted benefit paid for the life of the member only.

Option 1: Cash refund equal to the remaining member contribution balance, if any, at the date of death (where the member contribution balance has been reduced each month by the portion of the monthly benefit deemed to be provided by member contributions).

Option 2: 100% joint and survivor annuity.

Option 3: 50% joint and survivor annuity.

Option 4: Joint and survivor annuity at any percentage other than those available under Option 2 and Option 3.

Option 5: Designated percentage of the benefit (not less than 51%) payable to the member, with the remaining percentage (the two to equal 100%) payable to a beneficiary (may only be a sole beneficiary) while both are alive. At the death of either, the higher of the two percentages is paid to the survivor for the survivor's life, and the lower-percentage benefit ceases to be paid.

Option 6: 100% joint and survivor annuity (Option 2) with pop-up*.

APPENDIX B – SUMMARY OF PROGRAM PROVISIONS

Option 7: 50% joint and survivor annuity (Option 3) with pop-up*.

Option 8: Option 4 with pop-up*.

* The "pop-up" feature attached to a given Option means that in the case of a beneficiary predeceasing the member, the member's benefit will be revised prospectively to the amount that the benefit would have been had the member selected Full Benefit payment upon retirement.

14. Program Changes since Prior Valuation

The Cost-of-Living Adjustment as of September 1, 2021 included an additional one percent in excess of the three percent maximum. In addition, the COLA Base for 2022 was increased by the full change in CPI of 5.4% instead of the maximum COLA Cap of three percent.

Retroactive coverage under the 1998 Special Plan was enacted for certain Department of Corrections employees.

Certain employees of the Maine State Police Crime Laboratory and Computer Crimes Unit were moved from the Regular Plan to the 1998 Special Plan on a prospective basis effective October 1, 2021. Impacted members who were employed on or before that date elected whether to participate in the 1998 Special Plan prospectively or remain in the Regular Plan.

This Appendix B is intended to be a brief summary of provisions. In the event of a dispute, applicable statutes and administrative policy supersede this report description.

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

1. Annual Rate of Investment Return

State Employees	6.50%
Teachers	6.50%

Rate is net of both administrative and investment expense.

2. Cost-of-Living Adjustment (COLA) Assumed Rate

State Employees	2.20%
Teachers	2.20%

3. Annual Rate of Individual Salary Increase (% at Selected Years of Service)

Service	State Employees	Teachers
0	9.43%	13.03%
5	6.24	5.83
10	5.32	4.81
15	3.98	4.29
20	3.78	3.26
25 and over	3.26	2.80

The above rates include a 2.75% across-the-board increase at each year of service.

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

4. Sample Rates of Termination (% at Selected Years of Service)

Service	State Employees	Teachers
0	32.5%	26.0%
5	10.0	9.0
10	6.0	5.5
15	4.0	3.5
20	3.0	3.0
25	2.5	3.0

Non-vested members are assumed to take a refund of contributions with interest. Once vested, the member is assumed to elect the greater of the deferred vested benefit or a refund of member contributions with interest based on present value at the time of termination.

5. Sample Rates of Mortality for Healthy Annuitant Lives at Selected Ages (number of deaths per 10,000 members)

	(Showing values in 2022)			
	State Employees		Teachers	
Age	Male	Female	Male	Female
50	31	25	10	6
55	47	35	21	17
60	71	48	36	26
65	103	69	59	37
70	159	112	97	60
75	269	200	179	114
80	485	370	342	320
85	894	703	715	629
90	1,556	1,314	1,335	1,191
95	2,428	2,146	2,246	2,119

Rates for State Employees are based on 112.1% and 118.5% of the 2010 Public Plan General Benefits-Weighted Healthy Retiree Mortality Table, respectively, for males and females.

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

Rates for Teachers are based on the 2010 Public Plan Teacher Benefits-Weighted Healthy Retiree Mortality Table adjusted as follows:

- 98.1% and 87.5% respectively of the rates for males before age 85 and females before age 80
- 106.4% and 122.3% respectively of the rates for males on and after age 85 and females on and after age 80

The rates are projected generationally using the RPEC_2020 model, with an ultimate rate of 1.00% for ages 80 and under, grading down to 0.05% at age 95, and further grading down to 0.00% at age 115, along with convergence to the ultimate rates in the year 2027. All other parameters used in the RPEC_2020 model are those included in the published MP-2020 scale.

6. Sample Rates of Mortality for Active Lives at Selected Ages (number of deaths per 10,000 members)*

	(Showing values in 2022)			
	State Employees		Teachers	
Age	Male	Female	Male	Female
20	3	1	3	1
25	3	1	2	1
30	4	2	3	2
35	6	3	4	3
40	7	4	5	3
45	9	5	7	4
50	12	7	10	6
55	18	11	15	10
60	28	17	25	16
65	39	25	41	24

* For State Regular and Teachers, 5% of deaths assumed to arise out of and in the course of employment; for State Special, 20% of deaths are assumed to arise out of and in the course of employment.

Rates for State Employees are based on 83.5% and 88.6% of the 2010 Public Plan General Benefits-Weighted Employee Mortality Table, respectively, for males and females. Rates for Teachers are based on 93.1% and 91.9% of the 2010 Public Plan Teacher Benefits-Weighted Employee Mortality Table, respectively, for males and females. These rates are generationally projected using the same version of the RPEC_2020 model as described in the healthy annuitant mortality.

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

7. Sample Rates of Mortality for Disabled Annuitant Lives at Selected Ages (number of deaths per 10,000 members)

	(Showing values in 2022)			
	State Employees		Teachers	
Age	Male	Female	Male	Female
25	36	21	32	25
30	54	37	47	42
35	73	57	64	69
40	90	76	79	91
45	113	99	99	119
50	161	143	141	172
55	219	184	192	221
60	278	213	244	255
65	330	222	289	267
70	389	262	341	314

Rates for State Employees are based on 107.3% and 103.2% of the 2010 Public Plan Non-Safety Benefits-Weighted Disabled Retiree Mortality Table, respectively, for males and females. Rates for Teachers are based on 94.2% and 123.8% of the 2010 Public Plan Non-Safety Benefits-Weighted Disabled Retiree Mortality Table, respectively, for males and females. These rates are generationally projected using the same version of the RPEC_2020 model described in the healthy annuitant mortality.

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

8. Sample Rates of Retirement at Selected Ages (number retiring per 1,000 members)

Teachers and State Regular Plans

	State Regular Employees			Teachers		
Age	NRA 60	NRA 62	NRA 65	NRA 60	NRA 62	NRA 65
57	40	35	N/A	40	35	N/A
59	260	40	N/A	200	45	N/A
60	210	50	20	275	80	20
61	210	350	20	210	240	20
62	210	270	50	230	220	50
63	250	180	80	220	180	80
64	190	200	300	280	220	200
65	210	220	250	340	300	300
70	200	200	200	300	200	300
75	350	350	250	400	200	300
80	1,000	1,000	1,000	1,000	1,000	1,000

In the case of State Regular and Teacher employees, NRA 60 refers to those who had accrued at least 10 years of service by July 1, 1993. NRA 62 refers to those who had not accrued at least 10 years of service by July 1, 1993 or were hired after that date but had five years of service by July 1, 2011. NRA 65 refers to those who did not have five years of service by July 1, 2011. Rates are only applied for early retirement when the member is at least age 57. Earlier rates are applicable for normal retirement.

State Special Plans

Members of the 1998 Special Plan are assumed to retire at rates that vary by age and whether service is less than 25 years or not. Sample rates are as follows:

	1998 Special Plan Retirement	
Age	Service < 25	Service >= 25
55	20.0%	25.0%
57	10.0	25.0
60	20.0	30.0
62	30.0	30.0
65	23.4	30.0
67	36.8	50.0
70	100.0	100.0

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

Members of the 25 & Out Plan are assumed to retire at rates that vary by service. Sample rates are as follows:

25 & Out Plan	
Service	**Assumption**
<24	0.0%
25-29	25.0
30-31	25.0
32-34	40.0
35-37	40.0
38+	100.0

Members of State Special Plans other than the 25 & Out Plan and the 1998 Special Plan are all currently assumed to retire at a rate of 50% per year, beginning when they reach eligibility for unreduced benefits, with a 100% assumed rate at age 70. Rates are only applied when the member is at least age 50.

9. Sample Rates of Disability at Selected Ages (number becoming disabled per 10,000 members)*

State Employees			
Age	**Regular**	**Special**	**Teachers**
25	2.5	5.4	1.1
30	3.1	6.5	1.2
35	9.3	9.9	1.2
40	14.0	15.8	1.6
45	16.0	24.4	3.1
50	18.0	36.4	6.6
55	25.0	42.6	22.1
60	43.4	46.4	22.2

* 10% assumed to receive Workers Compensation benefits offsetting disability benefit; also, current rates for State Special groups are higher by 7 per 10,000 at all ages.

10. Family Composition Assumptions

80% of active members are assumed to be married and have two children born when the member is 24 and 28; children are assumed dependent until age 18; a female spouse is assumed to be three years younger than a male spouse; member is assumed to have no dependent parents; unmarried members are assumed to have beneficiaries entitled to benefits worth 80% as much as those of married members' beneficiaries.

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

11. Vacation/Sick Leave Credits

Members can use up to 90 days of unused, unpaid vacation and sick leave at retirement to increase creditable service.

For members who had 10 years of service on July 1, 1993, payment for up to 30 days of unused vacation and sick leave may be used to increase final average compensation, subject to an earnings cap. To reflect this, projected retirement benefits are increased by 0.48% for state (regular) employees and 0.75% for teachers for impacted members.

12. Technical and Miscellaneous Assumptions

Decrement Timing: Middle of the valuation year.

Pay Increase Timing: Salary provided is treated as the rate of pay as of the valuation date. Annual increases are applied as of the beginning of each subsequent valuation.

Member Contribution Interest Rate: Reflect actual historical member contribution interest rates from 1970 through the valuation; future contribution interest assumed to equal the inflation assumption of 2.75%.

COLA Timing: September 1.

Special Plan Member Contribution Rates: For members of Special Plans where the contribution rate drops from 8.65% to 7.65% after a given number of years, 8.65% is used for all years for valuation purposes as a simplifying assumption reflecting data limitations.

13. Rationale for Assumptions

The demographic assumptions were adopted by the Board of Trustees at their March 11, 2021 meeting. The discount rate was adopted by the Board of Trustees at their August 12, 2021 meeting. The demographic assumptions adopted are based on an experience study covering the period from July 1, 2015 through June 30, 2020, and the economic assumptions are based on this experience study along with advice of the MainePERS investment consultants.

14. Changes since Last Valuation

None.

15. Rationale for Change in Actuarial Assumptions

N/A

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

16. Disclosure of Models Used

ProVal: Cheiron utilizes ProVal, an actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate the liabilities, normal costs, and projected benefit payments. We have relied on WinTech as the developer of ProVal. We have reviewed ProVal and have a basic understanding of it and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this actuarial valuation.

Projection Model: This report includes projections of future contributions, assets, liabilities, and funded status for the purpose of assisting the Board of Trustees with the management of the Fund. We have used Cheiron's P-Scan and R-Scan models to develop these projections. The model is also used to stress test the impact of volatile asset returns over the projection period.

The P-Scan projection uses projected benefit payments for current members but does not include projected benefit payments for new members. This limitation is not material for the next 20 years, but longer projection periods should be viewed with caution. The P-Scan projection uses standard roll-forward techniques that implicitly assume a stable active population. Changes in the demographic characteristics of the active population will lead to different results.

The stochastic projections of investment returns assume that each future year's investment return is independent from all other years and is identically distributed according to a lognormal distribution. This assumption may result in an unrealistically wide range of compound investment returns over longer periods of time. The standard deviation used in the stochastic projection of investment returns was provided by the investment consultant.

Mortality Improvement Model: Cheiron utilized the RPEC_2014_v2020 Model Implementation Tool for the purposes of developing the customized version of MP-2020 used in this report. This tool is updated and published annually by the Society of Actuaries and their Retirement Plans Experience Committee and allows actuaries to develop customized versions of mortality improvement scales based on the parameters and data underlying the published MP-2020 scale but allowing practitioners to vary parameters from those used in the published MP-2020 scale.

We have reviewed this model and believe it is appropriate to our intended use in developing a customized mortality improvement scale for the Programs. Further, we are aware of no material inconsistencies that would limit our ability to use this model for its intended purpose.

APPENDIX C – ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

1. Cost Method

For the Plans in this Program, the funding methodology employed is the entry age normal cost method. Under this method, there are two components to the total contribution: the normal cost rate (NC rate), and the unfunded actuarial liability rate (UAL rate). Both of these rates are developed for each Plan within the Program, consisting of the Teacher Program, the State Regular Plan, and several State Special Plans.

For each Plan in the Program, an individual entry age normal cost rate is determined for each active member. The normal cost is determined by the following steps. First, an individual normal cost rate is determined by taking the value, as of entry age into a Plan, of each active member's projected future benefit. Second, this value is then divided by the value, also at entry age, of the member's expected future salary. Finally, the rate is reduced by the member contribution rate to produce the employer normal contribution rate. These rates are then multiplied by each member's salary as of the valuation date to get the total normal cost dollars as of the valuation date for that Plan and then divided by the total payroll at the valuation for the Plan to get the normal cost rate for that Plan. This process results in specific normal cost rates for each of the Plans in the Program.

The unfunded actuarial liability under the entry age normal cost method equals the present value, at the time of valuation, of the future benefit payments less the present value of future employer normal cost contributions, future member contributions, future UAL payments, and current assets. The UAL rate determined is the percentage that applied to member payroll is expected to amortize the UAL according to the Program's amortization policy. Specifically, the remaining original UAL has 6 years of its prescribed amortization period remaining and all other gains and losses, including assumption changes, are amortized over twenty-year periods beginning on the date as of which they occur. The UAL amortization uses a level percentage of pay method with payroll assumed to increase at 2.75% annually. Amortization payments are assumed to occur at each pay period. Benefit changes are funded immediately and are therefore not included in the amortization of the UAL. With the 2022 ratemaking, the 2014 gain base was accelerated by six years from the standard twenty-year schedule.

2. Asset Valuation Method

For purposes of determining the employer contributions to the Program and the Program's funded ratio, we use an actuarial value of assets. The asset adjustment method dampens the volatility in asset values that could occur because of fluctuations in market conditions. Use of an asset smoothing method is consistent with the long-term nature of the actuarial valuation process.

In determining the actuarial value of assets, we calculate an expected actuarial value based on the cash flows for the year and imputed returns at the actuarial assumption. This expected value is compared to the actual market value at the valuation date and one-third

of the difference is added to the preliminary actuarial value to arrive at the final actuarial value.

3. Changes since Last Valuation

Consistent with the 2022 ratemaking, the amortization of the FY 2014 gain base was accelerated by six years resulting in a remaining amortization period of six years as of June 30, 2022.

4. Rationale for Change

The amortization of the 2014 gain base was changed to maintain rate stability and provide a more stable progression of costs before the exhaustion of the 1996 unfunded actuarial liability.

APPENDIX D – GLOSSARY OF GASB TERMS

1. Actuarially Determined Contribution

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

2. Actuarial Valuation Date

The date as of which an actuarial valuation is performed. This date may be up to 24 months prior to the measurement date and up to 30 months prior to the employer's reporting date.

3. Deferred Inflow of Resources

An acquisition of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience gains on the Total Pension Liability, assumption changes reducing the Total Pension Liability, or investment gains that are recognized in future reporting periods.

4. Deferred Outflow of Resources

A consumption of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 68, these are experience losses on the Total Pension Liability, assumption changes increasing the Total Pension Liability or investment losses that are recognized in future reporting periods.

5. Entry Age Actuarial Cost Method

The actuarial cost method required for GASB Nos. 67 and 68 calculations. Under this method, the actuarial present value of the projected benefits of each individual, included in an actuarial valuation, is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this actuarial present value allocated to a valuation year is called the Service Cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future service costs is called the Total Pension Liability.

6. Measurement Date

The date as of which the Total Pension Liability and Program Fiduciary Net Position are measured. The Total Pension Liability may be projected from the Actuarial Valuation Date to the Measurement Date. The Measurement Date must be the same as the Reporting Date for the Program.

APPENDIX D – GLOSSARY OF GASB TERMS

7. Net Pension Liability

The liability of employers and non-employer contributing entities for employees for benefits provided through a defined benefit pension plan. It is calculated as the Total Pension Liability less the Program Fiduciary Net Position.

8. Program Fiduciary Net Position

The fair or market value of assets.

9. Reporting Date

The last day of the Program or employer's fiscal year.

10. Service Cost

The portion of the actuarial present value of projected benefit payments that is attributed to the current period of employee service in conformity with the requirements of GASB Nos. 67 and 68. The Service Cost is the normal cost calculated under the entry age actuarial cost method.

11. Total Pension Liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of GASB Nos. 67 and 68. The Total Pension Liability is the actuarial liability calculated under the entry age actuarial cost method.