Maine Public Employees Retirement System State Employee and Teacher Retirement Program

Actuarial Valuation Report as of June 30, 2016

Produced by Cheiron

October 2016

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October 28, 2016

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, 2016 Actuarial Valuation Report for the State Employee and Teacher Retirement Program (Program) of the Maine Public Employees Retirement System (MainePERS). This report is for the 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 the Program's financial condition including assets, liabilities, and contributions of the Program, as well as the required accounting statement disclosures under the Governmental Accounting Standards Board 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.

The results of this report rely on future plan experience conforming to the underlying assumptions and methods outlined in this report. To the extent that the actual plan experience deviates from the underlying assumptions and methods, or there are any changes in plan provisions or applicable laws, the results would vary accordingly.

To the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. 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 valuation was prepared for the Maine Public Employees Retirement System for the purposes described herein and for the use by the plan 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 any other user.

Sincerely,
Cheiron

Gene Kalwarski, FSA, EA
Principal Consulting Actuary

Fiona E. Liston, FSA, EA
Principal Consulting Actuary

FOREWORD

Cheiron has completed the Actuarial Valuation Report of the Maine Public Employees Retirement System State Employee and Teacher Program (Program) as of June 30, 2016. The purpose of this report is to:

1) Measure and disclose, as of the valuation date, the financial condition of the Program;

2) Indicate trends, both historical and prospective, in the financial condition of the Program;

3) Report on the employer contribution rates developed in this valuation for informational purposes (the actual contributions to be paid by the employers for Fiscal Year (FY) 2016 were developed in July 2014, based on a roll forward of the June 30, 2013 valuation); and

4) Provide specific information and documentation required for MainePERS financial disclosures.

An actuarial valuation establishes and analyzes assets and liabilities on a consistent basis, and traces 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 trends experienced by the Program in recent years, and providing analysis relating to the future status of the Program.

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

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

Section IV develops the employer contribution rates to be compared to those actually established during the budgeting process.

Section V includes financial disclosure information.

Finally, at the end of this report we present appendices that contain a summary of the:

- Program membership by plan at the valuation date (Appendix A);
- Actuarial methods and assumptions used in the valuation (Appendix B);
- Major benefit provisions of the Program and the various plans included in the Program (Appendix C); and
- Terminology used in the Governmental Accounting Standards Board (GASB) disclosures provided as a glossary (Appendix D).

SECTION I - BOARD SUMMARY

General Comments

The annual employer contributions to the plans in this Program are determined on a biennial basis. The contributions developed through the State's budgeting process to produce the applicable contributions in FY 2017 were based on the liabilities of the June 30, 2013 valuation, adjusted for anticipated growth in benefits and reductions due to payouts to reflect our best estimate of the June 30, 2014 liability together with the June 30, 2014 preliminary asset information available during the ratemaking process. The contributions developed through the State's budgeting process to produce the applicable contributions in FY 2018 were based on the liabilities of the June 30, 2015 valuation, adjusted for recently adopted changes in assumptions, anticipated growth in benefits, and reductions due to payouts to reflect our best estimate of the June 30, 2016 liability together with the June 30, 2016 preliminary asset information available during the ratemaking process. This adjustment process also reflects any change in assumptions or plan provisions between the valuation date and the date the contributions will be made. The results of this June 30, 2016 valuation will be used primarily for accounting disclosures. Next year's June 30, 2017 valuation will be used as the basis for the applicable FY 2020 and FY 2021 State budget contributions.

Experience from July 1, 2015 through June 30, 2016 (FY 2016)

The State of Maine composite total employer rate produced by the June 30, 2015 valuation for all plans in the State Employee and Teacher Retirement Program was 16.07% of payroll. The same rate produced in this valuation is 19.29% of payroll. The change in contribution rate was attributable to several elements, including a loss in investment returns, a loss in liabilities, and a change in several of the actuarial assumptions. Details on the assumption changes can be found in a separate report.

As of June 30, 2016, the Program had an unfunded actuarial liability (UAL) of $2.557 billion. This represents an increase of $0.316 billion from the $2.241 billion UAL measured as of June 30, 2015. The specific factors contributing to this change are presented in Table I-1 below. There are separate columns showing the impact of liabilities and investments.

Table I-1

$ in Billions	Liabilities	Assets*	UAL
Value as of June 30, 2015	$ 12.616	$ 10.375	$ 2.241
Expected Change	0.342	0.422	(0.080)
Impact of Assumption Changes	0.030	0.000	0.030
Recognized Investment Loss	0.000	(0.284)	0.284
Recognized Liability Loss	0.082	0.000	0.082
Value as of June 30, 2016	$ 13.070	$ 10.513	$ 2.557

* Demonstration uses the actuarial value of assets. Results would be different if the market value was used.

SECTION I - BOARD SUMMARY

Trends

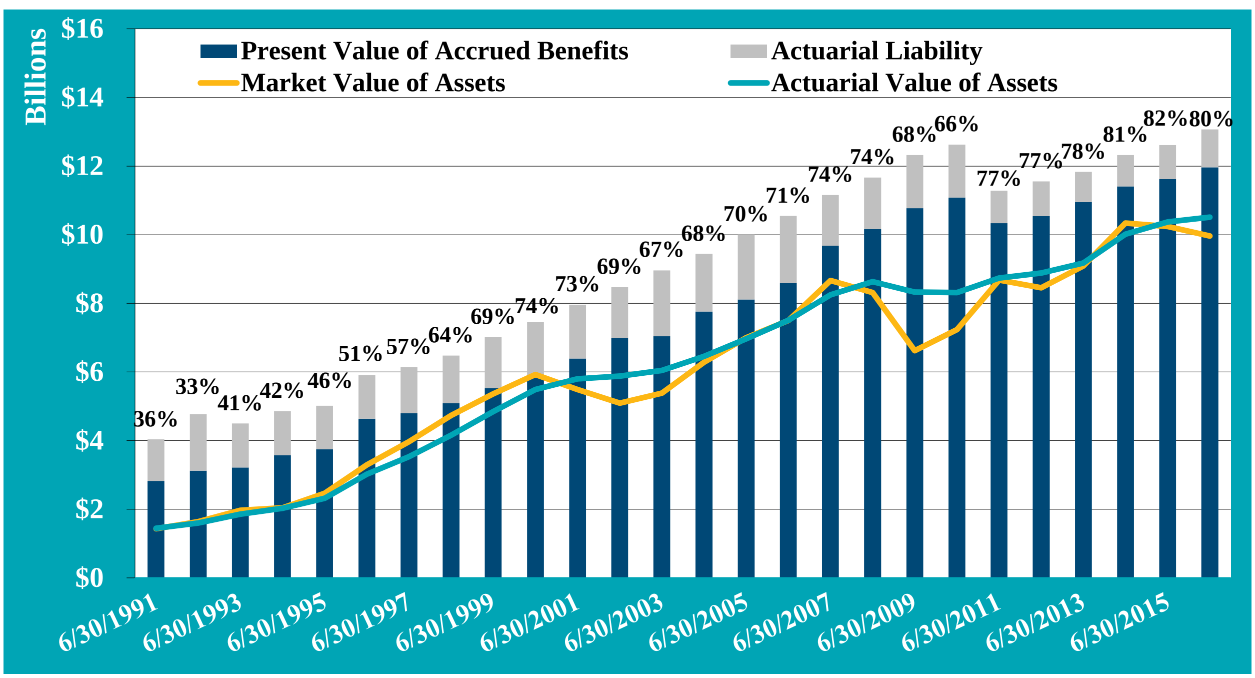
It is important to take a step back from the latest results and view them in the context of the Program's history. On the next few pages, we present a series of graphs that display key historical trends in the Program's financial condition. Following the historical review, we present projections of the probable condition of the Program in the future under various market return scenarios.

Assets and Liabilities

The graph shown below illustrates the progress of assets against liabilities for the Program since June 30, 1991. The blue bars represent the present value of accrued benefits (PVAB) as of June 30 of the indicated years.

The actuarial liability (AL), the liability measure used for funding purposes, is represented by the top of the grey bars. The actuarial value of assets (AVA) divided by this measure of liability is the AVA funded ratio used in evaluating the Program's financial status. These values as of each valuation date are the percentages shown in the graph labels.

Plan changes were legislated during 2010 and first reflected in the 2011 valuation, resulting in a reduction in liability for that year. As of June 30, 2016, the Program is funded 80% based on the AVA funded ratio, which represents a decrease from the prior valuation.

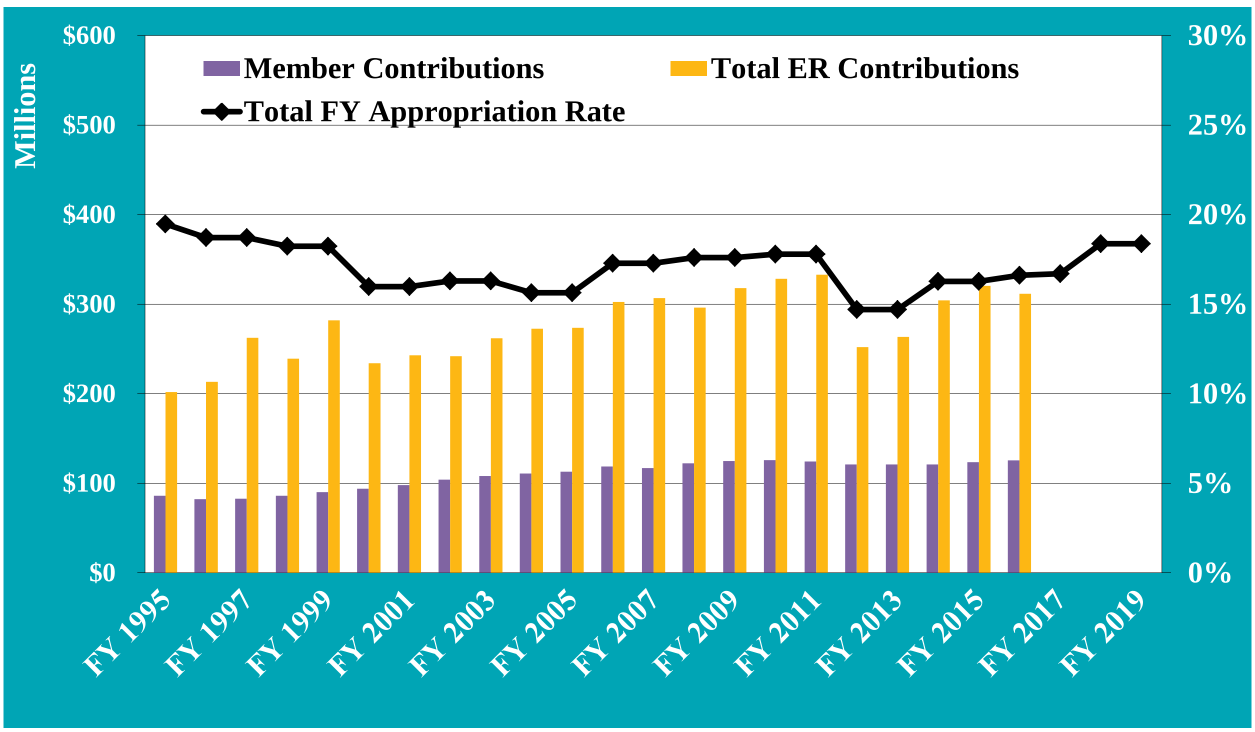


SECTION I - BOARD SUMMARY

Contributions

The graph below shows the history of contributions to the Program, both as dollar amounts and as a percentage 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) ending in the year indicated by the horizontal axis. These bars are read using the left-hand axis. The black line shows the total employer appropriation contribution rate for the FY as a percentage of payroll and should reference the right-hand axis. The FY 2017 through 2019 contributions has already been determined based on the budgeting process, so three additional years of the contribution rate are shown versus the dollars received.

The member contribution rates are set by statute, based on the plan in which the member participates. The total employer contribution rate is set by the actuarial process, on a biennial basis. The contribution rate for FY 2016 was based on a roll forward of the June 30, 2013 valuation to June 30, 2014.



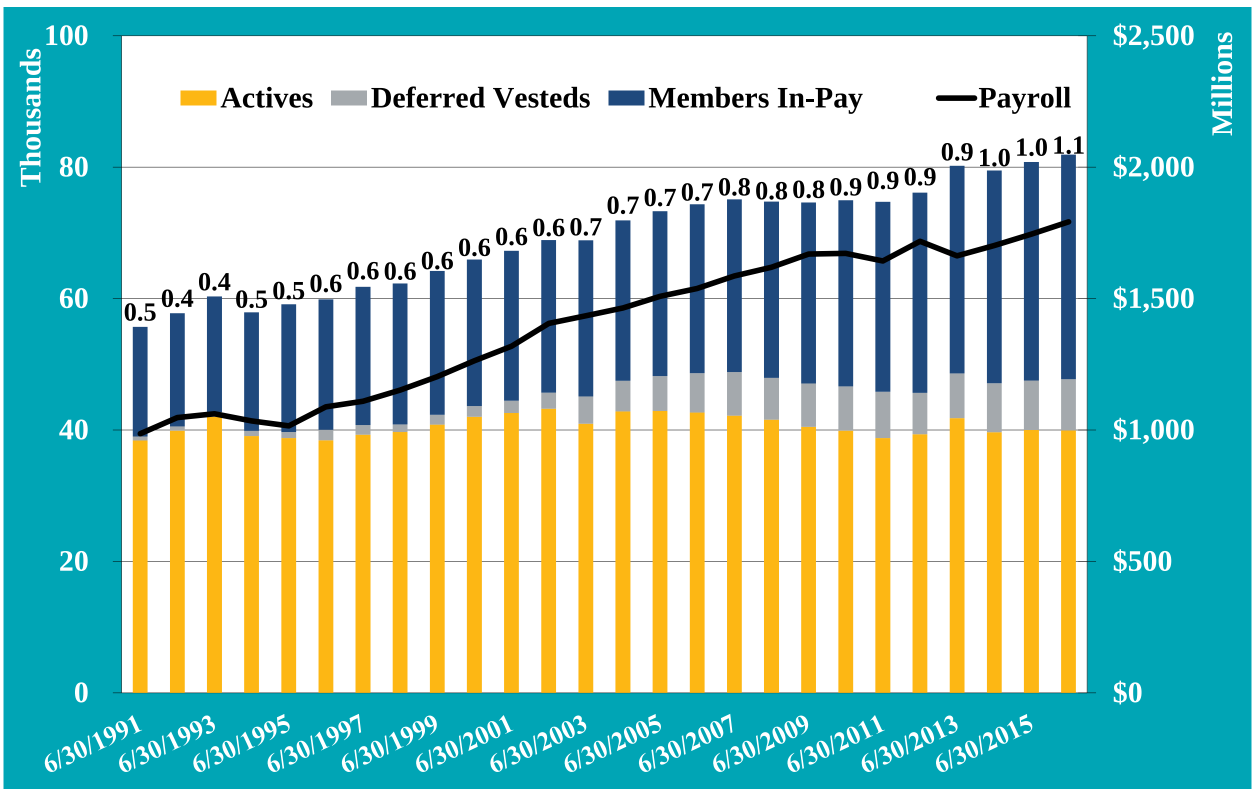
Participant Trends

The stacked bars in the graph on the following page show the number of actives, terminated vested, and members in-pay status covered by the Program as of June 30 of each year indicated and is read using the left-hand axis of the graph. As with many funds in this country, there has been a steady growth in the number of retired members as the Program has matured. The labels above each bar show the ratio of inactive members (members in-pay plus deferred vested members) per active member, which has been generally increasing since 1991. We anticipate

SECTION I - BOARD SUMMARY

that this ratio will continue to increase as the "baby boomer" generation enters retirement. While an increasing ratio would be a concern in a plan with no prefunding, in the Program's case, it just indicates that there may be difficulty in recovering from an investment loss since assets are lost on all covered liabilities, but contributions only come in on the basis of payroll. The more negative a plan's cash flows, the more sensitive, in terms of contribution volatility, the plan is to volatile investment markets. The valuation process takes this trend into account, and the projections on the next few pages show that the assets are expected to be sufficient to meet this growing cash flow disparity.

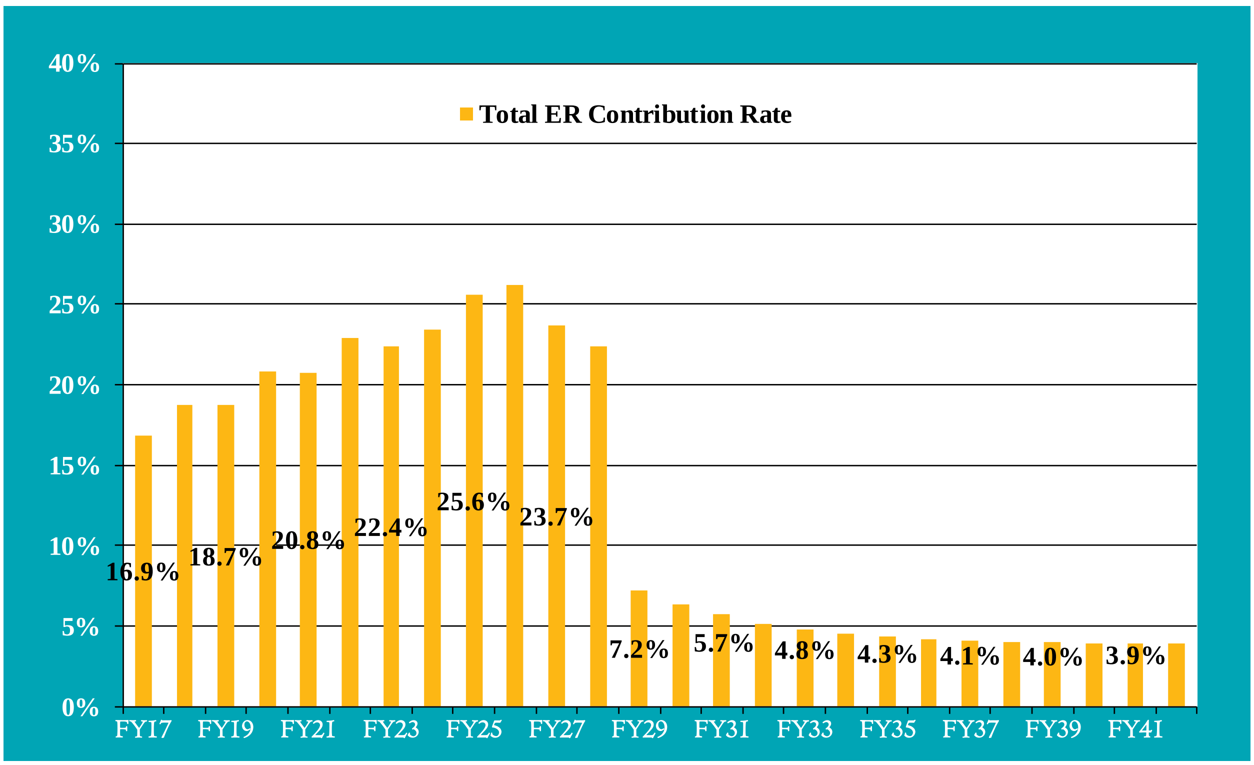
The black line in the graph indicates the total covered payroll of actives in the Program and is read using the right-hand axis of the graph. It has been generally increasing since 1991.



Projections

Our analysis of the projected financial trends for the Program is an important part of this valuation. In this section, we present sensitivity analysis of future valuation results in terms of benefit security, the previously referenced AVA funded ratio (AVA over AL), and the expected employer contribution rates. We first present a baseline projection of these future results if all actuarial assumptions being exactly met during the projection period, including the assumed 6.875% investment return being achieved each year. We then present the same projections based on achieving all assumptions exactly met except for having investment earnings 1% above and 1% below the assumed 6.875% return. The primary purpose of presenting these projections is to demonstrate how sensitive future valuation results are to deviations from our investment return expectations.

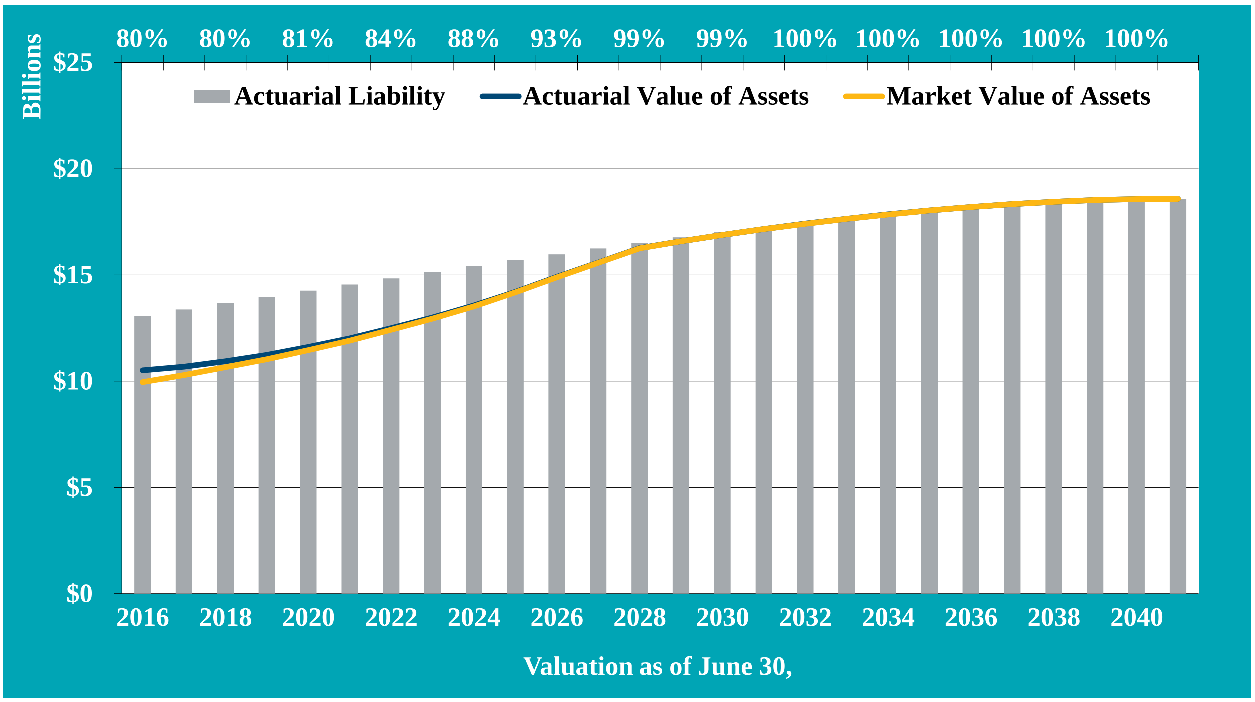
Baseline Projections



The graph above shows the expected progress of the Program's employer contribution rates over the next 25 years assuming that the Program's assets earn 6.875% on their *market value*. It shows that the overall composite employer contribution rate for the Program is projected to increase for the next nine years as the recent loss bases are fully amortized. The initial UAL balance under the current funding method will be paid off in FY 2028. At that point the employer contribution rate under this scenario drops substantially to 7.2%, with continual declines thereafter. Note that this projection is based on the assumption that all actuarial assumptions are exactly met each and

SECTION I - BOARD SUMMARY

every year, including the 6.875% investment assumption. 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. Also, due to the short amortization periods set by the State's Constitution (currently 10 years for new layers), there will always be significant volatility in the rate as is shown above for the period 2017 through 2028.



The graph above shows the projected funded ratio (AVA divided by AL) over the next 25 years in this baseline scenario. It shows that the Program's funded ratio is projected to improve from the starting level of 80% as of FY 2016 to 100% funding in FY 2032, which is after the year that the Maine Constitution mandates that the Program's UAL is to be paid off. This is because annual gains and losses will always occur; meaning that by 2028, there will be either an unfunded actuarial liability (if more losses occur) or a surplus of plan assets (if more gains occur).

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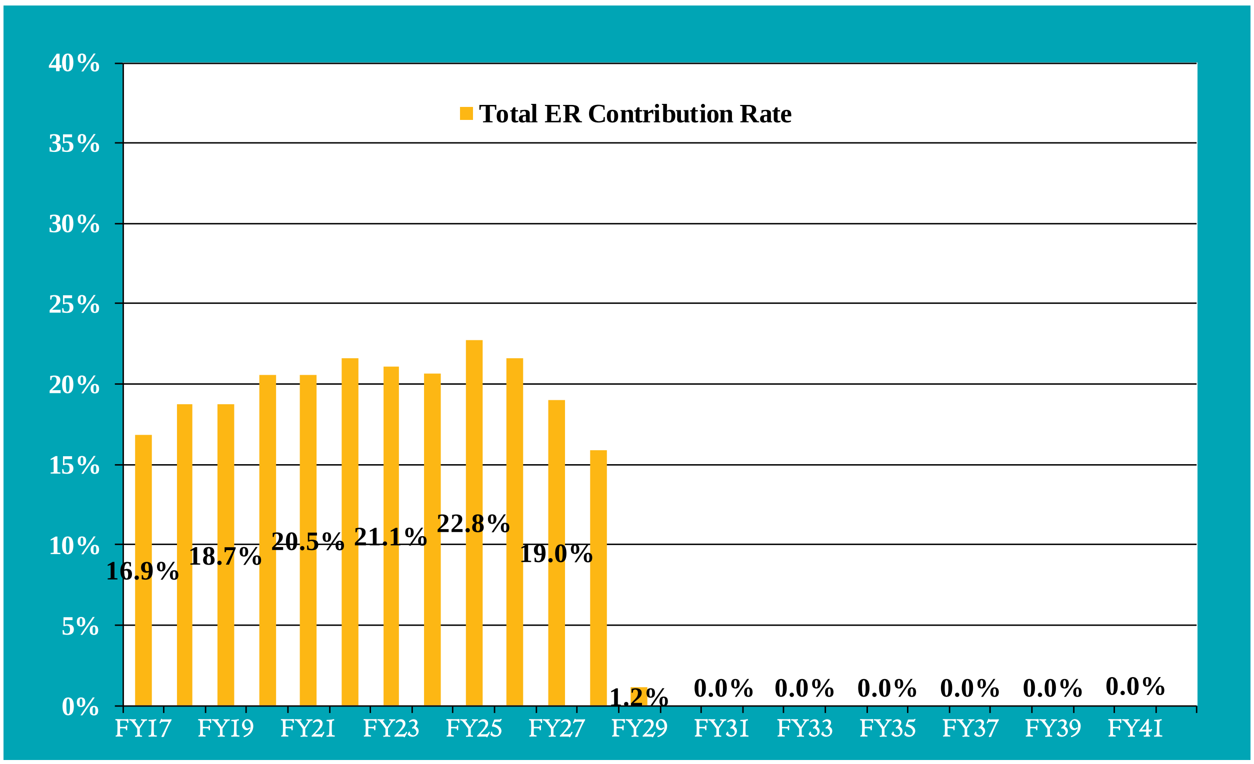
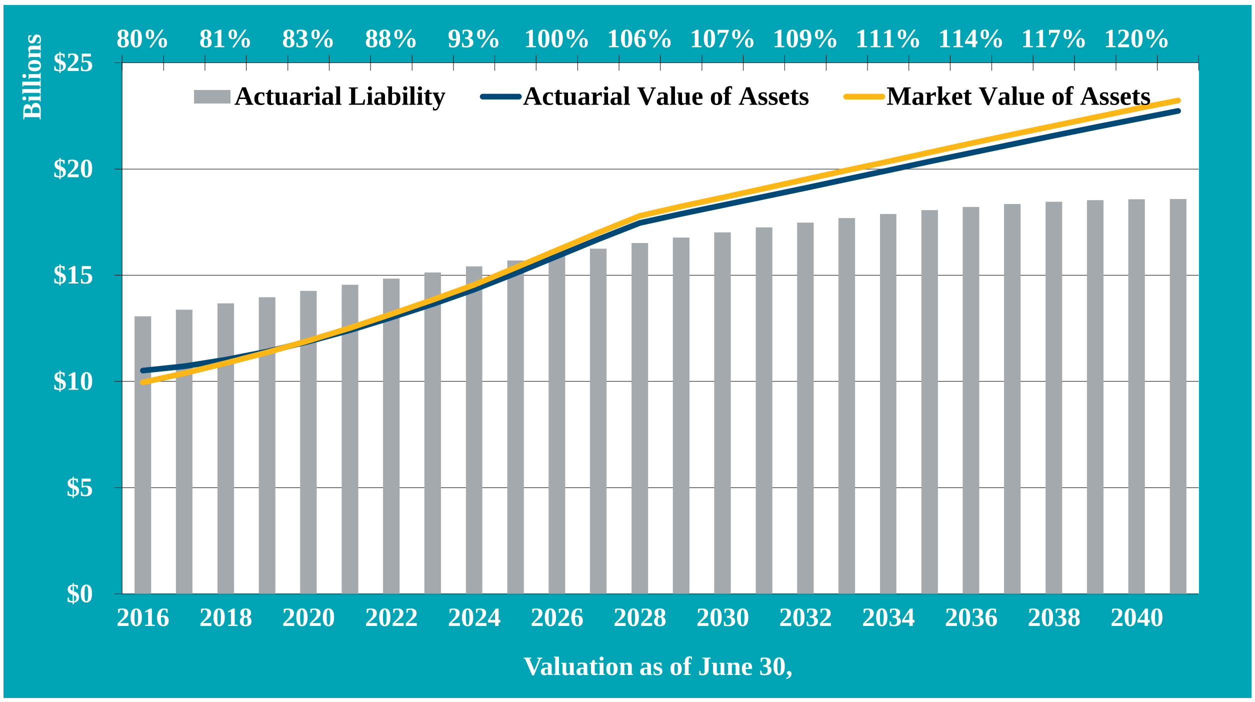
Projections with Asset Returns of 7.875%

The future funding of this Program will be significantly driven by the investment earnings as relatively minor changes in the market returns can have significant effects on the Program's funding status. The graph below shows that with 7.875% annual returns in each year while exactly meeting all other assumptions, the composite total employer contribution rate would increase at a much slower rate and then decline at the end of the initial UAL payoff period. After the payoff period, both the normal cost rate and the UAL rates would go to zero. This is due to the excess earnings each year resulting in a surplus of assets such that the amortization of the surpluses would be more than enough to offset the entirety of the employer normal cost for the remainder of the projection period.



SECTION I - BOARD SUMMARY

Assuming the same 7.875% return on investments scenario, this next graph shows that the Program's funded ratio would increase to reach 100% by 2026, and then continue to improve. The reason the plan reaches 100% funding in the year 2026 and the UAL payments in the graph above continued until 2028 has to do with the timing of when the valuation is performed and when the State's biennial budget is set.



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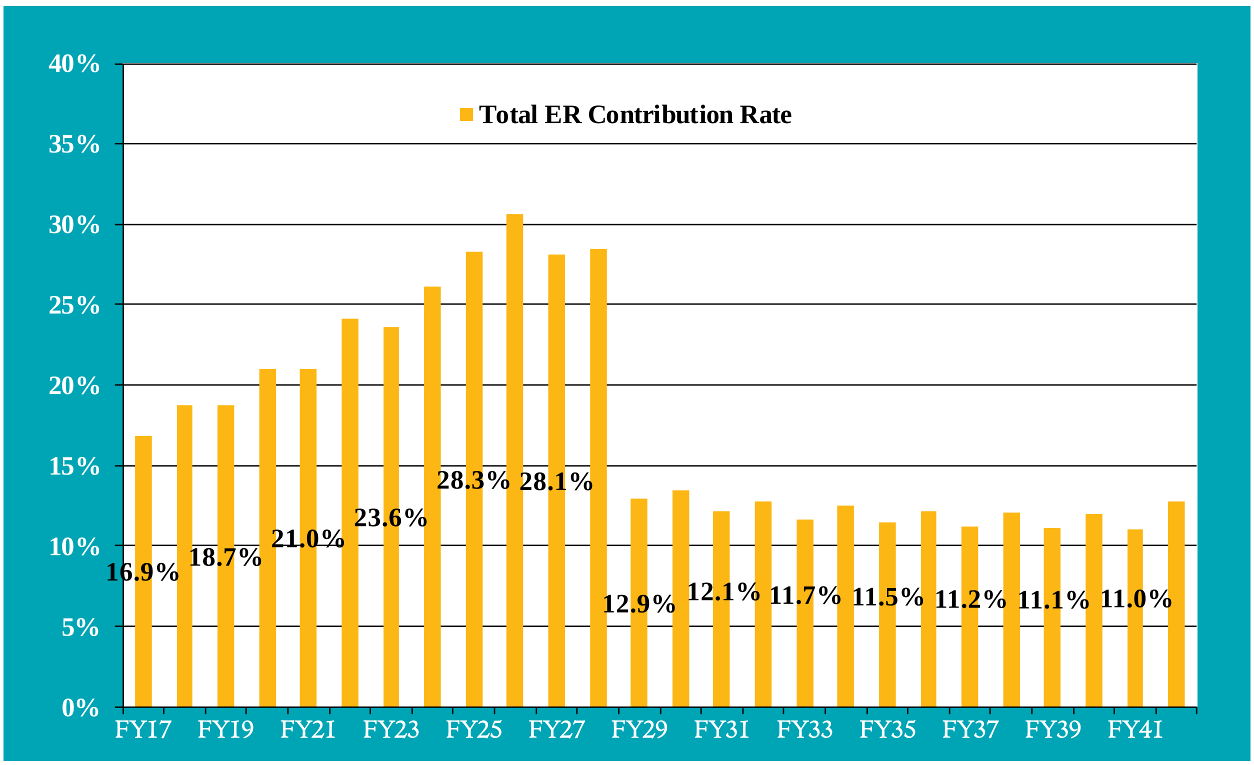
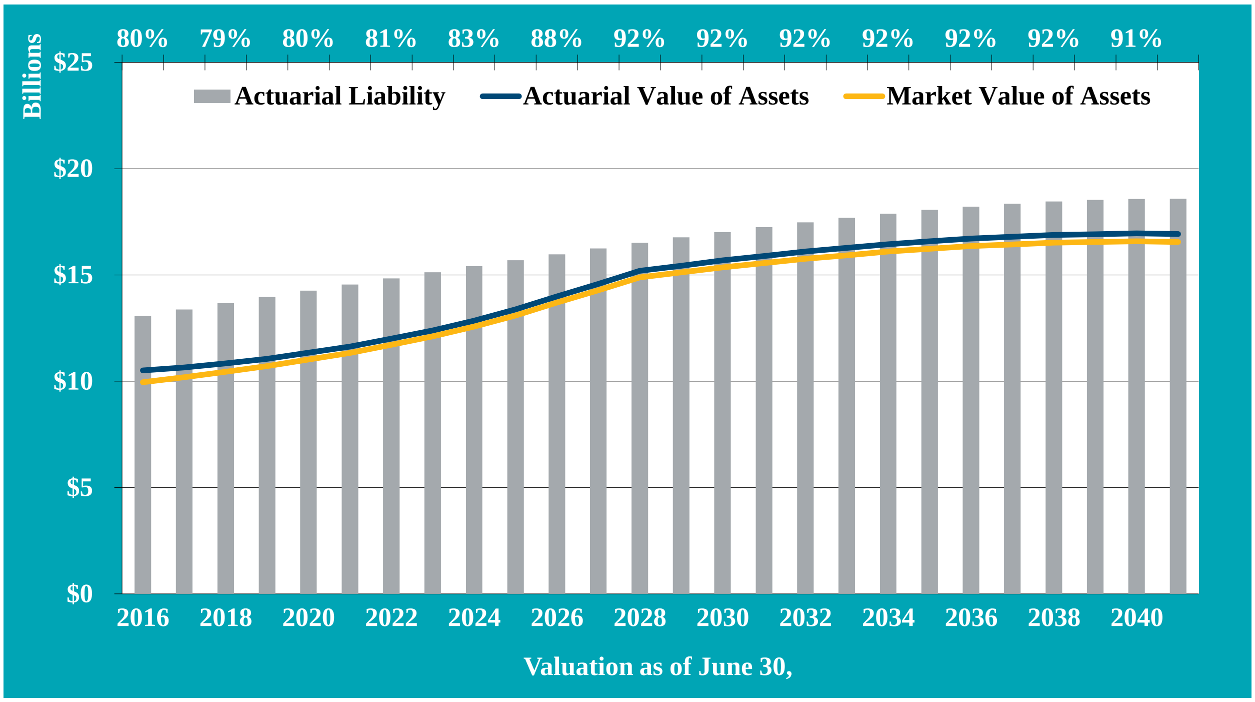
Projections with Asset Returns of 5.875%

Just as returns in excess of the rate of return assumption will lead to declining employer contributions and an improved funded ratio, the opposite will occur if actual investment earnings are below the assumed rate. The graph below shows the contribution projection under a 5.875% annual return scenario, continuing to meet all other assumptions exactly. The period of decline in the composite employer contribution rate will be shorter than in the baseline scenario, and this contribution rate would rise to around 30% of payroll in order to meet the Constitutional funding requirements. Beyond 2028, there will be continued unfunded actuarial contributions in order to amortize the annual investment losses of 1% each year compared to the assumed rate of return.



SECTION I - BOARD SUMMARY

The next graph shows that the Program's funded ratio would increase to 92% over the next 25 years with actual returns at 5.875%, one percentage point lower than the assumed rate. In addition, under this scenario, the Program would still have an unfunded actuarial liability (UAL) in 2028, the end of the current amortization period. The Constitutional Amendment would be satisfied, in that the UAL existing on July 1, 1997 would be paid off by 2028, but new losses that create additional UAL would continue to be funded over up to ten years each based on the Constitutional Amendment.



Principal Results Summary

The balance of this Board Summary section of the Actuarial Valuation Report presents a summary of the principal results of the valuation, comparing key results between this year's valuation and last year's for member counts, assets and liabilities, and contribution rates. These summary results are shown for the total State Employee and Teacher programs, and then for each of these subgroups.

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

Valuation as of:	June 30, 2015	June 30, 2016	% Change
Member Counts			
Active Members	40,016	39,942	(0.2%)
Retired Members	24,880	25,734	3.4%
Beneficiaries of Retired Members	6,059	6,143	1.4%
Survivors of Deceased Members	637	644	1.1%
Disabled Members	1,684	1,660	(1.4%)
Deferred Vested Members	7,511	7,783	3.6%
Inactives Due Refunds	36,810	37,656	2.3%
Total Membership	117,597	119,562	1.7%
Annual Payroll of Active Members	$ 1,745,075,075	$ 1,792,004,417	2.7%
Annual Payments to Benefit Recipients	$ 691,848,265	$ 728,131,830	5.2%
Assets and Liabilities			
Actuarial Liability (AL)	$ 12,616,287,054	$ 13,069,954,948	3.6%
Actuarial Value of Assets (AVA)	10,375,552,498	10,512,524,178	1.3%
Unfunded Actuarial Liability (UAL)	$ 2,240,734,556	$ 2,557,430,770	14.1%
AVA Funding Ratio (AVA/AL)	82.2%	80.4%	
MVA Funding Ratio (MVA/AL)	81.2%	76.2%	
Accrued Benefit Liability (PVAB)	$ 11,620,489,393	$ 11,965,421,559	3.0%
Market Value of Assets (MVA)	10,242,097,022	9,960,335,390	(2.8%)
Unfunded PVAB	$ 1,378,392,371	$ 2,005,086,169	45.5%
Accrued Benefit Funded Ratio	88.1%	83.2%	
Contributions as a Percentage of Payroll			
Employer Normal Cost Rate	3.95%	4.19%	
UAL Rate	12.12%	15.10%	
Total Employer Rate	16.07%	19.29%	
From 2014 Ratemaking (FY16/FY17)	16.62%	16.70%	
From 2016 Ratemaking (FY18/FY19)	18.38%	18.37%	

SECTION I - BOARD SUMMARY

Table I-3
Summary of Principal Results
Teachers Program

Valuation as of:	June 30, 2015	June 30, 2016	% Change
Member Counts			
Active Members	27,200	27,052	(0.5%)
Retired Members	14,984	15,609	4.2%
Beneficiaries of Retired Members	2,783	2,861	2.8%
Survivors of Deceased Members	278	284	2.2%
Disabled Members	703	695	(1.1%)
Deferred Vested Members	4,700	4,931	4.9%
Inactives Due Refunds	30,549	30,931	1.3%
Total Membership	81,197	82,363	1.4%
Annual Payroll of Active Members	$ 1,154,016,315	$ 1,172,879,963	1.6%
Annual Payments to Benefit Recipients	$ 424,433,055	$ 450,491,142	6.1%
Assets and Liabilities			
Actuarial Liability (AL)	$ 8,208,737,166	$ 8,432,364,488	2.7%
Actuarial Value of Assets (AVA)	6,947,987,526	7,035,241,991	1.3%
Unfunded Actuarial Liability (UAL)	$ 1,260,749,640	$ 1,397,122,497	10.8%
AVA Funding Ratio (AVA/AL)	84.6%	83.4%	
MVA Funding Ratio (MVA/AL)	83.6%	79.0%	
Accrued Benefit Liability (PVAB)	$ 7,503,274,005	$ 7,651,346,848	2.0%
Market Value of Assets (MVA)	6,858,619,082	6,665,703,555	(2.8%)
Unfunded PVAB	$ 644,654,923	$ 985,643,293	52.9%
Accrued Benefit Funded Ratio	91.4%	87.1%	
Contributions as a Percentage of Payroll			
Employer Normal Cost Rate	3.38%	4.04%	
UAL Rate	9.63%	11.76%	
Total Employer Rate	13.01%	15.80%	
From 2014 Ratemaking (FY16/FY17)	13.38%	13.38%	
From 2016 Ratemaking (FY18/FY19)	15.05%	15.05%	

SECTION I - BOARD SUMMARY

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

Valuation as of:	June 30, 2015	June 30, 2016	% Change
Member Counts			
Active Members	12,816	12,890	0.6%
Retired Members	9,896	10,125	2.3%
Beneficiaries of Retired Members	3,276	3,282	0.2%
Survivors of Deceased Members	359	360	0.3%
Disabled Members	981	965	(1.6%)
Deferred Vested Members	2,811	2,852	1.5%
Inactives Due Refunds	6,261	6,725	7.4%
Total Membership	36,400	37,199	2.2%
Annual Payroll of Active Members	$ 591,058,760	$ 619,124,454	4.7%
Annual Payments to Benefit Recipients	$ 267,415,210	$ 277,640,688	3.8%
Assets and Liabilities			
Actuarial Liability (AL)	$ 4,407,549,888	$ 4,637,590,460	5.2%
Actuarial Value of Assets (AVA)	3,427,564,972	3,477,282,187	1.5%
Unfunded Actuarial Liability (UAL)	$ 979,984,916	$ 1,160,308,273	18.4%
AVA Funding Ratio (AVA/AL)	77.8%	75.0%	
MVA Funding Ratio (MVA/AL)	76.8%	71.0%	
Accrued Benefit Liability (PVAB)	$ 4,117,215,388	$ 4,314,074,711	4.8%
Market Value of Assets (MVA)	3,383,477,940	3,294,631,835	(2.6%)
Unfunded PVAB	$ 733,737,448	$ 1,019,442,876	38.9%
Accrued Benefit Funded Ratio	82.2%	76.4%	
Contributions as a Percentage of Payroll			
Employer Normal Cost Rate	5.05%	4.47%	
UAL Rate	16.99%	21.43%	
Total Employer Rate	22.04%	25.90%	
From 2014 Ratemaking (FY16/FY17)	23.07%	23.41%	
From 2016 Ratemaking (FY18/FY19)	24.30%	24.25%	

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

Valuation as of:	**June 30, 2015**	**June 30, 2016**	**% Change**
Member Counts			
Active Members	11,038	11,093	0.5%
Retired Members	9,036	9,139	1.1%
Beneficiaries of Retired Members	2,897	2,891	(0.2%)
Survivors of Deceased Members	349	350	0.3%
Disabled Members	901	886	(1.7%)
Deferred Vested Members	2,573	2,593	0.8%
Inactives Due Refunds	5,495	5,912	7.6%
Total Membership	32,289	32,864	1.8%
Annual Payroll of Active Members	$ 499,495,116	$ 518,494,414	3.8%
Annual Payments to Benefit Recipients	$ 234,063,127	$ 240,695,486	2.8%
Assets and Liabilities			
Actuarial Liability (AL)	$ 3,780,803,720	$ 3,932,578,697	4.0%
Actuarial Value of Assets (AVA)	2,992,282,440	2,985,309,921	(0.2%)
Unfunded Actuarial Liability (UAL)	$ 788,521,280	$ 947,268,776	20.1%
AVA Funding Ratio (AVA/AL)	79.1%	75.9%	
MVA Funding Ratio (MVA/AL)	78.1%	71.9%	
Accrued Benefit Liability (PVAB)	$ 3,528,747,276	$ 3,664,226,003	3.8%
Market Value of Assets (MVA)	2,953,794,227	2,828,501,276	(4.2%)
Unfunded PVAB	$ 574,953,049	$ 835,724,727	45.4%
Accrued Benefit Funded Ratio	83.7%	77.2%	
Contributions as a Percentage of Payroll			
Employer Normal Cost Rate	4.87%	4.34%	
UAL Rate	16.55%	20.92%	
Total Employer Rate	21.42%	25.26%	
From 2014 Ratemaking (FY16/FY17)	22.37%	22.69%	
From 2016 Ratemaking (FY18/FY19)	24.05%	24.01%	

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

Valuation as of:	June 30, 2015	June 30, 2016	% Change
Member Counts			
Active Members	1,778	1,797	1.1%
Retired Members	860	986	14.7%
Beneficiaries of Retired Members	379	391	3.2%
Survivors of Deceased Members	10	10	0.0%
Disabled Members	80	79	(1.3%)
Deferred Vested Members	238	259	8.8%
Inactives Due Refunds	766	813	6.1%
Total Membership	4,111	4,335	5.4%
Annual Payroll of Active Members	$ 91,563,644	$ 100,630,040	9.9%
Annual Payments to Benefit Recipients	$ 33,352,083	$ 36,945,202	10.8%
Assets and Liabilities			
Actuarial Liability (AL)	$ 626,746,168	$ 705,011,763	12.5%
Actuarial Value of Assets (AVA)	435,282,532	491,972,266	13.0%
Unfunded Actuarial Liability (UAL)	$ 191,463,636	$ 213,039,497	11.3%
AVA Funding Ratio (AVA/AL)	69.5%	69.8%	
MVA Funding Ratio (MVA/AL)	68.6%	66.1%	
Accrued Benefit Liability (PVAB)	$ 588,468,112	$ 649,848,708	10.4%
Market Value of Assets (MVA)	429,683,713	466,130,559	8.5%
Unfunded PVAB	$ 158,784,399	$ 183,718,149	15.7%
Accrued Benefit Funded Ratio	73.0%	71.7%	
Contributions as a Percentage of Payroll			
Employer Normal Cost Rate	6.06%	5.11%	
UAL Rate	19.45%	24.02%	
Total Employer Rate	25.51%	29.13%	
From 2014 Ratemaking (FY16/FY17)	27.04%	27.47%	
From 2016 Ratemaking (FY18/FY19)	25.48%	25.43%	

SECTION II - ASSETS

Pension plan assets play a key role in the financial operation of plans and in the decisions 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 impact 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, the Judicial Retirement Program, the Legislative Retirement Program, and the Participating Local District Retirement Program, including both the Consolidated Plan and the several Nonconsolidated PLDs. The assets of all 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 program assets including:

- Disclosure of total MainePERS DB assets at June 30, 2015 and June 30, 2016
- Statement of the changes in total MainePERS DB market values during the year;
- Development of the total MainePERS DB actuarial value of assets;
- Allocation of total actuarial value to MainePERS DB sub-plans;
- Assessment of the total MainePERS DB investment performance; and
- Projection of expected cash flows for the Plan for the next ten 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. Therefore, a smoothed, actuarial value is developed for use in this process and for evaluating the Program's ongoing ability to meets its obligations.

Current actuarial methods employed in this Program use an allocated portion of the actuarial value of assets developed for the total MainePERS DB assets. The actuarial methodology used for the total 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 all as of the valuation date. The expected value of the actuarial value of assets takes the prior year's actuarial value of assets and adjusts it for contributions, benefit payments, and expected interest earnings at the investment return assumption that was in effect for the previous year, 7.125% for this valuation.

SECTION II - ASSETS

Table II-1 below develops the change in the market value of assets for the total MainePERS DB assets during FY 2016.

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

Market Value of Total MainePERS DB Assets – June 30, 2015		**$ 12,746,883,200**
Additions		
Contributions:		
Employer Contributions	$ 361,012,746	
Member Contributions	167,156,743	
Transfers	(222,487)	
Total Contributions	$ 527,947,002	
Investment Income:		
Net Appreciation (Depreciation) in Fair Value of Investments	$ 126,844,129	
Interest on Bank Balances	228,561	
Total Investment Income	$ 127,072,690	
Investment Activity Expenses:		
Management Fees	$ (72,537,525)	
Investment Related Expense	(3,471,936)	
Banking Fees	(32,470)	
Total Investment Activity Expenses	$ (76,041,931)	
Net Income from Investing Activities	$ 51,030,759	
Total Additions		$ 578,977,761
Deductions		
Retirement Benefits	$ (813,553,420)	
Disability Benefits	(33,769,256)	
Survivor Benefits	(21,711,881)	
Refunds	(21,969,587)	
Administrative Expenses	(10,764,216)	
Total Deductions		$ (901,768,360)
Total		
Net Increase (Decrease)		$ (322,790,599)
Market Value of Total MainePERS DB Assets – June 30, 2016		**$ 12,424,092,601**

SECTION II - ASSETS

Table II-2 below develops the actuarial value of assets for the Total MainePERS DB assets as of June 30, 2016 using the adopted actuarial valuation methodology.

Table II-2
Development of Actuarial Value of Total MainePERS Defined Benefit (DB) Assets
as of June 30, 2016

1.	Actuarial Value of Total MainePERS DB Assets at June 30, 2015	$	12,912,976,273
2.	Amount in (1) with Interest to June 30, 2016		13,833,025,831
3.	Employer and Member Contributions for FY 2016		527,947,002
4.	Interest on Contributions in (3), Assuming Received Uniformly Throughout FY 2016		18,484,521
5.	Total Disbursements without Administrative Expenses for FY 16		(891,004,144)
6.	Interest on Disbursements in (5), Assuming Payments Made Uniformly throughout FY 2016		(31,195,906)
7.	Expected Value of Total MainePERS DB Assets at June 30, 2016 = (2) + (3) + (4) + (5) + (6)	$	13,457,257,304
8.	Actual Market Value of Total MainePERS DB Assets at June 30, 2016		12,424,092,601
9.	Excess of (8) Over (7)		(1,033,164,703)
10.	Actuarial Value of Total MainePERS DB Assets at June 30, 2016 = (7) + [33⅓% of (9)]	$	13,112,869,070

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 contribution rates that could develop from short-term fluctuations in the market value of assets. Current actuarial methods employed in this plan use an allocated portion of the actuarial valuation process applied to the total MainePERS DB assets. This 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, benefit payments, and expected interest earnings at the investment return assumption that was in effect for the previous year, 7.125% for this valuation. The previous table, Table II-2, illustrates the calculation of the actuarial value of assets for the total MainePERS DB assets as of June 30, 2016.

Allocation of Actuarial Value of Assets to the Program

The assets for all of the defined benefit plans administered by MainePERS are commingled for investment purposes, with the adopted actuarial smoothing methodology applied to the market value of the total MainePERS DB assets. This produces an asset ratio (total MainePERS actuarial value of assets divided by total MainePERS market value of assets) that is then 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, 2016 valuation as shown in Table II-2 above is 1.055439 ($13,112,869,070 ÷ $12,424,092,601). 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 II-3
Allocation of Actuarial Value of Total MainePERS DB Assets as of June 30, 2016

	Market Value	Actuarial Value
Teachers	$ 6,665,703,555	$ 7,035,241,991
State (Regular & Special)	3,294,631,835	3,477,282,187
Judges	60,890,109	64,265,782
Legislators	10,806,661	11,405,769
Participating Local Districts (Consolidated & Non-Consolidated)	2,392,060,441	2,524,673,341
Total	$ 12,424,092,601	$ 13,112,869,070

Investment Performance

The market value of assets for the total MainePERS DB assets returned a positive 0.32% during FY 2016. This is lower than the assumed return of 7.125%. The equivalent returns in FY 2015 and FY 2014 were positive 1.80% and positive 16.85%, respectively.

On an actuarial value of assets basis, the return for FY 2016 for the total MainePERS DB assets was a positive 4.42%. This return is higher than the return on a market value basis, but still lower than the 7.125% assumption. Therefore, this return gave rise to an investment loss on the total MainePERS DB assets this year of which the Program experienced a portion.

Cash Flow Projections

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

FY Ending June 30	Expected Benefit Payments	Expected Employer Contributions	Expected Member Contributions	Total Expected Contributions
2016	$ 792,668,000	$ 306,362,000	$ 140,050,000	$446,412,000
2017	821,803,000	349,746,000	143,902,000	493,648,000
2018	849,774,000	358,853,000	147,859,000	506,712,000
2019	877,544,000	409,651,000	151,925,000	561,576,000
2020	905,467,000	420,483,000	156,103,000	576,586,000
2021	933,124,000	475,822,000	160,396,000	636,218,000
2022	961,533,000	478,178,000	164,807,000	642,985,000
2023	989,214,000	514,262,000	169,339,000	683,601,000
2024	1,017,610,000	576,928,000	173,996,000	750,924,000
2025	1,045,065,000	607,984,000	178,781,000	786,765,000

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

The expected benefit payments in Table II-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 projected 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 time period shown.

Expected employer contributions in this table use the budget UAL contributions for FY 17 through FY 19. Future contributions beyond that point are developed based on the assumption that all actuarial assumptions are exactly met, including that the market value of assets will earn 6.875% 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 projection of member contributions is similarly based on a 2.75% per year increase in covered payroll multiplied by the average aggregate member contribution rate of 7.71%.

SECTION III - LIABILITIES

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

- Disclosure of program liabilities at June 30, 2015 and June 30, 2016;
- Statement of changes in these liabilities during the year; and
- An allocation of liabilities to the Teachers, 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 active participants continue to earn salary increases and accrue benefits under their current plan provisions and assuming all actuarial assumptions are exactly met, including the 6.875% per year investment return.

- Actuarial Liability (AL): Used for funding calculations and GASB disclosures, this liability is calculated taking 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 funding method. For this Program and the other MainePERS defined benefit plans, this method is referred to as the entry age normal (EAN) funding method.

- Present Value of Accrued Benefits (PVAB): Used for communicating the liabilities for benefits accrued as of the valuation date.

Table III-1 on the following page 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 plan assets yields, for each respective type, a net surplus or an unfunded liability.

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

The present value of future benefits (PVB) is compared to the current market value of assets, the expected future value of member contributions, and the expected future value of total employer contributions. The future employer contribution is calculated as the employer contribution rate developed in each valuation times the expected future payroll of the active population as of the valuation date. The difference between the PVB and these anticipated resources indicates either an expected shortfall or an expected surplus representing either additional funding or excess funding required on the payroll of new hires to pay for benefits of existing members. This surplus or shortfall indicates the size of the Program's stored gains or losses that remain outside of the valuation process. These gains or losses may enter the rate-making process depending on the future investment performance.

SECTION III - LIABILITIES

Table III-1
Disclosure of Liabilities

	June 30, 2015	June 30, 2016
Present Value of Benefits (PVB)		
Active Member Benefits	$ 6,064,463,166	$ 6,190,130,229
Retiree Benefits	7,318,952,505	7,781,852,088
Terminated (Vested & Nonvested) Benefits	512,396,398	617,269,494
Total PVB	**$** 13,895,812,069	**$** 14,589,251,811
Market Value of Assets (MVA)	$ 10,242,097,022	$ 9,960,335,390
Future Member Contributions	893,621,684	1,038,562,276
Future Employer Contributions Assuming No Further Gains or Losses or New Hires	2,699,173,285	3,122,585,617
Projected (Surplus)/Shortfall	60,920,078	467,768,528
Total Resources	**$** 13,895,812,069	**$** 14,589,251,811
Actuarial Liability (AL)		
Present Value of Benefits (PVB)	$ 13,895,812,069	$ 14,589,251,811
Present Value of Future Normal Costs (PVFNC)		
Employer Portion	385,903,331	480,734,587
Member Portion	893,621,684	1,038,562,276
Actuarial Liability (AL = PVB – PVFNC)	**$** 12,616,287,054	**$** 13,069,954,948
Actuarial Value of Assets (AVA)	10,375,552,498	10,512,524,178
Net (Surplus)/Unfunded (AL – AVA)	**$** 2,240,734,556	**$** 2,557,430,770
Present Value of Accrued Benefits		
Present Value of Future Benefits (PVB)	$ 13,895,812,069	$ 14,589,251,811
Present Value of Future Benefit Accruals (PVFBA)	2,275,322,676	2,623,830,252
Accrued Liability (PVAB = PVB – PVFBA)	**$** 11,620,489,393	**$** 11,965,421,559
Market Value of Assets (MVA)	10,242,097,022	9,960,335,390
Net (Surplus)/Unfunded (PVAB – MVA)	**$** 1,378,392,371	**$** 2,005,086,169

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 plan participants since the last valuation
- Benefits accrued since the last valuation
- Plan amendments changing benefits since the last valuation
- Passage of time, which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected since the last valuation
- A change in actuarial assumptions since the last valuation
- A change in the actuarial funding method since the last valuation

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

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

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

Table III-2

	Present Value of Future Benefits	Actuarial Liability	Present Value of Accrued Benefits
Liability Measurement – June 30, 2015	$ 13,895,812,069	$ 12,616,287,054	$ 11,620,489,393
Liability Measurement – June 30, 2016	14,589,251,811	13,069,954,948	11,965,421,559
Liability Measurement Increase	$ 693,439,742	$ 453,667,894	$ 344,932,166
(Decrease) Due to:			
Plan Amendment	$ 0	$ 0	$ 0
Assumption Change	277,841,656	30,436,605	(9,850,558)
Actuarial (Gain)/Loss	N/C	81,506,701	N/C
Benefits Accumulated and Other Sources	$ 415,598,086	$ 341,724,588	$ 354,782,724

N/C = Not calculated

SECTION III - LIABILITIES

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

Table III-3
Allocation of Actuarial Liability as of June 30, 2016

	Total Program	Teachers Program	State Regular Plans	State Special Plans
1. Actuarial Liabilities for:				
a. Active Members	$ 4,670,833,366	$3,149,408,609	$ 1,253,039,612	$ 268,385,145
b. Retired, Disabled, and Beneficiary Members	7,781,852,088	4,860,795,856	2,497,350,887	423,705,345
c. Terminated Vested and Inactive Members	617,269,494	422,160,023	182,188,198	12,921,273
2. Total Actuarial Liability (1(a) + 1(b) + 1(c))	$13,069,954,948	$8,432,364,488	$ 3,932,578,697	$ 705,011,763
3. Actuarial Value of Assets	10,512,524,178	7,035,241,991	2,985,309,921	491,972,266
4. Unfunded Actuarial Liability (2 – 3)	$ 2,557,430,770	$1,397,122,497	$ 947,268,776	$ 213,039,497

SECTION IV - CONTRIBUTIONS

In this section, we present detailed information on employer contribution rates as developed in this June 30, 2016 valuation for the Program, including:

- Development of the composite total employer contribution rate, including the composite employer normal cost rate and the composite unfunded actuarial liability (UAL) 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, Teachers 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 is the entry age normal funding 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 Teachers Plan, 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 and added together 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 funding 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 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 12 years of its amortization period left and all other gains, losses, and changes are amortized over ten-year periods beginning on the date as of which they were first measured.

Contribution Calculations

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

Table IV-1
Composite Total Employer Rate

Valuation Date	June 30, 2015	June 30, 2016
Composite Employer NC Rate	3.95%	4.19%
Composite UAL Rate	12.12%	15.10%
Composite Total Employer Rate	16.07%	19.29%

Table IV-2 shows the employer NC rate, the UAL rate, and the total employer rate for each plan in the Program.

Table IV-2
Total Employer Contribution Rates by Plan

Valuation Date June 30, 2016	Total NC Rate	Employee Contribution Rate	Employer NC Rate	UAL Contribution Rate	Total Employer Contribution Rate
Total Program	11.90%	7.71%	4.19%	15.10%	19.29%
Teacher Program	11.69%	7.65%	4.04%	11.76%	15.80%
State Program	12.28%	7.81%	4.47%	21.43%	25.90%
State Regular	11.99%	7.65%	4.34%	20.92%	25.26%
State Police*	19.87%	8.65%	11.22%	34.67%	45.89%
Inland F&W*	20.87%	8.65%	12.22%	36.43%	48.65%
Prison Employees*	13.68%	8.65%	5.03%	23.86%	28.89%
Forest Rangers*	12.57%	8.65%	3.92%	21.94%	25.86%
25 & Out Plan	12.62%	8.65%	3.97%	22.03%	26.00%
1998 Special Plan	14.29%	8.65%	5.64%	24.94%	30.58%

*Closed plan

SECTION IV - CONTRIBUTIONS

Table IV-3 below provides the development of the UAL rate for the Teacher Program as well as the composite UAL rate for the total State Program.

Table IV-3
Derivation of Unfunded Actuarial Liability Rates

Valuation Date June 30, 2016	Teacher Program	State Program (Regular and Special Plans)	Total Program
1. Actuarial Liability (AL)	$ 8,432,364,488	$ 4,637,590,460	$13,069,954,948
2. Actuarial Value of Assets (AVA)	7,035,241,991	3,477,282,187	10,512,524,178
3. Unfunded Actuarial Liability (UAL)	$ 1,397,122,497	$ 1,160,308,273	$ 2,557,430,770
4. Remaining Balances of Prior Amortization Bases			
a. Original UAL Amount	$ 1,522,507,270	$ 876,700,678	$ 2,399,207,948
b. 2012 (Gain)/Loss Base	23,169,537	23,169,537	46,339,074
c. 2013 (Gain)/Loss Base	(108,204,513)	121,636,672	13,432,159
d. 2014 (Gain)/Loss Base	(189,441,854)	(76,905,768)	(266,347,622)
e. 2015 (Gain)/Loss Base	(12,076,851)	1,623,176	(10,453,675)
f. 2016 (Gain)/Loss Base	161,168,908	214,083,978	375,252,886
g. Sum of the Bases	$ 1,397,122,497	$ 1,160,308,273	$ 2,557,430,770
5. UAL Amortizations			
a. Original UAL Amount 12 Years	$ 161,373,880	$ 92,923,425	$ 254,297,305
b. 2012 (Gain)/Loss Base 6 Years	4,395,003	4,395,003	8,790,006
c. 2013 (Gain)/Loss Base 7 Years	(17,927,654)	20,153,135	2,225,481
d. 2014 (Gain)/Loss Base 8 Years	(27,982,680)	(11,359,842)	(39,342,522)
e. 2015 (Gain)/Loss Base 9 Years	(1,615,422)	217,119	(1,398,303)
f. 2016 (Gain)/Loss Base 10 Years	19,763,860	26,252,742	46,016,602
g. Sum of Amortization Payments	$ 138,006,987	$ 132,581,582	$ 270,588,569
6. Covered Payroll	$ 1,172,879,963	$ 619,124,454	$ 1,792,004,417
7. UAL Amortization Rate			
a. Original UAL Amount 12 Years	13.76%	15.01%	14.20%
b. 2012 (Gain)/Loss Base 6 Years	0.37%	0.71%	0.49%
c. 2013 (Gain)/Loss Base 7 Years	(1.53%)	3.26%	0.12%
d. 2014 (Gain)/Loss Base 8 Years	(2.39%)	(1.83%)	(2.20%)
e. 2015 (Gain)/Loss Base 9 Years	(0.14%)	0.04%	(0.08%)
f. 2016 (Gain)/Loss Base 10 Years	1.69%	4.24%	2.57%
g. Sum of UAL Amortization Rates	**11.76%**	**21.43%**	**15.10%**

SECTION IV - CONTRIBUTIONS

Table IV-4 below shows the development of the UAL rate for each plan within the State Program.

Table IV-4
Allocation of Unfunded Actuarial Liability Rates within State Program (Regular & Special Plans)

Valuation Date June 30, 2016	Total State Program	State Regular Plan	State Police (Closed)	Inland F&W (Closed)	Prison Employees (Closed)	Forest Rangers (Closed)	25 & Out Plan	1998 Special Plan
1. Employer NC Rate	4.47%	4.34%	11.22%	12.22%	5.03%	3.92%	3.97%	5.64%
2. Member Contribution Rate	7.81%	7.65%	8.65%	8.65%	8.65%	8.65%	8.65%	8.65%
3. Total NC Rate	12.28%	11.99%	19.87%	20.87%	13.68%	12.57%	12.62%	14.29%
4. UAL Amortization Rates*								
a. Original UAL Amount	15.01%	14.66%	24.29%	25.51%	16.72%	15.36%	15.43%	17.47%
b. 2012 Loss Base	0.71%	0.69%	1.15%	1.21%	0.79%	0.73%	0.73%	0.83%
c. 2013 Loss Base	3.26%	3.18%	5.27%	5.54%	3.63%	3.34%	3.35%	3.79%
d. 2014 Gain Base	(1.83%)	(1.79%)	(2.96%)	(3.11%)	(2.04%)	(1.87%)	(1.88%)	(2.13%)
e. 2015 Loss Base	0.04%	0.04%	0.06%	0.07%	0.04%	0.04%	0.04%	0.05%
f. 2016 Loss Base	4.24%	4.14%	6.86%	7.21%	4.72%	4.34%	4.36%	4.93%
g. Sum of Amortization Rates	21.43%	20.92%	34.67%	36.43%	23.86%	21.94%	22.03%	24.94%

* The 21.43% 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 12.28% total NC rate for the State Program in total.

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

SECTION V - 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 plans in the Program were to terminate. We have prepared the following exhibit in this section based on FASB ASC Topic 960:

- Table V-1: Accrued Benefits information

The Governmental Accounting Standards Board (GASB) Statements 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 V-2: Schedule of Changes in Net Pension Liability and Related Ratios
- Table V-3: Sensitivity of Net Pension Liability to Changes in Discount Rate
- Table V-4: Schedule of Employer Contributions
- Table V-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 V-5 included in this section is only applicable to GASB No. 68. Additional information necessary for disclosures under Statement No. 68 is provided under separate cover.

Finally, we have also developed disclosure information in this section based on additional guidance relating to Comprehensive Annual Financial Reports (CAFRs) 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 V-6: Analysis of Financial Experience
- Table V-7: Solvency Test

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, 2016 are discounted at the assumed valuation

SECTION V - FINANCIAL DISCLOSURE INFORMATION

interest rate of 6.875% per annum in all of these disclosures. The June 30, 2015 amounts used the prior year's assumption of 7.125%.

Table V-1 below includes the relevant amounts as of June 30, 2015 and June 30, 2016 as well as a reconciliation between the two dates under FASB ASC Topic 960.

Table V-1
Accrued Benefits Information

	June 30, 2015	June 30, 2016
FASB ASC Topic 960 Basis		
1. Present Value of Benefits Accrued to Date (PVAB)		
a. Members Currently Receiving Payments	$ 7,318,952,505	$ 7,781,852,088
b. Vested Terminated Members	512,396,398	617,269,494
c. Active Members	3,789,140,490	3,566,299,977
d. Total PVAB	$ 11,620,489,393	$ 11,965,421,559
2. Market Value of Assets (MVA)	10,242,097,022	9,960,335,390
3. Unfunded Present Value of Accrued Benefits, But Not Less Than Zero	$ 1,378,392,371	$ 2,005,086,169
4. Ratio of MVA to PVAB (2)/(1)(d)		

Change in Present Value of Benefits Accrued to Date during FY 2016

Increase (Decrease) During Year Attributable to:	
Passage of Time	$ 801,196,511
Benefits Paid	(744,357,598)
Assumption Changes	(9,850,558)
Plan Changes	0
Benefits Accrued, Other Gains/Losses	297,943,811
Net Increase (Decrease)	$ 344,932,166

SECTION V - FINANCIAL DISCLOSURE INFORMATION

Table V-2 below shows the changes in the total pension liability (TPL), the plan fiduciary net position (FNP) (i.e., fair value of Program net assets), and the net pension liability (NPL) during the measurement year ending June 30, 2016 and related ratios as calculated under the provisions of GASB Statement No. 67 for the Program.

Table V-2
Schedule of Changes in Net Pension Liability and Related Ratios
FY 2016

	Teachers Program	State Program	Total State and Teacher Program
Total Pension Liability (TPL)			
Service Cost	$ 127,288,000	$ 76,009,053	$ 203,297,053
Interest (Includes Interest on Service Cost)	574,537,157	308,247,977	882,785,134
Changes of Benefit Terms	0	0	0
Differences Between Actual and Expected Experience	51,250,246	30,256,454	81,506,700
Changes of Assumptions	(68,058,679)	98,495,284	30,436,605
Benefit Payments, Including Refunds of Member Contributions	(461,389,402)	(282,968,196)	(744,357,598)
Net Change in TPL	**223,627,322**	**230,040,572**	**453,667,894**
Beginning of Year TPL	**8,208,737,166**	**4,407,549,888**	**12,616,287,054**
End of Year TPL	**$ 8,432,364,488**	**$ 4,637,590,460**	**$13,069,954,948**
Plan Fiduciary Net Position (FNP)			
Employer Contributions	$ 157,827,167	$ 153,700,244	$ 311,527,411
Member Contributions	89,697,061	35,826,925	125,523,986
Net Investment Income	26,766,691	13,774,067	40,540,758
Transfers	(25,227)	(6,321,932)	(6,347,159)
Benefit Payments, Including Refunds of Member Contributions	(461,389,402)	(282,968,196)	(744,357,598)
Administrative Expense	(5,791,817)	(2,857,213)	(8,649,030)
Net Change in FNP	(192,915,527)	(88,846,105)	(281,761,632)
Beginning of Year FNP	**6,858,619,082**	**3,383,477,940**	**10,242,097,022**
End of Year FNP	**$ 6,665,703,555**	**$ 3,294,631,835**	**$ 9,960,335,390**
End of Year Net Pension Liability (NPL)	**$ 1,766,660,933**	**$ 1,342,958,625**	**$ 3,109,619,558**
FNP as a Percentage of TPL	79.0%	71.0%	76.2%
Covered-Employee Payroll (Payroll)*	1,179,575,239	624,466,164	1,816,435,084
NPL as a Percentage of Payroll	149.8%	215.1%	171.2%

*For FY 2016.

SECTION V - FINANCIAL DISCLOSURE INFORMATION

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

Change of assumptions. In 2016, the amounts reported as changes of assumptions were due to assumptions that were updated based on the experience study covering the period from June 30, 2012 through June 30, 2015.

A ten-year schedule of changes in NPL and related ratios is to be included within the CAFR for PERS. However, based on GASB guidance, this ten-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 these individual years in the MainePERS CAFR to build this schedule to show the full ten-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. We do not believe that any such note is necessary for the measurement year ending June 30, 2016, but it is our expectation that System staff will make the final determination regarding any notes needed for this schedule.

Table V-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 V-3
Sensitivity of Net Pension Liability to Changes in Discount Rate
FY 2016

	1% Decrease 5.875%	Discount Rate 6.875%	1% Increase 7.875%
Teacher Program			
Total Pension Liability (TPL)	$ 9,494,577,934	$ 8,432,364,488	$ 7,547,019,345
Plan Fiduciary Net Position (FNP)	6,665,703,555	6,665,703,555	6,665,703,555
Net Pension Liability (NPL)	$ 2,828,874,379	$ 1,766,660,933	$ 881,315,790
FNP as a Percentage of TPL	70.2%	79.0%	88.3%
State Program			
Total Pension Liability (TPL)	$ 5,180,097,282	$ 4,637,590,460	$ 4,181,416,357
Plan Fiduciary Net Position (FNP)	3,294,631,835	3,294,631,835	3,294,631,835
Net Pension Liability (NPL)	$ 1,885,465,447	$ 1,342,958,625	$ 886,784,522
FNP as a Percentage of TPL	63.6%	71.0%	78.8%
Total State and Teacher Program			
Total Pension Liability (TPL)	$14,674,675,216	$13,069,954,948	$11,728,435,702
Plan Fiduciary Net Position (FNP)	9,960,335,390	9,960,335,390	9,960,335,390
Net Pension Liability (NPL)	$ 4,714,339,826	$ 3,109,619,558	$ 1,768,100,312
FNP as a Percentage of TPL	67.9%	76.2%	84.9%

SECTION V - FINANCIAL DISCLOSURE INFORMATION

A one percent decrease in the discount rate increases the TPL by approximately 12% and increases the NPL by approximately 52%. A one percent increase in the discount rate decreases the TPL by approximately 10% and decreases the NPL by approximately 43%.

Table V-4 below 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 specifically finance specific liabilities of individual employers of the plan. 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 CAFR.

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 ten years of information should be shown in this schedule if it is available, but this ten-year history can be built one year at a time following implementation. We have shown only the second year of this *Schedule of Employer Contributions* below and believe that you can accumulate these in the MainePERS CAFR to build this schedule to show the full ten-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 ten-year period should also be included in the notes to this schedule. We do not believe that any such note is necessary for the measurement year ending June 30, 2016, but it is our expectation that System staff will make the final determination regarding any notes needed for this schedule.

Table V-4
Schedule of Employer Contributions
FY 2016

	Teachers Program	State Program	Total State and Teacher Program
Actuarially Determined Contribution (ADC)	$ 157,827,167	$144,064,344	$ 301,891,511
Contributions in Relation to the ADC	157,827,167	144,064,344	301,891,511
Contribution Deficiency/(Excess)	$ 0	$ 0	$ 0
Covered-Employee Payroll (Payroll)	$1,179,575,239	$624,466,164	$1,816,435,084
Contributions as a Percentage of Payroll	13.38%	23.07%	16.62%

SECTION V - FINANCIAL DISCLOSURE INFORMATION

Notes to Schedule of Employer Contributions

Valuation Date:	June 30, 2014
Timing:	June 30, 2016 ADC rates are calculated based on a 2014 Actuarial Valuation developed as a roll-forward of the 2013 valuation liability, adjusted for expected experience and any assumption or methodology changes during FY 2014 using actual assets as of June 30, 2014.

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 18-year amortization of the 2014 UAL
Discount Rate:	7.125%
Amortization Growth Rate:	3.50%
Price Inflation:	3.50%
Salary Increases:	3.50% plus merit component based on employee's years of service
Mortality:	Sex distinct RP-2000 Combined Mortality projected to 2015 using Scale AA for State Employees; Teachers use the same table with a two-year set back.

A complete description of the methods and assumptions used to determine contribution rates for the year ending June 30, 2016 can be found in the June 30, 2014 Actuarial Valuation Report.

Other Information

Change of assumptions. In 2016, the amounts reported as changes of assumptions were due to assumptions that were updated based on the experience study covering the period from June 30, 2012 through June 30, 2015.

Table V-5 on the following page was provided in this report at the request of MainePERS staff, showing the development of the average remaining service life for the Plan. GASB 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, 2016, these values are thus developed as of June 30, 2015. The development of this value is shown below, including reflection of the decision by MainePERS to round the resulting value to the nearest whole year. Note that the decision was made to apply GASB 68 separately to the Teachers Program and the State Program based upon paragraph 19 of that statement, so this value has been provided for both of these Programs.

Table V-5
Average Expected Remaining Service Lives
For Measurement Year Ending June 30, 2016

Teachers Program

Status	Total Expected Future Service	Count	Average Remaining Service Lives
Actives	215,913	27,200	8
In-Pay Members	0	18,748	0
Deferred Vested Members	0	4,700	0
Inactives Due Refunds	0	30,549	0
Total Membership	215,913	81,197	3

State Program

Status	Total Expected Future Service	Count	Average Remaining Service Life
Actives	114,944	12,816	9
In-Pay Members	0	14,512	0
Deferred Vested Members	0	2,811	0
Inactives Due Refunds	0	6,261	0
Total Membership	114,944	36,400	3

SECTION V - FINANCIAL DISCLOSURE INFORMATION

Table V-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 V-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, 2011	Gain (or Loss) For Fiscal Year Ended June 30, 2012	Gain (or Loss) For Fiscal Year Ended June 30, 2013	Gain (or Loss) For Fiscal Year Ended June 30, 2014	Gain (or Loss) For Fiscal Year Ended June 30, 2015	Gain (or Loss) For Fiscal Year Ended June 30, 2016
Investment Income	$ (29,110,015)	$ (220,050,211)	$ (52,030,633)	$ 639,521,136	$ (67,533,511)	$ (284,220,804)
Combined Liability Experience	(91,222,335)	57,603,161	21,191,240	17,694,276	44,287,643	(81,506,701)
Gain (or Loss) during Year from Financial Experience	$(120,332,350)	$ (162,447,050)	$ (30,839,393)	$ 657,215,412	$ (23,245,868)	$ (365,727,505)
Non-Recurring Items	1,822,058,877	15,629,192	50,659,935	(167,650,573)	0	(30,436,605)
Composite Gain (or Loss) During Year	**$1,701,726,527**	**$ (146,817,858)**	**$ 19,820,542**	**$ 489,564,839**	**$ (23,245,868)**	**$ (396,164,110)**

SECTION V - FINANCIAL DISCLOSURE INFORMATION

Table V-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 solvency test 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 ten 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 that any such note is necessary for the measurement year ending June 30, 2016, but it is our expectation that System staff will make the final determination regarding any notes needed for this schedule.

Table V-7
SOLVENCY TEST
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)
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%
2012	2,271,164,594	6,656,860,191	2,625,281,496	8,880,730,120	100%	99%	0%
2011	2,229,984,967	6,453,384,730	2,598,295,489	8,736,885,121	100%	100%	2%
2010	2,117,903,830	6,856,828,427	3,642,411,748	8,313,459,810	100%	90%	0%
2009	2,002,784,767	6,622,143,609	3,696,290,956	8,325,951,236	100%	95%	0%
2008	1,898,148,565	6,209,005,616	3,560,878,330	8,631,557,629	100%	100%	15%
2007	1,789,362,929	5,850,882,771	3,517,524,438	8,245,520,019	100%	100%	17%

* Reported Assets are measured at actuarial value. Results would be different if 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 value of the System.

APPENDIX A - MEMBERSHIP INFORMATION

Active Member Data as of June 30, 2016	
Teachers	
Count	27,052
Average Current Age	46.2
Average Benefit Service	12.4
Average Vesting Service	12.6
Average Valuation Pay	$ 43,356
State Employee Regular Plan	
Count	11,093
Average Current Age	48.3
Average Benefit Service	12.2
Average Vesting Service	12.7
Average Valuation Pay	$ 46,741
Forest Rangers Special Plan (Closed Plan)	
Count	4
Average Current Age	58.6
Average Benefit Service	37.5
Average Vesting Service	37.5
Average Valuation Pay	$ 65,332
Inland Fisheries & Wildlife Officers Special Plan (Closed Plan)	
Count	3
Average Current Age	60.4
Average Benefit Service	35.2
Average Vesting Service	35.2
Average Valuation Pay	$ 59,703
Prison Employees Special Plan (Closed Plan)	
Count	1
Average Current Age	52.9
Average Benefit Service	32.5
Average Vesting Service	32.7
Average Valuation Pay	$ 61,116

APPENDIX A - MEMBERSHIP INFORMATION

Active Member Data as of June 30, 2016	
State Police Special Plan (Closed Plan)	
Count	2
Average Current Age	57.8
Average Benefit Service	35.4
Average Vesting Service	35.4
Average Valuation Pay	$100,219
State Employee Special 25 & Out Plan	
Count	466
Average Current Age	40.6
Average Benefit Service	13.9
Average Vesting Service	14.3
Average Valuation Pay	$ 70,339
State Employee 1998 Special Plan	
Count	1,321
Average Current Age	43.3
Average Benefit Service	11.3
Average Vesting Service	11.7
Average Valuation Pay	$ 50,833
State Employee Totals (Excludes Teachers)	
Count	12,890
Average Current Age	47.5
Average Benefit Service	12.2
Average Vesting Service	12.7
Average Valuation Pay	$ 48,031

APPENDIX A - MEMBERSHIP INFORMATION

Non-Active Member Data as of June 30, 2016 Teachers				
	Count	**Average Age**	**Total Annual Benefit**	**Average Annual Benefit**
Retired	15,609	72.0	$ 397,612,004	$ 25,473
Retired – Concurrent Beneficiaries	1,439	72.0	8,275,910	5,751
Disabilities/1122	0		0	0
Disabilities/3 and 3A	695	66.5	19,321,964	27,801
Beneficiaries	1,422	72.8	23,629,189	16,617
Pre-Retirement Death Benefits	284	62.0	1,652,076	5,817
Terminated Vested	4,931	52.7	39,618,216	8,035
Inactive Due Refund	30,931		NA	NA

Non-Active Member Data as of June 30, 2016 State Regular				
	Count	**Average Age**	**Total Annual Benefit**	**Average Annual Benefit**
Retired	9,139	72.2	$ 187,920,079	$ 20,562
Retired – Concurrent Beneficiaries	1,032	71.8	5,215,908	5,054
Disabilities/1122	3	88.1	56,625	18,875
Disabilities/3 and 3A	883	65.1	20,276,396	22,963
Beneficiaries	1,859	66.0	25,204,168	13,558
Pre-Retirement Death Benefits	350	66.8	2,022,311	5,778
Terminated Vested	2,593	52.9	19,118,518	7,373
Inactive Due Refund	5,912		NA	NA

APPENDIX A - MEMBERSHIP INFORMATION

Non-Active Member Data as of June 30, 2016
Special Plans

	Count	Average Age	Total Annual Benefit	Average Annual Benefit
Retired	986	67.4	$ 30,024,908	$ 30,451
Retired – Concurrent Beneficiaries	156	65.3	938,059	6,013
Disabilities/1122	1	85.6	19,024	19,024
Disabilities/3 and 3A	78	59.0	2,129,459	27,301
Beneficiaries	235	71.3	3,782,199	16,094
Pre-Retirement Death Benefits	10	46.9	51,553	5,155
Terminated Vested	259	46.5	1,948,507	7,523
Inactive Due Refund	813		NA	NA

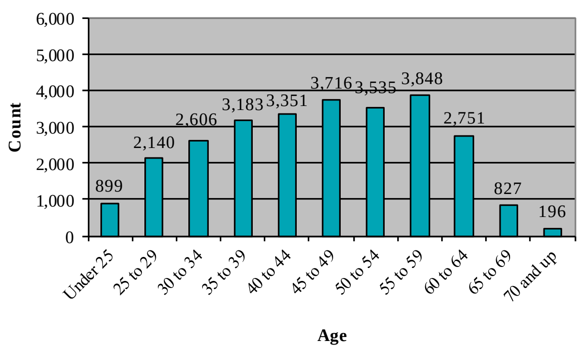
APPENDIX A - MEMBERSHIP INFORMATION

Distribution of Active Members
As of June 30, 2016

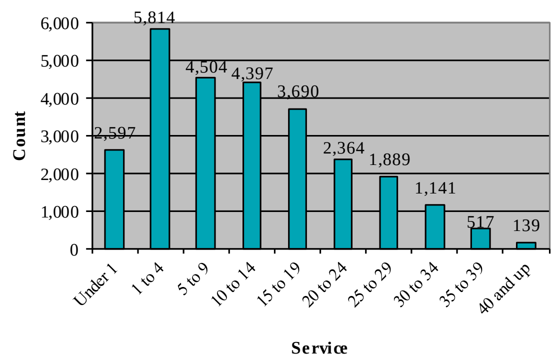
Teachers

	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	486	413	0	0	0	0	0	0	0	0	899
25 to 29	401	1,333	406	0	0	0	0	0	0	0	2,140
30 to 34	319	822	1,042	423	0	0	0	0	0	0	2,606
35 to 39	318	755	698	1,060	352	0	0	0	0	0	3,183
40 to 44	270	710	624	649	853	245	0	0	0	0	3,351
45 to 49	255	630	593	689	615	713	219	2	0	0	3,716
50 to 54	208	453	451	585	586	404	632	215	1	0	3,535
55 to 59	141	343	372	523	700	474	509	595	191	0	3,848
60 to 64	93	211	233	351	443	414	409	247	280	70	2,751
65 to 69	63	92	68	101	131	94	103	76	39	60	827
70 and up	43	52	17	16	10	20	17	6	6	9	196
Total	2,597	5,814	4,504	4,397	3,690	2,364	1,889	1,141	517	139	27,052

Age Distribution



Service Distribution



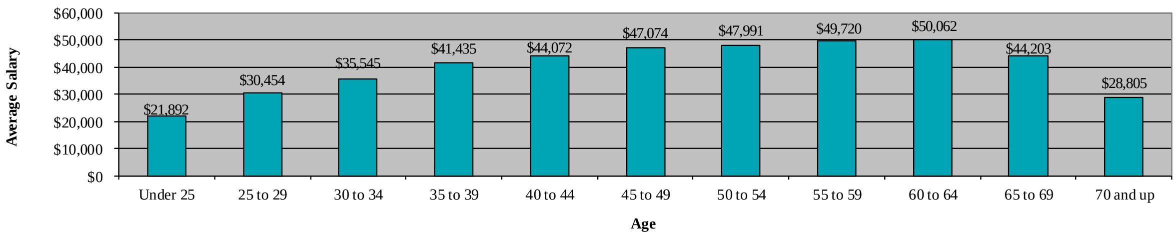
APPENDIX A - MEMBERSHIP INFORMATION

Distribution of Active Members
As of June 30, 2016

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	$ 17,381	$ 27,201	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 21,892
25 to 29	20,851	30,811	38,770	0	0	0	0	0	0	0	30,454
30 to 34	20,245	30,110	40,107	46,405	0	0	0	0	0	0	35,545
35 to 39	21,251	30,997	41,121	50,202	56,281	0	0	0	0	0	41,435
40 to 44	20,759	29,192	38,751	50,341	57,524	62,998	0	0	0	0	44,072
45 to 49	19,355	27,753	38,902	49,386	57,203	64,196	65,796	24,452	0	0	47,074
50 to 54	19,771	26,363	36,642	43,496	52,294	62,014	65,616	67,031	46,361	0	47,991
55 to 59	21,255	25,411	32,856	41,579	48,498	56,109	63,795	66,917	67,074	0	49,720
60 to 64	18,877	22,589	33,744	41,143	47,035	55,009	60,272	65,959	69,461	69,913	50,062
65 to 69	18,172	19,523	26,787	39,280	44,496	50,991	57,013	61,109	63,948	69,895	44,203
70 and up	18,719	7,814	21,422	34,586	33,957	46,727	54,844	58,152	45,490	76,519	28,805
Average	$ 19,784	$ 28,603	$ 38,250	$ 46,781	$ 53,024	$ 59,796	$ 63,423	$ 66,223	$ 67,840	$ 70,333	$ 43,356

Average Salary Distribution



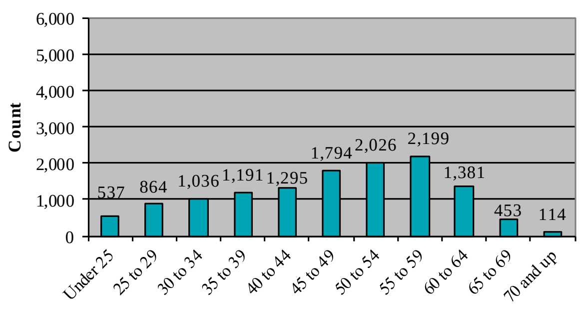
APPENDIX A - MEMBERSHIP INFORMATION

Distribution of Active Members
As of June 30, 2016

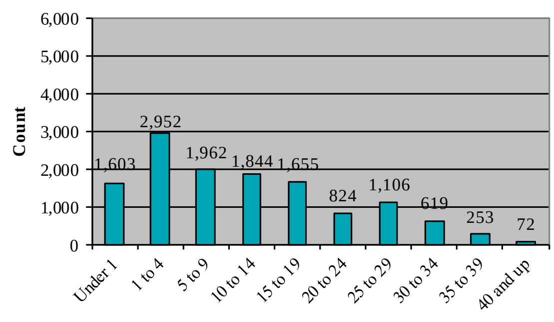
State

	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	359	178	0	0	0	0	0	0	0	0	537
25 to 29	245	536	78	5	0	0	0	0	0	0	864
30 to 34	203	433	279	115	6	0	0	0	0	0	1,036
35 to 39	166	331	292	294	107	1	0	0	0	0	1,191
40 to 44	140	303	221	255	304	69	3	0	0	0	1,295
45 to 49	159	311	289	277	328	225	192	13	0	0	1,794
50 to 54	132	317	270	298	305	171	350	176	7	0	2,026
55 to 59	103	290	269	303	325	185	322	258	135	9	2,199
60 to 64	63	185	182	212	210	121	168	131	80	29	1,381
65 to 69	28	50	66	70	54	43	56	33	25	28	453
70 and up	5	18	16	15	16	9	15	8	6	6	114
Total	1,603	2,952	1,962	1,844	1,655	824	1,106	619	253	72	12,890

Age Distribution



Service Distribution



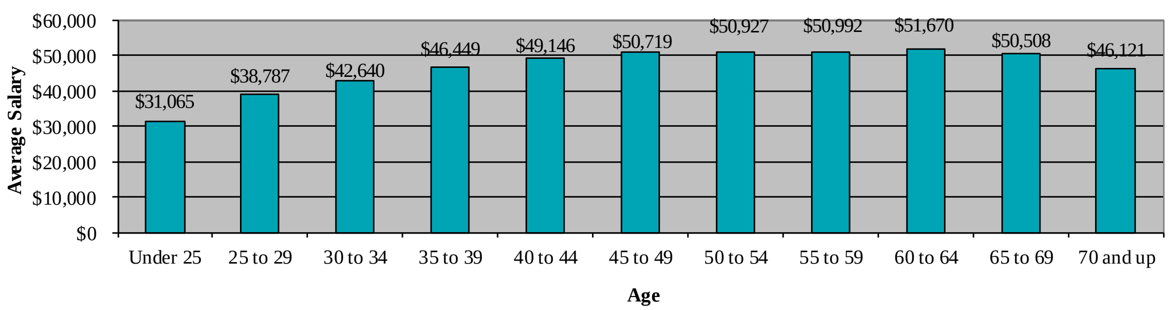
APPENDIX A - MEMBERSHIP INFORMATION

Distribution of Active Members
As of June 30, 2016

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	$ 28,562	$ 36,113	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 31,065
25 to 29	34,788	39,885	43,667	40,945	0	0	0	0	0	0	38,787
30 to 34	36,467	41,413	46,923	47,472	48,210	0	0	0	0	0	42,640
35 to 39	37,827	42,802	47,243	51,920	53,760	61,793	0	0	0	0	46,449
40 to 44	37,627	41,238	45,299	52,754	58,709	63,946	52,731	0	0	0	49,146
45 to 49	39,005	41,959	44,853	52,697	55,682	63,385	56,656	59,644	0	0	50,719
50 to 54	38,049	40,513	46,366	52,083	55,088	58,968	56,487	58,249	52,204	0	50,927
55 to 59	39,067	41,559	44,750	48,727	52,460	57,588	57,077	58,088	56,846	56,614	50,992
60 to 64	37,707	41,477	44,266	51,134	52,516	57,651	57,966	60,607	63,514	56,803	51,670
65 to 69	34,536	37,213	49,518	49,942	49,436	55,183	52,849	65,277	60,612	57,745	50,508
70 and up	33,109	27,278	30,976	47,357	50,629	58,845	55,406	54,520	57,404	73,994	46,121
Average	$ 35,236	$ 40,776	$ 45,689	$ 51,144	$ 54,690	$ 59,892	$ 56,704	$ 59,037	$ 59,211	$ 58,578	$ 48,031

Average Salary Distribution

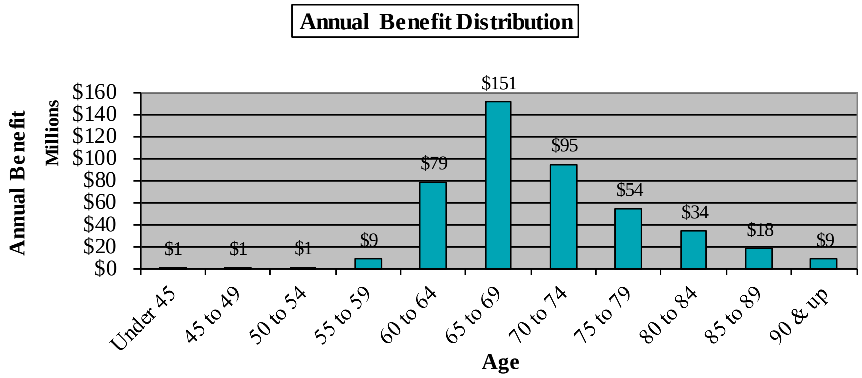


APPENDIX A - MEMBERSHIP INFORMATION

Distribution of Retirees, Disabled Members, Beneficiaries, and Survivors
As of June 30, 2016

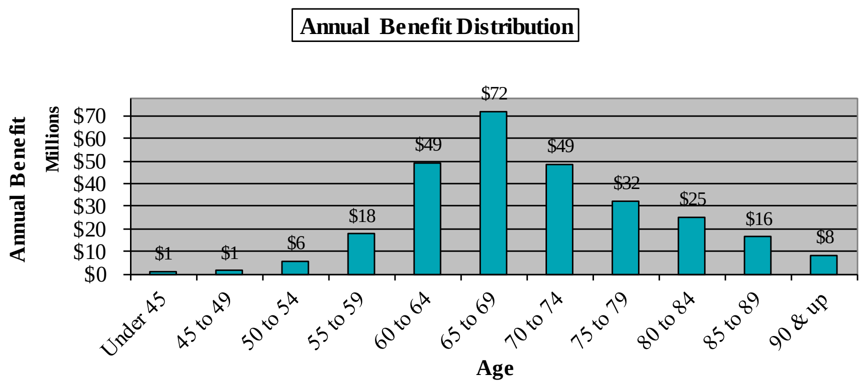
Teachers

Age	Count	Annual Benefit
Under 45	130	$ 788,421
45 to 49	68	830,571
50 to 54	85	1,289,564
55 to 59	369	8,520,985
60 to 64	2,885	78,616,254
65 to 69	6,079	150,760,950
70 to 74	4,088	94,593,660
75 to 79	2,512	54,294,695
80 to 84	1,673	34,026,033
85 to 89	1,011	18,247,880
90 & up	549	8,522,129
Total	19,449	$ 450,491,142



State

Age	Count	Annual Benefit
Under 45	150	$ 1,099,956
45 to 49	120	1,387,207
50 to 54	312	5,676,062
55 to 59	864	17,587,103
60 to 64	2,340	49,384,833
65 to 69	3,566	71,830,092
70 to 74	2,484	48,556,386
75 to 79	1,798	32,168,215
80 to 84	1,464	25,214,518
85 to 89	1,026	16,411,813
90 & up	608	8,324,503
Total	14,732	$ 277,640,688



APPENDIX B - SUMMARY OF PROGRAM AND PLAN 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 5% annual interest.

<u>Contribution Requirements for Special State Employee Groups</u>

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 and state prison employees 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 include 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, fire marshals, investigators and inspectors, oil and hazardous materials emergency response workers and capitol security officers: 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.

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 ten years of service at 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 military service credit, other purchased service credit, 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 Ten 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 ten 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 the following approximate percentages for each year retirement age is less than age 60.

APPENDIX B - SUMMARY OF PROGRAM AND PLAN PROVISIONS

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 Ten 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 ten 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 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.

APPENDIX B - SUMMARY OF PROGRAM AND PLAN PROVISIONS

Eligibility for Members not in Active Service at Retirement, and not in Active Service on or After October 1, 1999: At least ten 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.

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. Liquor Inspectors Employed Before September 1, 1984

Eligibility: Age 55 and 25 years of creditable service as a liquor inspector.

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.

APPENDIX B - SUMMARY OF PROGRAM AND PLAN PROVISIONS

iv. State Prison Employees Employed Before September 1, 1984

Eligibility: Age 50 and 20 years of creditable service as a prison employee.

Benefit: one-half of average final compensation plus 2% for each year of service earned after qualification for retirement.

Form of Payment: Life annuity.

v. 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 marshals employed on or after January 1, 2000.

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

Eligibility: Ten 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, except oil and hazardous materials emergency response workers and certain prison employee benefits are reduced for retirement before age 55.

-AND-

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.

vi. 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.

APPENDIX B - SUMMARY OF PROGRAM AND PLAN PROVISIONS

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.

vii. Minimum Service Retirement Benefit

$100 per month

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

Eligibility: Disabled as defined in the MainePERS statutes prior to 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 on 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 ten years following normal retirement age or on 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 same rate as any cost-of-living adjustments for which the member is eligible (not subject to a cap) (see item 12). On the date when service benefits reach a level of 66⅔% of average final compensation or ten 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 on 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 a 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.

Benefit: Designated beneficiary, spouse, child(ren), or parents entitled to benefit calculated as if deceased member had retired under Option 2 (see item 13); however, beneficiary may elect survivor benefits payable to a surviving spouse, dependent child(ren), parent, or other designated beneficiaries in monthly amounts varying by status of beneficiary and number of eligible survivors. Otherwise accumulated contributions with interest are payable to designated beneficiary, spouse, child(ren), 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 child(ren) 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 child(ren). When there are no longer any dependent children, the surviving spouse shall receive two-thirds of 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 child(ren), the surviving spouse and dependent child(ren) 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 child(ren) 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."

10. Termination Benefit

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

All service and disability retirement and survivor benefits are adjusted each year that there is a percentage change in the Consumer Price Index, 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 which is not in excess of a COLA cap 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 is 3%. 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 AND PLAN PROVISIONS

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

2014 - $20,000.00
2015 - $20,420.00
2016 - $20,940.71

Members who did not have ten 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 twelve 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*.

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. Plan Changes since Prior Valuation

None.

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. Rate of Investment Return:

	Previous	Revised
State Employees	7.125%	6.875%
Teachers	7.125%	6.875%

Rate is net of both administrative and investment expense.

2. Cost-of-Living Increases in Benefits:

	Previous	Revised
State Employees	2.55%	2.20%
Teachers	2.55%	2.20%

3. Rates of Salary Increase (% at Selected Years of Service):

Service	Previous Assumption State Employees	Previous Assumption Teachers	Revised Assumption State Employees	Revised Assumption Teachers
0	10.50%	13.50%	8.75%	14.50%
5	6.00	6.25	5.00%	5.75
10	4.50	5.00	3.75%	4.75
15	3.95	4.50	3.20%	4.00
20	3.70	3.70	2.95%	2.75
25 and over	3.50	3.50	2.75%	2.75

The above rates previously include a 3.50% across-the-board increase at each year of service. The revised rates include a 2.75% across-the-board increase at each year of service.

APPENDIX C - ACTUARIAL ASSUMPTIONS AND METHODS

4. Rates of Termination (% at Selected Service):

Service	Previous Assumption State Employees	Previous Assumption Teachers	Revised Assumption State Employees and Teachers
0	30.00%	37.00%	33.50%
5	7.50	12.00	10.50
10	4.40	6.90	5.95
15	4.00	5.50	4.25
20	4.00	5.50	4.00
25	4.00	5.50	4.00

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 time of termination.

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

	Previous Assumption				Revised Assumption Showing 2016 Values			
	State Employees		Teachers		State Employees		Teachers	
Age	Male	Female	Male	Female	Male	Female	Male	Female
50	16	13	14	11	42	32	40	27
55	27	24	22	20	59	43	56	36
60	53	47	41	36	79	63	76	52
65	103	90	81	71	113	97	107	80
70	177	155	142	125	175	156	167	129
75	306	249	246	204	285	256	272	211
80	554	413	448	338	480	432	457	357
85	997	708	807	571	837	766	796	632
90	1,727	1,259	1,418	1,026	1,469	1,365	1,398	1,126
95	2,596	1,888	2,267	1,654	2,314	2,242	2,203	1,849

Previous rates for State Employees are based on the RP-2000 Mortality Table for males and females projected forward to 2015 using Scale AA. Current rates for Teachers are based on the same projected table but with a two-year set back. These assumptions were set in 2011 with a margin for future improvement based on the five-year experience study process.

Revised rates for State Employees are based on 104% and 120% of the RP-2014 Total Dataset Healthy Annuitant Mortality Table, respectively, for males and females, using the

APPENDIX C - ACTUARIAL ASSUMPTIONS AND METHODS

RP-2014 Total Dataset Employee Mortality Table for ages prior to start of the Healthy Annuitant Mortality Table, both projected from the 2006 base rates 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. Proposed rates for Teachers are based on 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.

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

	Previous Assumption				Revised Assumption Showing 2016 Values			
	State Employees		Teachers		State Employees		Teachers	
Age	Male	Female	Male	Female	Male	Female	Male	Female
20	3	2	2	1	4	2	4	2
25	3	2	3	2	5	2	4	2
30	4	2	4	2	4	3	4	2
35	7	4	6	3	5	4	5	3
40	10	6	9	5	6	5	6	4
45	12	9	11	7	10	8	9	6
50	16	13	14	11	17	13	16	27
55	27	24	22	20	29	20	27	36
60	53	47	41	36	48	30	46	52
65	103	90	81	71	85	45	81	80

* 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.

Previous rates for State Employees are based on the RP-2000 Mortality Table for males and females projected forward to 2015 using Scale AA. Current rates for Teachers are based on the same projected table but with a two-year set back. These assumptions were set in 2011 with a margin for future improvement based on the five-year experience study process.

Revised rates for State Employees are based on 104% and 120% of the RP-2014 Total Dataset Employee Mortality Table, respectively, for males and females, using the RP-2014 Total Dataset Healthy Annuitant Mortality Table rates after the end of the Total Employee Mortality Table, both projected from the 2006 base rates 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. Proposed rates for Teachers are based on 99% of the RP-2014 Total Dataset

APPENDIX C - ACTUARIAL ASSUMPTIONS AND METHODS

Healthy Annuitant Mortality Table for both males and females, using the RP-2014 Total Dataset Healthy Annuitant Mortality Table rates after the end of the Total Employee 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.

7. **Rates of Mortality for Disabled Lives and Retired Disabled Lives at Selected Ages (number of deaths per 10,000 members):**

	Previous Assumption				Revised Assumption Showing 2016 values			
	State Employees		Teachers		State Employees		Teachers	
Age	Male	Female	Male	Female	Male	Female	Male	Female
25	92	72	92	72	84	24	84	24
30	112	89	112	89	80	31	80	31
35	134	109	134	109	94	43	94	43
40	160	126	160	126	114	59	114	59
45	193	144	193	144	177	92	177	92
50	236	165	236	165	216	121	216	121
55	295	191	295	191	249	152	249	152
60	362	226	362	226	282	181	282	181
65	446	272	446	272	337	220	337	220
70	576	331	576	331	437	300	437	300

Previous rates are based on the Revenue Ruling 96-7 Disabled Mortality Table for males and females.

Revised rates are based on 108% and 105% of the RP-2014 Total Dataset Disabled Annuitant Mortality Table, respectively, for males and females, projected from the 2006 base rates 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.

APPENDIX C - ACTUARIAL ASSUMPTIONS AND METHODS

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

	Previous Assumption						Revised Assumption		
	State Employees			Teachers			State Employees and Teachers		
Age	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3
45	3	NA	NA	13	NA	NA	13	NA	NA
50	19	NA	NA	29	NA	NA	29	NA	NA
55	19	NA	NA	79	NA	NA	40	40	40
59	58	75	75	150	225	225	150	40	40
60	300	100	100	225	225	225	250	75	40
61	300	100	100	230	225	225	200	175	40
62	270	250	125	250	300	225	200	250	40
63	270	250	125	260	300	225	200	150	75
64	250	250	125	270	300	225	250	200	225
65	250	250	250	300	300	300	350	250	300
70	1,000	1,000	1,000	1,000	1,000	1,000	200	200	300
75	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

In the case of State Regular and Teacher employees, Tier 1 refers to those who had accrued at least 10 years of service by July 1, 1993. Tier 2 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. Tier 3 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 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. The revised assumptions do not change this assumption.

Members of the State Special 25 & Out Plan are previously 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. The revised assumption is for a rate of 25% per year beginning at 25 years of service, increasing to 50% per year after reaching 30 years of service, and finally to 100% per year beginning at 35 years of service.

Members of the 1998 Special Plan are previously assumed to retire at a rate of 25% per year eligible, increased to 50% with both 25 or more years of service and age at least 60, and with 100% retirement assumed at age 70. The revised rates for this group vary by age and whether service is less than 25 years or not. Sample revised rates are as follows:

APPENDIX C - ACTUARIAL ASSUMPTIONS AND METHODS

1998 Special Plan Retirement				
	Current Assumption		Proposed Assumption	
Age	Service < 25	Service >= 25	Service < 25	Service >= 25
55	25.0%	25.0%	20.0%	25.0%
57	25.0	25.0	10.0	25.0
60	25.0	50.0	20.0	30.0
62	25.0	50.0	15.0	30.0
65	25.0	50.0	23.4	30.0
67	25.0	50.0	36.8	50.0
70	100.0	100.0	100.0	100.0

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

	Previous Assumption		Revised Assumption		
			State Employees		
Age	State Employees	Teachers	Regular	Special	Teachers
25	6.8	3.5	5.0	5.4	2.1
30	7.6	3.8	6.1	6.5	2.3
35	10.2	3.8	9.3	9.9	2.3
40	19.0	5.1	14.8	15.8	3.1
45	27.9	11.6	22.8	24.4	7.0
50	42.7	18.2	34.0	36.4	10.9
55	53.0	24.8	39.9	42.6	14.9
60	63.0	31.3	43.4	46.4	18.8

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

11. Vacation/Sick Leave Credits:

For members who had ten years of service on July 1, 1993, credits for unused vacation and sick leave may be used to increase final average compensation and/or creditable service. In order to reflect this, projected retirement benefits are increased by 0.48% for state (regular) employees and 0.75% for teachers.

APPENDIX C - ACTUARIAL ASSUMPTIONS AND METHODS

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 valuation date. Annual increases are applied as of the beginning of each subsequent valuation.
Member Contribution Interest Rate: 5%
COLA Timing: September 1

13. Rationale for Assumptions:

The revised assumptions have been proposed by the actuary and adopted by the Board on July 14, 2016 for use starting with the 2016 valuation. The demographic assumptions are based on an experience study covering the period from June 30, 2012 through June 30, 2015. The Board continually reviews the investment return and inflation assumptions and adopted a reduced rate of 6.875%, effective with the 2016 valuation, at the advice of its investment consultants.

14. Changes since Last Valuation:

The COLA, salary increase, termination, retirement, disability, mortality, and disability mortality assumptions were updated based on the experience study covering the period from June 30, 2012 through June 30, 2015.

B. Actuarial Methods

1. Funding Method:

For the plans in this Program, the funding methodology employed is the entry age normal funding 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 Teachers 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.

APPENDIX C - ACTUARIAL ASSUMPTIONS AND METHODS

The unfunded actuarial liability under the entry age normal funding 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 12 years of its prescribed amortization period remaining and all other gains and losses are amortized over ten-year periods beginning on the date as of which they occur.

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 cash flow for the year and imputed returns at the actuarial assumption. This expected value is compared to the market value 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:

None.

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 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 Plan 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 plan.

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 Plan Fiduciary Net Position.

APPENDIX D - GLOSSARY OF GASB TERMS

8. Plan Fiduciary Net Position

The fair or market value of assets.

9. Reporting Date

The last day of the Plan 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 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 67 and 68. The Total Pension Liability is the actuarial liability calculated under the entry age actuarial cost method.

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