HAMPSHIRE COUNTY RETIREMENT SYSTEM

ACTUARIAL VALUATION
as of

January 1, 2018

Prepared by:

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July, 2018

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July 9, 2018

Hampshire County Retirement Board
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Dear Board Members:

We are pleased to present the enclosed report providing the results of our actuarial valuation of the Hampshire County Retirement System as of January 1, 2018. Our valuation was performed in accordance with the provisions contained in Chapter 32 of the Massachusetts General Laws, "M.G.L.", as of January 1, 2018. Disclosures under GASB Statement No. 67, Financial Reporting for Pension Plans (GASB 67) and GASB Statement No. 68, Accounting and Financial Reporting for Pensions (GASB 68) are provided in a separate report.

The principal results of our valuation are summarized in Section 2. The Summary of Plan Provisions and Actuarial Methods and Assumptions are shown in Sections 5 and 6, respectively. Section 7 summarizes the demographic profile of active members, retired plan members and beneficiaries and disabled plan members. Asset information and actuarial liabilities are presented in Section 2. The development of the required appropriations pursuant to Chapter 32 of the M.G.L. is shown in Section 3, including a 30-year forecast of the required appropriations and projected cash flows. The summary of information for PERAC is presented in Section 4.

This valuation is based upon member data provided by the Hampshire County Retirement Board and asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Retirement Board. Although we did not audit the data used in the valuation, we believe that the information is complete and reliable.

Liabilities presented in this report are based on a long-term investment return rate assumption of 7.45%, net of investment expense, compounded annually.

This report was completed in accordance with generally accepted actuarial standards and procedures, and conforms to the Code of Professional Conduct of the American Academy of Actuaries. The actuarial assumptions used in the determination of costs are reasonably related to the experience of the System and to reasonable expectations, and represent our best estimate of anticipated long-term experience under the System.

Future actuarial valuation results may differ significantly from the current results presented in this report. Examples of potential sources of volatility include plan experience differing from that anticipated by the economic or demographic assumptions, the effect of new entrants, changes in economic or demographic assumptions, the effect of law changes and the delayed effect of smoothing techniques.

Our valuation follows generally accepted actuarial methods and we perform such tests as we consider necessary to assure the accuracy of the results. The amounts presented in this report have been appropriately determined according to the actuarial assumptions and methods stated herein.

This report is intended for the sole use of the Hampshire County Retirement System and is intended to provide information to comply with the stated purpose of the report. It may not be appropriate for other purposes.

The undersigned credentialed actuaries are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinion contained herein. They are available to answer any questions with regard to this report.

Respectfully submitted,

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SECTION 1 - SUMMARY

Background

We have completed the Actuarial Valuation of the Hampshire County Retirement System as of January 1, 2018. This valuation is based upon census data provided by the Retirement Board and asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Hampshire County Retirement Board. Information for the prior valuation completed as of January 1, 2016 was obtained from the valuation report prepared by Stone Consulting.

Massachusetts General Laws

The valuation was prepared in accordance with Chapter 32 of the Massachusetts General Laws ("M.G.L."). The results are based on the active, inactive and retired members and beneficiaries as of January 1, 2018, the assets as of December 31, 2017 and assumptions regarding investment returns, salary increases, death, turnover, disability and retirement.

The valuation does not take into consideration:

- Changes in the law after the valuation date,
- Transfers between retirement systems pursuant to Section 3(8)(c) of Chapter 32, although an estimated payment towards the net 3(8)(c) transfers is added to the annual appropriation,
- State-mandated benefits and
- Cost-of-living increases granted to members in pay status between 1982 and 1997.

GASB Statement Numbers 67 and 68

In June 2012, the GASB approved two related Statements that significantly changed the way pension plans and governments account and report pension liabilities. Effective for plans with fiscal years beginning after June 15, 2013, GASB Statement No. 67, Financial Reporting for Pension Plans, replaced the requirements of Statement No. 25 and effective for employers with fiscal years beginning after June 15, 2014, GASB Statement No. 68, Accounting and Financial Reporting for Pensions, replaced the requirements of Statement No. 27.

The new pension standards reflect changes from those previously in place regarding how governments calculate total pension liability and pension expense. Further, the new standards contain requirements for disclosing information in the notes to financial statements and presenting required supplementary information following the notes.

The required disclosures and notes under the new GASB Statements for the fiscal year ending December 31, 2017 are provided in a separate report.

SECTION 1 - SUMMARY

Actuarial Valuation

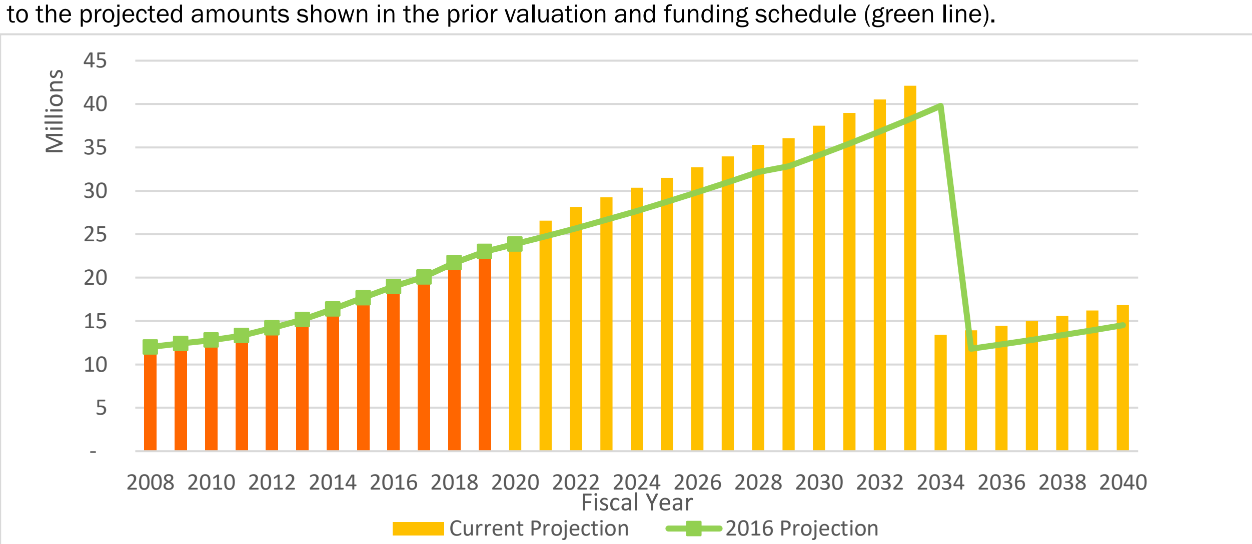
During the two years since the last valuation, the total unfunded actuarial accrued liability of the System was expected to decrease from $192,659,663 as of January 1, 2016 to $185,071,492 as of January 1, 2018, for a total decrease of $7,588,171. The actual unfunded actuarial accrued liability, before any assumption or plan changes, was $191,319,731, resulting in an actuarial loss of $6,248,239. The actuarial loss was primarily due to an asset loss of $2,921,341 and a demographic experience loss of $3,326,898. The details of the gain and loss analysis are provided in Exhibit 2.6.

Appropriations

The funding appropriation for each year is computed as the sum of the normal cost, net 3(8)(c) transfers and an amortization payment to pay off the Unfunded Actuarial Liability, adjusted for semi-annual payments of the appropriation made July 1 and January 1. The appropriation calculated as of the January 1, 2018 valuation is $23,650,718, and is made up of a normal cost payment of $6,161,191, net 3(8)(c) transfers of $1,193,092 and an amortization payment of $16,296,435. The amortization method is an increasing amortization of the unfunded actuarial accrued liability at 4% over 15 years and is expected to fully pay the unfunded actuarial accrued liability by the year 2033. The development of the appropriation as of January 1, 2018 is presented in Exhibit 3.1.

For fiscal year 2019, we show the actual appropriation developed under the previous funding schedule and reported on the PERAC "Required Fiscal Year 2019 Appropriation" letter dated December 1, 2017 of $22,998,444. For fiscal year 2020, we developed an annual appropriation of $24,723,326, which is made up of a normal cost of $6,777,593, net 3(8)(c) transfers of 1,258,951 and payment toward the unfunded actuarial accrued liability (including payments for the Early Retirement Incentives) of $16,686,782. The unfunded actuarial accrued liability is expected to be fully paid by 2033. The Board adopted a schedule that limits the annual increase in appropriation to 7.5% for each year. The current funding schedule is shown in Exhibit 3.2.

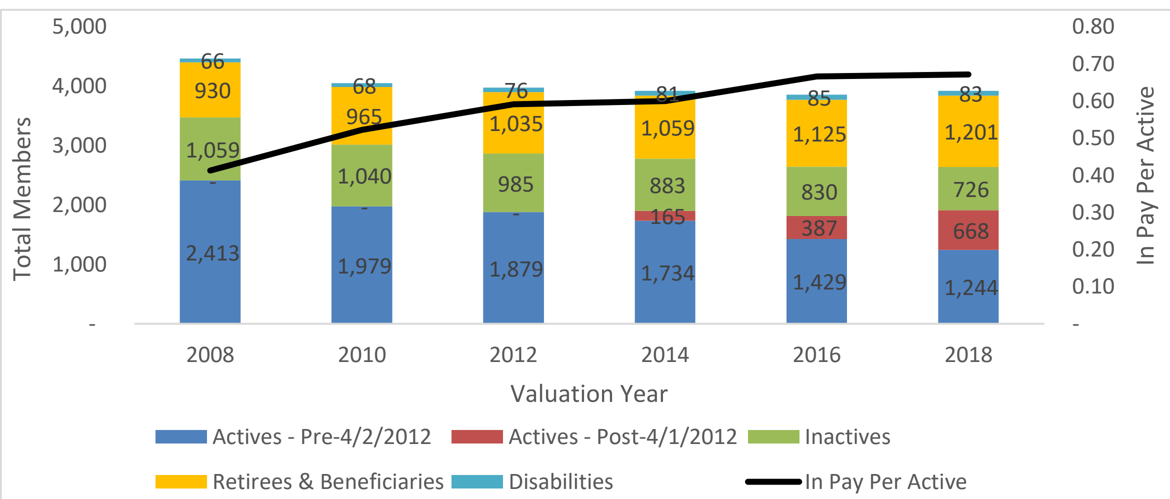
The chart below shows the historical (orange bars) and projected (yellow bars) annual appropriations compared to the projected amounts shown in the prior valuation and funding schedule (green line).



SECTION 1 - SUMMARY

A summary of principal valuation results from the current valuation and the prior valuation follows. Changes in actuarial assumptions and methods and Plan provisions are discussed below, as well as changes in census data and asset information.

Valuation Date	1/1/2018	1/1/2016	Increase/ (Decrease)
Summary of Member Data			
Active Members	1,912	1,816	5.3%
Average Age	48.3	48.9	(1.2%)
Average Service	11.4	12.0	(5.0%)
Valuation Salary	$84,207,234	$75,386,731	11.7%
Average Salary	$44,041	$41,513	6.1%
Retired Members and Beneficiaries	1,201	1,125	6.8%
Average Age	72.7	N/A	N/A
Total Annual Retirement Allowance	$24,638,050		
Average Annual Retirement Allowance	$20,515		
State Reimbursed COLAs	$144,237		
Total System-Funded Retirement Allowance	$24,493,813	$21,244,176	15.3%
Disabled Members	83	85	(2.4%)
Average Age	64.2	N/A	N/A
Total Annual Retirement Allowance	$2,695,703		
Average Annual Retirement Allowance	$32,478		
State Reimbursed COLAs	$24,376		
Total System-Funded Retirement Allowance	$2,671,327	$2,551,975	4.7%
Inactive Members	726	830	(12.5%)
Annuity Savings Fund	$5,968,602	$6,833,641	(12.7%)



SECTION 1 - SUMMARY

Valuation Date	1/1/2018	1/1/2016	Increase/ (Decrease)
Funded Status - Market Value of Assets			
Actuarial Accrued Liability (AAL)	$503,968,562	$464,390,826	8.5%
Market Value of Assets (MVA)	$318,127,580	$256,905,832	23.8%
Unfunded Accrued Liability	$185,840,982	$207,484,994	(10.4%)
Funded Status	63.1%	55.3%	14.1%
Funded Status - Actuarial Value of Assets			
Actuarial Accrued Liability (AAL)	$503,968,562	$464,390,826	8.5%
Actuarial Value of Assets (AVA)	309,998,130	$271,731,163	14.1%
Unfunded Accrued Liability	$193,970,432	$192,659,663	0.7%
Funded Status	61.5%	58.5%	5.1%
Normal Cost			
Total Normal Cost	$12,771,414	$11,288,446	13.1%
Employee Normal Cost	7,610,223	7,212,661	5.5%
Administrative Expenses	1,000,000	1,061,575	(5.8%)
Net Employer Normal Cost	$6,161,191	$5,137,360	19.9%
Appropriations			
Fiscal Year 2018	N/A	$21,708,958	N/A
Fiscal Year 2019	$22,998,445	$22,998,444	0.0%
Fiscal Year 2020	$24,723,326	$23,861,346	3.6%
Fiscal Year 2021	$26,577,577	$24,759,343	7.3%

Actuarial Assumptions and Methods

Some Actuarial Assumptions and Methods used in this valuation have changed since the last valuation, including decreasing the investment return rate from 7.5% to 7.45%. Changing these assumptions resulted in a net increase in the unfunded actuarial accrued liability of $2,650,701 and an increase in the employer normal cost of $128,720. The administrative expense assumption was decreased from $1,061,575 to $1,000,000 and the net 3(8)(c) transfers were increased from $1,170,087 to $1,258,951. The Actuarial Assumptions and Methods utilized in this valuation are detailed in Section 6, Actuarial Assumptions and Methods.

Plan Provisions

All Plan provisions used in this valuation are the same as those used in the prior valuation, and are summarized in Section 5, Summary of Plan Provisions.

SECTION 1 - SUMMARY

Census Data

As of January 1, 2018, there are 1,912 active members who may be eligible for benefits in the future, 1,201 retirees and beneficiaries, 726 inactives and 83 disabled retirees. Summaries of the active, retired and disabled employees and beneficiaries are included in Section 7, Demographic Information.

Assets

This valuation is based upon asset information reported to the Public Employee Retirement Administration Commission (PERAC) by the Hampshire County Retirement Board. The market value of assets increased from $256,905,832 as of December 31, 2015 to $318,127,580 as of December 31, 2017. During the plan years ended 2016 and 2017, the market value rates of return were 8.36% and 16.62%, respectively.

The actuarial value of assets increased from $271,731,163 as of January 1, 2016 to $309,998,130 as of January 1, 2018. During the plan years ended 2016 and 2017, the rates of return on the actuarial value of assets were 6.59% and 7.40%, respectively.

SECTION 2 - PRINCIPAL VALUATION RESULTS

Exhibit 2.1 - Plan Assets

Asset information is reported annually to the Public Employee Retirement Administration Commission by the Hampshire County Retirement System. The Market Value of Assets for the three most recent calendar years are as follows:

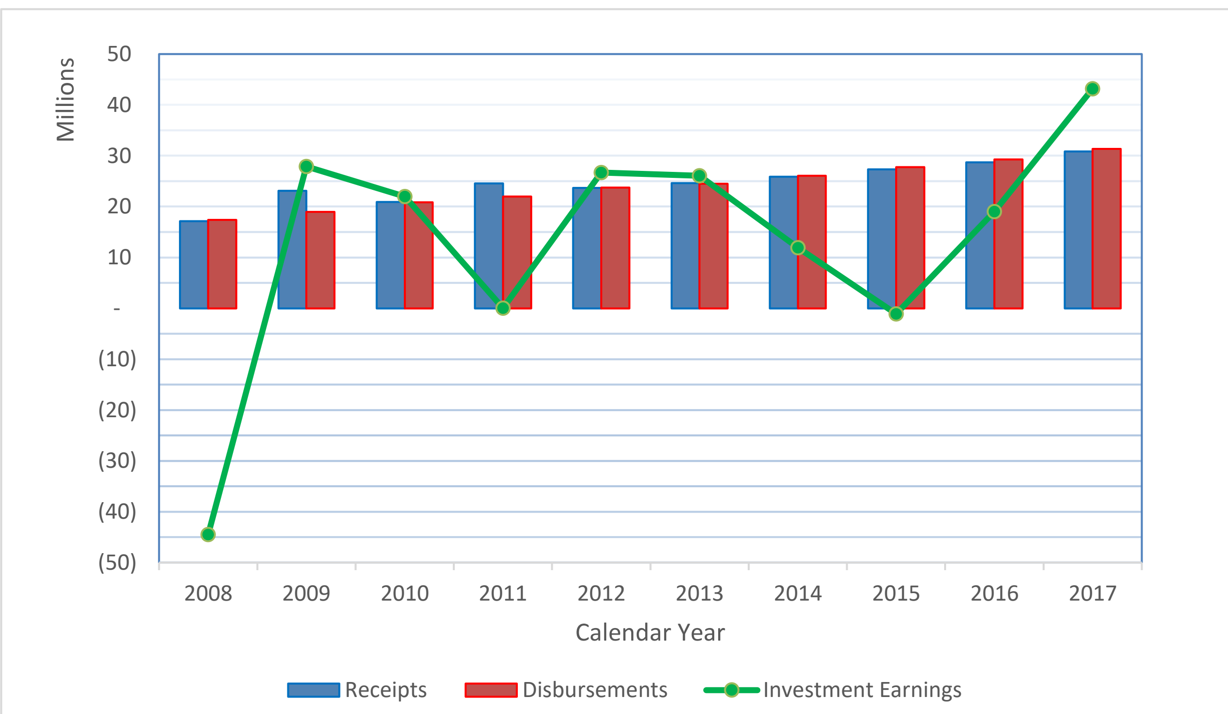
Calendar Year	2017	2016	2015
Trust Fund Composition at Year-End			
Cash	$8,213,746	$2,934,087	$15,207,179
Short-Term Investments	0	0	0
Fixed Income Securities	0	0	0
Equities	0	0	0
Pooled Short Term Funds	0	0	0
Pooled Domestic Equity Funds	60,890,908	51,111,658	42,590,366
Pooled International Equity Funds	87,217,586	60,355,422	44,092,679
Pooled Global Equity Funds	0	18,450,200	24,545,213
Pooled Domestic Fixed Income Funds	59,610,648	42,195,783	35,158,450
Pooled International Fixed Income Funds	0	0	0
Pooled Global Fixed Income Funds	27,610,015	24,423,002	7,777,009
Pooled Alternative Investments	31,017,750	30,289,997	29,965,329
Pooled Real Estate Funds	42,776,536	32,250,646	30,927,197
Pooled Domestic Balanced Funds	0	0	0
Pooled International Balanced Funds	0	0	0
Hedge Funds	0	12,686,364	25,503,811
PRIT Cash	0	0	0
PRIT Fund	0	0	0
Interest Due & Accrued	0	0	0
Prepaid Expenses	0	0	0
Accounts Receivable	791,665	688,513	1,151,029
Land	0	0	0
Buildings	0	0	0
Accumulated Depreciation - Buildings	0	0	0
Accounts Payable	(1,274)	(449)	(12,430)
Total Market Value of Assets	$318,127,580	$275,385,223	$256,905,832

SECTION 2 - PRINCIPAL VALUATION RESULTS

Exhibit 2.1 - Plan Assets

Calendar Year	2017	2016	2015
Funds			
Annuity Savings Fund	$80,393,312	$78,241,775	$76,651,349
Annuity Reserve Fund	24,481,103	23,782,059	22,625,792
Special Military Service Fund	57,378	58,575	58,517
Pension Fund	17,671,995	18,329,058	0
Expense Fund	0	0	0
Pension Reserve Fund	195,523,792	154,973,756	157,570,174
Total Market Value of Assets	$318,127,580	$275,385,223	$256,905,832
Asset Activity			
Market value as of Beginning of Year	$275,385,223	$256,905,832	$258,410,684
Contributions and Receipts	30,865,778	28,740,452	27,332,424
Benefit Payments and Expenses	(31,325,075)	(29,299,339)	(27,748,374)
Investment Return (net of fees)	43,201,654	19,038,278	(1,088,902)
Market Value as of End of Year	$318,127,580	$275,385,223	$256,905,832
Rate of Return	16.62%	8.36%	0.32%

Below are the receipts and disbursements during the last 10 years. The green line reflects investment gains and losses, which vacillate as investment markets fluctuate. Blue bars indicate contributions, from employees and employers, and red bars show benefit payments and administrative expenses.



SECTION 2 - PRINCIPAL VALUATION RESULTS

Exhibit 2.1 - Plan Assets

The Actuarial Value of Assets is the market value of assets as of the valuation date adjusted to phase in investment gains and losses over a 5-year period, further constrained to be within 10% of the market value of assets. Investment gains and losses are the excess or deficiency of the expected returns over the actual returns.

Valuation Date	1/1/2018	1/1/2017	1/1/2016
1. **Market Value of Assets as of prior January 1**	$275,385,223	$256,905,832	$258,410,684
a. Prior Year Contributions and Receipts	30,865,778	28,740,452	27,332,424
b. Prior Year Benefit Payments and Expenses	(31,325,075)	(29,299,339)	(27,748,374)
c. Expected Investment Return Rate	7.50%	7.50%	7.875%
d. Expected Investment Return	20,636,668	19,246,979	20,333,463
e. Expected Market Value of Assets as of Valuation Date	$295,562,594	$275,593,924	$278,328,197
2. **Prior Year Gain / (Loss)**			
a. Market Value of Assets as of January 1	$318,127,580	$275,385,223	$256,905,832
b. Expected Market Value of Assets	295,562,594	275,593,924	278,328,197
c. Prior Year Gain / (Loss)	22,564,986	(208,701)	(20,965,586) *

* based on results of January 1, 2016 valuation prepared by Stone Consulting.

3. **Phase-In of Asset Gains and Losses**

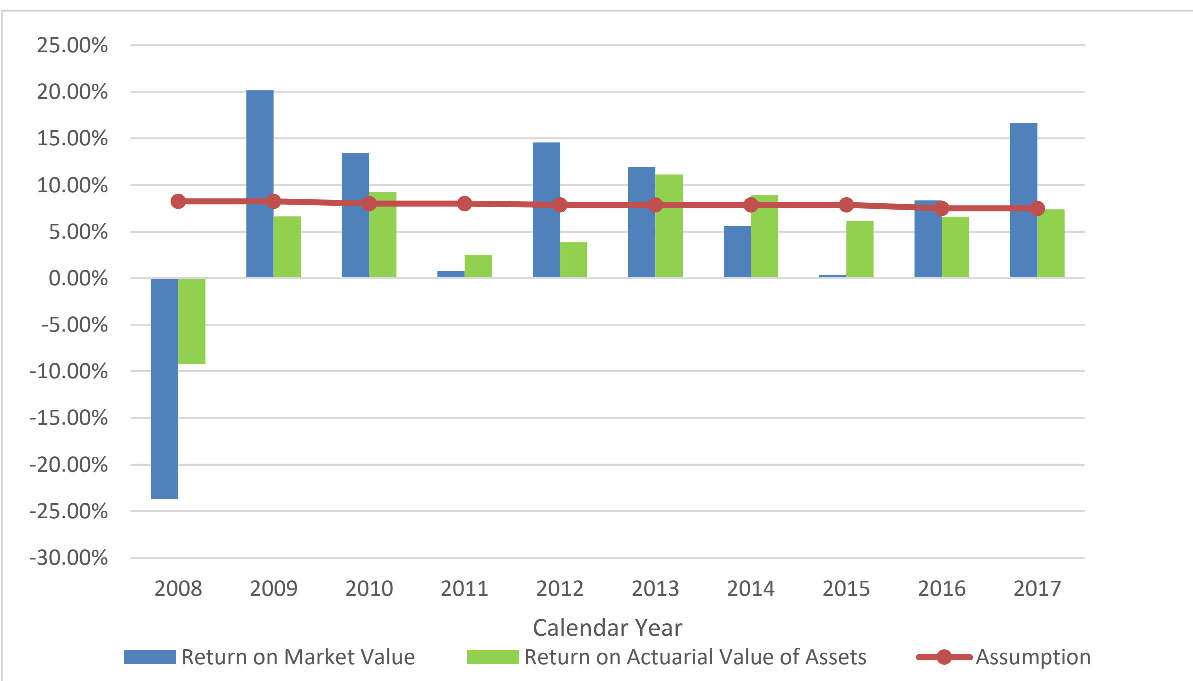
	Calendar Year	Gain / (Loss)	Unrecognized Gain / (Loss)	Unrecognized Gain / (Loss)	Unrecognized Gain / (Loss)
a.	2017	$22,564,986	$18,051,989	-	-
b.	2016	(208,701)	(125,221)	(166,961)	-
c.	2015	(20,965,586)	(8,386,234)	(12,579,352)	(16,772,468)
d.	2014	(7,055,419)	(1,411,084)	(2,822,168)	(4,233,251)
e.	2013	9,405,361	-	1,881,072	3,762,144
f.	2012	12,091,220	-	-	2,418,244
g.	Total deferred gains/(losses)		8,129,450	(13,687,409)	(14,825,331)

SECTION 2 - PRINCIPAL VALUATION RESULTS

Exhibit 2.1 - Plan Assets

Valuation Date	1/1/2018	1/1/2017	1/1/2016
4. Actuarial Value of Assets			
a. Market Value of Assets	$318,127,580	$275,385,223	$256,905,832
b. Deferred gains/(losses)	8,129,450	(13,687,409)	(14,825,331)
c. Market Value of Assets Less deferred gains/(losses)	$309,998,130	$289,072,632	$271,731,163
d. 90% of Market Value of Assets	286,314,822	247,846,701	231,215,249
e. 110% of Market Value of Assets	349,940,338	302,923,745	282,596,415
f. Actuarial Value of Assets, c., but not less than d. and not greater than e.	$309,998,130	$289,072,632	$271,731,163
g. Ratio of Actuarial Value of Assets to Market Value of Assets	97.44%	104.97%	105.77%
5. Rate of Return on Actuarial Value of Assets for Prior Calendar Year	7.40%	6.59%	6.14%

Below are the investment returns during the last 10 years. The red line reflects the investment return actuarial assumption. Blue bars indicate investment return rates on market value of assets, and green bars show investment return rates on actuarial value of assets.



SECTION 2 - PRINCIPAL VALUATION RESULTS

Exhibit 2.2 - Actuarial Present Value of Future Benefits

The **Actuarial Present Value of Future Benefits** is the present value of the cost to finance all benefits payable in the future, discounted to reflect the probability of payment and the time value of money. Below is the Actuarial Present Value of Future Benefits from the current valuation and the prior valuation:

Valuation Date	1/1/2018	1/1/2016
Actives	$352,820,518	Not available
Retired Members and Beneficiaries	242,882,651	
Disabled Members	30,021,117	
Inactive Members	5,968,602	
Total Present Value of Future Benefits	$631,692,888	

Exhibit 2.3 - Actuarial Accrued Liability

The **Actuarial Accrued Liability** is the portion of the Actuarial Present Value of Future Benefits which is allocated to all periods prior to a valuation year and therefore is not provided for by future Normal Costs. Below is the Actuarial Accrued Liability from the current valuation and the prior valuation:

Valuation Date	1/1/2018	1/1/2016
Actives	$225,096,192	$219,536,881
Retired Members and Beneficiaries	242,882,651	208,111,325
Disabled Members	30,021,117	29,908,979
Inactive Members	5,968,602	6,833,641
Total Actuarial Accrued Liability	$503,968,562	$464,390,826

Exhibit 2.4 - Unfunded Actuarial Accrued Liability

Valuation Date	1/1/2018	1/1/2016
Unfunded Actuarial Accrued Liability		
a. Actuarial Accrued Liability	$503,968,562	$464,390,826
b. Actuarial Value of Assets	309,998,130	271,731,163
c. Unfunded Actuarial Accrued Liability (a. - b.)	$193,970,432	$192,659,663
d. Funded Ratio (b. divided by a.)	61.5%	58.5%

SECTION 2 - PRINCIPAL VALUATION RESULTS

Below are the accrued liabilities, asset values (actuarial and market) and funded status during the last 10 years. The black solid line reflects the funded status on an actuarial value of assets (AVA) basis and the black dotted line reflects the funded status on a market value (MVA) basis. Blue bars indicate actuarial accrued liabilities, red bars indicate actuarial value of assets and green bars indicate market value of assets.

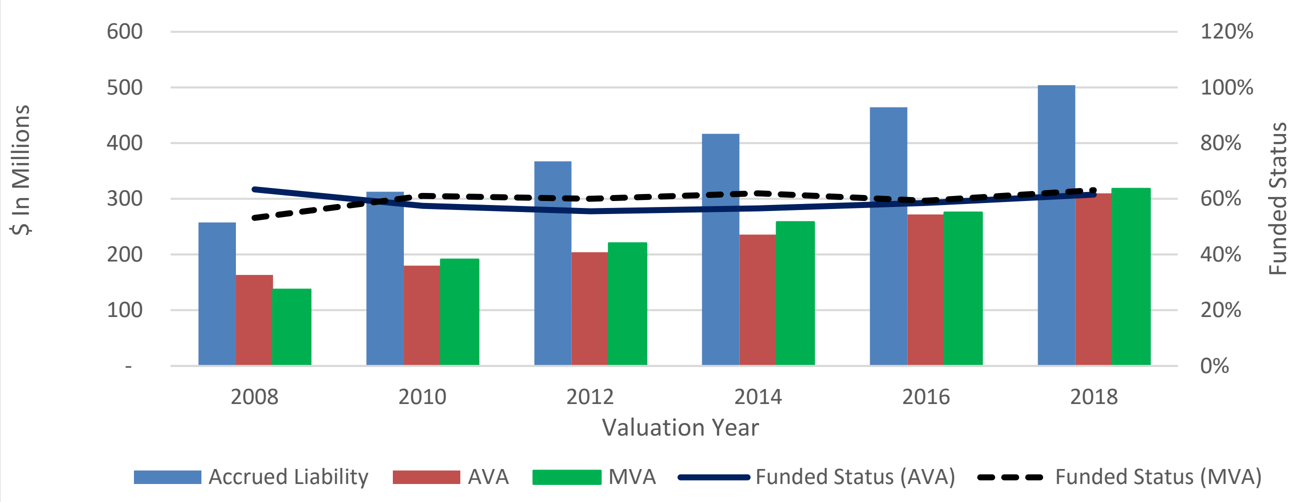


Exhibit 2.5 - Normal Cost

The **Normal Cost** is the portion of the Actuarial Present Value of Future Benefits which is allocated to a valuation year. Only active employees who have not reached Normal Retirement Age incur a Normal Cost. Below is the Normal Cost from the current valuation and the prior valuation:

Valuation Date	1/1/2018	1/1/2016
Total Normal Cost	$12,771,414	$11,288,446
As of Percentage of Salary	15.2%	15.0%
Employee Normal Cost	$7,610,223	$7,212,661
As of Percentage of Salary	9.0%	9.6%
Administrative Expenses	$1,000,000	$1,061,575
As a Percentage of Salary	1.2%	1.4%
Net Employer Normal Cost	$6,161,191	$5,137,360
As a Percentage of Salary	7.3%	6.8%

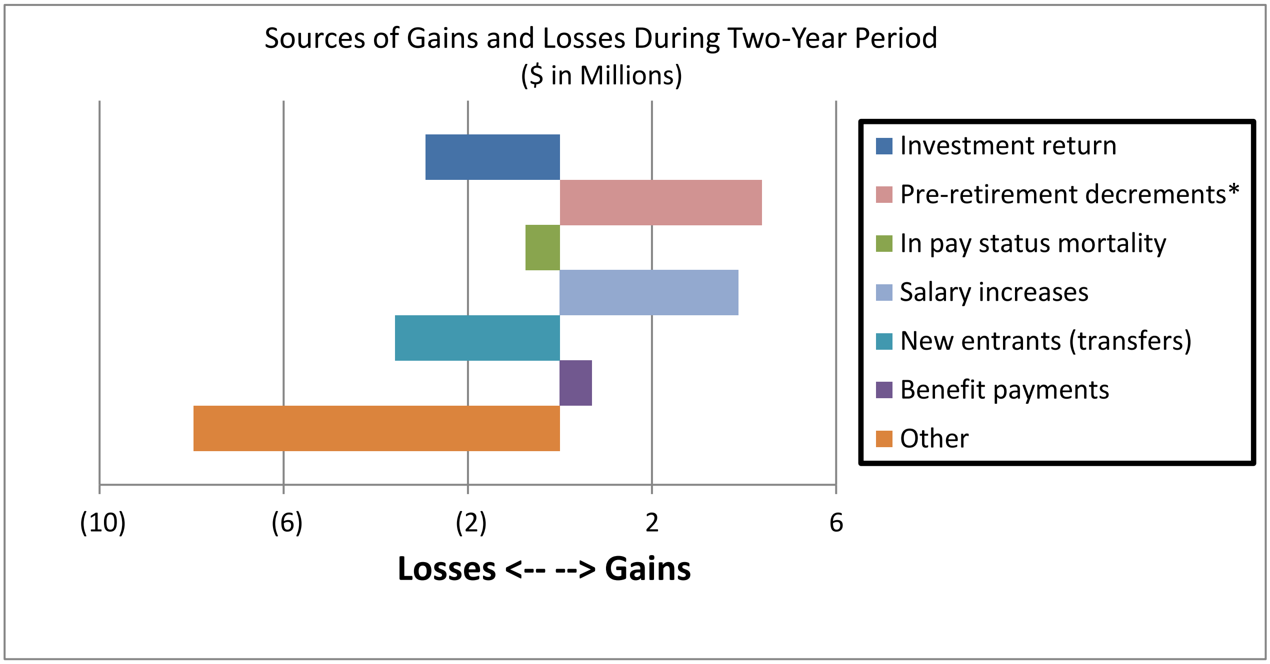
Exhibit 2.6 - Actuarial Experience

In performing the actuarial valuation, various assumptions are made regarding mortality, retirement, disability and withdrawal rates as well as salary increases and investment returns. A comparison of the results of the current valuation and the prior valuation is made to determine how closely actual experience relates to expected. During the two years since the last valuation, the total unfunded actuarial accrued liability of the System was expected to decrease by $7,588,171. Below is the development of the Actuarial Loss for the current 2-year period:

Calendar Year Ending		12/31/2017	12/31/2016
Expected Unfunded Actuarial Accrued Liability			
a.	Unfunded Actuarial Accrued Liability, beginning of year	$189,425,998	$192,659,663
b.	Normal cost, beginning of year	$12,522,594	11,288,446
c.	Total contributions	30,865,778	28,740,452
d.	Interest (full year on a. and b., one-half year on c.)	13,988,678	14,218,341
e.	Expected Unfunded Actuarial Accrued Liability	$185,071,492	$189,425,998
f.	Unfunded Actuarial Accrued Liability (before changes)	191,319,731	
g.	(Gain)/Loss	$6,248,239	
Asset (gain)/loss			
a.	Actuarial value of assets, beginning of year	$289,072,632	$271,731,163
b.	Contributions and Receipts	30,865,778	28,740,452
c.	Benefit Payments and Expenses	(31,325,075)	(29,299,339)
d.	Assumed rate of return (prior valuation)	7.50%	7.50%
e.	Expected return	21,663,224	20,358,879
f.	Actuarial value of assets, end of year	309,998,130	289,072,632
g.	Actual return	21,384,795	17,900,356
h.	Actual rate of return	7.40%	6.59%
i.	Asset (gain)/loss	$278,429	$2,458,523
j.	Total asset (gain)/loss, 2-year period	$2,921,341	

Exhibit 2.6 - Actuarial Experience

Below are the various sources of gains and losses over the 2-year period. The asset loss during the period was $2,921,341, and the total demographic loss during the period was $3,326,898, which totals to an overall loss of $6,248,239.



* turnover, death, disability and retirement rates

Actual Unfunded Actuarial Accrued Liability

a.	Changes due to:	
	i) Asset (gain)/loss	$2,921,341
	ii) (Gain)/loss from demographic experience	3,326,898
	iii) (Gain)/loss prior to changes	6,248,239
	iv) Plan change	-
	v) Assumption change - reduce investment return rate	2,650,701
	vi) Total (gain)/loss (including changes)	8,898,940
b.	Unfunded Actuarial Accrued Liability, end of year	$193,970,432

SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

Exhibit 3.1 - Annual Appropriations

The **Annual Appropriation** is determined in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws ("M.G.L."). The appropriation is comprised of the annual employer normal cost and amortization payments to pay the unfunded actuarial accrued liability. Below are the details of the annual appropriations for the current valuation, adjusted for semi-annual payments made each July 1 and January 1. The appropriations shown are based on the results of the valuations and do not account for any adjustments made to appropriations in the selected funding schedule.

Amortization Payments	1/1/2018
a. Early Retirement Incentive Plan (2002)	
Fully Funded Year	2028
Investment Return Rate	7.45%
Balance as of valuation date	$1,919,640
Amortization Amount	$259,680
Increasing Rate	0.00%
Remaining Payment Period (from Valuation date)	10
b. Early Retirement Incentive Plan (2003)	
Fully Funded Year	2028
Investment Return Rate	7.45%
Balance as of valuation date	$2,031,578
Amortization Amount	$274,823
Increasing Rate	0.00%
Remaining Payment Period (from Valuation date)	10
c. Unfunded Actuarial Accrued Liability	
Fully Funded Year	2033
Balance as of valuation date	$190,019,214
Amortization Amount	$15,761,932
Remaining Payment Period (from Valuation date)	15
d. Total Amortization Payments	$16,296,435
Normal Cost	$6,161,191
Net 3(8)(c) Transfers	$1,193,092
Total Appropriation as of January 1	$23,650,718
Adjusted for Payments as of July 1 and January 1	$24,956,235

SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

Exhibits 3.2 and 3.3 are based on the assumptions below:

Exhibit 3.2:

- The Employer Normal Cost is expected to increase 4.25% per year.
- The Unfunded Actuarial Accrued Liability ("UAL") is computed as of January 1 of each year assuming no future gains or losses.
- The Amortization Payment of UAL is an increasing payment at 4% paid over 15 years through 2033.
- The Amortization Payment of the Early Retirement Incentive Plan (2002) is a level payment paid over 10 year(s) through 2028.
- The Amortization Payment of the Early Retirement Incentive Plan (2003) is a level payment paid over 10 year(s) through 2028.
- Net 3(8)(c) transfers are a level dollar amount based on the net transfers expected to be paid by the Hampshire County Retirement Board during the current year offset by the amount received during the same period.
- Total Employer Cost is the sum of the Employer Normal Cost, net 3(8)(c) transfers and the Amortization of the UAL (including ERIs), all computed as of January 1 of each year and adjusted for semi-annual payments made on July 1 and January 1.
- For fiscal year 2019, we show the actual appropriation developed under the previous funding schedule of $22,998,445. For fiscal years 2020 and later, the Board has selected a funding schedule that fully amortizes the unfunded actuarial accrued liability by 2033, with annual employer costs limited to increases of 7.5% over the prior year.

Exhibit 3.3:

- Expected benefit payments include payments expected to be made to retired members, beneficiaries, disabled members and active members expected to retire. In addition, expected benefit payments include distribution of the annuity savings fund attributed to inactive members.
- Benefit payments exclude cost-of-living increases granted to members in pay status between 1982 and 1997. In addition, benefit payments are as expected for the first ten years of the forecast, then increase by the greater of 4.5% per year thereafter or the expected future payments for the current population projected by our computer model.
- Calendar year cash flow entries are developed as of each January 1.

Exhibit 3.2 - 30-Year Forecast of Annual Appropriations

Fiscal Year Ending	Employer Normal Cost	Amortization Payment of UAL	Amortization Payment of ERI 2002	Amortization Payment of ERI 2003	Net 3(8)(c) Transfers	Total Employer Cost	Single Payment on July 1	Unfunded Actuarial Accrued Liability
2019	$5,450,627	$15,813,722	$274,015	$289,993	$1,170,088	$22,998,445	$22,590,057	$193,970,432
2020	6,777,593	16,122,775	274,014	289,993	1,258,951	24,723,326	24,287,083	191,743,946
2021	7,065,642	17,688,977	274,014	289,993	1,258,951	26,577,577	26,108,616	189,036,878
2022	7,365,932	18,975,636	274,014	289,993	1,258,951	28,164,526	27,667,563	184,533,286
2023	7,678,983	19,734,661	274,014	289,992	1,258,951	29,236,601	28,720,721	178,383,983
2024	8,005,340	20,524,048	274,015	289,993	1,258,951	30,352,347	29,816,780	171,003,651
2025	8,345,567	21,345,009	274,014	289,993	1,258,951	31,513,534	30,957,478	162,269,656
2026	8,700,253	22,198,809	274,014	289,992	1,258,951	32,722,019	32,144,639	152,049,003
2027	9,070,014	23,086,762	274,014	289,992	1,258,951	33,979,733	33,380,161	140,197,495
2028	9,455,489	24,010,233	274,015	289,993	1,258,951	35,288,681	34,666,013	126,558,857
2029	9,857,347	24,970,641	-	-	1,258,951	36,086,939	35,450,185	110,963,776
2030	10,276,285	25,969,467	-	-	1,258,951	37,504,703	36,842,933	93,803,212
2031	10,713,027	27,008,247	-	-	1,258,951	38,980,225	38,292,419	74,347,091
2032	11,168,331	28,088,576	-	-	1,258,951	40,515,858	39,800,956	52,383,709
2033	11,642,985	29,212,118	-	-	1,258,951	42,114,054	41,370,952	27,683,966
2034	12,137,813	-	-	-	1,258,951	13,396,764	13,160,378	-
2035	12,653,670	-	-	-	1,258,951	13,912,621	13,667,133	-
2036	13,191,451	-	-	-	1,258,951	14,450,402	14,195,425	-
2037	13,752,088	-	-	-	1,258,951	15,011,039	14,746,169	-
2038	14,336,553	-	-	-	1,258,951	15,595,504	15,320,322	-
2039	14,945,856	-	-	-	1,258,951	16,204,807	15,918,873	-
2040	15,581,055	-	-	-	1,258,951	16,840,006	16,542,864	-
2041	16,243,250	-	-	-	1,258,951	17,502,201	17,193,375	-
2042	16,933,589	-	-	-	1,258,951	18,192,540	17,871,533	-
2043	17,653,266	-	-	-	1,258,951	18,912,217	18,578,511	-
2044	18,403,530	-	-	-	1,258,951	19,662,481	19,315,537	-
2045	19,185,680	-	-	-	1,258,951	20,444,631	20,083,886	-
2046	20,001,071	-	-	-	1,258,951	21,260,022	20,884,889	-
2047	20,851,115	-	-	-	1,258,951	22,110,066	21,719,934	-
2048	21,737,288	-	-	-	1,258,951	22,996,239	22,590,471	-

SECTION 3 - CHAPTER 32 OF M.G.L. APPROPRIATIONS

Exhibit 3.3 - 30-Year Forecast of Cash Flow

Calendar Year	Market Value of Assets, BOY	Benefit Payments	Employee Contributions	Employer Contributions	Investment Return	Market Value of Assets, EOY
2018	$318,127,580	$35,006,873	$7,252,160	$21,795,344	$24,560,538	$336,728,748
2019	336,728,748	30,600,868	7,933,657	23,345,779	26,276,727	363,684,043
2020	363,684,043	32,079,258	8,270,837	25,187,243	28,392,136	393,455,001
2021	393,455,001	33,692,276	8,622,348	26,691,175	30,688,218	425,764,466
2022	425,764,466	35,483,364	8,988,798	27,707,168	33,131,547	460,108,615
2023	460,108,615	37,286,104	9,370,822	28,764,546	35,730,269	496,688,148
2024	496,688,148	38,971,629	9,769,082	29,864,989	38,504,312	535,854,902
2025	535,854,902	40,810,500	10,184,268	31,010,256	41,469,991	577,708,917
2026	577,708,917	42,596,145	10,617,099	32,202,176	44,642,644	622,574,691
2027	622,574,691	44,386,205	11,068,326	33,442,650	48,044,496	670,743,958
2028	670,743,958	46,025,453	11,538,730	34,199,149	51,663,449	722,119,833
2029	722,119,833	48,096,598	12,029,126	35,542,746	55,550,434	777,145,541
2030	777,145,541	50,260,945	12,540,364	36,941,080	59,711,490	836,077,530
2031	836,077,530	52,522,688	13,073,329	38,396,381	64,165,799	899,190,351
2032	899,190,351	54,886,209	13,628,945	39,910,972	68,933,894	966,777,953
2033	966,777,953	57,356,088	14,208,175	12,695,948	71,892,800	1,008,218,788
2034	1,008,218,788	59,937,112	14,812,022	13,184,820	74,965,407	1,051,243,925
2035	1,051,243,925	62,634,282	15,441,533	13,694,468	78,155,177	1,095,900,821
2036	1,095,900,821	65,452,825	16,097,798	14,225,777	81,465,600	1,142,237,171
2037	1,142,237,171	68,398,202	16,781,954	14,779,667	84,900,177	1,190,300,767
2038	1,190,300,767	71,476,121	17,495,187	15,357,096	88,462,417	1,240,139,346
2039	1,240,139,346	74,692,546	18,238,732	15,959,067	92,155,820	1,291,800,419
2040	1,291,800,419	78,053,711	19,013,878	16,586,621	95,983,868	1,345,331,075
2041	1,345,331,075	81,566,128	19,821,968	17,240,846	99,950,006	1,400,777,767
2042	1,400,777,767	85,236,604	20,664,402	17,922,875	104,057,632	1,458,186,072
2043	1,458,186,072	89,072,251	21,542,639	18,633,891	108,310,073	1,517,600,424
2044	1,517,600,424	93,080,502	22,458,201	19,375,125	112,710,566	1,579,063,814
2045	1,579,063,814	97,269,125	23,412,675	20,147,861	117,262,239	1,642,617,464
2046	1,642,617,464	101,646,236	24,407,714	20,953,438	121,968,085	1,708,300,465
2047	1,708,300,465	106,220,317	25,445,042	21,793,253	126,830,931	1,776,149,374

SECTION 4 - REQUIRED DISCLOSURES

Exhibit 4.1 - GASB 67 and GASB 68 Disclosures

In June 2012, the GASB approved two related Statements that significantly changed the way pension plans and governments account and report pension liabilities. Effective for plans with fiscal years beginning after June 15, 2013, GASB Statement No. 67, *Financial Reporting for Pension Plans* , replaced the requirements of Statement No. 25 and effective for employers with fiscal years beginning after June 15, 2014, GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* , replaced the requirements of Statement No. 27.

The new pension standards reflect changes from those currently in place regarding how governments calculate total pension liability and pension expense. Further, the new standards contain requirements for disclosing information in the notes to financial statements and presenting required supplementary information following the notes.

GASB 67 requires defined benefit pension plans, such as the Hampshire County Retirement System, to present a statement of fiduciary net position (pension plan assets) and a statement of changes in fiduciary net position. Further, the statement requires that notes to financial statements include descriptive information such as the types of benefits provided, the classes of plan members covered and the composition of the pension plan's retirement board. Finally, GASB 67 requires pension plans to present in required supplementary information the sources of the changes in the net pension liability and information about the actuarially determined contributions compared with the actual contributions made to the plan and related ratios.

GASB 67 and GASB 68 require projected benefit payments be discounted to their actuarial present value using the single rate that reflects:

(1) a long-term expected rate of return on pension plan investments *to the extent that the pension plan's assets are sufficient to pay benefits and pension plan assets are expected to be invested using a strategy to achieve that return and*

(2) a tax-exempt, high-quality municipal bond rate *to the extent that the conditions for use of the long-term expected rate of return are not met.*

GASB 68 establishes standards for measuring and recognizing liabilities, deferred outflows of resources, deferred inflows of resources and pension expense by state and local governments.

The effective date for GASB 67 is for plan years beginning after June 15, 2013, which is fiscal year ending December 31, 2014 for the Hampshire County Retirement System. The effective date for GASB 68 is for employers' fiscal years beginning after June 15, 2014. The GASB report, submitted under separate cover and prepared as of December 31, 2017 (the measurement date), presents information to assist the Hampshire County Retirement System in providing the required information under GASB 68 to participating employers.

Exhibit 4.2 - PERAC Disclosure Information

The most recent actuarial valuation of the System was prepared by KMS Actuaries, LLC as of January 1, 2018.

The normal cost for employees on that date was:	$7,610,223	9.0% of payroll
The normal cost for the employer was:	$6,161,191	7.3% of payroll

The actuarial liability for active members was:	$225,096,192
The actuarial liability for retired and inactive members was:	278,872,370
Total actuarial liability:	$503,968,562
System assets as of that date:	$309,998,130
Unfunded actuarial accrued liability:	$193,970,432

The ratio of System assets to total actuarial accrued liability was: 61.5%

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	7.45%
Rate of Salary Increase:	Based on service, 6% graded down to 4.25% for Group 1
	Based on service, 7% graded down to 4.75% for Group 4

SECTION 5 - SUMMARY OF PLAN PROVISIONS

Administration

There are 104 contributory retirement systems for public employees in Massachusetts. Each system is governed by a retirement board and all boards, although operating independently, are governed by Chapter 32 of the Massachusetts General Laws, Chapter 34B, Section 19 and other applicable statutes. This law in general provides uniform benefits, uniform contribution requirements and a uniform accounting and funds structure for all systems.

Participation

Participation is mandatory for all full-time employees. Eligibility with respect to part-time, provisional, temporary, seasonal or intermittent employment is governed by regulations promulgated by the local retirement board, and approved by PERAC. Membership is optional for certain elected officials.

There are four classes of membership in the Retirement System:

Group 1:	General employees, including clerical, administrative, technical and all other employees not otherwise classified.
Group 2:	Certain specified hazardous duty positions.
Group 3:	State police officers and inspectors.
Group 4:	Local police officers, firefighters and other specified hazardous positions.

For members in more than one group, participation will be proportional.

Member Contributions

Member contributions vary depending on the most recent date of membership:

Prior to 1975:	5% of Salary
1975 – 1983:	7% of Salary
1984 – June 30, 1996:	8% of Salary
July 1, 1996 – present:	9% of Salary
1979 – present:	An additional 2% of Salary in excess of $30,000.
Group 1 members hired on or after April 2, 2012:	6% of Salary with 30 or more years of creditable service.

Rate of Interest

Interest on regular deductions made after January 1, 1984 is a rate established by PERAC in consultation with the Commissioner of Banks. The rate is obtained from the average rates paid on individual savings accounts by a representative sample of at least ten financial institutions.

SECTION 5 - SUMMARY OF PLAN PROVISIONS

Retirement Age

The mandatory retirement age for some Group 2 and Group 4 members is age 65. Most Group 2 and Group 4 members may remain in service after reaching age 65. Group 4 members who are employed in certain public safety positions are required to retire at age 65. There is no mandatory retirement age for members in Group 1.

Salary

Gross regular compensation. This does not include bonuses, overtime, severance pay, unused sick leave credit or other similar compensation.

Average Salary

Membership before April 2, 2012: Average annual rate of regular compensation received during the three consecutive years that produce the highest average, or, if greater, during the last three years (whether or not consecutive) preceding retirement.

Membership on or after April 2, 2012: Average annual rate of regular compensation received during the five consecutive years that produce the highest average, or, if greater, during the last five years (whether or not consecutive) preceding retirement.

Creditable Service

The period during which a member contributes to the retirement system plus certain periods of military service and "purchased" service.

Benefit Rate

The benefit rate varies with the member's retirement age, Group, membership date and years of creditable service at retirement. Each year a member retires prior to the age at which the 2.5% maximum benefit rate applies, a reduction is applied to each year of age under the maximum age. The maximum age and reduction for each Group and membership date is as follows:

	Group 1	Group 2	Group 4
2.5% for Membership before April 2, 2012:			
Maximum age:	65	60	55
Reduction:	0.1%	0.1%	0.1%
2.5% for Membership on or after April 2, 2012 (less than 30 years of service):			
Maximum age:	67	62	57
Reduction:	0.15%	0.15%	0.15%
2.5% for Membership on or after April 2, 2012 (30+ years of service):			
Maximum age:	67	62	57
Reduction:	0.125%	0.125%	0.125%

SECTION 5 - SUMMARY OF PLAN PROVISIONS

Superannuation Retirement	Eligibility if membership before April 2, 2012:	• completion of 20 years of Creditable Service, or • attainment of age 55 if hired prior to 1978, or • attainment of age 55 with 10 years of Creditable Service, if hired after 1978.
	Eligibility if membership on or after April 2, 2012:	• attainment of age 60 with 10 years of Creditable Service if classified in Group 1 • attainment of age 55 with 10 years of Creditable Service if classified in Group 2 • attainment of age 55 if classified in Group 4
	Benefit Amount	Product of the member's Benefit Rate, Average Salary and Creditable Service.
	Maximum Benefit	80% of the member's Average Salary.
	Veteran's Benefit	Additional benefit of $15 per year of Creditable Service, up to a maximum of $300.
Deferred Vested	Eligibility	• completion of ten or more years of Creditable Service. • elected officials hired prior to 1978, completion of six years of Creditable Service.
	Benefit Amount	Accrued benefit payable commencing at age 55, or the completion of 20 years of Creditable Service, or may be deferred until later at the participant's option.
Withdrawal of Contributions		Contributions may be withdrawn upon termination of employment. • Members hired on or after January 1, 1984 who terminate with less than ten years of Creditable Service receive contributions plus interest on the Annuity Savings Account at an annual rate of 3%. • All other withdrawals receive contributions plus 100% of the regular interest that has accrued to the Annuity Savings Account.

SECTION 5 - SUMMARY OF PLAN PROVISIONS

Ordinary Disability Retirement	Eligibility	Non-job related disability after completion of ten years of Creditable Service.
	Benefit Amount for Group 1 membership before April 2, 2012 or Group 2 or Group 4	Superannuation benefit determined if the member is age 55, up to a maximum of 80% of Average Salary over three years. If the member is a veteran, 50% of final rate of salary (final year) plus an annuity based on the accumulated member contributions plus credited interest, up to a maximum of 80% of Average Salary over five years.
	Benefit Amount for Group 1 membership on or after April 2, 2012	Superannuation benefit determined if the member is age 60, up to a maximum of 80% of Average Salary over three years. If the member is a veteran, 50% of final rate of salary (final year) plus an annuity based on the accumulated member contributions plus credited interest, up to a maximum of 80% of Average Salary over five years.
Accidental Disability Retirement	Eligibility	Disabled as a result of an accident in the performance of duties. There is no minimum age or service requirement.
	Benefit Amount	72% of Salary plus an annuity based on accumulated member contributions plus credited interest.
	Maximum Benefit	100% of Salary if hired before January 1, 1988, otherwise 75% of Salary.
	Veteran's Benefit	Additional allowance of $15 per year of Creditable Service, up to a maximum of $300.
	Supplemental Dependent Allowance	Additional allowance of $897.72 per year for each child until age 18 (or age 22 if a full-time student).
Non-Occupational Death	Eligibility	For members with at least two years of creditable service who die while in active service, but not due to occupational injury.
	Benefit Amount	Benefit as if Option C had been elected. Minimum benefit of $500 per month for surviving spouse, $120 per month for first child and $90 per month for each additional child.

SECTION 5 - SUMMARY OF PLAN PROVISIONS

Accidental Death	Eligibility	For members who die as a result of an occupational injury.
	Benefit Amount	72% of Salary plus an annuity based on accumulated member contributions plus credited interest.
	Maximum Benefit	100% of Salary if hired before January 1, 1988, otherwise 75% of Salary.
	Veteran's Benefit	Additional allowance of $15 per year of creditable service, up to a maximum of $300.
	Supplemental Dependent Allowance	Additional allowance of $897.72 per year for each child until age 18 (or age 22 if a full-time student).

Cost-of-Living Adjustment (COLA)

In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a Cost-of-Living Adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees and beneficiaries who have been receiving benefit payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is $13,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the Commonwealth of Massachusetts and are not the liability of the Retirement System.

Optional Forms of Payment

A member may elect to receive his or her retirement allowance, payable in monthly installments, in one of three forms of payment:

- Option A – Total annual allowance commencing at retirement and terminating at member's death.

- Option B – A reduced annual allowance commencing at retirement with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member.

- Option C – A reduced annual allowance commencing at retirement with 66⅔% of benefit continued to designated beneficiary upon death of member. For members who retired on or after January 12, 1988, if the beneficiary pre-deceases the retiree, the benefit payable increases based on the factor used to determine the Option C benefit at retirement. For members who retired prior to January 12, 1988, if the System has accepted Section 288 of Chapter 194 of the Acts of 1998 and the beneficiary pre-deceases the retiree, the benefit payable increases based on the factor used to determine the Option C benefit at retirement.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Valuation Date

January 1, 2018

Investment Return

7.45% per year. Previously, 7.50% per year.

The investment return assumption is a long-term assumption based on capital market expectations by asset class, historical returns and professional judgment. We considered analysis prepared by PRIM's investment advisor using a building block approach and using the target asset allocation, expected returns by asset class and risk analysis to determine a long-term expected average annual rate of return.

Annuity Savings Fund Interest Rate

2.00% per year

Amortization Method

Unfunded Actuarial Accrued Liability (UAL):

Increasing dollar amount at 4% to reduce the Unfunded Actuarial Accrued Liability to zero on or before June 30, 2033.

Early Retirement Incentive Program (ERI) for 2002:

Level dollar amount to reduce the Unfunded Actuarial Accrued Liability attributable to the 2002 ERI to zero on or before June 30, 2028.

Early Retirement Incentive Programs (ERI) for 2003:

Level dollar amount to reduce the Unfunded Actuarial Accrued Liability attributable to the 2003 ERI to zero on or before June 30, 2028.

Salary Scale

The assumed annual rates for salary increases including longevity are illustrated by the following rates:

Years of Service	Groups 1 and 2	Group 4
0	6.00%	7.00%
1	5.50%	6.50%
2	5.50%	6.00%
3	5.25%	5.75%
4	5.25%	5.25%
5	4.75%	5.25%
6	4.75%	4.75%
7	4.50%	4.75%
8	4.50%	4.75%
9+	4.25%	4.75%

The salary scale assumption is a long-term estimate derived from historical data, current and recent market expectations and professional judgment.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Cost-of-Living Allowance

Cost-of-Living Allowances (COLA) are assumed to be 3% of the pension amount, capped at $390 per year.

Mortality Rates

RP-2000 Mortality Table (base year 2009) with full generational mortality improvement using Scale BB. For disabled members, RP-2000 Mortality Table (base year 2012) with full generational mortality improvement using Scale BB.

General Employees: 55% of deaths are job-related.
Police and Fire : 90% of deaths are job-related.

The underlying tables with generational mortality improvement reasonably reflect the mortality experience of the System as of the valuation date based on historical and current demographic data. Further, PERAC reviewed a sampling of a few larger local retirement systems and compared the results with the results found in performing the analsyis of the State Retirement System for years 2012 - 2014. For the State Retirement System analysis, the mortality assumptions reflect the recent experience study published in 2014.

Turnover Rates

Illustrative turnover rates are shown below:

Creditable Service	Groups 1 and 2	Group 4
0	0.1500	0.0150
10	0.0540	0.0150
20	0.0200	0.0000
30	0.0000	0.0000

Disability Rates

Illustrative disability rates are shown below:

Attained Age	Groups 1 and 2	Group 4
20	0.0001	0.0010
30	0.0003	0.0030
40	0.0010	0.0030
50	0.0019	0.0125
60	0.0028	0.0085

General Employees: 55% of disabilities are accidental and 45% are ordinary.
Police and Fire : 90% of disabilities are accidental and 10% are ordinary.

Retirement Rates

Illustrative retirement rates are shown below:

	Groups 1 and 2		Group 4
Age	Male	Female	Male & Female
50	0.0100	0.0150	0.0200
51	0.0100	0.0150	0.0200
52	0.0100	0.0200	0.0200
53	0.0100	0.0250	0.0500
54	0.0200	0.0250	0.0750
55	0.0200	0.0550	0.1500
56	0.0250	0.0650	0.1000
57	0.0250	0.0650	0.1000
58	0.0500	0.0650	0.1000
59	0.0650	0.0650	0.1500
60	0.1200	0.0500	0.2000
61	0.2000	0.1300	0.2000
62	0.3000	0.1500	0.2500
63	0.2500	0.1250	0.2500
64	0.2200	0.1800	0.3000
65	0.4000	0.1500	1.0000
66	0.2500	0.2000	1.0000
67	0.2500	0.2000	1.0000
68	0.3000	0.2500	1.0000
69	0.3000	0.2000	1.0000
70	1.0000	1.0000	1.0000

The turnover, disability and retirement rates are based on PERAC's most recent experience analysis of local retirement systems which reviewed age, gender and job group. The assumptions reflect this analysis as well as professional judgment.

Actuarial Cost Method

Individual Entry Age Normal.

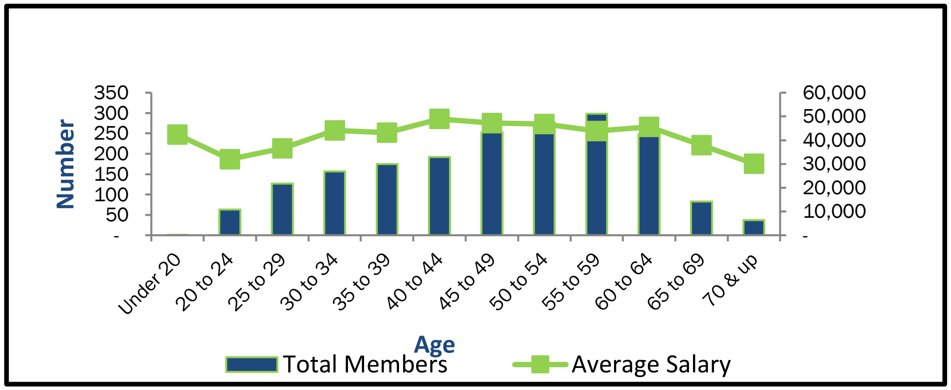
SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Asset Method	The Actuarial Value of Assets is the market value of assets as of the valuation date reduced by the sum of: a) 80% of gains and losses of the prior year, b) 60% of gains and losses of the second prior year, c) 40% of gains and losses of the third prior year, d) 20% of gains and losses of the fourth prior year. Investment gains and losses are determined by the excess or deficiency of the expected return over the actual return on the market value. The actuarial valuation of assets is further constrained to be not less than 90% or more than 110% of market value.
Census Data	Census data as of the valuation date were submitted by the Retirement Board.
Asset Data	Asset information is reported annually to the Public Employee Retirement Administration Commission by the Hampshire County Retirement System.
Dependents	80% of all members will be survived by a spouse. Age assumption for spouses is that males are assumed to be three years older than females.
Net Section 3(8)(c) Transfers	Reimbursements paid to and received from other retirement systems for that portion of a retiree's pension that is based on service earned in another retirement system. Net 3(8)(c) transfers are assumed to be $1,258,951 per year.
Administrative Expenses	The anticipated administrative expenses for the fiscal year. For Fiscal Year 2019, the administrative expenses were assumed to be $1,000,000 and are anticipated to increase 4.25% per year. The administrative expense assumption is based on information relating to the System's administrative expenses provided by the Retirement System.

SECTION 7 - PLAN MEMBER INFORMATION

Exhibit 7.1 - ACTIVE MEMBERS BY AGE and YEARS OF SERVICE AS OF JANUARY 1, 2018

Age	Years of Service 0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total	Total Salary	Average Salary
Under 20	1	-	-	-	-	-	-	-	-	1	42,424	42,424
20 to 24	63	-	-	-	-	-	-	-	-	63	2,017,231	32,020
25 to 29	107	20	-	-	-	-	-	-	-	127	4,640,116	36,536
30 to 34	97	46	13	1	-	-	-	-	-	157	6,919,577	44,074
35 to 39	93	36	33	13	-	-	-	-	-	175	7,566,117	43,235
40 to 44	74	34	28	33	21	2	-	-	-	192	9,391,972	48,917
45 to 49	79	43	41	38	38	13	1	-	-	253	11,957,254	47,262
50 to 54	65	48	41	51	33	27	13	-	-	278	13,013,923	46,813
55 to 59	52	41	52	64	35	22	24	7	1	298	13,082,884	43,902
60 to 64	27	32	33	50	44	39	15	5	3	248	11,318,719	45,640
65 to 69	8	11	19	15	11	11	4	3	1	83	3,143,551	37,874
70 & up	5	5	6	4	2	4	7	2	2	37	1,113,466	30,094
Total	671	316	266	269	184	118	64	17	7	1,912	84,207,234	44,041
Average Salary	33,196	40,378	47,088	49,963	57,237	58,849	64,351	60,921	82,553			
					Average Age:		48.3	Average Service:		11.4		



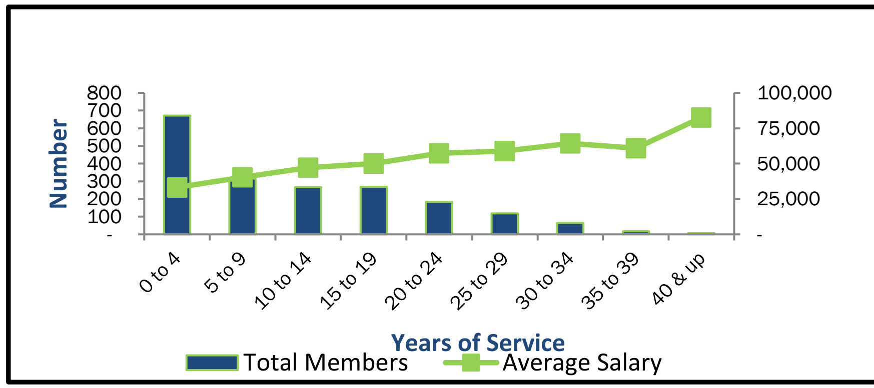
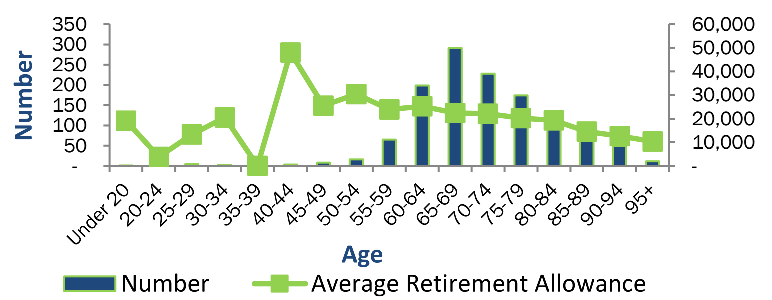
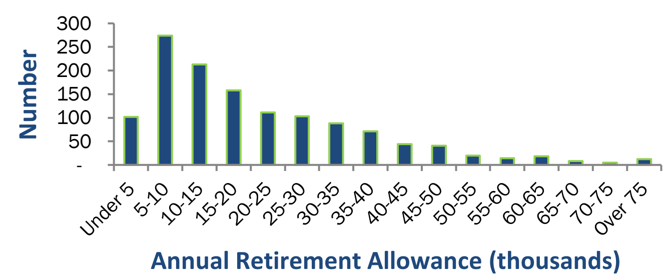


Exhibit 7.2 - Retired Plan Members and Beneficiaries Annual Pensions as of January 1, 2018

	Service Retirements		Disability Retirements		Beneficiaries	
Attained Age	Number	Annual Retirement Allowance	Number	Annual Retirement Allowance	Number	Annual Retirement Allowance
Under 20	0	0	0	0	1	19,120
20-24	0	0	0	0	2	7,582
25-29	0	0	0	0	4	53,195
30-34	0	0	1	29,840	1	11,208
35-39	0	0	0	0	0	0
40-44	0	0	3	144,254	0	0
45-49	0	0	4	150,460	4	53,061
50-54	6	204,544	8	257,952	2	23,833
55-59	42	1,013,550	13	415,147	10	126,862
60-64	162	4,146,735	15	520,047	22	348,400
65-69	256	5,821,594	17	492,546	18	208,820
70-74	201	4,550,457	8	261,790	19	239,998
75-79	152	3,178,629	6	176,444	16	155,087
80-84	114	2,243,477	6	205,488	14	126,767
85-89	78	1,136,567	2	41,735	17	235,761
90-94	42	537,107	0	0	7	82,588
95+	9	109,046	0	0	2	4,062
Total	1,062	22,941,706	83	2,695,703	139	1,696,344
Average Age	73.0		64.2		70.2	
Average Retirement Allowance		21,602		32,478		12,204





SECTION 8 - GLOSSARY OF TERMS

Actuarial Accrued Liability – That portion of the Actuarial Present Value of pension plan benefits which is not provided by future Normal Costs or employee contributions. It is the portion of the Actuarial Present Value attributable to service rendered as of the Valuation Date.

Actuarial Assumptions – Assumptions, based upon past experience or standard tables, used to predict the occurrence of future events affecting the commencement, amount and duration of pension benefits, such as: changes in compensation, mortality, withdrawal, disablement and retirement; rates of investment earnings and asset appreciation or depreciation; and any other relevant items.

Actuarial Cost Method (or Funding Method) – A procedure for allocating the Actuarial Present Value of all past and future pension plan benefits to the current year (Normal Cost) and the past (Actuarial Accrued Liability).

Actuarial Gain or Loss (or Experience Gain or Loss) – A measure of the difference between actual experience and that expected based upon the set of Actuarial Assumptions, during the period between the valuation date and the most recent immediately preceding valuation date.

Actuarial Present Value – The dollar value on the valuation date of all benefits expected to be paid to current members based upon the Actuarial Assumptions and the terms of the Plan.

Amortization Payment – That portion of the pension plan appropriation which represents payments made to pay interest on and the reduction of the Unfunded Accrued Liability.

Annual Statement – The statement submitted by the local retirement board to PERAC each year that describes the asset holdings and Fund balances as of December 31 and the transactions during the calendar year that affected the financial condition of the retirement system.

Annuity Reserve Fund – The fund into which total accumulated Member Contributions, including interest, is transferred at the time a member retires, and from which annuity payments are made.

Annuity Savings Fund – The fund in which Member Contributions plus interest credited are held for active members and for former members who have not withdrawn their contributions and are not yet receiving a benefit (inactive members).

Assets – The total value of the investments held by the Plan trust that are for the payment of promised benefits. Employer appropriations and Member Contributions, as well as investment earnings, are added to the Plan trust. Benefit payments and other disbursements are withdrawn from the Plan trust. For valuation purposes, assets are usually measured at market value.

Cost of Benefits – The estimated payment from the pension system for benefits for the fiscal year.

Expense Fund – The fund into which the appropriation for administrative expenses is paid and from which all such expenses are paid.

SECTION 8 - GLOSSARY OF TERMS

Funded Ratio – The Actuarial Value of Assets expressed as a percentage of the Actuarial Accrued Liability.

Funding Schedule – The schedule based upon the most recently approved actuarial valuation which sets forth the amount which would be appropriated to the pension system in accordance with Section 22D of M.G.L. Chapter 32.

GASB – Governmental Accounting Standards Board.

Normal Cost – Total Normal Cost is that portion of the Actuarial Present Value of pension plan benefits which is expected to accrue in the current fiscal year. The Employee Normal Cost is the amount of the expected Member Contributions for the current fiscal year. The Employer Normal Cost is the difference between the Total Normal Cost and the Employee Normal Cost.

Pension Fund – The fund into which appropriation amounts as determined by PERAC are paid and from which pension benefits are paid.

Pension Reserve Fund – The fund which shall be credited with all amounts set aside by a system for the purpose of establishing a reserve to meet future pension liabilities. These amounts would include excess interest earnings.

Present Value of Future Benefits – The actuarial present value of the cost to finance benefits payable in the future, discounted to reflect the expected effects of the time value of money and the probabilities of payment.

Special Fund for Military Service Credit – The fund which is credited with amounts paid by the retirement board equal to the amount which would have been contributed by a member during a military leave of absence as if the member had remained in active service of the retirement board. In the event of retirement or a non-job related death, such amount is transferred to the Annuity Reserve Fund. In the event of termination prior to retirement or death, such amount shall be transferred to the Pension Fund.

Total Pension Liability – The portion of the Actuarial Present Value attributable to past service in accordance with the Entry Age cost method as stipulated by GASB Statement Number 67 (GASB 67).

Unfunded Actuarial Accrued Liability – The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.