Analysis of the Early Retirement Incentive Program (ERIP) for the **State Retirement System**

February 2016

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INTRODUCTION

The Public Employee Retirement Administration Commission (PERAC) is pleased to release our analysis regarding Chapter 19 of the Acts of 2015, which established an early retirement incentive program (ERIP) for State employees. Section 13 of that Chapter directed PERAC to complete an analysis of the costs and liabilities attributable to the additional benefits payable in accordance with the Act and submit a report to the Secretary of Administration and Finance, the Joint Committee on Public Service, and the House and Senate Committees on Ways and Means by January 15, 2016. Our January 14, 2016 letter and exhibit showed the principal results of the study. This final report details the data, methodology and assumptions used in the study.

The law provides that eligible members who elect to participate in the ERIP have their retirement allowances determined by adding 5 years to their age and/or creditable service (any combination in full years to a maximum of 5 years). The enhanced benefit cannot exceed 80% of the average rate of annual compensation used in the calculation. All members retiring under the program had an effective date of retirement of June 30, 2015.

This study was based on retiree data of those members who elected the ERIP and the corresponding data of these members as active members as of December 31, 2014. All data was supplied by the State Retirement Board. The retiree data included the enhanced retirement allowance which we reviewed for reasonableness. In addition, we estimated the allowance each member would have received if each member had retired as of June 30, 2015 without the enhanced ERIP benefit. We previously reviewed the December 31, 2014 active member data as part of our January 1, 2015 actuarial valuation of the State Retirement System. The members retiring under the ERIP will be included as retirees in the January 1, 2016 actuarial valuation of the State Retirement System.

The actuarial assumptions used to calculate the actuarial accrued liability and the normal cost are the same as those used in the actuarial valuation of the State Retirement System as of January 1, 2015. The assumptions are shown at the back of this report.

I am a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report. In my opinion, the actuarial assumptions used in this report are reasonable, are related to plan experience and expectations, and represent my best estimate of anticipated experience. I believe this report represents an accurate appraisal of the impact of the ERIP on the State Retirement System performed in accordance with generally accepted actuarial principles and practices relating to pension plans.

We gratefully acknowledge the efforts of the State Retirement Board in completing this project.

Respectfully submitted,
Public Employee Retirement Administration Commission

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Dated: February 4, 2016

COST ANALYSIS

To determine the actuarial accrued liability attributable to the ERIP, we valued the members who elected to retire under the program in two ways. Both calculations were determined as of July 1, 2015.

The first calculation determined the actuarial liability attributable to the retirees who elected the ERIP had each member retired without the incentive. The second calculation determined the actuarial liability for these retirees after the application of the ERIP. The difference between the two amounts reflects the increase in actuarial liability due to the ERIP. This amount will be amortized as part of the Commonwealth funding schedule. For comparison, we have shown the January 1, 2015 actuarial valuation results for the active members who participated in the ERIP.

Below is a summary of the results (dollars in thousands):

	As Actives	As Retirees
Number of Members		
Active	2,473	
Terminated Vested	13	
Retirees*	0	2,487
Total	2,486	2,487
Regular Compensation		
Active	$184,263	N/A
Terminated Vested	$751	N/A
Total	$185,014	N/A
Total Normal Cost	$18,453	N/A
Employee Contributions	$13,856	N/A
Net Employer Normal Cost	$4,597	N/A
Actuarial Liability as of July 1, 2015 (before incentive)	$1,002,082	$1,116,132
(after incentive)		$1,346,434
Increase in Actuarial Liability		$230,302
Amortization of Increase beginning FY16 (annual payments on January 1)		
15-year level basis		$25,544
10-year level basis		$32,715

* includes 1 member who was not included in the State data on January 1, 2015

COST ANALYSIS *(continued)*

Our understanding is that the estimate of the amortization of the increase in actuarial liability due to the ERIP ($29.1 million), as determined by Administration & Finance and included in the FY16 and FY17 budgets, is based on a 15-year level dollar amortization. The legislation does not specify the amortization period to be used. Our recommendation would be to use a 10-year (or less) amortization period.

Effective with the January 1, 2016 actuarial valuation, the investment return assumption will be reduced to 7.50%. On this basis, the increase in actuarial liability is $235.2 million. The amortization of the increase would be $25.7 million on a 15-year level basis and $33.1 million on a 10-year level basis.

The Commonwealth funding schedule includes liabilities for the State Retirement System, the State Teachers' Retirement System, Boston teachers, and COLA reimbursements to local systems. The cost of the ERIP will affect this schedule. The schedule adopted in 2014 amortizes the Commonwealth unfunded liability ($33.4 billion on 1/1/15) with payments increasing 10% per year through FY17 with payments then increasing 7% per year until the unfunded liability is completely amortized.

ACTIVE MEMBER DATA

The following data reflects data as of January 1, 2015. Some members eligible for the ERIP were coded as vested terminations in the January 1, 2015 data.

	Actives	Vested Terminations
Number of Members	2,473	13
Average Age	61.6	62.4
Average Service	26.4	23.6
Average Salary	$74,510	$57,736
Average Annuity Savings Fund Balance	$116,425	$82,186

Age by Service Distribution of Active Members

	Years of Service							
Present Age	0 - 4	5 -9	10 – 14	15 - 19	20 - 24	25 - 29	30+	Total
0 - 24								
25 - 29								
30 - 34								
35 - 39								
40 - 44					1			1
45 - 49					4	4	1	9
50 - 54			3	1	28	47	48	127
55 - 59		6	31	50	62	185	522	856
60 - 64		5	90	116	139	288	317	955
65+		10	98	123	85	180	29	525
Total	0	21	222	290	319	704	917	2,473

ACTIVE MEMBER DATA *(continued)*

Salary by Age Distribution of Active Members

Present Age	Number of Members	Total Salary	Average Salary
30-34	0	$0	$0
35-39	0	$0	$0
40 - 44	1	$121,505	$121,505
45 - 49	9	$584,510	$64,946
50 - 54	127	$8,853,578	$69,713
55 - 59	856	$64,494,074	$75,344
60 - 64	955	$72,141,633	$75,541
65+	525	$38,067,190	$72,509
Total	2,473	$184,262,490	$74,510

RETIREE DATA

The following data reflects information as of June 30, 2015.

	ERIP
Number of Members	2,487
Average Age	62.1
Average Annual Benefit	$47,204
Total Current Payable	$117,396,268

Benefit by Age Distribution

		ERIP	
Present Age	Number of Members	Total Benefit	Average Benefit
Less than 40	0	$0	0
40 - 44	1	$22,062	$22,062
45 - 49	5	$103,995	$20,799
50 - 54	106	$3,618,710	$34,139
55 - 59	792	$38,416,816	$48,506
60 - 64	975	$48,406,801	$49,648
65 - 69	469	$21,288,808	$45,392
70 - 74	100	$4,055,223	$40,552
75 - 79	32	$1,229,398	$38,419
80 - 84	6	$229,719	$38,287
85 - 90	1	$24,736	$24,736
Totals	2,487	$117,396,268	$47,204

ACTUARIAL ASSUMPTIONS

Actuarial Cost Method

Entry Age Normal Cost Method

Investment Return

7.75% per year net of investment expenses

The investment return assumption is a long term assumption and is 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 which included expected returns by asset class, risk analysis, and the determination of a 30 year expected target rate of return.

As of January 1, 2016, this assumption will be reduced to 7.50%. See page 4 for the impact of this change.

Interest Rate Credited to the Annuity Savings Fund

3.5% per year

Assumed Rate of Cost of Living Increases (COLA)

3.0% per year (on the first $13,000 of an allowance)

Mortality

Pre-retirement mortality reflects RP-2000 Employees table projected generationally with Scale BB and a base year of 2009 (gender distinct).

Post-retirement mortality reflects RP-2000 Healthy Annuitant table projected generationally with Scale BB and a base year of 2009 (gender distinct).

For disabled members, the mortality rate is assumed to be in accordance with the RP-2000 Healthy Annuitant Table projected generationally with Scale BB and a base year of 2015 (gender distinct).

It is assumed that 55% of pre-retirement deaths are job-related for Group 1 and 2 members and 90% are job-related for Group 4 members. For members retired under an Accidental Disability, 40% of deaths are assumed to be from the same cause as the disability.

The mortality assumptions reflect our recent experience analysis published in 2014 (based on the years 2006-2011), updated to reflect data through January 1, 2015 for post-retirement mortality, and professional judgment. As such, this assumption reflects observed current mortality as well as expected mortality improvement. The pre-retirement mortality and disabled member assumptions reflect both the prior analysis and the more recent work.

ACTUARIAL ASSUMPTIONS *(continued)*

Salary Increase

Based on an analysis of past experience. Annual rates are shown below.

Increases for all employees are 3.5% for 2013, 3.75% for 2014 and 4.0% for 2015. Increases before 2013 and after 2015 are based on service as shown below.

Service	Groups 1& 2	Group 3	Group 4
0	7.00%	7.00%	9.00%
1	6.50%	7.00%	8.00%
2	6.00%	7.00%	7.50%
3	5.50%	7.00%	7.00%
4	5.50%	6.75%	6.75%
5	5.25%	6.25%	6.25%
6	5.00%	5.25%	5.75%
7	4.75%	4.75%	5.25%
8-12	4.75%	4.75%	4.75%
13-15	4.50%	4.75%	4.75%
16-19	4.25%	4.75%	4.75%
20+	4.00%	4.50%	4.50%

The salary increase assumption reflects both prior experience (2014 study) and professional judgment. The assumption for 2013 to 2015 was modified to reflect current conditions.

Disability

Based on an analysis of past experience. Sample annual rates are shown below.

Age	Group 1	Group 2	Group 3	Group 4
20	0.00010	0.00052	0.0010	0.0020
30	0.00010	0.00072	0.0016	0.0021
40	0.00068	0.00210	0.0036	0.0071
50	0.00133	0.00420	0.0094	0.0110
60	0.00120	0.00500	0.0430	0.0080

It is also assumed that 75% of disabilities will be job-related for Group 1 and 2 members, and 95% will be job-related for Group 3 and 4 members.

Disability rates are based on our most recent experience analysis (2014) which reviewed age, gender and job group. Final assumptions reflect this analysis as well as professional judgment.

ACTUARIAL ASSUMPTIONS *(continued)*

Retirement

	Group 1		Group 2	Group 3	Group 4
Age	Male	Female			
45	0.000	0.000	0.000	0.020	0.060
46	0.000	0.000	0.000	0.020	0.060
47	0.000	0.000	0.000	0.050	0.060
48	0.000	0.000	0.000	0.050	0.060
49	0.000	0.000	0.000	0.050	0.060
50	0.030	0.030	0.020	0.050	0.060
51	0.030	0.030	0.020	0.060	0.060
52	0.030	0.030	0.020	0.070	0.060
53	0.030	0.030	0.030	0.080	0.075
54	0.030	0.035	0.040	0.090	0.150
55	0.035	0.050	0.075	0.100	0.250
56	0.035	0.050	0.075	0.100	0.150
57	0.040	0.055	0.080	0.110	0.150
58	0.050	0.060	0.100	0.110	0.150
59	0.060	0.065	0.120	0.120	0.150
60	0.090	0.075	0.150	0.140	0.200
61	0.110	0.100	0.150	0.150	0.200
62	0.150	0.150	0.150	0.150	0.200
63	0.150	0.150	0.150	0.150	0.200
64	0.160	0.150	0.200	0.250	0.300
65	0.200	0.200	0.200	0.250	0.500
66	0.200	0.200	0.200	0.250	0.250
67	0.200	0.200	0.200	0.250	0.250
68	0.200	0.200	0.200	0.250	0.250
69	0.200	0.200	0.200	0.250	0.250
70	1.000	1.000	1.000	1.000	1.000

See page 20 for an explanation of retirement rates for employees hired on or after April 2, 2012.

Retirement rates are based on our most recent experience analysis (2014) which reviewed age, service, gender and job group. Final assumptions reflect this analysis as well as professional judgment.

ACTUARIAL ASSUMPTIONS *(continued)*

Withdrawal

Based on an analysis of past experience. For Groups 1 and 2, rates are both age and service based for service up to 10 years. After 10 years of service, rates are age based. For groups 3 and 4 rates are service based. Sample annual rates are shown below.

Groups 1 & 2

Age		Service	
	0	5	10+
20	0.270	0.000	0.000
30	0.230	0.100	0.045
40	0.160	0.080	0.030
50	0.180	0.060	0.030

Groups 3 & 4

Service	Group 3	Group 4
0	0.007	0.090
5	0.007	0.060
10	0.005	0.035
15	0.005	0.020
20+	0.005	0.015

See below for an explanation of withdrawal rates for employees hired on or after April 2, 2012.

Withdrawal rates are based on our most recent experience analysis (2014) which reviewed age, service, gender and job group. Final assumptions reflect this analysis as well as professional judgment.

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