Analysis of Early Retirement Incentive Program (ERIP)

for Certain Employees of the

Massachusetts Department of Transportation

June 2017

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INTRODUCTION

The Public Employee Retirement Administration Commission (PERAC) is pleased to release our analysis regarding Section 40 of Chapter 79 of the Acts of 2014. This section established an early retirement incentive program (ERIP) for certain employees of the State Retirement System employed by the highway division of the Massachusetts Department of Transportation whose positions have been eliminated due to the cessation of manual toll collection on the Massachusetts Turnpike. The legislation directed PERAC to complete an actuarial analysis of the impact to the Commonwealth's unfunded pension liability attributable to the additional benefits provided by the ERIP and submit a report to the Secretary of Administration and Finance, the House and Senate Committees on Ways and Means, and the State Retirement Board by June 30, 2017.

The law provides that eligible members (both members eligible to receive a superannuation retirement allowance on the date specified and those who would be eligible to receive a superannuation retirement allowance using service provided by the incentive) 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. Most members retiring under the program had an effective date of retirement of October 28, 2016.

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, 2015. 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 October 28, 2016 without the enhanced ERIP benefit. We previously reviewed the December 31, 2015 active member data as part of our January 1, 2016 actuarial valuation of the State Retirement System. Most of the members retiring under the ERIP are included as retirees in the January 1, 2017 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, 2017 and available on our website (mass.gov/perac). 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

James R. Lamenzo
Member of the American Academy of Actuaries
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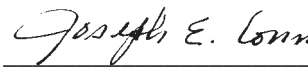
Enrolled Actuary Number 17-4709



Joseph E. Connarton
Executive Director

Dated: June 27, 2017

COST ANALYSIS

To determine the increase in actuarial accrued liability attributable to the ERIP, we calculated the actuarial liability for members who elected to retire under the program in two ways. Both calculations were determined as of January 1, 2017.

The first calculation determined the actuarial liability for 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. These amounts are shown in the "As Retirees" column below.

For comparison, in the "As Actives" column, we have shown the January 1, 2016 actuarial valuation results (compensation and normal cost), and the actuarial liability (rolled forward and estimated as of January 1, 2017) for these members.

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

	As Actives	As Retirees
Number of Members		
Active	117	
Terminated Vested	0	
Retirees	0	117
Total	117	117
Regular Compensation		
Active	$7,634	N/A
Terminated Vested	$0	N/A
Total	$7,634	N/A
Total Normal Cost	$929	N/A
Employee Contributions	$624	N/A
Net Employer Normal Cost	$305	N/A
Actuarial Liability as of January 1, 2017 (before incentive)	$38,600	$43,280
(after incentive)	N/A	$53,650
Increase in Actuarial Liability		$10,370
Increase in Actuarial Liability if paid June 30, 2017		$10,759

We estimated benefits for 5 members because of data issues and/or final calculations not yet completed.

COST ANALYSIS *(continued)*

In accordance with Chapter 79, the Department of Transportation (DOT) is responsible to the State Retirement System (SRS) for funding any additional liability attributable to the ERIP and the funding shall be based on a schedule established by PERAC, DOT and SRS. Our understanding is that the DOT will make a one-time payment to the SRS on June 30, 2017 to cover this liability. The mechanism for this transfer is being worked out between DOT and SRS. Since the payment will be made in one lump sum, we have not shown an amortization schedule.

The Commonwealth funding schedule includes liabilities for the State Retirement System, the State Teachers' Retirement System, Boston teachers, and COLA reimbursements to local systems. Since the increase in liability will be paid in one lump sum, the cost of the ERIP will not affect this schedule. The current schedule was adopted earlier this year and amortizes the Commonwealth unfunded liability ($37.9 billion as of 1/1/16) with payments increasing 8.94% per year through FY36.

ACTIVE MEMBER DATA

The following reflects data as of January 1, 2016 for members electing the ERIP.

	Actives
Number of Members	117
Average Age	59.5
Average Service	22.0
Average Salary	$65,246
Average Annuity Savings Fund Balance	$97,133

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								
45 - 49				1				1
50 - 54		1	3	3	1	5	3	16
55 - 59		6	5	7	6	10	15	49
60 - 64	1	1	7	1	12	6	6	34
65+			4	7	3	3		17
Total	1	8	19	19	22	24	24	117

ACTIVE MEMBER DATA *(continued)*

Salary by Age Distribution of Active Members

Present Age	Number of Members	Total Salary	Average Salary
30-34			
35-39			
40 - 44			
45 - 49	1	$64,889	$64,889
50 - 54	16	$1,041,091	$65,068
55 - 59	49	$3,192,555	$65,154
60 - 64	34	$2,245,417	$66,042
65+	17	$1,089,836	$64,108
Total	117	$7,633,788	$65,246

RETIREE DATA

The following reflects data as of January 1, 2017.

	ERIP
Number of Members	117
Average Age	60.5
Average Annual Benefit	$37,924
Total Current Payable	$4,437,139

Benefit by Age Distribution

		ERIP	
Present Age	Number of Members	Total Benefit	Average Benefit
Less than 40			
40 - 44			
45 - 49	1	$8,376	$8,376
50 - 54	10	$279,761	$27,976
55 - 59	48	$1,775,585	$36,991
60 - 64	39	$1,623,912	$41,639
65 - 69	14	$578,030	$41,288
70 - 74	4	$142,781	$35,695
75 - 79	1	$28,694	$28,694
80 - 84			
85 - 90			
Totals	117	$4,437,139	$37,924

ACTUARIAL ASSUMPTIONS

Actuarial Cost Method

Entry Age Normal Cost Method

Investment Return

7.50% 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.

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-2014 Blue Collar Employees table projected generationally with Scale MP-2016 set forward 1 year for females. (*Prior assumption: RP-2000 Employees table projected generationally with Scale BB and a base year of 2009 (gender distinct)*).

Post-retirement mortality reflects RP-2014 Blue Collar Healthy Annuitant table projected generationally with Scale MP-2016 set forward 1 year for females *(Prior assumption: 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 75% 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 actual experience from 2012 through 2016 for post-retirement mortality, and professional judgment. As such, this assumption reflects observed current mortality as well as expected mortality improvement. The disabled member assumptions remain unchanged from last valuation.

ACTUARIAL ASSUMPTIONS *(continued)*

Salary Increase

Based on an analysis of past experience. Annual rates are 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

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

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.

Commonwealth of Massachusetts
Public Employee Retirement Administration Commission

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