

The City of Cranston Fire and Police Department Pension Plans

Report on the Results of an Experience Study - Revised

Period Covering

July 1, 2011 – June 30, 2014

August 2015





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August 25, 2015

Mr. Robert F. Strom
City of Cranston
869 Park Avenue
Cranston, RI 02910

Dear Mr. Strom:

Submitted in this report are the results of an investigation of economic and demographic (non-economic) experience for the City of Cranston Fire and Police Department Pension Plans. The purpose of the investigation was to assess the reasonableness of the actuarial assumptions and methods used in the annual valuations of the Plan and to recommend appropriate revisions.

The investigation was based upon the participant and financial information furnished for the annual actuarial valuations and covers the three-year period from July 1, 2011, through June 30, 2014.

Qualified actuaries completed the experience investigation in accordance with accepted actuarial procedures as prescribed by the Actuarial Standards Board. To the best of our knowledge, this report is complete and accurate and has been prepared in accordance with generally accepted actuarial principles and practice. The undersigned with actuarial designation are qualified to render the opinions contained in this report.

Respectfully submitted,

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**CITY OF CRANSTON FIRE AND POLICE DEPARTMENT PENSION PLANS
EXPERIENCE INVESTIGATION**

Summary of Findings

The three-year period (July 1, 2011 to June 30, 2014) covered by this experience investigation provided data appropriate to form a basis for recommending certain changes in the demographic (non-economic) and economic assumptions used in the actuarial valuations of the City of Cranston Fire and Police Department Pension Plans. It is also worthwhile to note that the active participant group represents a very small portion of the total liabilities and, as a result, any changes in the assumptions used with respect to those participants have a negligible impact on the liabilities and funding costs.

The recommended changes in actuarial assumptions resulting from this experience investigation are summarized below. We recommend that these proposed changes first be reflected in the July 1, 2015 actuarial valuation.

Demographic Changes:

Pensioners: For post- retirement mortality the recommendation is to change the tables as follows: For males, reflect 115% of the RP-2000 Combined Healthy for Males mortality table with White Collar adjustments, projected generationally with Scale AA from 2000 for healthy retirees and beneficiaries. For females, reflect 95% of the RP-2000 Combined Healthy for Females mortality table with White Collar adjustments, projected generationally with Scale AA from 2000 for healthy retirees and beneficiaries. We recommend no change to the mortality table currently being used for disabled retirees.

Economic Changes:

Interest Rate: Increase the overall interest rate from 7.50% to 7.90%.

Impact on Valuation:

The table below highlights the impact on certain valuation results if the recommended demographic and economic assumption changes listed on the above had been in place for the July 1, 2014 valuation. Amounts are in \$ millions.

Item	July 1, 2014 Valuation Results	With Demographic Assumption Changes	With Demographic and Economic Assumption Changes
Accrued Liability	\$313.0	\$318.2	\$305.7
Unfunded Accrued Liability	246.3	251.6	239.1
FYE 2016 ARC	21.3	21.8	21.4

Introduction

The methodology, results and conclusions of the three-year experience investigation of the economic and demographic assumptions are described below.

The objectives of the investigation are to:

- Determine appropriate economic assumptions, including investment return, and rates of anticipated salary increase.
- Determine appropriate rates to anticipate the following events among active members:
 - termination from employment
 - mortality during active service
 - disability retirement
 - service retirement
- Determine appropriate rates to anticipate mortality among service retirees, beneficiaries and disability retirees.
- Review actuarial methods:
 - Funding (cost) method
 - Asset valuation method

Methodology

Data is supplied annually to the actuary by the Plan for purposes performing the actuarial valuation report. This data includes demographic characteristics of the current and past membership, including any changes in the members' status or relationship with the Plan. The data also includes a salary history for active members and pension payable for inactive members. These demographic changes, salary history and benefit history are the basis for the experience review.

Tabulations were compiled which show age or service distributions of the number of members who were exposed during the three-year period to the events of termination, retirement, death and disability. A member is considered exposed to an event if the member meets the age and service requirements for that event. The assumed rates of occurrence for each event, which are currently used in the annual actuarial valuations, were then applied to the number of members exposed to determine the number of members expected to separate from service for each category.

The actual number of members who separated from service due to termination, retirement, death or disability was then compared to the expected number. The results were then expressed as a ratio of actual experience over expected experience. In some instances a high ratio is favorable for the financial experience of the Plan and in others, a high ratio is unfavorable. Data is generally grouped by age or service in five-year increments to provide statistically significant results.

The expected and actual salaries as of the end of each year were also compared to actual salaries as of the end of each previous year. The comparisons show an average annual total increase in both expected and actual salaries for the period.

The results of the experience review are the basis for the actuary's recommendation of assumption changes. In recommending assumptions the actuary must also take into account special plan benefits and past economic factors.

In addition to comparing actual to expected experience and adjusting the results for special plan benefits and economic conditions, the actuary must consider future expectations of experience due to future plan changes or changes in the economy.

To summarize, the actuary's recommendation of assumptions is based on the following:

- comparison of actual to expected experience,
- adjustment for special plan benefits and past economic conditions, and
- adjustment for future plan changes and economic conditions.

Generally, actuarial assumptions are selected with a slight margin to provide for adverse experience so that the financial strength of the Plan can be maintained.

Experience Investigation Results

Investment Return Results

Historical experience and projected future returns were used when evaluating the System's current economic assumptions. The investment return of the assets of the Plan over the July 1, 2011 to June 30, 2014 period was as follows:

Fiscal Year Ended June 30	Market Value	Inflation
2012	0.5%	1.66%
2013	10.8	1.75
2014	16.1	2.07
Average	9.0%	1.83%

Assets are valued at market value, which means each year the valuation assets fully recognize the investment gain or loss for that year, and large swings in market returns from year to year can result in significant contribution volatility. As an alternative to market value, many retirement systems use a smoothing mechanism in order to dampen the volatility and have annual contributions that are more stable. A typical smoothing method is one that phases in investment gains and losses over a five-year period, i.e. recognizes 20% of any difference between actual and expected investment income (gain or loss) in the valuation year and 20% of unrecognized investment gains/losses for each of the four previous valuation years. No changes in asset method are recommended at this time.

The expected investment income is based on the Plan's assumed interest rate. The current interest rate assumption is 7.5%, which is lower than the 9.0% three-year actuarial rate of return reported above. Interest rate assumptions are based on two components: real rate of return and inflation, and due to the short-term volatility of these variables and the long-term nature of a pension plan, current practice views the interest rate assumption as long-term. Therefore, short-term periods should not overly influence this rate.

Determination of the Valuation Interest / Discount Rate

The valuation interest rate was reviewed through a forecast of the expected return of the Plan's assets over the next 20 to 30 years using the Plan's target asset allocation of 75% equities and 25% fixed income. Forecast values were generated using the GEMS Economic Scenario Generator, which Buck Consultants leases from Conning and Company. The GEMS model is a multifactor economic model that uses basic macroeconomic variables, such as GDP growth, employment levels, expected and actual inflation, to generate simulations of the economy over time. A total of 1,000 stochastic forecast paths were generated, and the simulated geometric mean portfolio return based on the Plan's target asset allocation over 20 to 30 years was computed on each path. The recommended valuation interest rate is based on the average return computed on these 1,000 paths.

Based on the simulations, a rate of 7.90%, which is an increase from the current rate of 7.50%, is recommended. The return for the 20-year horizon at the Plan's target asset allocation is 8.35% which might make an argument for such as a recommended rate. However, since the plan's funded ratio is only about 23%, there is not much of a cushion to absorb significant future adverse experience. As such, a conservative discount rate is appropriate. Furthermore, currently the expected benefit payments are about 35% of the asset balance, which implies that a large portion of the assets may need to be liquid, which in turn may limit the ability of the Plan to realize the returns at the upper end of the range. A

recommendation of 7.90% strikes a balance between the need to reflect a higher expected rate of return while maintaining a degree of conservatism

Only hindsight will tell whether a particular combination of economic assumptions is optimal. We believe the recommended assumptions are the best combination for the System at the current time.

Results and Conclusions

Investment Return

As discussed above, we recommend a rate of 7.90%, which is an increase from the current rate of 7.50%.

Rates of Service Retirement

The current rates of retirement are unisex by gender and are based on service, with the provision of immediate retirement at age 65. The number of service retirements was greater than expected, resulting in an actual over expected ratio of 124.1% (20 actual versus 16.1 expected). Given the low number of cases, which reduces credibility of actual experience and the fact the plan is closed to new entrants and the actual over expected ratio is within a reasonable range, it is recommended that no changes be made at this time.

Rates of Withdrawal

Over the three-year period reviewed in this study, there were no withdrawals, which is consistent with the current assumption of no withdrawals assumed. As such we recommend no changes in the current rates.

Rates of Mortality Among Active Members

There was no actual deaths and 0.26 expected. Given the very low number of cases, which reduces credibility of actual experience and the fact that the plan is closed to new entrants and almost all of the active members are close to retirement eligibility, it is recommended that no changes be made at this time.

Rates of Disability Retirement

There were 4 disability retirements and 1.68 expected. Given the very low number of cases, which reduces credibility of actual experience and the fact that the plan is closed to new entrants and almost all of the active members are close to retirement eligibility, it is recommended that no changes be made at this time.

Rates of Salary Increase

The current salary increase assumption is 3.0% per year. Actual salary increases were about 2.7% per year. Given the net effect of (i) a very low number of cases, which reduces credibility of actual experience (ii) the current contract for the fire department and the ongoing negotiations with the police department (iii) the desire for conservatism, and (iv) the effect of promotions/step increases, we recommend no changes at this time.

Rates of Mortality Among Healthy Retirees

The number of actual deaths of male and female service retirees exceeded the number expected. The actual over expected ratio was varied each year in the study and averaged 123.0% over the three-year period. Given the very low number of cases (and related credibility issue), we examined the assumption used for the Employees' Retirement System of Rhode Island, which covers similar employees, and has statistically credible experience. As a result, we recommend adjusting the male mortality at 115% of the

RP-2000 Combined Healthy for Males mortality table with White Collar adjustments, projected generationally with Scale AA from 2000 and the female mortality at 95% of the RP-2000 Combined Healthy for Females mortality table with White Collar adjustments, projected generationally with Scale AA from 2000.

Rates of Mortality Among Disabled Retirees

There were 8 deaths among the disability retired group and 5.97 expected, resulting in an actual over expected ratio of 134.0%. Given the low number of cases, which reduces credibility of actual experience and that the experience has shown to be sufficiently conservative, we do not recommend changing the assumption.

Rates of Mortality Among Beneficiaries

Similar to our comments about healthy retirees, we recommend changing to the assumption used for healthy retirees.

Rates of COLA increase

The current COLA increases in future years are based on plan provisions and the State Superior Court approved provision changes that the City negotiated with the Plan members, which is an alternate-year COLA freeze over a ten-year period, effective July 1, 2013. In years 11 and 12 a 1.5% COLA will apply, and 3.0% COLAs will apply in each year thereafter, effective July 1. A separate increase is used for the members who opted out of those Court approved changes. For these members, no COLAs are assumed for a ten year period effective July 1, 2013. Upon expiration of the ten year period, increases of 3.0% are assumed to occur annually thereafter, effective each July 1. Actual future rates of inflation will have no impact on actual COLA adjustments, so an independent assessment of possible experience is unnecessary.

Actuarial Methods

Funding (cost) method: The current funding method is Attained Age Normal method with the UAAL funded on a level dollar basis over a closed period. The funding method does not impact the Plan's liabilities, but rather is a method of determining the contribution requirement needed to support the liabilities. Since the Plan is closed to new members and the liability for current retirees is approximately 92% of the overall Plan liability, a change in the cost method would not have a material impact on contribution requirements. We recommend no change in the funding method at this time. The Governmental Accounting Standards Board Statement No. 67 (GASB 67) requires Entry Age Normal for the actuarial cost method for financial disclosure purposes, consideration may be given eventually to changing the funding method to be consistent with the reporting of accounting liabilities.

Asset valuation method: As discussed above, the current asset valuation method is Market Value and we recommend no change in the asset valuation method at this time. At some point in the future when the funded position of the plan becomes higher, such that volatile asset performance may have a significant impact on the UAAL it may be worthwhile to consider using an asset smoothing method for determining the funded position and the associated funding costs.

The following tables summarize the results of the experience investigation. The tables illustrate the Plan's experience relative to current assumptions for the period being investigated. Numbers of actual separations as well as those expected are shown, along with various ratios, to help illustrate the basis for our recommendations. It should be noted that the tabular results are, generally, based on five-year grouping of ages. Due to the de minimis amount of exposures, a table of results is not included for withdrawals. Since COLA amounts are mandated by statute, a table of results is not included for COLA as well.



CITY OF CRANSTON FIRE AND POLICE DEPARTMENT PENSION PLANS

**SEPARATION FROM ACTIVE SERVICE
RATES OF SERVICE RETIREMENT**

Males and Females Combined

Experience by Service

Service	Exposed Number	Expected Number	Actual Number	Actual/Expected	Expected Rate	Actual Rate
20	1	0.20	1	500.0%	0.20000	1.00000
21-24	43	1.72	3	174.4	0.04000	0.06977
25	20	3.00	4	133.3	0.15000	0.20000
26-29	60	6.00	8	133.3	0.10000	0.13333
30	6	3.00	1	33.3	0.50000	0.16667
31 and over	11	2.20	3	136.4	0.20000	0.27273
Total	141	16.12	20	124.1%		

Overall Experience by Year

Year	Exposed Number	Expected Number	Actual Number	Actual/Expected
2011-2012	55	6.32	7	110.8%
2012-2013	46	4.61	5	108.5
2013-2014	40	5.19	8	154.1
Total	141	16.12	20	124.1%

Recommendation: Continue with current rates.



CITY OF CRANSTON FIRE AND POLICE DEPARTMENT PENSION PLANS

**SEPARATION FROM ACTIVE SERVICE
RATES OF DEATH**

Males and Females Combined

Experience by Age

Age	Exposed Number	Expected Number	Actual Number	Actual/Expected	Expected Rate	Actual Rate
Under 40	0	0.00	0	0.0%	0.00000	0.00000
40-44	4	0.00	0	0.0	0.00000	0.00000
45-49	38	0.05	0	0.0	0.00132	0.00000
50-54	84	0.15	0	0.0	0.00179	0.00000
55-59	19	0.05	0	0.0	0.00263	0.00000
60 and over	2	0.01	0	0.0	0.00500	0.00000
Total	147	0.26	0	N/A		

Overall Experience by Year

Year	Exposed Number	Expected Number	Actual Number	Actual/Expected
2011-2012	57	0.10	0	0.0%
2012-2013	48	0.08	0	0.0
2013-2014	42	0.08	0	0.0
Total	147	0.26	0	0.0%

Recommendation: Continue with current rates.



CITY OF CRANSTON FIRE AND POLICE DEPARTMENT PENSION PLANS

**SEPARATION FROM ACTIVE SERVICE
RATES OF DISABILITY**

Males and Females Combined

Experience by Age

Age	Exposed Number	Expected Number	Actual Number	Actual/Expected	Expected Rate	Actual Rate
Under 40	0	0.00	0	0.0%	0.00000	0.00000
40-44	4	0.03	0	0.0	0.00750	0.00000
45-49	38	0.38	0	0.0	0.01000	0.00000
50-54	84	1.02	2	196.1	0.01214	0.02381
55-59	19	0.23	2	869.6	0.01211	0.10526
60 and over	2	0.02	0	0.0	0.01000	0.00000
Total	147	1.68	4	238.1%		

Overall Experience by Year

Year	Exposed Number	Expected Number	Actual Number	Actual/Expected
2011-2012	57	0.64	2	312.5%
2012-2013	48	0.55	1	181.8
2013-2014	42	0.49	1	204.1
Total	147	1.68	4	238.1%

Recommendation: Continue with current rates.



CITY OF CRANSTON FIRE AND POLICE DEPARTMENT PENSION PLANS

RATES OF SALARY INCREASE

Males and Females Combined

Experience by Age

Age	Exposed Number	Actual Last Year	Expected This Year	Actual This Year	Expected Increase	Actual Increase	Actual/Expected
Under 40	0	-	-	-	0.0%	0.0%	0.0%
40-44	7	425,889	438,665	441,208	103.0	103.6	100.6
45-49	44	3,061,881	3,153,738	3,140,517	103.0	102.6	99.6
50-54	65	4,624,305	4,763,034	4,756,519	103.0	102.9	99.9
55-59	7	579,929	597,327	591,943	103.0	102.1	99.1
60-64	0	-	-	-	0.0	0.0	0.0
65 and over	0	-	-	-	0.0	0.0	0.0
Total	123	8,692,004	8,952,764	8,930,187	103.0%	102.7%	99.7%

Overall Experience by Year

Year	Exposed Number	Actual Last Year	Expected This Year	Actual This Year	Expected Increase	Actual Increase	Actual/Expected
2011-2012	48	3,298,038	3,396,979	3,421,866	103.0%	103.8%	100.7%
2012-2013	42	3,006,660	3,096,860	3,087,574	103.0	102.7	99.7
2013-2014	33	2,387,306	2,458,925	2,420,747	103.0	101.4	98.4
Total	123	8,692,004	8,952,764	8,930,187	103.0%	102.7%	99.7%

Recommendation: Continue with current rates.



CITY OF CRANSTON FIRE AND POLICE DEPARTMENT PENSION PLANS

**RATES OF POST-RETIREMENT MORTALITY
FOR HEALTHY RETIREES**

Males and Females Combined

Experience by Age

Age	Exposed Number	Expected Number	Actual Number	Actual/Expected (Current)	Expected Rate	Actual Rate	Proposed Rate	Actual/Expected (Proposed)
under 50	32	0.05	0	0.0%	0.00156	0.00000	0.00156	0.0%
50-54	118	0.22	0	0.0	0.00186	0.00000	0.00229	0.0
55-59	133	0.51	0	0.0	0.00383	0.00000	0.00391	0.0
60-64	170	1.31	2	152.7	0.00771	0.01176	0.00729	161.3
65-69	113	1.54	2	129.9	0.01363	0.01770	0.01327	133.3
70-74	72	1.58	3	189.9	0.02194	0.04167	0.02236	186.3
75-79	50	1.91	2	104.7	0.03820	0.04000	0.04140	96.6
80-84	66	4.80	5	104.2	0.07273	0.07576	0.08061	94.0
85-89	27	3.02	4	132.5	0.11185	0.14815	0.12889	114.9
90-94	3	0.51	1	196.1	0.17000	0.33333	0.20000	166.7
95 and over	0	0.00	0	0.0	0.00000	0.00000	0.00000	0.0
Total	784	15.45	19	123.0%				114.0%

Overall Experience by Year

Year	Exposed Number	Expected Number	Actual Number	Actual/Expected (Current)	Actual/Expected (Proposed)
2011-2012	262	5.18	7	135.1%	124.1%
2012-2013	262	5.00	7	140.0	130.1
2013-2014	260	5.27	5	94.9	88.8
Total	784	15.45	19	123.0%	114.0%

Recommendation: Adjust rates to better reflect experience.



CITY OF CRANSTON FIRE AND POLICE DEPARTMENT PENSION PLANS

**RATES OF POST-RETIREMENT MORTALITY
FOR BENEFICIARIES**

Males and Females Combined

Experience by Age

Age	Exposed Number	Expected Number	Actual Number	Actual/Expected (Current)	Expected Rate	Actual Rate	Proposed Rate	Actual/Expected (Proposed)
under 50	7	0.01	0	0.0%	0.00143	0.00000	0.00143	0.0%
50-54	11	0.02	0	0.0	0.00182	0.00000	0.00182	0.0
55-59	16	0.05	0	0.0	0.00313	0.00000	0.00313	0.0
60-64	17	0.10	0	0.0	0.00588	0.00000	0.00529	0.0
65-69	33	0.38	2	526.3	0.01152	0.06061	0.01030	588.2
70-74	24	0.44	0	0.0	0.01833	0.00000	0.01708	0.0
75-79	43	1.25	1	80.0	0.02907	0.02326	0.02814	82.6
80-84	57	2.74	3	109.5	0.04807	0.05263	0.04702	111.9
85-89	30	2.70	2	74.1	0.09000	0.06667	0.08600	77.5
90-94	17	2.29	3	131.0	0.13471	0.17647	0.12706	138.9
95 and over	3	0.62	0	0.0	0.20667	0.00000	0.20000	0.0
Total	258	10.60	11	103.8%				108.4%

Overall Experience by Year

Year	Exposed Number	Expected Number	Actual Number	Actual/Expected (Current)	Actual/Expected (Proposed)
2011-2012	83	3.05	1	32.8%	34.0%
2012-2013	88	3.62	5	138.1	144.5
2013-2014	87	3.93	5	127.2	133.7
Total	258	10.60	11	103.8%	108.4%

Recommendation: Adjust rates to better reflect experience.



CITY OF CRANSTON FIRE AND POLICE DEPARTMENT PENSION PLANS

**RATES OF POST-RETIREMENT MORTALITY
FOR DISABLED RETIREES**

Males and Females Combined

Experience by Age

Age	Exposed Number	Expected Number	Actual Number	Actual/Expected (Current)	Expected Rate	Actual Rate
under 50	29	0.05	0	0.0%	0.00172	0.00000
50-54	39	0.11	0	0.0	0.00282	0.00000
55-59	34	0.18	0	0.0	0.00529	0.00000
60-64	25	0.30	0	0.0	0.01200	0.00000
65-69	51	0.95	2	210.5	0.01863	0.03922
70-74	35	1.00	1	100.0	0.02857	0.02857
75-79	7	0.39	0	0.0	0.05571	0.00000
80-84	13	1.16	3	258.6	0.08923	0.23077
85-89	6	0.93	2	215.1	0.15500	0.33333
90-94	1	0.28	0	0.0	0.28000	0.00000
95 and over	2	0.62	0	0.0	0.31000	0.00000
Total	242	5.97	8	134.0%		

Overall Experience by Year

Year	Exposed Number	Expected Number	Actual Number	Actual/Expected (Current)
2011-2012	81	1.96	2	102.0%
2012-2013	81	1.99	2	100.5
2013-2014	80	2.02	4	198.0
Total	242	5.97	8	134.0%

Recommendation: Continue with current rates.