

**JULY 1, 2018**  
**ACTUARIAL VALUATION OF**  
**THE CITY OF CRANSTON**  
**FIRE AND POLICE DEPARTMENT**  
**PENSION PLANS**

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**Report Summary:**

<b><u>Highlights</u></b>	<b><u>July 1, 2017</u></b>	<b><u>July 1, 2018</u></b>
<u>Contributions</u>		
Funding Schedule FY 2019	\$21,569,803	
Funding Schedule FY 2020		\$21,463,003
<u>Funded Ratios</u>		
Attained Age Method	21.9%	23.1%
<u>Participants</u>		
Actives	27	23
Retirees and Beneficiaries	<u>422</u>	<u>429</u>
Total	449	452
<u>Payroll</u>		
Payroll of Active Members	\$2,697,374	\$2,403,064
Average Payroll	99,903	104,481
<u>Present Value of Future Benefits</u>		
Actives	25,383,791	22,906,132
Retirees, Beneficiaries, Disabilities and Inactives	<u>279,211,849</u>	<u>280,544,347</u>
Total	304,595,640	303,450,479
<u>Actuarial Value of Assets</u>		
Market Value of Assets without receivable	66,333,847	69,844,258
Market Value of Assets with receivable*	88,900,198	91,414,061
<u>Unfunded Actuarial Accrued Liabilities</u>	\$236,296,164	\$231,884,185

\* The contribution receivable is the city FYE19 budgeted amount of \$21,569,803.

## Introduction

The purpose of this report is to present the findings of an actuarial valuation as of July 1, 2018, of the City of Cranston Fire and Police Department Pension Plans for the purpose of funding the plan. Separate report was prepared for accounting and financial disclosure purposes.

The actuarial valuation is based on:

- Negotiated provisions with the Fire and Police unions as of July 1, 2018.
- Employee data provided by the City
- Asset information reported by the City of Cranston

During the last twelve months, the total unfunded actuarial accrued liability decreased by 1.9% to \$231,884,185. The decrease is greater than expected. There was an actuarial gain of \$829,373. Sources of (gains) and losses are as follows:

	<u>(Gain) / Loss</u>
Assets	211,544
Salary Increases	424,922
New Participants	0
Active - Retirements	248,491
Active - Terminations	0
Active - Mortality	4,760
Active - Disabilities	(52,652)
Inactive - Mortality and data adjustments	(589,481)
Benefit Payments	(1,088,918)
Other	<u>11,961</u>
Total (Gain) / Loss	(829,373)

**Market Value of Plan Assets**

The trust fund composition on a market value basis is shown below.

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	<u>July 1, 2017</u>	<u>July 1, 2018</u>
Cash equivalents	\$135,956	\$308,297
PIMCO Bond Account	6	6
JMS Other Investments (REIT)	416,243	282,959
Janney Equities Stock/Options	36,402,959	38,661,714
Janney-Fx Inc Mutual Fund	19,322,817	21,342,603
JMS Taxable Dividends	6,420,438	5,453,866
JMS Account	<u>3,635,429</u>	<u>3,794,813</u>
Total Market Value	66,333,847	69,844,258
Contribution Receivable	<u>22,566,351</u>	<u>21,569,803</u>
Total Actuarial Value	\$88,900,198	\$91,414,061

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**Results of the Valuation**

	<u>Fire</u>	<u>Police</u>	<u>Total</u>
1. Actuarial Liabilities			
(a)    PVFB Actives	18,363,838	4,542,294	22,906,132
(b)    PVFB Retirees	160,210,822	120,333,525	280,544,347
(c)    Total	178,574,660	124,875,819	303,450,479
2. Market Value of Assets	44,569,459	25,274,799	69,844,258
3. Total Future Contributions	134,005,201	99,601,020	233,606,221
4. Unfunded Accrued Liability	132,713,235	99,170,950	231,884,185
5. Present Value of Future Normal Contributions	1,291,966	430,070	1,722,036
6. Present Value of Future Salary	6,674,878	2,163,224	8,838,102
7. Normal Contribution Rate	19.36%	19.88%	19.48%
8. Valuation Payroll	1,916,981	486,083	2,403,064
9. Normal Cost with Interest			
(a) Employees	248,421	59,992	308,412
(b) City	137,001	40,391	177,393
(c ) Total (7. x 8.), plus interest	385,422	100,383	485,805
10. Asset Receivable	12,032,261	9,537,542	21,569,803
11. Adjusted UAL for FYE20	135,870,198	100,871,756	236,741,954
12. City Contribution to Amortize			
(a) Court Approved FYE42	11,308,648	5,950,803	17,259,451
(b) Opt Outs FYE37	793,967	3,232,193	4,026,160
(c) Total	12,102,615	9,182,995	21,285,611
13. Total Contribution	12,488,037	9,283,378	21,771,416
14. City Contribution FYE20	12,239,616	9,223,387	21,463,003

Due to different amortization period for the retirees that opted out of the Court approved agreement, Market Value of Assets were allocated in proportion of each group's accrued liability to the total accrued liability.

**Appropriation Forecast**

The following exhibit forecasts employer and employee contributions over the next 20 years under the adopted funding schedule.

Fiscal Year	Normal Cost with Interest	Court Approved Amortization	Other Amortization	Total Cost with Interest	Unfunded Liability	Funded Ratio %**	
2019	\$2,022,536	\$485,400	\$17,259,451	\$4,026,160	\$22,566,351	\$231,884,185	23.1%
2020	\$1,730,259	\$418,013	\$17,259,451	\$4,026,160	\$21,439,779	\$227,910,590	24.1%
2021	\$1,313,255	\$318,478	\$17,259,451	\$4,026,160	\$21,370,006	\$222,948,352	25.3%
2022	\$1,039,080	\$252,883	\$17,259,451	\$4,026,160	\$21,294,470	\$217,594,098	26.5%
2023	\$853,419	\$208,574	\$17,259,451	\$4,026,160	\$21,240,878	\$211,816,858	27.8%
2024	\$712,173	\$175,013	\$17,259,451	\$4,026,160	\$21,203,255	\$205,583,216	29.3%
2025	\$544,966	\$134,700	\$17,259,451	\$4,026,160	\$21,184,308	\$198,857,116	30.9%
2026	\$412,722	\$102,648	\$17,259,451	\$4,026,160	\$21,154,687	\$191,599,655	32.6%
2027	\$299,380	\$75,007	\$17,259,451	\$4,026,160	\$21,136,902	\$183,768,853	34.4%
2028	\$194,935	\$49,056	\$17,259,451	\$4,026,160	\$21,133,851	\$175,319,419	36.4%
2029	\$145,309	\$37,039	\$17,259,451	\$4,026,160	\$21,092,752	\$166,202,479	38.5%
2030	\$87,106	\$22,401	\$17,259,451	\$4,026,160	\$21,123,132	\$156,365,301	40.9%
2031	\$53,037	\$13,487	\$17,259,451	\$4,026,160	\$21,111,312	\$145,750,986	43.6%
2032	\$27,981	\$6,969	\$17,259,451	\$4,026,160	\$21,129,869	\$134,298,140	46.6%
2033	\$15,347	\$3,419	\$17,259,451	\$4,026,160	\$21,119,871	\$121,940,519	50.1%
2034	\$2,455	\$0	\$17,259,451	\$4,026,160	\$21,236,275	\$108,606,646	54.1%
2035	\$0	\$0	\$17,259,451	\$4,026,160	\$21,285,611	\$94,219,398	58.8%
2036	\$0	\$0	\$17,259,451	\$4,026,160	\$20,977,198	\$78,695,556	64.3%
2037	\$0	\$0	\$17,259,451	\$4,026,160	\$20,977,198	\$61,945,331	70.7%
2038	\$0	\$0	\$17,259,451	\$0	\$16,951,038	\$43,871,839	78.3%
2039	\$0	\$0	\$0	\$0	\$0	\$28,714,767	85.1%

## **EXHIBITS**



Exhibit 1 - Age/Service Distribution with Salary as of July 1, 2018

Attained Age	Service				Total
	25-29	30-34	35-39	40+	
< 20	0	0	0	0	0
	0	0	0	0	0
20-24	0	0	0	0	0
	0	0	0	0	0
25-29	0	0	0	0	0
	0	0	0	0	0
30-34	0	0	0	0	0
	0	0	0	0	0
35-39	0	0	0	0	0
	0	0	0	0	0
40-44	0	0	0	0	0
	0	0	0	0	0
45-49	0	1	0	0	1
	0	79,176	0	0	79,176
50-54	4	5	2	0	11
	73,481	74,433	103,982	0	79,459
55-59	0	2	5	1	8
	0	86,311	87,738	99,393	88,838
60-64	0	0	2	1	3
	0	0	93,446	112,799	99,897
65-69	0	0	0	0	0
	0	0	0	0	0
70+	0	0	0	0	0
	0	0	0	0	0
Total Employees	4	8	9	2	23
Average Salary	73,481	77,995	92,616	106,096	85,375

## Exhibit 2 - Retiree Distribution as of July 1, 2018

Attained Age	Number of Employees			Total Monthly Payments		
	Female	Male	Total	Female	Male	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	0	0	0	0	0
45-49	1	2	3	2,637	6,000	8,636
50-54	4	39	43	12,896	152,907	165,803
55-59	4	67	71	12,228	291,756	303,984
60-64	6	54	60	21,118	244,212	265,331
65-69	11	72	83	38,072	331,625	369,697
70-74	13	40	53	42,667	178,994	221,661
75-79	12	21	33	43,712	96,480	140,192
80-84	19	15	34	54,928	72,591	127,519
85-89	15	14	29	48,478	60,867	109,345
90-94	7	3	10	20,813	10,492	31,305
95+	2	1	3	4,975	4,742	9,716
Total	94	328	422	302,524	1,450,665	1,753,189
Average (Age/Payment)	76.57	66.02	68.37	3,218	4,423	4,154
Frequency Percent	22.3	77.7	100	17.3	82.7	100

## Exhibit 3 - Cash Flow

The following is a forecast of benefit payments, contribution income and investment returns.

Plan Year Ending	Benefit Payments	Employee Contributions	Employer Contributions	Investment Returns	Plan Assets - BOY
2019	\$24,746,235	\$308,412	\$22,566,351	\$8,998,353	\$69,844,258
2020	25,009,830	263,844	21,439,779	5,389,583	71,927,634
2021	25,115,780	200,256	21,370,006	5,544,897	73,927,013
2022	25,115,704	158,447	21,294,470	5,698,304	75,962,530
2023	25,047,703	130,136	21,240,878	5,858,571	78,144,412
2024	24,975,961	108,598	21,203,255	6,031,427	80,511,731
2025	25,271,347	83,101	21,184,308	6,205,277	82,713,071
2026	25,521,591	62,935	21,154,687	6,367,557	84,776,658
2027	25,734,640	45,652	21,136,902	6,520,966	86,745,538
2028	25,867,675	29,725	21,133,851	6,670,617	88,712,056
2029	25,974,699	22,158	21,092,752	6,819,939	90,672,206
2030	26,023,245	13,283	21,123,132	6,973,743	92,759,119
2031	26,022,421	8,088	21,111,312	7,137,982	94,994,080
2032	25,965,213	4,267	21,129,869	7,317,332	97,480,335
2033	25,859,874	2,340	21,119,871	7,517,366	100,260,038
2034	25,693,192	374	21,236,275	7,747,855	103,551,351
2035	25,468,185	0	21,285,611	8,018,485	107,387,261
2036	25,183,872	0	20,977,198	8,320,588	111,501,176
2037	24,838,050	0	20,977,198	8,658,988	116,299,312
2038	24,427,163	0	16,951,038	8,897,951	117,721,138
2039	23,950,291	0	0	8,371,914	102,142,761

## **EXHIBIT 4 - SUMMARY OF PLAN PROVISIONS:**

This summary is prepared in accordance with Fire and Police union contracts as of July 1, 2018, and does not take into account any subsequent changes.

### **1. Administration**

The Pension Plan is administered by the City of Cranston.

### **2. Participation**

Participation is mandatory for all full-time employees whose employment began prior to July 1, 1995.

### **3. Salary**

Salary is defined as regular compensation plus Holiday Pay and Longevity. Salary does not include bonuses, overtime, severance pay, unused sick leave credit or other similar compensation.

### **4. Member Contributions**

Member contributions vary depending upon their employment as follows:

	<b><u>Member Contribution Rate</u></b>
Firefighters	10.5% of Salary
Police	10.0% of Salary

### **5. Average Salary**

Final salary is used to determine a participant's benefit.

### **6. Creditable Service**

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

**7. Service Retirement**

a. Eligibility:

Completion of 20 years of service

b. Benefit Amount:

A pension of 2½% of the member's final salary for each year of service up to 20 years plus 2% of final salary for each year of service, up to 10 years, in excess of 20 years. An additional 5% of final compensation is added to the pension at age 55.

**8. Deferred Vested Retirement**

a. Eligibility:

A participant who has completed 10 or more years of creditable service is eligible for a deferred vested retirement benefit.

b. Benefit Amount:

The participant's accrued benefit is based on 2.5% per year of credited service up to 20 years, plus 2% per year (up to 10 years).

b. Refund of Contributions:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions with credited interest.

**9. Accidental Disability**

a. Eligibility:

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

b. Benefit Amount:

The accidental disability amount is 66 2/3rd% of annual salary.

## 10. Ordinary Disability

### a. Eligibility:

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related.

### b. Benefit Amount:

The ordinary disability amount is 50% of the final salary.

## 11. Survivor Benefits

### a. Eligibility:

Death in active service after 1 year of service or after termination with a deferred pension. (No service requirement if death is work related).

### b. Benefit Amount:

A pension of 33 $\frac{1}{3}$ % of the member's final compensation is paid to his widow until she dies or remarries. The benefit increases to 67 $\frac{1}{2}$ % of final compensation if the member has 20 years of service. (The pension is 50% if death is work related). In the event of death after termination with a deferred pension, the widow receives 67 $\frac{1}{2}$ % of the deferred pension starting when the member would have been age 55.

## 12. Cost-of-Living Increases

For Court approved members, every other year COLA freeze for a ten year period, effective July 1, 2013. In years 11 and 12 a 1.5% COLA would apply and then a 3.0% COLA for each year thereafter. For others, No COLAs will be paid for a ten year period effective July 1, 2013. Upon the expiration of the ten year period, 3.0% annually thereafter, effective each July 1st.

## 13. Postretirement Death Benefits

Any benefits following the death of a member after retirement are based upon the 66.5% Joint and Survivor Annuity form of benefit.

## **EXHIBIT 5 - ACTUARIAL METHODS AND ASSUMPTIONS:**

The actuarial cost method, factors and assumptions used in determining cost estimates are presented below.

### **1. Member Data**

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired and disabled members of the employer as supplied by the employer to the actuary.

### **2. Valuation Date**

July 1, 2018.

### **3. Actuarial Cost Method**

Attained Age Normal method with the UAAL funded on a level dollar basis over a closed period. For the Court approved plan provisions, the closed period is through FYE 2042. For the Opt Out plan the closed period is through FYE 2037.

### **4. Rate of Investment Return**

It is assumed that the assets of the fund will accumulate at a compound annual rate of 7.9% per annum, net of investment management fees.

### **5. Cost-of-Living Increases**

For Court approved members, every other year COLA freeze for a ten year period, effective July 1, 2013. In years 11 and 12 a 1.5% COLA would apply and then a 3.0% COLA for each year thereafter. For others, No COLAs will be paid for a ten year period effective July 1, 2013. Upon the expiration of the ten year period, 3.0% annually thereafter, effective each July 1st.

### **6. Salary Scale**

The assumed annual rates for salary increases including longevity and holiday pay is 3%.

### **7. Value of Investments**

Assets held by the fund are valued at market value as reported by the City. The actuarial value of assets is equal to the market value.

**8. Annual Rate of Withdrawal Prior to Retirement**

None

**9. Annual Rate of Mortality**

It is assumed that pre-retirement mortality is represented by the RP-2000 Blue Collar mortality table with Scale AA improvement to 2026. Post retirement mortality is represented by the RP-2000 White Collar Mortality Table, adjusted 115% for males, 95% for females, with Scale AA improvements on a generational basis. Mortality for disabled members is represented by the RP-2000 Blue Collar Mortality Table with Scale AA adjustment to 2026 and a setforward of 3 years.



**10. Service Retirement**

Based on expected experience, the assumed annual retirement rates are illustrated at the following ages and years of service. It is assumed that retirement will take place at age 65, regardless of service.

<u>Service</u>	<u>Rate</u>
20	0.20
21	0.04
22	0.04
23	0.04
24	0.04
25	0.15
26	0.10
27	0.10
28	0.10
29	0.05
30	0.20

**11. Annual Rate of Disability Prior to Retirement**

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following rates at the following ages:

<u>Attained Age</u>	
20	0.0012
30	0.0022
40	0.0044
50	0.0121

In addition, it is assumed for the 7.5% of all disabilities are assumed to be ordinary and 92.5% are service connected.

**12. Family Composition**

It is assumed that 80% of all male members and 80% of all female members will be survived by a spouse and that females (males) are three years younger (older) than members.

**13. Administrative Expenses**

No provisions are made for administrative expenses.

**14. Definition of Salary**

Regular pay plus a 20.04% holiday/longevity load (8.14% for holiday and 11% for longevity).

## **EXHIBIT 6 - GLOSSARY OF TERMS:**

This glossary summarizes the technical terms contained in this report.

### **1. Actuarial Accrued Liability**

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

### **2. Actuarial Assumptions**

Assumptions as to the occurrence of future events affecting the Pension Plan such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

### **3. Actuarial Cost Method**

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

### **4. Actuarial Present Value**

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

### **5. Forecast**

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions and additional assumptions as to the replacement of terminating employees with new employees.

**6. Normal Cost**

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

**7. Unfunded Actuarial Accrued Liability**

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

**8. Valuation Method**

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

**9. Vested Liability**

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

## CERTIFICATION:

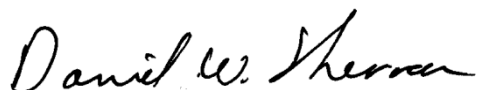
This report fairly represents the actuarial position of the City of Cranston Fire and Police Department Pension Plans contributing as of July 1, 2018, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost are reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

The funded status measure is appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. The funded status measure is appropriate for assessing the need for or the amount of future contributions. The funded status measure would be different if the measure reflected the market value of assets rather than the actuarial value of assets.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such future measurements.

The report was prepared under the supervision of Daniel Sherman, an Associate of the Society of Actuaries and a Member of the American Academy of Actuaries, who takes responsibility for the overall appropriateness of the analysis, assumptions and results. Daniel Sherman is deemed to meet the General Qualification Standard and the basic education and experience requirement in the pension area. Based on over thirty years of performing valuations of similar complexity, Mr. Sherman is qualified by experience. Daniel Sherman has met the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein

Sherman Actuarial Services, LLC



Daniel W. Sherman, ASA, MAAA

August, 2018