

CITY OF EVANSTON
POLICE PENSION FUND
ACTUARIAL VALUATION
AS OF JANUARY 1, 2020
CONTRIBUTIONS APPLICABLE TO THE
PLAN/FISCAL YEAR ENDING DECEMBER 31, 2021



FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

July 30, 2020

Board of Trustees
City of Evanston
Police Pension Fund
2100 Ridge Avenue
Evanston, IL 60201

Re: Actuarial Valuation Report – City of Evanston Police Pension Fund

Dear Board:

We are pleased to present to the Board this report of the annual actuarial valuation of the City of Evanston Police Pension Fund. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits and to develop the appropriate funding requirements for the applicable plan year. Please note that this valuation may not be applicable for any other purposes.

The valuation has been conducted in accordance with generally accepted actuarial principles and practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards Board, and reflects laws and regulations issued to date pursuant to the provisions of Article 3, Illinois Pension Code, as well as applicable federal laws and regulations. In our opinion, the assumptions used in this valuation, as adopted by the Board of Trustees, represent reasonable expectations of anticipated plan experience. Future actuarial measurements may differ significantly from the current measurements presented in this report for a variety of reasons including: changes in applicable laws, changes in plan provisions, changes in assumptions, or plan experience differing from expectations. Due to the limited scope of the valuation, we did not perform an analysis of the potential range of such future measurements.

In conducting the valuation, we have relied on personnel, plan design, and asset information supplied by the Board, financial reports prepared by the custodian bank and the actuarial assumptions and methods described in the Actuarial Assumptions section of this report. While we cannot verify the accuracy of all this information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy of the information and believe that it has produced appropriate results. This information, along with any adjustments or modifications, is summarized in various sections of this report.

The undersigned is familiar with the immediate and long-term aspects of pension valuations and meets the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the actuarial opinions.

To our knowledge, no associate of Foster & Foster, Inc. working on valuations of the program has any direct financial interest or indirect material interest in the City of Evanston, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the City of Evanston Police Pension Fund. Thus, there is no relationship existing that might affect our capacity to prepare and certify this actuarial report.

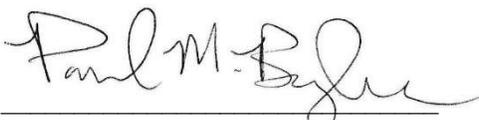
If there are any questions, concerns, or comments about any of the items contained in this report, please contact us at 630-620-0200.

Respectfully submitted,

Foster & Foster, Inc.

By: 
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Enclosures

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SUMMARY OF REPORT

The regular annual actuarial valuation of the City of Evanston Police Pension Fund, performed as of January 1, 2020, has been completed and the results are presented in this Report. The contribution amounts set forth herein are applicable to the plan/fiscal year ended December 31, 2021.

The contribution requirements, compared with those set forth in the January 1, 2019 actuarial report, are as follows:

Valuation Date	1/1/2020	1/1/2019
Applicable to Fiscal Year Ending	<u>12/31/2021</u>	<u>12/31/2020</u>
Total Recommended Contribution	\$13,734,978	\$13,488,464
% of Projected Annual Payroll	87.4%	85.7%
Member Contributions (Est.)	1,557,936	1,560,593
% of Projected Annual Payroll	9.9%	9.9%
City Recommended Contribution	12,177,042	11,927,871
% of Projected Annual Payroll	77.5%	75.8%

As you can see, the Total Recommended Contribution shows an increase when compared to the results determined in the January 1, 2019 actuarial valuation report. The increase is primarily attributable to Tier 2 benefit changes.

Plan experience was unfavorable overall on the basis of the plan's actuarial assumptions. The primary sources of unfavorable experience were actuarial coding updates, less than expected inactive mortality, and fewer terminations than expected. This loss was offset in part by gains associated with an average salary increase of 2.39% which fell short of the 4.33% assumption and an investment return of 7.44% (Actuarial Asset Basis) which exceeded the 6.25% assumption.

CHANGES SINCE PRIOR VALUATION

Plan Changes Since Prior Valuation

As a result of Public Act 101-0610, signed into law on December 18, 2019, the following updates were made to the Tier 2 benefits:

- The surviving spouse benefit for non-line of duty death was updated to mirror Tier 1 benefits, whereby Tier 2 surviving spouses will now receive 54% of final average salary, even prior to achieving vesting at 10 years of service.
- The pensionable salary cap increased retroactive to 2011 to alleviate safe harbor concerns, updating the annual adjustment to be CPI-U instead of 50% of CPI-U. The 3% annual growth cap remains in place.
- The final average salary was increased from averaging the highest consecutive 96 of the last 120 months of salary to averaging the highest consecutive 48 of the last 60 months of salary.

Actuarial Assumption/Method Changes Since Prior Valuation

There were no assumption or method changes since the prior valuation.

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

	New Benefits <u>1/1/2020</u>	Old Benefits <u>1/1/2020</u>	<u>1/1/2019</u>
A. Participant Data			
Number Included			
Actives	155	155	158
Service Retirees	138	138	137
Beneficiaries	27	27	28
Disability Retirees	18	18	18
Terminated Vested	<u>19</u>	<u>19</u>	<u>20</u>
Total	357	357	361
Total Annual Payroll	\$15,720,848	\$15,720,848	\$15,747,659
Payroll Under Assumed Ret. Age	15,720,848	15,720,848	15,747,659
Annual Rate of Payments to:			
Service Retirees	10,607,857	10,607,857	10,183,809
Beneficiaries	1,154,241	1,154,241	1,052,666
Disability Retirees	824,213	824,213	809,975
Terminated Vested	122,146	122,146	145,066
B. Assets			
Actuarial Value	130,942,778	130,942,778	122,344,568
Market Value	141,309,841	141,309,841	116,755,057
C. Liabilities			
Present Value of Benefits			
Actives			
Retirement Benefits	110,889,362	107,887,113	105,725,655
Disability Benefits	9,255,305	9,033,832	9,161,107
Death Benefits	1,326,634	1,112,219	1,079,450
Vested Benefits	7,391,942	7,271,761	7,328,825
Service Retirees	150,370,926	150,370,926	146,436,163
Beneficiaries	9,686,113	9,686,113	8,910,528
Disability Retirees	12,316,619	12,316,619	12,292,570
Terminated Vested	<u>1,475,410</u>	<u>1,475,410</u>	<u>1,849,169</u>
Total	302,712,311	299,153,993	292,783,467

C. Liabilities - (Continued)	New Benefits <u>1/1/2020</u>	Old Benefits <u>1/1/2020</u>	<u>1/1/2019</u>
Present Value of Future Salaries	160,440,167	156,752,900	164,807,708
Present Value of Future Member Contributions	15,899,621	15,534,212	16,332,444
Normal Cost (Retirement)	3,204,158	3,080,069	3,217,964
Normal Cost (Disability)	544,116	538,624	571,110
Normal Cost (Death)	70,214	56,365	54,722
Normal Cost (Vesting)	<u>403,312</u>	<u>398,844</u>	<u>415,353</u>
Total Normal Cost	4,221,800	4,073,902	4,259,149
Present Value of Future Normal Costs	39,530,555	36,945,496	40,305,495
Accrued Liability (Retirement)	80,150,808	79,255,091	74,535,732
Accrued Liability (Disability)	3,933,396	3,889,607	3,576,630
Accrued Liability (Death)	636,957	637,253	592,740
Accrued Liability (Vesting)	4,611,527	4,577,478	4,284,440
Accrued Liability (Inactives)	<u>173,849,068</u>	<u>173,849,068</u>	<u>169,488,430</u>
Total Actuarial Accrued Liability	263,181,756	262,208,497	252,477,972
Unfunded Actuarial Accrued Liability (UAAL)	132,238,978	131,265,719	130,133,404
Funded Ratio (AVA / AL)	49.8%	49.9%	48.5%

	New Benefits <u>1/1/2020</u>	Old Benefits <u>1/1/2020</u>	<u>1/1/2019</u>
D. Actuarial Present Value of Accrued Benefits			
Vested Accrued Benefits			
Inactives	173,849,068	173,849,068	169,488,430
Actives	24,486,361	24,048,066	23,790,321
Member Contributions	<u>16,282,570</u>	<u>16,282,570</u>	<u>15,330,841</u>
Total	214,617,999	214,179,704	208,609,592
Non-vested Accrued Benefits	<u>6,717,550</u>	<u>6,816,283</u>	<u>5,602,163</u>
Total Present Value Accrued Benefits	221,335,549	220,995,987	214,211,755
Funded Ratio (MVA / PVAB)	63.8%	63.9%	54.5%
Increase (Decrease) in Present Value of Accrued Benefits Attributable to:			
Plan Amendments	339,562	0	
Assumption Changes	0	0	
New Accrued Benefits	0	6,309,990	
Benefits Paid	0	(12,522,660)	
Interest	0	12,996,902	
Other	<u>0</u>	<u>0</u>	
Total	339,562	6,784,232	

Valuation Date	New Benefits	Old Benefits	
Applicable to Fiscal Year Ending	1/1/2020 <u>12/31/2021</u>	1/1/2020 <u>12/31/2021</u>	1/1/2019 <u>12/31/2020</u>
E. Pension Cost			
Normal Cost ¹	\$4,485,663	\$4,328,521	\$4,525,346
% of Total Annual Payroll ¹	28.5	27.5	28.7
Administrative Expenses ¹	55,342	55,342	62,565
% of Total Annual Payroll ¹	0.4	0.4	0.4
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 21 years (as of 1/1/2020) ¹	9,193,973	9,117,942	8,900,553
% of Total Annual Payroll ¹	58.5	58.0	56.6
Total Recommended Contribution	13,734,978	13,501,805	13,488,464
% of Total Annual Payroll ¹	87.4	85.9	85.7
Expected Member Contributions ¹	1,557,936	1,557,936	1,560,593
% of Total Annual Payroll ¹	9.9	9.9	9.9
Expected City Contribution	12,177,042	11,943,869	11,927,871
% of Total Annual Payroll ¹	77.5	76.0	75.8
F. Past Contributions			
Plan Years Ending:	<u>12/31/2019</u>		
Total Recommended Contribution	12,737,376		
City	11,153,745		
Actual Contributions Made:			
Members (excluding buyback)	1,583,631		
City	<u>10,502,308</u>		
Total	12,085,939		
G. Net Actuarial (Gain)/Loss	901,541		

¹ Contributions developed as of 1/1/2020 displayed above have been adjusted to account for assumed interest.

H. Schedule Illustrating the Amortization of the Total Unfunded Actuarial Accrued Liability as of:

<u>Year</u>	<u>Projected Unfunded Accrued Liability ¹</u>
2020	105,920,802
2021	103,346,879
2022	100,612,086
2027	84,150,328
2032	61,859,773
2036	38,466,376
2041	0

¹ Target funded percentage is less than 100% so not all of the Unfunded Actuarial Accrued Liability is amortized.

I. (i) 3 Year Comparison of Actual and Assumed Salary Increases

		<u>Actual</u>	<u>Assumed</u>
Year Ended	12/31/2019	2.39%	4.33%
Year Ended	12/31/2018	4.95%	4.41%
Year Ended	12/31/2017	4.49%	4.41%

(ii) 3 Year Comparison of Investment Return on Actuarial Value

		<u>Actual</u>	<u>Assumed</u>
Year Ended	12/31/2019	7.44%	6.25%
Year Ended	12/31/2018	5.53%	6.25%
Year Ended	12/31/2017	8.22%	6.25%

DEVELOPMENT OF JANUARY 1, 2020 AMORTIZATION PAYMENT

(1) Unfunded Actuarial Accrued Liability as of January 1, 2019	\$130,133,404
(2) Sponsor Normal Cost developed as of January 1, 2019	2,698,556
(3) Expected administrative expenses for the year ended December 31, 2019	58,885
(4) Expected interest on (1), (2) and (3)	8,303,838
(5) Sponsor contributions to the System during the year ended December 31, 2019	10,502,308
(6) Expected interest on (5)	328,197
(7) Expected Unfunded Actuarial Accrued Liability as of December 31, 2019, (1)+(2)+(3)+(4)-(5)-(6)	130,364,178
(8) Change to UAAL due to Benefits Change	973,259
(9) Change to UAAL due to Actuarial (Gain)/Loss	901,541
(10) Unfunded Accrued Liability as of January 1, 2020	132,238,978
(11) UAAL Subject to Amortization (90% AAL less Actuarial Assets)	105,920,802

<u>Date Established</u>	<u>Years Remaining</u>	<u>1/1/2020 Amount</u>	<u>Amortization Amount</u>
1/1/2020	21	105,920,802	8,653,151

DETAILED ACTUARIAL (GAIN)/LOSS ANALYSIS

(1) Unfunded Actuarial Accrued Liability (UAAL) as of January 1, 2019	\$130,133,404
(2) Expected UAAL as of January 1, 2020	130,364,178
(3) Summary of Actuarial (Gain)/Loss, by component:	
Investment Return (Actuarial Asset Basis)	(1,455,758)
Salary Increases	(1,785,693)
Active Decrements	798,760
Inactive Mortality	805,943
Other	<u>2,538,289</u>
Change in UAAL due to (Gain)/Loss	901,541
Change to UAAL due to Benefits Change	<u>973,259</u>
(4) Actual UAAL as of January 1, 2020	\$132,238,978

RECONCILIATION OF CHANGES IN CONTRIBUTION REQUIREMENT

(1) Contribution Determined as of January 1, 2019	\$ 11,927,871
(2) Summary of Contribution Impact by component:	
Change in Normal Cost	(196,825)
Change in Assumed Administrative Expense	(7,223)
Investment Return (Actuarial Asset Basis)	(101,212)
Salary Increases	(124,151)
New Entrants	-
Active Decrements	55,534
Inactive Mortality	56,034
Contributions (More) or Less than Recommended	59,436
Increase in Amortization Payment Due to Payroll Growth Assumption	-
Change in Expected Member Contributions	2,657
Benefits Change	233,173
Other	271,748
Total Change in Contribution	249,171
(3) Contribution Determined as of January 1, 2020	\$12,177,042

STATUTORY MINIMUM REQUIRED CONTRIBUTION

Contribution requirements shown on this page are calculated according to statutory minimum funding requirements of the Illinois Pension Code. We do not believe this method is sufficient to fund future benefits; as such, we recommend funding according to the contributions developed in Section E of this report.

Valuation Date Applicable to Fiscal Year Ending	New Benefits 1/1/2020 <u>12/31/2021</u>	 Old Benefits 1/1/2020 <u>12/31/2021</u>	1/1/2019 <u>12/31/2020</u>
Actuarial Accrued Liability (PUC)	252,944,086	252,238,782	244,576,620
Actuarial Value of Assets	<u>130,942,778</u>	<u>130,942,778</u>	<u>122,344,568</u>
Unfunded Actuarial Accrued Liability (UAAL)	122,001,308	121,296,004	122,232,052
UAAL Subject to Amortization	96,706,899	96,072,126	97,774,390
Normal Cost ¹	\$5,206,908	\$5,062,232	\$5,018,596
% of Total Annual Payroll ¹	33.1	32.2	31.9
Administrative Expenses ¹	55,342	55,342	62,565
% of Total Annual Payroll ¹	0.4	0.4	0.4
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 21 years (as of 1/1/2020) ¹	6,280,463	6,239,238	6,133,635
% of Total Annual Payroll ¹	39.9	39.6	38.9
Total Required Contribution	11,542,713	11,356,812	11,214,796
% of Total Annual Payroll ¹	73.4	72.2	71.2
Expected Member Contributions ¹	1,557,936	1,557,936	1,560,593
% of Total Annual Payroll ¹	9.9	9.9	9.9
Expected City Contribution	9,984,777	9,798,876	9,654,203
% of Total Annual Payroll ¹	63.5	62.3	61.3
Assumptions and Methods:			
Actuarial Cost Method	Projected Unit Credit		
Amortization Method	90% Funding by 2040		
Payroll Growth Assumption	3.50%		

All other assumptions and methods are as described in the Actuarial Assumptions and Methods section.

¹ Contributions developed as of 1/1/2020 displayed above have been adjusted to account for assumed interest.

PROJECTION OF BENEFIT PAYMENTS

Year	Payments for Current Actives	Payments for Current Inactives	Total Payments
2020	373,744	12,521,982	12,895,726
2021	708,499	12,652,751	13,361,250
2022	1,051,846	12,859,059	13,910,905
2023	1,454,745	13,061,794	14,516,539
2024	1,861,133	13,188,330	15,049,463
2025	2,271,851	13,287,799	15,559,650
2026	2,803,703	13,376,120	16,179,823
2027	3,283,314	13,435,874	16,719,188
2028	3,858,326	13,447,982	17,306,308
2029	4,455,328	13,439,740	17,895,068
2030	5,150,571	13,384,289	18,534,860
2031	5,923,179	13,291,267	19,214,446
2032	6,728,364	13,158,467	19,886,831
2033	7,585,892	13,002,043	20,587,935
2034	8,448,686	12,785,147	21,233,833
2035	9,335,565	12,523,806	21,859,371
2036	10,224,897	12,246,956	22,471,853
2037	11,075,625	11,897,388	22,973,013
2038	11,918,531	11,505,061	23,423,592
2039	12,786,672	11,072,449	23,859,121
2040	13,579,985	10,603,084	24,183,069
2041	14,402,878	10,121,044	24,523,922
2042	15,304,212	9,593,107	24,897,319
2043	16,093,990	9,068,856	25,162,846
2044	16,982,688	8,507,112	25,489,800
2045	17,707,134	7,937,420	25,644,554
2046	18,480,817	7,366,209	25,847,026
2047	19,036,368	6,799,571	25,835,939
2048	19,547,350	6,242,895	25,790,245
2049	19,975,151	5,700,817	25,675,968
2050	20,325,232	5,177,152	25,502,384
2051	20,615,003	4,675,149	25,290,152
2052	20,851,058	4,197,410	25,048,468
2053	21,027,187	3,745,710	24,772,897
2054	21,147,300	3,321,253	24,468,553
2055	21,202,717	2,925,034	24,127,751
2056	21,195,266	2,557,884	23,753,150
2057	21,118,572	2,220,293	23,338,865
2058	20,970,581	1,912,409	22,882,990
2059	20,750,153	1,634,077	22,384,230

ACTUARIAL ASSUMPTIONS AND METHODS

Interest Rate	6.25% per year compounded annually, net of investment related expenses. We will continue to monitor this assumption to ensure that the rate continues to be supported.
Mortality Rate	<p><i>Active Lives:</i> PubS-2010 Employee mortality, projected 5 years past the valuation date with Scale MP-2019. 10% of active deaths are assumed to be in the line of duty.</p> <p><i>Inactive Lives:</i> PubS-2010 Healthy Retiree mortality, projected 5 years past the valuation date with Scale MP-2019.</p> <p><i>Beneficiaries:</i> PubS-2010 Survivor mortality, projected 5 years past the valuation date with Scale MP-2019.</p> <p><i>Disabled Lives:</i> PubS-2010 Disabled mortality, projected 5 years past the valuation date with Scale MP-2019.</p> <p>The mortality assumptions sufficiently accommodate anticipated future mortality improvements.</p>
Retirement Age	See table later in this section. This is based on a 2017 experience study performed for the State of Illinois Department of Insurance.
Disability Rate	See table later in this section. 60% of the disabilities are assumed to be in the line of duty. This is based on a 2017 experience study performed for the State of Illinois Department of Insurance.
Termination Rate	See table later in this section. This is based on a 2017 experience study performed for the State of Illinois Department of Insurance.
Inflation	2.50%.
Cost-of-Living Adjustment	<p><u>Tier 1:</u> 3.00% per year after age 55. Those that retire prior to age 55 receive an increase of 1/12 of 3.00% for each full month since benefit commencement upon reaching age 55.</p> <p><u>Tier 2:</u> 1.25% per year after the later of attainment of age 60 or first anniversary of retirement.</p>

Salary Increases

Graded schedule based on age.

Age	Increase
25	7.36%
30	5.48%
35	4.53%
40	4.02%
45	3.81%
50	3.68%
55+	3.62%

Marital Status

80% of Members are assumed to be married.

Spouse's Age

Males are assumed to be three years older than females.

Funding Method

Entry Age Normal Cost Method.

Actuarial Asset Method

Investment gains and losses are smoothed over a 5-year period.

Funding Policy Amortization Method

The UAAL is amortized according to a Level Dollar method over a period ending in 2040. The initial amortization amount is 90% of the Accrued Liability less the Actuarial Value of Assets.

Payroll Growth

0.00% per year.

Administrative Expenses

Expenses paid out of the fund other than investment-related expenses are assumed to be equal to those paid in the previous year.

Decrement Tables

% Terminating During the Year		% Becoming Disabled During the Year		% Retiring During the Year (Tier 1)		% Retiring During the Year (Tier 2)	
Age	Rate	Age	Rate	Age	Rate	Age	Rate
20	14.00%	20	0.000%	50 - 51	15%	50 - 54	5%
25	10.40%	25	0.030%	52 - 54	20%	55	40%
30	5.60%	30	0.140%	55 - 64	25%	56 - 64	25%
35	3.10%	35	0.260%	65 - 69	40%	65 - 69	40%
40	1.90%	40	0.420%	70+	100%	70+	100%
45	1.50%	45	0.590%				
50	1.50%	50	0.710%				
56+	0.00%	55	0.900%				
		60	1.150%				

GLOSSARY

Total Annual Payroll is the projected annual rate of pay for the fiscal year following the valuation date of all covered members.

Present Value of Benefits is the single sum value on the valuation date of all future benefits to be paid to current Members, Retirees, Beneficiaries, Disability Retirees and Vested Terminations.

Normal (Current Year's) Cost is the current year's cost for benefits yet to be funded.

Unfunded Accrued Liability is a liability which arises when a pension plan is initially established or improved and such establishment or improvement is applicable to all years of past service.

Total Recommended Contribution is equal to the Normal Cost plus an amount sufficient to amortize the Unfunded Accrued Liability over a period ending in 2040. The recommended amount is adjusted for interest according to the timing of contributions during the year.

Entry Age Normal Cost Method - Under this method, the normal cost is the sum of the individual normal costs for all active participants. For an active participant, the normal cost is the participant's normal cost accrual rate, multiplied by the participant's current compensation.

- (a) The normal cost accrual rate equals:
 - (i) the present value of future benefits for the participant, determined as of the participant's entry age, divided by
 - (ii) the present value of the compensation expected to be paid to the participant for each year of the participant's anticipated future service, determined as of the participant's entry age.
- (b) In calculating the present value of future compensation, the salary scale is applied both retrospectively and prospectively to estimate compensation in years prior to and subsequent to the valuation year based on the compensation used for the valuation.
- (c) The accrued liability is the sum of the individual accrued liabilities for all participants and beneficiaries. A participant's accrued liability equals the present value, at the participant's attained age, of future benefits less the present value at the participant's attained age of the individual normal costs payable in the future. A beneficiary's accrued liability equals the present value, at the beneficiary's attained age, of future benefits. The unfunded accrued liability equals the total accrued liability less the actuarial value of assets.
- (d) Under this method, the entry age used for each active participant is the participant's age at the time he or she would have commenced participation if the plan had always been in existence under current terms, or the age as of which he or she first earns service credits for purposes of benefit accrual under the current terms of the plan.

DISCUSSION OF RISK

ASOP No. 51, Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions, states that the actuary should identify risks that, in the actuary's professional judgment, may reasonably be anticipated to significantly affect the plan's future financial condition.

Throughout this report, actuarial results are determined under various assumption scenarios. These results are based on the premise that all future plan experience will align with the plan's actuarial assumptions; however, there is no guarantee that actual plan experience will align with the plan's assumptions. It is possible that actual plan experience will differ from anticipated experience in an unfavorable manner that will negatively impact the plan's funded position.

Below are examples of ways in which plan experience can deviate from assumptions and the potential impact of that deviation. Typically, this results in an actuarial gain or loss representing the current-year financial impact on the plan's unfunded liability of the experience differing from assumptions; this gain or loss is amortized over a period of time determined by the plan's amortization method. When assumptions are selected that adequately reflect plan experience, gains and losses typically offset one another in the long term, resulting in a relatively low impact on the plan's contribution requirements associated with plan experience. When assumptions are too optimistic, losses can accumulate over time and the plan's amortization payment could potentially grow to an unmanageable level.

- Investment Return: When the rate of return on the Actuarial Value of Assets falls short of the assumption, this produces a loss representing assumed investment earnings that were not realized. Further, it is unlikely that the plan will experience a scenario that matches the assumed return in each year as capital markets can be volatile from year to year. Therefore, contribution amounts can vary in the future.
- Salary Increases: When a plan participant experiences a salary increase that was greater than assumed, this produces a loss representing the cost of an increase in anticipated plan benefits for the participant as compared to the previous year. The total gain or loss associated with salary increases for the plan is the sum of salary gains and losses for all active participants.
- Demographic Assumptions: Actuarial results take into account various potential events that could happen to a plan participant, such as retirement, termination, disability, and death. Each of these potential events is assigned a liability based on the likelihood of the event and the financial consequence of the event for the plan. Accordingly, actuarial liabilities reflect a blend of financial consequences associated with various possible outcomes (such as retirement at one of various possible ages). Once the outcome is known (e.g. the participant retires) the liability is adjusted to reflect the known outcome. This adjustment produces a gain or loss depending on whether the outcome was more or less favorable than other outcomes that could have occurred.
- Contribution Risk: This risk results from the potential that actual employer contributions may deviate from actuarially determined contributions, which are determined in accordance with the Board's funding policy. The funding policy is intended to result in contribution requirements that if paid when due, will result in a reasonable expectation that assets will accumulate to be sufficient to pay plan benefits when due. Contribution deficits, particularly large deficits and those that occur repeatedly, increase future contribution requirements and put the plan at risk for not being able to pay plan benefits when due.

Impact of Plan Maturity on Risk

For newer pension plans, most of the participants and associated liabilities are related to active members who have not yet reached retirement age. As pension plans continue in operation and active members reach retirement ages, liabilities begin to shift from being primarily related to active members to being shared amongst active and retired members. Plan maturity is a measure of the extent to which this shift has occurred. It is important to understand that plan maturity can have an impact on risk tolerance and the overall risk characteristics of the plan. For example, plans with a large amount of retired liability do not have as long of a time horizon to recover from losses (such as losses on investments due to lower than expected investment returns) as plans where the majority of the liability is attributable to active members. For this reason, less tolerance for investment risk may be warranted for highly mature plans with a substantial inactive liability. Similarly, mature plans paying substantial retirement benefits resulting in a small positive or net negative cash flow can be more sensitive to near term investment volatility, particularly if the size of the fund is shrinking, which can result in less assets being available for investment in the market.

To assist with determining the maturity of the plan, we have provided some relevant metrics in the table following titled “Plan Maturity Measures and Other Risk Metrics”. Highlights of this information are discussed below:

- The Support Ratio, determined as the ratio of active to inactive members, has decreased from 85.1% on January 1, 2017 to 76.7% on January 1, 2020, indicating that the plan has been rapidly maturing.
- The Accrued Liability Ratio, determined as the ratio of the Inactive Accrued Liability, which is the liability associated with members who are no longer employed but are due a benefit from the plan, to the Total Accrued Liability, is 66.1%. With a plan of this maturity, losses due to lower than expected investment returns or demographic factors will need to be made up for over a shorter time horizon than would be needed for a less mature plan.
- The Funded Ratio, determined as the ratio of the Actuarial Value of Assets to the Total Accrued Liability, has increased from 46.9% on January 1, 2017 to 49.8% on January 1, 2020, due to paying off of the plan’s unfunded liability during the period.
- The Net Cash Flow Ratio, determined as the ratio of the Net Cash Flow (contributions minus benefit payments and administrative expenses) to the Market Value of Assets, stayed approximately the same from January 1, 2017 to January 1, 2020. The current Net Cash Flow Ratio of -0.3% indicates that contributions are not currently covering the plan's benefit payments and administrative expenses.

It is important to note that the actuary has identified the risks above as the most significant risks based on the characteristics of the plan and the nature of the project, however, it is not an exhaustive list of potential risks that could be considered. Additional advanced modeling, as well as the identification of additional risks, can be provided at the request of the audience addressed on page 2 of this report.

PLAN MATURITY MEASURES AND OTHER RISK METRICS

	<u>1/1/2017</u>	<u>1/1/2018</u>	<u>1/1/2019</u>	<u>1/1/2020</u>
<u>Support Ratio</u>				
Total Actives	165	163	158	155
Total Inactives	194	199	203	202
Actives / Inactives	85.1%	81.9%	77.8%	76.7%
 <u>Asset Volatility Ratio</u>				
Market Value of Assets (MVA)	106,191,547	121,629,667	116,755,057	141,309,841
Total Annual Payroll	15,343,727	15,614,913	15,747,659	15,720,848
MVA / Total Annual Payroll	692.1%	778.9%	741.4%	898.9%
 <u>Accrued Liability (AL) Ratio</u>				
Inactive Accrued Liability	151,850,046	159,027,866	169,488,430	173,849,068
Total Accrued Liability	227,820,272	237,625,062	252,477,972	263,181,756
Inactive AL / Total AL	66.7%	66.9%	67.1%	66.1%
 <u>Funded Ratio</u>				
Actuarial Value of Assets (AVA)	106,910,133	115,898,879	122,344,568	130,942,778
Total Accrued Liability	227,820,272	237,625,062	252,477,972	263,181,756
AVA / Total Accrued Liability	46.9%	48.8%	48.5%	49.8%
 <u>Net Cash Flow Ratio</u>				
Net Cash Flow ¹	87,853	197,442	36,443	(488,808)
Market Value of Assets (MVA)	106,191,547	121,629,667	116,755,057	141,309,841
Ratio	0.1%	0.2%	0.0%	-0.3%

¹ Determined as total contributions minus benefit payments and administrative expenses.

STATEMENT OF FIDUCIARY NET POSITION
December 31, 2019

<u>ASSETS</u>	MARKET VALUE
Cash and Cash Equivalents:	
Cash Equivalents	7,015,554
Total Cash and Equivalents	7,015,554
Receivables:	
From City	19,303
Accrued Past Due Interest	297,895
Total Receivable	317,198
Investments:	
Corporate Bonds	20,977,717
U.S. Gov't and Agency Obligations	20,848,373
Stocks	37,379,730
Mutual Funds	53,707,166
Total Investments	132,912,986
Other Assets	1,064,103
Total Assets	141,309,841
<u>LIABILITIES</u>	
Total Liabilities	0
Net Assets:	
Active and Retired Members' Equity	141,309,841
NET POSITION RESTRICTED FOR PENSIONS	141,309,841
TOTAL LIABILITIES AND NET ASSETS	141,309,841

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
FOR THE YEAR ENDED December 31, 2019
Market Value Basis

ADDITIONS

Contributions:

Member	1,583,631	
City	10,502,308	

Total Contributions		12,085,939
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Investment Income:

Net Realized Gain (Loss)	2,936,299	
Unrealized Gain (Loss)	19,318,761	
Net Increase in Fair Value of Investments		22,255,060
Interest & Dividends		3,134,491
Less Investment Expense ¹		(345,959)

Net Investment Income		25,043,592
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Total Additions		37,129,531
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DEDUCTIONS

Distributions to Members:

Benefit Payments	12,482,548	
Refund of Contributions/Transfers	40,112	

Total Distributions		12,522,660
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Administrative Expenses		52,087
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Total Deductions		12,574,747
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Net Increase in Net Position		24,554,784
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NET POSITION RESTRICTED FOR PENSIONS

Beginning of the Year		116,755,057
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End of the Year		141,309,841
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¹ Investment Related expenses include investment advisory, custodial and performance monitoring fees.

ACTUARIAL ASSET VALUATION

December 31, 2019

Actuarial Assets for funding purposes are developed by recognizing the total actuarial investment gain or loss for each Plan Year over a five year period. In the first year, 20% of the gain or loss is recognized. In the second year 40%, in the third year 60%, in the fourth year 80%, and in the fifth year 100% of the gain or loss is recognized. The actuarial investment gain or loss is defined as the actual return on investments minus the actuarial assumed investment return. Actuarial Assets shall not be less than 80% nor greater than 120% of the Market Value of Assets.

Plan Year Ending	Gain/(Loss)	Gains/(Losses) Not Yet Recognized				
		Amounts Not Yet Recognized by Valuation Year				
		2020	2021	2022	2023	2024
12/31/2016	1,135,676	227,135	0	0	0	0
12/31/2017	8,597,538	3,439,015	1,719,508	0	0	0
12/31/2018	(12,514,046)	(7,508,428)	(5,005,618)	(2,502,809)	0	0
12/31/2019	17,761,676	14,209,341	10,657,006	7,104,670	3,552,335	0
Total		10,367,063	7,370,896	4,601,861	3,552,335	0

Development of Investment Gain/Loss

Market Value of Assets, 12/31/2018	116,755,057
Contributions Less Benefit Payments & Administrative Expenses	(488,808)
Expected Investment Earnings ¹	7,281,916
Actual Net Investment Earnings	<u>25,043,592</u>
2019 Actuarial Investment Gain/(Loss)	17,761,676

¹ Expected Investment Earnings = 6.25% x (116,755,057 + 0.5 x -488,808)

Development of Actuarial Value of Assets

Market Value of Assets, 12/31/2019	141,309,841
(Gains)/Losses Not Yet Recognized	<u>(10,367,063)</u>
Actuarial Value of Assets, 12/31/2019	130,942,778
(A) 12/31/2018 Actuarial Assets:	122,344,568
(I) Net Investment Income:	
1. Interest and Dividends	3,134,491
2. Realized Gains (Losses)	2,936,299
3. Change in Actuarial Value	3,362,187
4. Investment Expenses	<u>(345,959)</u>
Total	9,087,018
(B) 12/31/2019 Actuarial Assets:	130,942,778
Actuarial Asset Rate of Return = (2 x I) / (A + B - I):	7.44%
Market Value of Assets Rate of Return:	21.49%
12/31/2019 Limited Actuarial Assets:	130,942,778
Actuarial Gain/(Loss) due to Investment Return (Actuarial Asset Basis)	1,455,758

CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS
December 31, 2019
Actuarial Asset Basis

INCOME		
Contributions:		
Member	1,583,631	
City	10,502,308	
Total Contributions		12,085,939
Earnings from Investments		
Interest & Dividends	3,134,491	
Net Realized Gain (Loss)	2,936,299	
Change in Actuarial Value	3,362,187	
Total Earnings and Investment Gains		9,432,977
EXPENSES		
Administrative Expenses:		
Investment Related ¹	345,959	
Other	52,087	
Total Administrative Expenses		398,046
Distributions to Members:		
Benefit Payments	12,482,548	
Refund of Contributions/Transfers	40,112	
Total Distributions		12,522,660
Change in Net Assets for the Year		8,598,210
Net Assets Beginning of the Year		122,344,568
Net Assets End of the Year ²		130,942,778

¹ Investment Related expenses include investment advisory, custodial and performance monitoring fees.

² Net Assets may be limited for actuarial consideration.

STATISTICAL DATA

	<u>1/1/2017</u>	<u>1/1/2018</u>	<u>1/1/2019</u>	<u>1/1/2020</u>
<u>Actives - Tier 1</u>				
Number	123	117	111	109
Average Current Age	42.8	43.3	43.7	44.2
Average Age at Employment	28.2	28.3	28.1	27.4
Average Past Service	14.6	15.0	15.6	16.8
Average Annual Salary	\$99,810	\$102,843	\$107,090	\$108,387
<u>Actives - Tier 2</u>				
Number	42	46	47	46
Average Current Age	30.2	31.0	32.1	32.8
Average Age at Employment	27.8	28.0	28.3	27.7
Average Past Service	2.4	3.0	3.8	5.1
Average Annual Salary	\$73,027	\$77,875	\$82,142	\$84,927
<u>Service Retirees</u>				
Number	131	134	137	138
Average Current Age	69.2	69.8	70.0	70.4
Average Annual Benefit	\$69,479	\$71,838	\$74,334	\$76,869
<u>Beneficiaries</u>				
Number	30	30	28	27
Average Current Age	77.1	77.7	78.4	77.8
Average Annual Benefit	\$36,343	\$36,620	\$37,595	\$42,750
<u>Disability Retirees</u>				
Number	16	17	18	18
Average Current Age	61.8	61.1	62.4	63.4
Average Annual Benefit	\$41,103	\$43,224	\$44,999	\$45,790
<u>Terminated Vested</u>				
Number	17	18	20	19
Average Current Age	41.0	41.5	41.3	41.0
Average Annual Benefit ¹	\$24,178	\$24,178	\$24,178	N/A

¹ Average Annual Benefit for Terminated Vested members reflects the benefit for members entitled to a future annual benefit from the plan.

AGE AND SERVICE DISTRIBUTION

PAST SERVICE

AGE	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30+	Total
15 - 19	0	0	0	0	0	0	0	0	0	0	0	0
20 - 24	0	0	0	0	0	0	0	0	0	0	0	0
25 - 29	2	1	1	1	0	5	0	0	0	0	0	10
30 - 34	0	0	2	6	1	15	3	0	0	0	0	27
35 - 39	0	1	0	3	0	6	22	4	0	0	0	36
40 - 44	0	0	0	0	0	4	11	21	0	0	0	36
45 - 49	0	1	0	0	0	0	4	8	5	0	0	18
50 - 54	0	0	0	0	0	0	1	9	7	6	0	23
55 - 59	0	0	0	0	0	0	0	0	0	2	0	2
60 - 64	0	0	0	0	0	0	0	1	0	1	0	2
65+	0	0	0	0	0	0	0	1	0	0	0	1
Total	2	3	3	10	1	30	41	44	12	9	0	155

VALUATION PARTICIPANT RECONCILIATION

1. Active lives

a. Number in prior valuation 1/1/2019	158
b. Terminations	
i. Vested (partial or full) with deferred benefits	(1)
ii. Non-vested or full lump sum distribution received	(1)
iii. Transferred service to other fund	0
c. Deaths	
i. Beneficiary receiving benefits	0
ii. No future benefits payable	0
d. Disabled	0
e. Retired	(3)
f. Continuing participants	153
g. New entrants	<u>2</u>
h. Total active life participants in valuation	155

2. Non-Active lives (including beneficiaries receiving benefits)

	Service Retirees, Vested Receiving <u>Benefits</u>	Receiving Death <u>Benefits</u>	Receiving Disability <u>Benefits</u>	Vested <u>Deferred</u>	<u>Total</u>
a. Number prior valuation	137	28	18	20	203
Retired	4	0	0	(1)	3
Vested Deferred	0	0	0	1	1
Death, With Survivor	(2)	2	0	0	0
Death, No Survivor	(1)	(3)	0	0	(4)
Disabled	0	0	0	0	0
Refund of Contributions	0	0	0	(3)	(3)
Rehires	0	0	0	0	0
Expired Annuities	0	0	0	0	0
Data Corrections	0	0	0	0	0
Hired/Termed in Same Year	0	0	0	2	2
b. Number current valuation	138	27	18	19	202

SUMMARY OF CURRENT PLAN

Article 3 Pension Fund

The Plan is established and administered as prescribed by “Article 3. Police Pension Fund – Municipalities 500,000 and Under” of the Illinois Pension Code.

Plan Administration

The Plan is a single employer defined benefit pension plan administered by a Board of Trustees comprised of:

- a.) Two members appointed by the Municipality,
- b.) Two active Members of the Police Department elected by the Membership, and
- c.) One retired Member of the Police Department elected by the Membership.

Credited Service

Complete years of service as a sworn police officer employed by the Municipality.

Normal Retirement

Date

Tier 1: Age 50 and 20 years of Credited Service.

Tier 2: Age 55 with 10 years of Credited Service.

Benefit

Tier 1: 50% of annual salary attached to rank on last day of service plus 2.50% of annual salary for each year of service over 20 years, up to a maximum of 75% of salary. The minimum monthly benefit is \$1,000 per month.

Tier 2: 2.50% per year of service times the average salary for the 48 consecutive months of service within the last 60 months of service in which the total salary was the highest prior to retirement times the number of years of service, up to a maximum of 75% of average salary. The minimum monthly benefit is \$1,000 per month.

For Tier 2 participants, the salary is capped at a rate of \$106,800 as of 2011, indexed annually at a rate of CPI-U, but not to exceed 3.00%.

Form of Benefit

Tier 1: For married retirees, an annuity payable for the life of the Member; upon the death of the member, 100% of the Member’s benefit payable to the spouse until death. For unmarried retirees, the normal form is a Single Life Annuity.

Tier 2: Same as above, but with 66 2/3% of benefit continued to spouse.

Early Retirement

Date	Tier 1: Age 60 and 8 years of Credited Service. Tier 2: Age 50 with 10 years of Credited Service.
Benefit	Tier 1: Normal Retirement benefit with no minimum. Tier 2: Normal Retirement benefit, reduced 6.00% each year before age 55, with no minimum benefit.
Form of Benefit	Same as Normal Retirement

Disability Benefit

Eligibility	Total and permanent as determined by the Board of Trustees.
Benefit Amount	A maximum of: <ul style="list-style-type: none">a.) 65% of salary attached to the rank held by Member on last day of service, and;b.) The monthly retirement pension that the Member is entitled to receive if he or she retired immediately.

For non-service connected disabilities, a benefit of 50% of salary attached to rank held by Member on last day of service.

Cost-of-Living Adjustment

Tier 1:

Retirees: An annual increase equal to 3.00% per year after age 55. Those that retire prior to age 55 receive an increase of 1/12 of 3.00% for each full month since benefit commencement upon reaching age 55.

Disabled Retirees: An annual increase equal to 3.00% per year of the original benefit amount beginning at age 60. Those that become disabled prior to age 60 receive an increase of 3.00% of the original benefit amount for each year since benefit commencement upon reaching age 60.

Tier 2: An annual increase each January 1 equal to 3.00% per year or one-half of the annual unadjusted percentage increase in the consumer price index-u for the 12 months ending with the September preceding each November 1, whichever is less, of the original pension after the attainment of age 60 or first anniversary of pension start date whichever is later.

Pre-Retirement Death Benefit

Service Incurred	100% of salary attached to rank held by Member on last day of service.
Non-Service Incurred	A maximum of: <ul style="list-style-type: none">a.) 54% of salary attached to the rank held by Member on last day of service, and;b.) The monthly retirement pension earned by the deceased Member at the time of death, regardless of whether death occurs before or after age 50.

For non-service deaths with less than 10 years of service, a refund of member contributions is provided.

Vesting (Termination)

Vesting Service Requirement	Tier 1: 8 years. Tier 2: 10 years.
Non-Vested Benefit	Refund of Member Contributions.
Vested Benefit	Either the termination benefit, payable upon reaching age 60 (55 for Tier 2), provided contributions are not withdrawn, or a refund of member contributions. The termination benefit is 2.50% of annual salary held in the year prior to termination (8-year final average salary for Tier 2) times creditable service.

Contributions

Employee	9.91% of Salary.
Municipality	Remaining amount necessary for payment of Normal (current year's) Cost and amortization of the accrued past service liability.