CITY OF ROCHELLE
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

June 12, 2020

Board of Trustees
Rochelle Police Department
Police Pension Fund
420 N. 6th Street
Rochelle, IL 61068

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

Dear Board:

We are pleased to present to the Board this report of the annual actuarial valuation of the City of Rochelle 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 are familiar with the immediate and long-term aspects of pension valuations and meet 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 Rochelle, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the City of Rochelle 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.

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Enclosures

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SUMMARY OF REPORT

The regular annual actuarial valuation of the City of Rochelle 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	12/31/2021	12/31/2020
Total Recommended Contribution	$1,036,011	$977,296
% of Projected Annual Payroll	67.4%	64.9%
Member Contributions (Est.)	152,243	149,130
% of Projected Annual Payroll	9.9%	9.9%
City Recommended Contribution	883,768	828,166
% of Projected Annual Payroll	57.5%	55.0%

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 attributable to net unfavorable experience and Tier 2 benefit changes.

Plan experience was unfavorable overall on the basis of the plan's actuarial assumptions. Sources of unfavorable experience included an investment return of 4.39% (Actuarial Asset Basis) which fell short of the 6.75% assumption, lower than expected inactive mortality, and less turnover than expected. These losses were offset in part by a gain associated with an average salary increase of 2.09% which fell short of the 4.45% 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 1/1/2020	Old Benefits 1/1/2020	1/1/2019
A. Participant Data			
Number Included			
Actives	19	19	19
Service Retirees	11	11	11
Beneficiaries	7	7	7
Disability Retirees	0	0	0
Terminated Vested	1	1	1
Total	38	38	38
Total Annual Payroll	$1,536,261	$1,536,261	$1,504,844
Payroll Under Assumed Ret. Age	1,536,261	1,536,261	1,504,844
Annual Rate of Payments to:			
Service Retirees	600,263	600,263	581,700
Beneficiaries	297,407	297,407	297,407
Disability Retirees	0	0	0
Terminated Vested	0	0	0
B. Assets			
Actuarial Value	11,937,971	11,937,971	11,586,805
Market Value	12,094,641	12,094,641	10,474,205
C. Liabilities			
Present Value of Benefits			
Actives			
Retirement Benefits	10,776,267	10,726,660	9,960,879
Disability Benefits	834,564	834,259	847,837
Death Benefits	107,592	97,767	93,110
Vested Benefits	656,223	654,041	667,577
Service Retirees	8,417,826	8,417,826	8,462,621
Beneficiaries	2,998,825	2,998,825	3,065,617
Disability Retirees	0	0	0
Terminated Vested	28,835	28,835	28,835
Total	23,820,132	23,758,213	23,126,476

C. Liabilities - (Continued)	New Benefits 1/1/2020	Old Benefits 1/1/2020	1/1/2019
Present Value of Future Salaries	13,980,113	13,973,605	14,485,436
Present Value of Future Member Contributions	1,385,429	1,384,784	1,435,507
Normal Cost (Retirement)	316,513	313,638	309,556
Normal Cost (Disability)	55,715	55,704	55,054
Normal Cost (Death)	5,815	5,047	4,747
Normal Cost (Vesting)	33,958	33,841	34,121
Total Normal Cost	412,001	408,230	403,478
Present Value of Future Normal Costs	3,471,596	3,424,060	3,594,477
Accrued Liability (Retirement)	8,029,742	8,016,134	7,124,622
Accrued Liability (Disability)	362,835	362,772	351,344
Accrued Liability (Death)	58,506	58,719	54,317
Accrued Liability (Vesting)	451,967	451,042	444,643
Accrued Liability (Inactives)	11,445,486	11,445,486	11,557,073
Total Actuarial Accrued Liability	20,348,536	20,334,153	19,531,999
Unfunded Actuarial Accrued Liability (UAAL)	8,410,565	8,396,182	7,945,194
Funded Ratio (AVA / AL)	58.7%	58.7%	59.3%

	New Benefits 1/1/2020	Old Benefits 1/1/2020	1/1/2019
D. Actuarial Present Value of Accrued Benefits			
Vested Accrued Benefits			
Inactives	11,445,486	11,445,486	11,557,073
Actives	2,342,395	2,320,522	1,741,533
Member Contributions	1,667,824	1,667,824	1,515,543
Total	15,455,705	15,433,832	14,814,149
Non-vested Accrued Benefits	771,901	780,507	735,937
Total Present Value Accrued Benefits	16,227,606	16,214,339	15,550,086
Funded Ratio (MVA / PVAB)	74.5%	74.6%	67.4%
Increase (Decrease) in Present Value of Accrued Benefits Attributable to:			
Plan Amendments	13,267	0	
Assumption Changes	0	0	
New Accrued Benefits	0	542,588	
Benefits Paid	0	(897,669)	
Interest	0	1,019,334	
Other	0	0	
Total	13,267	664,253	

	New Benefits	Old Benefits	
Valuation Date	1/1/2020	1/1/2020	1/1/2019
Applicable to Fiscal Year Ending	12/31/2021	12/31/2021	12/31/2020
E. Pension Cost			
Normal Cost [1]	$439,811	$435,786	$430,713
% of Total Annual Payroll [1]	28.6	28.4	28.6
Administrative Expenses [1]	23,846	23,846	23,325
% of Total Annual Payroll [1]	1.6	1.6	1.5
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 21 years (as of 1/1/2020) [1]	572,354	571,375	523,258
% of Total Annual Payroll [1]	37.2	37.1	34.8
Total Recommended Contribution	1,036,011	1,031,007	977,296
% of Total Annual Payroll [1]	67.4	67.1	64.9
Expected Member Contributions [1]	152,243	152,243	149,130
% of Total Annual Payroll [1]	9.9	9.9	9.9
Expected City Contribution	883,768	878,764	828,166
% of Total Annual Payroll [1]	57.5	57.2	55.0
F. Past Contributions			
Plan Years Ending:	12/31/2019		
Total Recommended Contribution	832,238		
City	680,056		
Actual Contributions Made:			
Members (excluding buyback)	152,182		
City	613,234		
Total	765,416		
G. Net Actuarial (Gain)/Loss	254,514		

[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:

Year	Projected Unfunded Accrued Liability
2020	8,410,565
2021	8,405,924
2022	8,380,937
2027	7,872,192
2032	6,463,907
2036	4,373,908
2041	0

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

		Actual	Assumed
Year Ended	12/31/2019	2.09%	4.45%
Year Ended	12/31/2018	3.00%	4.46%
Year Ended	12/31/2017	5.47%	5.45%

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

		Actual	Assumed
Year Ended	12/31/2019	4.39%	6.75%
Year Ended	12/31/2018	2.61%	6.75%
Year Ended	12/31/2017	4.19%	6.75%

DEVELOPMENT OF JANUARY 1, 2020 AMORTIZATION PAYMENT

(1)	Unfunded Actuarial Accrued Liability as of January 1, 2019	$7,945,194
(2)	Sponsor Normal Cost developed as of January 1, 2019	254,348
(3)	Expected administrative expenses for the year ended December 31, 2019	21,850
(4)	Expected interest on (1), (2) and (3)	554,207
(5)	Sponsor contributions to the System during the year ended December 31, 2019	613,234
(6)	Expected interest on (5)	20,697
(7)	Expected Unfunded Actuarial Accrued Liability as of December 31, 2019, (1)+(2)+(3)+(4)-(5)-(6)	8,141,668
(8)	Change to UAAL due to Benefits Change	14,383
(9)	Change to UAAL due to Actuarial (Gain)/Loss	254,514
(10)	Unfunded Accrued Liability as of January 1, 2020	8,410,565
(11)	UAAL Subject to Amortization (100% AAL less Actuarial Assets)	8,410,565

Date Established	Years Remaining	1/1/2020 Amount	Amortization Amount
1/1/2020	21	8,410,565	536,163

DETAILED ACTUARIAL (GAIN)/LOSS ANALYSIS

(1)	Unfunded Actuarial Accrued Liability (UAAL) as of January 1, 2019	$7,945,194
(2)	Expected UAAL as of January 1, 2020	8,141,668
(3)	Summary of Actuarial (Gain)/Loss, by component:	
	Investment Return (Actuarial Asset Basis)	271,135
	Salary Increases	(156,875)
	Active Decrements	29,810
	Inactive Mortality	101,817
	Other	8,627
	Change in UAAL due to (Gain)/Loss	254,514
	Change to UAAL due to Benefits Change	14,383
(4)	Actual UAAL as of January 1, 2020	$8,410,565

RECONCILIATION OF CHANGES IN CONTRIBUTION REQUIREMENT

(1)	Contribution Determined as of January 1, 2019	$ 828,166
(2)	Summary of Contribution Impact by component:	
	Change in Normal Cost	5,073
	Change in Assumed Administrative Expense	521
	Investment Return (Actuarial Asset Basis)	18,451
	Salary Increases	(10,676)
	New Entrants	-
	Active Decrements	2,029
	Inactive Mortality	6,929
	Data Corrections	5,531
	Contributions (More) or Less than Recommended	4,701
	Increase in Amortization Payment Due to Payroll Growth Assumption	18,314
	Change in Expected Member Contributions	(3,113)
	Benefits Change	5,004
	Other	2,838
	Total Change in Contribution	55,602
(3)	Contribution Determined as of January 1, 2020	$883,768

PROJECTION OF BENEFIT PAYMENTS

Year	Payments for Current Actives	Payments for Current Inactives	Total Payments
2020	21,767	919,861	941,628
2021	38,021	901,591	939,612
2022	65,269	911,404	976,673
2023	120,196	920,288	1,040,484
2024	183,257	928,035	1,111,292
2025	251,975	934,425	1,186,400
2026	339,423	939,208	1,278,631
2027	423,377	942,126	1,365,503
2028	499,415	942,908	1,442,323
2029	577,914	941,286	1,519,200
2030	658,603	936,991	1,595,594
2031	735,501	929,782	1,665,283
2032	798,521	919,446	1,717,967
2033	855,851	905,811	1,761,662
2034	934,436	888,743	1,823,179
2035	1,018,866	868,137	1,887,003
2036	1,138,276	843,928	1,982,204
2037	1,229,448	816,121	2,045,569
2038	1,314,614	784,776	2,099,390
2039	1,405,190	750,030	2,155,220
2040	1,485,081	712,129	2,197,210
2041	1,563,854	671,429	2,235,283
2042	1,629,923	628,409	2,258,332
2043	1,689,756	583,624	2,273,380
2044	1,783,670	537,717	2,321,387
2045	1,848,366	491,397	2,339,763
2046	1,915,502	445,391	2,360,893
2047	1,962,718	400,396	2,363,114
2048	2,005,582	357,068	2,362,650
2049	2,045,155	315,952	2,361,107
2050	2,081,067	277,506	2,358,573
2051	2,113,108	242,069	2,355,177
2052	2,139,740	209,822	2,349,562
2053	2,161,070	180,802	2,341,872
2054	2,177,409	154,941	2,332,350
2055	2,186,997	132,072	2,319,069
2056	2,189,721	111,978	2,301,699
2057	2,184,697	94,409	2,279,106
2058	2,171,699	79,120	2,250,819
2059	2,150,333	65,872	2,216,205

ACTUARIAL ASSUMPTIONS AND METHODS

Interest Rate	6.75% per year compounded annually, net of investment related expenses.
Mortality Rate	***Active Lives:*** 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. ***Inactive Lives:*** PubS-2010 Healthy Retiree mortality, projected 5 years past the valuation date with Scale MP-2019. ***Beneficiaries:*** PubS-2010 Survivor mortality, projected 5 years past the valuation date with Scale MP-2019. ***Disabled Lives:*** PubS-2010 Disabled mortality, projected 5 years past the valuation date with Scale MP-2019. The mortality assumptions sufficiently accommodate anticipated future mortality improvements.
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	Tier 1: 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. Tier 2: 1.25% per year after the later of attainment of age 60 or first anniversary of retirement.

Salary Increases	See table below. This is based on a 2017 experience study performed for the State of Illinois Department of Insurance.

Salary Scale	
Service	Rate
0	11.00%
1	10.75%
2	8.75%
3	8.50%
4	7.00%
5	6.25%
6	5.25%
7	4.25%
8 - 16	4.00%
17 - 32	3.75%
32+	3.50%

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 Percentage of Payroll method over a period ending in 2040. The initial amortization amount is 100% of the Accrued Liability less the Actuarial Value of Assets.
Payroll Growth	3.50% 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.

- Payroll Growth: The plan's payroll growth assumption, if one is used, causes a predictable annual increase in the plan's amortization payment in order to produce an amortization payment that remains constant as a percentage of payroll if all assumptions are realized. If payroll does not increase according to the plan's payroll growth assumption, the plan's amortization payment can increase significantly as a percentage of payroll even if all assumptions other than the payroll growth assumption are realized.

- 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 stayed about the same from January 1, 2017 to January 1, 2020, indicating that the plan's maturity level has not significantly changed during the period.

- 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 56.2%. With a plan of this maturity, losses due to lower than expected investment returns or demographic factors can be made up over a longer time horizon than would be needed for a more mature plan.

- The Funded Ratio, determined as the ratio of the Actuarial Value of Assets to the Total Accrued Liability, has decreased from 64.4% on January 1, 2017 to 58.7% on January 1, 2020, due mainly to assumption changes and unfavorable plan experience. If the contribution deficit continues, the funded ratio will continue to decrease even if all assumptions are met.

- 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 -1.3% 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

	1/1/2017	1/1/2018	1/1/2019	1/1/2020
Support Ratio				
Total Actives	19	18	19	19
Total Inactives	19	19	19	19
Actives / Inactives	100.0%	94.7%	100.0%	100.0%
Asset Volatility Ratio				
Market Value of Assets (MVA)	10,384,619	11,278,351	10,474,205	12,094,641
Total Annual Payroll	1,400,253	1,398,738	1,504,844	1,536,261
MVA / Total Annual Payroll	741.6%	806.3%	696.0%	787.3%
Accrued Liability (AL) Ratio				
Inactive Accrued Liability	11,159,417	11,164,638	11,557,073	11,445,486
Total Accrued Liability	17,600,771	18,010,948	19,531,999	20,348,536
Inactive AL / Total AL	63.4%	62.0%	59.2%	56.2%
Funded Ratio				
Actuarial Value of Assets (AVA)	11,329,782	11,491,222	11,586,805	11,937,971
Total Accrued Liability	17,600,771	18,010,948	19,531,999	20,348,536
AVA / Total Accrued Liability	64.4%	63.8%	59.3%	58.7%
Net Cash Flow Ratio				
Net Cash Flow [1]	(104,371)	(308,339)	(202,081)	(154,591)
Market Value of Assets (MVA)	10,384,619	11,278,351	10,474,205	12,094,641
Ratio	-1.0%	-2.7%	-1.9%	-1.3%

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

STATEMENT OF FIDUCIARY NET POSITION
December 31, 2019

ASSETS	MARKET VALUE
Cash and Cash Equivalents:	
Cash and Short-Term Investments	527,090
Total Cash and Equivalents	527,090
Receivables:	
Accrued Past Due Interest	34,152
Total Receivable	34,152
Investments:	
Municipal Bonds	10,128
Corporate Bonds	1,783,129
U.S. Gov't and Agency Obligations	2,156,729
Stocks	6,634,869
Mutual Funds	948,544
Total Investments	11,533,399
Total Assets	12,094,641
LIABILITIES	
Total Liabilities	0
Net Assets:	
Active and Retired Members' Equity	12,094,641
NET POSITION RESTRICTED FOR PENSIONS	12,094,641
TOTAL LIABILITIES AND NET ASSETS	12,094,641

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

<u>ADDITIONS</u>		
Contributions:		
Member	152,182	
City	613,234	
Total Contributions		765,416
Investment Income:		
Unrealized Gain (Loss)	1,375,001	
Net Increase in Fair Value of Investments		1,375,001
Interest & Dividends		428,304
Less Investment Expense [1]		(28,278)
Net Investment Income		1,775,027
Total Additions		2,540,443
<u>DEDUCTIONS</u>		
Distributions to Members:		
Benefit Payments	897,669	
Total Distributions		897,669
Administrative Expenses		22,338
Total Deductions		920,007
Net Increase in Net Position		1,620,436
NET POSITION RESTRICTED FOR PENSIONS		
Beginning of the Year		10,474,205
End of the Year		12,094,641

[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.

Gains/(Losses) Not Yet Recognized

Plan Year		Amounts Not Yet Recognized by Valuation Year				
Ending	Gain/(Loss)	2020	2021	2022	2023	2024
4/30/2016	(1,000,146)	(66,676)	0	0	0	0
12/31/2016	(126,760)	(25,352)	0	0	0	0
12/31/2017	510,073	204,029	102,015	0	0	0
12/31/2018	(1,356,533)	(813,920)	(542,613)	(271,307)	0	0
12/31/2019	1,073,236	858,589	643,942	429,294	214,647	0
Total		156,670	203,344	157,987	214,647	0

Development of Investment Gain/Loss

Market Value of Assets, 12/31/2018	10,474,205
Contributions Less Benefit Payments & Administrative Expenses	(154,591)
Expected Investment Earnings[1]	701,791
Actual Net Investment Earnings	1,775,027
2019 Actuarial Investment Gain/(Loss)	1,073,236

[1] Expected Investment Earnings = 6.75% x (10,474,205 + 0.5 x -154,591)

Development of Actuarial Value of Assets

Market Value of Assets, 12/31/2019	12,094,641
(Gains)/Losses Not Yet Recognized	(156,670)
Actuarial Value of Assets, 12/31/2019	11,937,971
(A) 12/31/2018 Actuarial Assets:	11,586,805
(I) Net Investment Income:	
1. Interest and Dividends	428,304
2. Realized Gains (Losses)	0
3. Change in Actuarial Value	105,731
4. Investment Expenses	(28,278)
Total	505,757
(B) 12/31/2019 Actuarial Assets:	11,937,971
Actuarial Asset Rate of Return = (2 x I) / (A + B - I):	4.39%
Market Value of Assets Rate of Return:	17.07%
12/31/2019 Limited Actuarial Assets:	11,937,971
Actuarial Gain/(Loss) due to Investment Return (Actuarial Asset Basis)	(271,135)

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

INCOME		
Contributions:		
Member	152,182	
City	613,234	
Total Contributions		765,416
Earnings from Investments		
Interest & Dividends	428,304	
Change in Actuarial Value	105,731	
Total Earnings and Investment Gains		534,035
EXPENSES		
Administrative Expenses:		
Investment Related[1]	28,278	
Other	22,338	
Total Administrative Expenses		50,616
Distributions to Members:		
Benefit Payments	897,669	
Total Distributions		897,669
Change in Net Assets for the Year		351,166
Net Assets Beginning of the Year		11,586,805
Net Assets End of the Year[2]		11,937,971

[1] Investment Related expenses include investment advisory, custodial and performance monitoring fees.
[2] Net Assets may be limited for actuarial consideration.

STATISTICAL DATA

	1/1/2017	1/1/2018	1/1/2019	1/1/2020
Actives - Tier 1				
Number	16	15	16	16
Average Current Age	40.7	42.3	42.7	43.7
Average Age at Employment	27.3	27.7	27.8	27.3
Average Past Service	13.4	14.6	14.9	16.4
Average Annual Salary	$76,808	$80,870	$82,021	$83,758
Actives - Tier 2				
Number	3	3	3	3
Average Current Age	31.6	32.6	37.1	38.1
Average Age at Employment	28.6	28.6	33.4	33.1
Average Past Service	3.0	4.0	3.7	5.0
Average Annual Salary	$57,110	$61,894	$64,168	$65,378
Service Retirees				
Number	11	11	11	11
Average Current Age	66.7	67.7	68.7	69.7
Average Annual Benefit	$50,109	$51,475	$52,882	$54,569
Beneficiaries				
Number	7	7	7	7
Average Current Age	67.3	68.3	69.3	70.3
Average Annual Benefit	$42,487	$42,487	$42,487	$42,487
Disability Retirees				
Number	0	0	0	0
Average Current Age	N/A	N/A	N/A	N/A
Average Annual Benefit	N/A	N/A	N/A	N/A
Terminated Vested				
Number	1	1	1	1
Average Current Age	40.6	41.6	42.6	43.6
Average Annual Benefit [1]	N/A	N/A	N/A	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	0	0	0	0	0	0	0	0	0	0	0	0
30 - 34	0	0	0	0	1	1	1	0	0	0	0	3
35 - 39	0	0	0	0	0	1	3	0	0	0	0	4
40 - 44	0	0	0	0	0	0	0	1	1	0	0	2
45 - 49	0	1	0	0	0	0	0	5	2	0	0	8
50 - 54	0	0	0	0	0	0	0	1	0	0	0	1
55 - 59	0	0	0	0	0	0	0	0	1	0	0	1
60 - 64	0	0	0	0	0	0	0	0	0	0	0	0
65+	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	2	4	7	4	0	0	19

VALUATION PARTICIPANT RECONCILIATION

1. Active lives

a. Number in prior valuation 1/1/2019	19
b. Terminations	
i. Vested (partial or full) with deferred benefits	0
ii. Non-vested or full lump sum distribution received	0
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	0
f. Continuing participants	19
g. New entrants	0
h. Total active life participants in valuation	19

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

	Service Retirees, Vested Receiving Benefits	Receiving Death Benefits	Receiving Disability Benefits	Vested Deferred	Total
a. Number prior valuation	11	7	0	1	19
Retired	0	0	0	0	0
Vested Deferred	0	0	0	0	0
Death, With Survivor	0	0	0	0	0
Death, No Survivor	0	0	0	0	0
Disabled	0	0	0	0	0
Refund of Contributions	0	0	0	0	0
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	0	0
b. Number current valuation	11	7	0	1	19

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: 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: 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.