

CITY OF EVANSTON
POLICE PENSION FUND
ACTUARIAL VALUATION
AS OF JANUARY 1, 2022
CONTRIBUTIONS APPLICABLE TO THE
PLAN/FISCAL YEAR ENDING DECEMBER 31, 2023



FOSTER & FOSTER
ACTUARIES AND CONSULTANTS



August 26, 2022

Board of Trustees
City of Evanston Police Pension Fund

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 funding 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. Use of the results for other purposes may not be applicable and could produce significantly different results.

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.

The funding percentages and unfunded accrued liability as measured based on the actuarial value of assets will differ from similar measures based on the market value of assets. These measures, as provided, are appropriate for determining the adequacy of future contributions, but may not be appropriate for the purpose of settling a portion or all of its liabilities.

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.

In performing the analysis, we used third-party software to model (calculate) the underlying liabilities and costs. These results are reviewed in the aggregate and for individual sample lives. The output from the software is either used directly or input into internally developed models to generate the costs. All internally developed models are reviewed as part of the process. As a result of this review, we believe that the models have produced reasonable results. We do not believe there are any material inconsistencies among assumptions or unreasonable output produced due to the aggregation of assumptions.

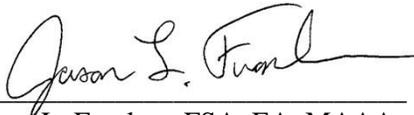
The undersigned are familiar with the immediate and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the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

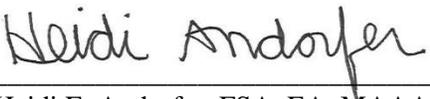
To our knowledge, no associate of Foster & Foster, Inc. working on valuations of the program has any direct financial interest or indirect material interest in the City of Evanston, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the City of Evanston Police Pension 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: 
Jason L. Franken, FSA, EA, MAAA

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, 2022, 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, 2023.

The contribution requirements, compared with those set forth in the January 1, 2021 actuarial report, are as follows:

Valuation Date Applicable to Fiscal Year Ending	1/1/2022 <u>12/31/2023</u>	1/1/2021 <u>12/31/2022</u>
Total Recommended Contribution	\$12,942,345	\$13,471,524
% of Projected Annual Payroll	92.0%	89.0%
Member Contributions (Est.)	(1,393,863)	(1,499,911)
% of Projected Annual Payroll	(9.9%)	(9.9%)
City Recommended Contribution	11,548,482	11,971,613
% of Projected Annual Payroll	82.1%	79.1%

As you can see, the Total Recommended Contribution shows a decrease when compared to the results determined in the January 1, 2021 actuarial valuation report. The decrease is attributable to favorable plan experience and a decrease in active membership. The decrease was offset in part by changes in actuarial assumptions.

Plan experience was favorable overall on the basis of the plan's actuarial assumptions. Sources of favorable experience included an investment return of 12.38% (Actuarial Asset Basis) which exceeded the 6.25% assumption and more turnover than expected. These gains were offset in part by losses associated with lower than expected inactive mortality and more retirements than expected.

CHANGES SINCE PRIOR VALUATION

Plan Changes Since Prior Valuation

There were no plan changes since the prior valuation.

Actuarial Assumption/Method Changes Since Prior Valuation

Based on the results of the 2022 experience study performed for the Fund, the following assumption changes were made:

- Updated mortality, retirement, disability, and termination rate tables.
- Updated assumed salary increase rates.

There were no method changes since the prior valuation.

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

	New Assump <u>1/1/2022</u>	Old Assump <u>1/1/2022</u>	<u>1/1/2021</u>
A. Participant Data			
Number Included			
Actives	132	132	146
Service Retirees	149	149	142
Beneficiaries	29	29	32
Disability Retirees	18	18	18
Terminated Vested	<u>23</u>	<u>23</u>	<u>18</u>
Total	351	351	356
Total Annual Payroll	\$14,065,216	\$14,065,216	\$15,135,330
Payroll Under Assumed Ret. Age	14,065,216	14,065,216	15,135,330
Annual Rate of Payments to:			
Service Retirees	12,051,030	12,051,030	11,264,177
Beneficiaries	1,428,594	1,428,594	1,472,298
Disability Retirees	859,401	859,401	847,436
Terminated Vested	268,263	268,263	158,267
B. Assets			
Actuarial Value	159,419,588	159,419,588	143,692,247
Market Value	182,575,170	182,575,170	158,136,437
C. Liabilities			
Present Value of Benefits			
Actives			
Retirement Benefits	102,023,289	101,163,065	105,704,540
Disability Benefits	7,259,480	8,481,839	8,992,462
Death Benefits	844,105	1,141,312	1,288,474
Vested Benefits	6,072,605	6,275,290	7,336,981
Service Retirees	171,397,852	170,671,629	160,677,606
Beneficiaries	12,188,007	12,306,461	12,754,948
Disability Retirees	12,554,109	12,218,420	12,207,344
Terminated Vested	<u>3,847,774</u>	<u>3,758,456</u>	<u>2,049,394</u>
Total	316,187,221	316,016,472	311,011,749

C. Liabilities - (Continued)	New Assump <u>1/1/2022</u>	Old Assump <u>1/1/2022</u>	<u>1/1/2021</u>
Present Value of Future Salaries	125,972,477	139,821,815	155,041,102
Present Value of Future Member Contributions	12,483,872	13,856,342	15,364,573
Normal Cost (Retirement)	2,858,785	2,884,804	3,072,771
Normal Cost (Disability)	463,454	496,988	524,664
Normal Cost (Death)	47,519	61,599	69,012
Normal Cost (Vesting)	<u>354,728</u>	<u>337,836</u>	<u>395,608</u>
Total Normal Cost	3,724,486	3,781,227	4,062,055
Present Value of Future Normal Costs	30,392,768	34,032,646	37,878,874
Accrued Liability (Retirement)	78,101,546	74,418,681	76,241,193
Accrued Liability (Disability)	3,305,923	3,819,430	3,860,651
Accrued Liability (Death)	408,296	537,699	611,129
Accrued Liability (Vesting)	3,990,946	4,253,050	4,730,610
Accrued Liability (Inactives)	<u>199,987,742</u>	<u>198,954,966</u>	<u>187,689,292</u>
Total Actuarial Accrued Liability	285,794,453	281,983,826	273,132,875
Unfunded Actuarial Accrued Liability (UAAL)	126,374,865	122,564,238	129,440,628
Funded Ratio (AVA / AL)	55.8%	56.5%	52.6%

	New Assump <u>1/1/2022</u>	Old Assump <u>1/1/2022</u>	<u>1/1/2021</u>
D. Actuarial Present Value of Accrued Benefits			
Vested Accrued Benefits			
Inactives	199,987,742	198,954,966	187,689,292
Actives	24,394,554	20,891,976	21,399,097
Member Contributions	<u>14,792,536</u>	<u>14,792,536</u>	<u>15,540,252</u>
Total	239,174,832	234,639,478	224,628,641
Non-vested Accrued Benefits	<u>7,129,201</u>	<u>5,714,051</u>	<u>7,191,468</u>
Total Present Value Accrued Benefits	246,304,033	240,353,529	231,820,109
Funded Ratio (MVA / PVAB)	74.1%	76.0%	68.2%
Increase (Decrease) in Present Value of Accrued Benefits Attributable to:			
Plan Amendments	0	0	
Assumption Changes	5,950,504	0	
Plan Experience	0	9,435,495	
Benefits Paid	0	(14,924,443)	
Interest	0	14,022,368	
Other	<u>0</u>	<u>0</u>	
Total	5,950,504	8,533,420	

	New Assump	Old Assump	
Valuation Date	1/1/2022	1/1/2022	1/1/2021
Applicable to Fiscal Year Ending	<u>12/31/2023</u>	<u>12/31/2023</u>	<u>12/31/2022</u>

E. Pension Cost

Normal Cost ¹	\$3,957,266	\$4,017,554	\$4,315,933
% of Total Annual Payroll ¹	28.1	28.6	28.5
Administrative Expenses ¹	48,495	48,495	70,111
% of Total Annual Payroll ¹	0.3	0.3	0.5
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 19 years (as of 1/1/2022) ¹	8,936,584	8,623,189	9,085,480
% of Total Annual Payroll ¹	63.6	61.3	60.0
Total Recommended Contribution	12,942,345	12,689,238	13,471,524
% of Total Annual Payroll ¹	92.0	90.2	89.0
Expected Member Contributions ¹	(1,393,863)	(1,393,863)	(1,499,911)
% of Total Annual Payroll ¹	(9.9)	(9.9)	(9.9)
Expected City Contribution	11,548,482	11,295,375	11,971,613
% of Total Annual Payroll ¹	82.1	80.3	79.1

F. Past Contributions

Plan Years Ending:	<u>12/31/2021</u>
Total Recommended Contribution	13,700,383
City	12,177,042
Actual Contributions Made:	
Members (excluding buyback)	1,523,341
City	<u>11,501,791</u>
Total	13,025,132

G. Net Actuarial (Gain)/Loss (5,895,534)

¹ Contributions developed as of 1/1/2022 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</u> ¹
2022	97,795,420
2023	94,971,049
2024	91,970,155
2028	77,970,089
2033	54,949,410
2037	30,789,767
2041	0

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

I. (i) 5 Year Comparison of Actual and Assumed Salary Increases

		<u>Actual</u>	<u>Assumed</u>
Year Ended	12/31/2021	4.09%	4.19%
Year Ended	12/31/2020	3.87%	4.30%
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) 5 Year Comparison of Investment Return on Actuarial Value

		<u>Actual MVA</u>	<u>Actual AVA</u>	<u>Assumed</u>
Year Ended	12/31/2021	16.79%	12.38%	6.25%
Year Ended	12/31/2020	12.53%	10.40%	6.25%
Year Ended	12/31/2019	21.49%	7.44%	6.25%
Year Ended	12/31/2018	-4.04%	5.53%	6.25%
Year Ended	12/31/2017	14.34%	8.22%	6.25%

DEVELOPMENT OF JANUARY 1, 2022 AMORTIZATION PAYMENT

(1)	Unfunded Actuarial Accrued Liability as of January 1, 2021	\$129,440,628
(2)	Sponsor Normal Cost developed as of January 1, 2021	2,562,144
(3)	Expected administrative expenses for the year ended December 31, 2021	65,987
(4)	Expected interest on (1), (2) and (3)	8,252,235
(5)	Sponsor contributions to the System during the year ended December 31, 2021	11,501,791
(6)	Expected interest on (5)	359,431
(7)	Expected Unfunded Actuarial Accrued Liability as of December 31, 2021, (1)+(2)+(3)+(4)-(5)-(6)	128,459,772
(8)	Change to UAAL due to Assumption Change	3,810,627
(9)	Change to UAAL due to Actuarial (Gain)/Loss	(5,895,534)
(10)	Unfunded Accrued Liability as of January 1, 2022	126,374,865
(11)	UAAL Subject to Amortization (90% AAL less Actuarial Assets)	97,795,420

<u>Date</u> <u>Established</u>	<u>Years</u> <u>Remaining</u>	<u>1/1/2022</u> <u>Amount</u>	<u>Amortization</u> <u>Amount</u>
1/1/2022	19	97,795,420	8,410,903

DETAILED ACTUARIAL (GAIN)/LOSS ANALYSIS

(1) Unfunded Actuarial Accrued Liability (UAAL) as of January 1, 2021	\$129,440,628
(2) Expected UAAL as of January 1, 2022	128,459,772
(3) Summary of Actuarial (Gain)/Loss, by component:	
Investment Return (Actuarial Asset Basis)	(8,752,308)
Salary Increases	(372,068)
Active Decrements	(705,491)
Inactive Mortality	1,570,251
Other	<u>2,364,082</u>
Change in UAAL due to (Gain)/Loss	(5,895,534)
Change to UAAL due to Assumption Change	<u>3,810,627</u>
(4) Actual UAAL as of January 1, 2022	\$126,374,865

RECONCILIATION OF CHANGES IN CONTRIBUTION REQUIREMENT

(1) Contribution Determined as of January 1, 2021	\$ 11,971,613
(2) Summary of Contribution Impact by component:	
Change in Normal Cost	(298,379)
Change in Assumed Administrative Expense	(21,616)
Investment Return (Actuarial Asset Basis)	(618,918)
Salary Increases	(26,311)
New Entrants	2,793
Active Decrements	(49,889)
Inactive Mortality	111,040
Contributions (More) or Less than Recommended	70,496
Increase in Amortization Payment Due to Payroll Growth Assumption	-
Change in Expected Member Contributions	106,048
Assumption Change	253,107
Other	48,498
Total Change in Contribution	(423,131)
(3) Contribution Determined as of January 1, 2022	\$11,548,482

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.

	New Assump	Old Assump	
Valuation Date	1/1/2022	1/1/2022	1/1/2021
Applicable to Fiscal Year Ending	<u>12/31/2023</u>	<u>12/31/2023</u>	<u>12/31/2022</u>
Actuarial Accrued Liability (PUC)	274,598,279	271,236,202	263,030,759
Actuarial Value of Assets	<u>159,419,588</u>	<u>159,419,588</u>	<u>143,692,247</u>
Unfunded Actuarial Accrued Liability (UAAL)	115,178,691	111,816,614	119,338,512
UAAL Subject to Amortization	87,718,863	84,692,994	93,035,436
Normal Cost ¹	\$4,875,572	\$4,817,770	\$5,026,920
% of Total Annual Payroll ¹	34.7	34.3	33.2
Administrative Expenses ¹	48,495	48,495	70,111
% of Total Annual Payroll ¹	0.3	0.3	0.5
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 19 years (as of 1/1/2022) ¹	6,394,771	5,935,396	6,268,813
% of Total Annual Payroll ¹	45.5	42.2	41.4
Total Required Contribution	11,318,838	10,801,661	11,365,844
% of Total Annual Payroll ¹	80.5	76.8	75.1
Expected Member Contributions ¹	(1,393,863)	(1,393,863)	(1,499,911)
% of Total Annual Payroll ¹	(9.9)	(9.9)	(9.9)
Expected City Contribution	9,924,975	9,407,798	9,865,933
% of Total Annual Payroll ¹	70.6	66.9	65.2
Assumptions and Methods:			
Actuarial Cost Method	Projected Unit Credit		
Amortization Method	90% Funding by 2040		
Payroll Growth Assumption	3.00% (previously 3.50%)		

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

¹ Contributions developed as of 1/1/2022 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
2022	222,565	14,490,880	14,713,445
2023	528,321	14,463,329	14,991,650
2024	854,325	14,630,706	15,485,031
2025	1,212,225	14,790,393	16,002,618
2026	1,615,781	14,921,873	16,537,654
2027	2,077,424	15,017,093	17,094,517
2028	2,589,598	15,076,772	17,666,370
2029	3,138,160	15,110,836	18,248,996
2030	3,755,561	15,135,935	18,891,496
2031	4,480,822	15,093,043	19,573,865
2032	5,199,686	15,014,165	20,213,851
2033	5,956,995	14,915,653	20,872,648
2034	6,745,033	14,789,504	21,534,537
2035	7,498,396	14,592,718	22,091,114
2036	8,205,792	14,382,368	22,588,160
2037	8,879,987	14,101,298	22,981,285
2038	9,532,179	13,778,289	23,310,468
2039	10,171,207	13,414,825	23,586,032
2040	10,798,406	13,013,485	23,811,891
2041	11,407,633	12,597,168	24,004,801
2042	12,036,576	12,132,204	24,168,780
2043	12,655,160	11,667,881	24,323,041
2044	13,328,938	11,190,141	24,519,079
2045	13,977,859	10,669,952	24,647,811
2046	14,661,001	10,141,652	24,802,653
2047	15,215,486	9,610,198	24,825,684
2048	15,721,333	9,079,780	24,801,113
2049	16,135,365	8,553,734	24,689,099
2050	16,524,300	8,034,643	24,558,943
2051	16,872,655	7,524,269	24,396,924
2052	17,195,166	7,023,688	24,218,854
2053	17,490,061	6,533,349	24,023,410
2054	17,750,195	6,053,395	23,803,590
2055	17,970,127	5,584,048	23,554,175
2056	18,150,641	5,125,586	23,276,227
2057	18,287,532	4,678,459	22,965,991
2058	18,383,947	4,243,584	22,627,531
2059	18,429,533	3,822,380	22,251,913
2060	18,427,500	3,416,709	21,844,209
2061	18,368,996	3,029,000	21,397,996

ACTUARIAL ASSUMPTIONS AND METHODS

Interest Rate	6.25% per year compounded annually, net of investment related expenses.
Mortality Rate	<p>Active Lives: PubS-2010 Employee mortality, unadjusted, with generational improvements with most recent projection scale (currently Scale MP-2021). 10% of active deaths are assumed to be in the line of duty.</p> <p>Inactive Lives: PubS-2010 Healthy Retiree mortality, adjusted by a factor of 1.15 for male retirees and unadjusted for female retirees, with generational improvements with most recent projection scale (currently Scale MP-2021).</p> <p>Beneficiaries: PubS-2010 Survivor mortality, unadjusted for male beneficiaries and adjusted by a factor of 1.15 for female beneficiaries, with generational improvements with most recent projection scale (currently Scale MP-2021).</p> <p>Disabled Lives: PubS-2010 Disabled mortality, adjusted by a factor of 1.08 for male disabled members and unadjusted for female disabled members, with generational improvements with most recent projection scale (currently Scale MP-2021).</p> <p>The mortality assumptions sufficiently accommodate anticipated future mortality improvements.</p>
Retirement Age	See table at end of this section. This is based on a 2022 experience study performed using actual Evanston Police experience.
Disability Rate	See table at end of this section. 60% of the disabilities are assumed to be in the line of duty. This is based on a 2022 experience study performed for the Illinois Police Officers' Pension Investment Fund.
Termination Rate	See table at end of this section. This is based on a 2022 experience study performed using actual Evanston Police experience.

Salary Increases

See table below. This is based on a 2022 experience study performed using actual Evanston Police experience.

Salary Scale	
Service	Rate
0	9.00%
1	8.00%
2	7.00%
3	6.50%
4	6.00%
5	5.00%
6 - 9	4.00%
10 - 17	3.50%
18+	3.00%

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.

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. 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.

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

None.

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)	
Service	Rate	Age	Rate	Age	Rate	Age	Rate
0	15.00%	20	0.000%	50	25%	50 - 54	5%
1	10.00%	25	0.029%	51	15%	55	25%
2 - 4	5.00%	30	0.133%	52	20%	56	60%
5 - 7	4.00%	35	0.247%	53	50%	57 - 64	25%
8 - 13	3.00%	40	0.399%	54	20%	65 - 66	40%
14 - 16	2.00%	45	0.561%	55	25%	67+	100%
17 - 20	1.50%	50	0.675%	56	60%		
21+	1.25%	55	0.855%	57 - 64	25%		
		60	1.093%	65 - 66	40%		
				67+	100%		

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.

Accrued Actuarial Liability is determined according to the plan's actuarial cost method. This amount represents the portion of the anticipated future benefits allocated to years prior to the valuation date.

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

Market Value of Assets is the fair market value of plan assets as of the valuation date. This amount may be adjusted to produce an Actuarial Value of Assets for plan funding purposes.

Actuarial Value of Assets is the asset value used in the valuation to determine contribution requirements. It represents the plan's Market Value of Assets, with adjustments according to the Actuarial Asset Method. These adjustments produce a "smoothed" value that is likely to be less volatile from year to year than the Market Value of Assets.

Unfunded Accrued Liability is the excess of the Accrued Actuarial Liability over the Actuarial Value of Assets.

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.
- (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 decreased from 77.8% on January 1, 2019 to 60.3% on January 1, 2022, 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 70.0%. 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 48.5% on January 1, 2019 to 55.8% on January 1, 2022, due mainly to favorable plan experience.
- 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, decreased from 0.0% on January 1, 2019 to -1.1% on January 1, 2022. The current Net Cash Flow Ratio of -1.1% 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>1/1/2022</u>	<u>1/1/2021</u>	<u>1/1/2020</u>	<u>1/1/2019</u>
<u>Support Ratio</u>				
Total Actives	132	146	155	158
Total Inactives	219	210	202	203
Actives / Inactives	60.3%	69.5%	76.7%	77.8%

Asset Volatility Ratio

Market Value of Assets (MVA)	182,575,170	158,136,437	141,309,841	116,755,057
Total Annual Payroll	14,065,216	15,135,330	15,720,848	15,747,659
MVA / Total Annual Payroll	1,298.1%	1,044.8%	898.9%	741.4%

Accrued Liability (AL) Ratio

Inactive Accrued Liability	199,987,742	187,689,292	173,849,068	169,488,430
Total Accrued Liability	285,794,453	273,132,875	263,181,756	252,477,972
Inactive AL / Total AL	70.0%	68.7%	66.1%	67.1%

Funded Ratio

Actuarial Value of Assets (AVA)	159,419,588	143,692,247	130,942,778	122,344,568
Total Accrued Liability	285,794,453	273,132,875	263,181,756	252,477,972
AVA / Total Accrued Liability	55.8%	52.6%	49.8%	48.5%

Net Cash Flow Ratio

Net Cash Flow ¹	(1,944,953)	(821,224)	(488,808)	36,443
Market Value of Assets (MVA)	182,575,170	158,136,437	141,309,841	116,755,057
Ratio	-1.1%	-0.5%	-0.3%	0.0%

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

STATEMENT OF FIDUCIARY NET POSITION
December 31, 2021

<u>ASSETS</u>	MARKET VALUE
Cash and Cash Equivalents:	
Checking Account	1,217,794
Money Market	7,646,913
Total Cash and Equivalents	8,864,707
Receivables:	
From City	52,870
Accrued Past Due Interest	268,538
Total Receivable	321,408
Investments:	
Corporate Bonds	16,590,230
U.S. Gov't and Agency Obligations	28,796,368
Insurance Company Contracts	1,308,489
Stocks	52,796,393
Mutual Funds	73,897,575
Total Investments	173,389,055
Total Assets	182,575,170
<u>LIABILITIES</u>	
Total Liabilities	0
Net Assets:	
Active and Retired Members' Equity	182,575,170
NET POSITION RESTRICTED FOR PENSIONS	182,575,170
TOTAL LIABILITIES AND NET ASSETS	182,575,170

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
 FOR THE YEAR ENDED December 31, 2021
 Market Value Basis

ADDITIONS

Contributions:

Member	1,523,341
City	11,501,791

Total Contributions 13,025,132

Investment Income:

Net Realized Gain (Loss)	3,978,776	
Unrealized Gain (Loss)	18,688,945	
Net Increase in Fair Value of Investments		22,667,721
Interest & Dividends		4,062,855
Less Investment Expense ¹		(346,890)

Net Investment Income 26,383,686

Total Additions 39,408,818

DEDUCTIONS

Distributions to Members:

Benefit Payments	14,175,234
Refund of Contributions/Transfers	749,209

Total Distributions 14,924,443

Administrative Expenses 45,642

Total Deductions 14,970,085

Net Increase in Net Position 24,438,733

NET POSITION RESTRICTED FOR PENSIONS

Beginning of the Year 158,136,437

End of the Year 182,575,170

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

ACTUARIAL ASSET VALUATION
December 31, 2021

Development of Actuarial Value of Assets

Market Value of Assets, 12/31/2021	182,575,170
(Gains)/Losses Not Yet Recognized	<u>(23,155,582)</u>
Actuarial Value of Assets, 12/31/2021	159,419,588
12/31/2021 Limited Actuarial Assets:	159,419,588

Development of Investment Gain/Loss

Market Value of Assets, 12/31/2020	158,136,437
Contributions Less Benefit Payments & Administrative Expenses	(1,944,953)
Expected Investment Earnings ¹	9,822,748
Actual Net Investment Earnings	<u>26,383,686</u>
2021 Actuarial Investment Gain/(Loss)	16,560,938

¹ Expected Investment Earnings = 6.25% x (158,136,437 + 0.5 x -1,944,953)

Gains/(Losses) Not Yet Recognized

Plan Year Ending	Gain/(Loss)	Amounts Not Yet Recognized by Valuation Year				
		2021	2022	2023	2024	2025
12/31/2018	(12,514,046)	(2,502,809)	0	0	0	0
12/31/2019	17,761,676	7,104,670	3,552,335	0	0	0
12/31/2020	8,841,618	5,304,971	3,536,647	1,768,324	0	0
12/31/2021	16,560,938	13,248,750	9,936,563	6,624,375	3,312,188	0
Total		23,155,582	17,025,545	8,392,699	3,312,188	0

Development of Asset Returns

(A) 12/31/2020 Actuarial Assets:	143,692,247
(I) Net Investment Income:	
1. Interest and Dividends	4,062,855
2. Realized Gains (Losses)	3,978,776
3. Change in Actuarial Value	9,977,553
4. Investment Expenses	<u>(346,890)</u>
Total	17,672,294
(B) 12/31/2021 Actuarial Assets:	159,419,588
Actuarial Asset Rate of Return = (2 x I) / (A + B - I):	12.38%
Market Value of Assets Rate of Return:	16.79%
Actuarial Gain/(Loss) due to Investment Return (Actuarial Asset Basis)	8,752,308

CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS
December 31, 2021
Actuarial Asset Basis

INCOME		
Contributions:		
Member	1,523,341	
City	11,501,791	
Total Contributions		13,025,132
Earnings from Investments		
Interest & Dividends	4,062,855	
Net Realized Gain (Loss)	3,978,776	
Change in Actuarial Value	9,977,553	
Total Earnings and Investment Gains		18,019,184
EXPENSES		
Administrative Expenses:		
Investment Related ¹	346,890	
Other	45,642	
Total Administrative Expenses		392,532
Distributions to Members:		
Benefit Payments	14,175,234	
Refund of Contributions/Transfers	749,209	
Total Distributions		14,924,443
Change in Net Assets for the Year		15,727,341
Net Assets Beginning of the Year		143,692,247
Net Assets End of the Year ²		159,419,588

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

² Net Assets may be limited for actuarial consideration.

STATISTICAL DATA

	<u>1/1/2022</u>	<u>1/1/2021</u>	<u>1/1/2020</u>	<u>1/1/2019</u>
<u>Actives - Tier 1</u>				
Number	87	99	109	111
Average Current Age	44.7	44.5	44.2	43.7
Average Age at Employment	27.0	27.5	27.4	28.1
Average Past Service	17.7	17.0	16.8	15.6
Average Annual Salary	\$114,946	\$111,500	\$108,387	\$107,090
<u>Actives - Tier 2</u>				
Number	45	47	46	47
Average Current Age	34.3	33.5	32.8	32.1
Average Age at Employment	28.3	28.0	27.7	28.3
Average Past Service	6.0	5.5	5.1	3.8
Average Annual Salary	\$90,331	\$87,167	\$84,927	\$82,142
<u>Service Retirees</u>				
Number	149	142	138	137
Average Current Age	70.2	70.0	70.4	70.0
Average Annual Benefit	\$80,879	\$79,325	\$76,869	\$74,334
<u>Beneficiaries</u>				
Number	29	32	27	28
Average Current Age	76.1	77.0	77.8	78.4
Average Annual Benefit	\$49,262	\$46,009	\$42,750	\$37,595
<u>Disability Retirees</u>				
Number	18	18	18	18
Average Current Age	65.4	64.4	63.4	62.4
Average Annual Benefit	\$47,745	\$47,080	\$45,790	\$44,999
<u>Terminated Vested</u>				
Number	23	18	19	20
Average Current Age	41.6	43.4	41.0	41.3
Average Annual Benefit ¹	\$33,533	\$26,378	N/A	\$24,178

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	1	0	0	0	0	0	0	0	0	0	0	1
25 - 29	3	0	1	0	0	1	0	0	0	0	0	5
30 - 34	0	3	0	1	2	11	2	0	0	0	0	19
35 - 39	1	1	0	0	0	12	11	5	0	0	0	30
40 - 44	0	0	0	0	0	1	10	23	2	0	0	36
45 - 49	0	0	0	1	0	0	3	11	9	0	0	24
50 - 54	0	0	0	0	0	0	0	4	6	2	0	12
55 - 59	0	0	0	0	0	0	0	1	2	0	0	3
60 - 64	0	0	0	0	0	0	0	1	0	1	0	2
65+	0	0	0	0	0	0	0	0	0	0	0	0
Total	5	4	1	2	2	25	26	45	19	3	0	132

VALUATION PARTICIPANT RECONCILIATION

1. Active lives

a. Number in prior valuation 1/1/2021	146
b. Terminations	
i. Vested (partial or full) with deferred benefits	(9)
ii. Non-vested or full lump sum distribution received	(1)
iii. Transferred service to other fund	(2)
c. Deaths	
i. Beneficiary receiving benefits	0
ii. No future benefits payable	0
d. Disabled	0
e. Retired	<u>(7)</u>
f. Continuing participants	127
g. New entrants	<u>5</u>
h. Total active life participants in valuation	132

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	142	32	18	18	210
Retired	8	0	0	(1)	7
Vested Deferred	0	0	0	9	9
Death, With Survivor	0	0	0	0	0
Death, No Survivor	(1)	(3)	0	0	(4)
Disabled	0	0	0	0	0
Refund of Contributions	0	0	0	(2)	(2)
Transfer Service to New Fund	0	0	0	(1)	(1)
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	149	29	18	23	219

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 (4-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.