

CITY OF EVANSTON
POLICE PENSION FUND
ACTUARIAL VALUATION
AS OF JANUARY 1, 2023
CONTRIBUTIONS APPLICABLE TO THE
PLAN/FISCAL YEAR ENDING DECEMBER 31, 2024



FOSTER & FOSTER
ACTUARIES AND CONSULTANTS



August 28, 2023

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.

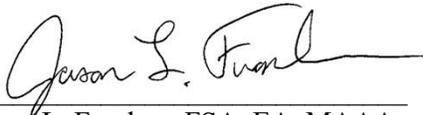
The undersigned are familiar with the immediate and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the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

JLF/lke
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, 2023, 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, 2024.

The contribution requirements, compared with those set forth in the January 1, 2022 actuarial report, are as follows:

Valuation Date	1/1/2023	1/1/2022
Applicable to Fiscal Year Ending	<u>12/31/2024</u>	<u>12/31/2023</u>
Total Recommended Contribution	\$14,620,908	\$12,942,345
% of Projected Annual Payroll	103.1%	92.0%
Member Contributions (Est.)	(1,405,907)	(1,393,863)
% of Projected Annual Payroll	(9.9%)	(9.9%)
City Recommended Contribution	13,215,001	11,548,482
% of Projected Annual Payroll	93.2%	82.1%

As you can see, the Total Recommended Contribution shows an increase when compared to the results determined in the January 1, 2022 actuarial valuation report. The increase is mainly attributable to a change in funding target from 90% to 100%. The increase was offset in part by a change in interest rate from 6.25% to 6.50% and favorable plan experience.

Plan experience was favorable overall on the basis of the plan's actuarial assumptions. Sources of favorable experience included higher than expected inactive mortality and more turnover than expected. There were no significant sources of unfavorable experience.

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

The valuation reflects the following assumption and method changes:

- The investment return assumption was increased from 6.25% to 6.50% per year compounded annually, net of investment related expenses.
- The Funding Policy Amortization Method was changed that the initial amortization amount is 100% of the Accrued Liability less the Actuarial Value of Assets.

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

	New Asmp/Mthd <u>1/1/2023</u>	Old Asmp/Mthd <u>1/1/2023</u>	<u>1/1/2022</u>
A. Participant Data			
Number Included			
Actives	130	130	132
Service Retirees	147	147	149
Beneficiaries	33	33	29
Disability Retirees	17	17	18
Terminated Vested	<u>22</u>	<u>22</u>	<u>23</u>
Total	349	349	351
Total Annual Payroll	\$14,186,746	\$14,186,746	\$14,065,216
Payroll Under Assumed Ret. Age	14,186,746	14,186,746	14,065,216
Annual Rate of Payments to:			
Service Retirees	12,195,459	12,195,459	12,051,030
Beneficiaries	1,661,694	1,661,694	1,428,594
Disability Retirees	847,713	847,713	859,401
Terminated Vested	215,697	215,697	268,263
B. Assets			
Actuarial Value	165,419,891	165,419,891	159,419,588
Market Value	150,950,058	150,950,058	182,575,170
C. Liabilities			
Present Value of Benefits			
Actives			
Retirement Benefits	99,077,399	104,806,226	102,023,289
Disability Benefits	6,805,582	7,165,582	7,259,480
Death Benefits	800,167	837,857	844,105
Vested Benefits	5,460,570	5,804,441	6,072,605
Service Retirees	167,383,223	171,642,167	171,397,852
Beneficiaries	13,531,666	13,754,636	12,188,007
Disability Retirees	11,202,762	11,486,444	12,554,109
Terminated Vested	<u>1,932,245</u>	<u>2,035,113</u>	<u>3,847,774</u>
Total	306,193,614	317,532,466	316,187,221

C. Liabilities - (Continued)	New Asmp/Mthd <u>1/1/2023</u>	Old Asmp/Mthd <u>1/1/2023</u>	<u>1/1/2022</u>
Present Value of Future Salaries	121,998,065	123,804,753	125,972,477
Present Value of Future Member Contributions	12,090,008	12,269,051	12,483,872
Normal Cost (Retirement)	2,639,236	2,841,671	2,858,785
Normal Cost (Disability)	445,649	468,135	463,454
Normal Cost (Death)	45,953	47,985	47,519
Normal Cost (Vesting)	<u>322,618</u>	<u>342,046</u>	<u>354,728</u>
Total Normal Cost	3,453,456	3,699,837	3,724,486
Present Value of Future Normal Costs	27,108,958	29,466,111	30,392,768
Accrued Liability (Retirement)	77,874,450	81,651,974	78,101,546
Accrued Liability (Disability)	3,131,554	3,250,698	3,305,923
Accrued Liability (Death)	383,121	395,724	408,296
Accrued Liability (Vesting)	3,645,635	3,849,599	3,990,946
Accrued Liability (Inactives)	<u>194,049,896</u>	<u>198,918,360</u>	<u>199,987,742</u>
Total Actuarial Accrued Liability	279,084,656	288,066,355	285,794,453
Unfunded Actuarial Accrued Liability (UAAL)	113,664,765	122,646,464	126,374,865
Funded Ratio (AVA / AL)	59.3%	57.4%	55.8%

	New Asmp/Mthd <u>1/1/2023</u>	Old Asmp/Mthd <u>1/1/2023</u>	<u>1/1/2022</u>
D. Actuarial Present Value of Accrued Benefits			
Vested Accrued Benefits			
Inactives	194,049,896	198,918,360	199,987,742
Actives	26,609,160	28,744,287	24,394,554
Member Contributions	<u>15,398,289</u>	<u>15,398,289</u>	<u>14,792,536</u>
Total	236,057,345	243,060,936	239,174,832
Non-vested Accrued Benefits	<u>5,751,505</u>	<u>5,986,746</u>	<u>7,129,201</u>
Total Present Value Accrued Benefits	241,808,850	249,047,682	246,304,033
Funded Ratio (MVA / PVAB)	62.4%	60.6%	74.1%
Increase (Decrease) in Present Value of Accrued Benefits Attributable to:			
Plan Amendments	0	0	
Assumption Changes	(7,238,832)	0	
Plan Experience	0	4,100,917	
Benefits Paid	0	(16,243,656)	
Interest	0	14,886,388	
Other	<u>0</u>	<u>0</u>	
Total	(7,238,832)	2,743,649	

Valuation Date	New Asmp/Mthd	Old Asmp/Mthd	
Applicable to Fiscal Year Ending	1/1/2023 <u>12/31/2024</u>	1/1/2023 <u>12/31/2024</u>	1/1/2022 <u>12/31/2023</u>
E. Pension Cost			
Normal Cost ¹	\$3,677,931	\$3,931,077	\$3,957,266
% of Total Annual Payroll ¹	25.9	27.7	28.1
Administrative Expenses ¹	47,685	47,573	48,495
% of Total Annual Payroll ¹	0.3	0.3	0.3
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 18 years (as of 1/1/2023) ¹	10,895,292	8,830,139	8,936,584
% of Total Annual Payroll ¹	76.9	62.3	63.6
Total Recommended Contribution	14,620,908	12,808,789	12,942,345
% of Total Annual Payroll ¹	103.1	90.3	92.0
Expected Member Contributions ¹	(1,405,907)	(1,405,907)	(1,393,863)
% of Total Annual Payroll ¹	(9.9)	(9.9)	(9.9)
Expected City Contribution	13,215,001	11,402,882	11,548,482
% of Total Annual Payroll ¹	93.2	80.4	82.1
F. Past Contributions			
Plan Years Ending:	<u>12/31/2022</u>		
Total Recommended Contribution	13,299,247		
City	11,971,613		
Actual Contributions Made:			
Members (excluding buyback)	1,327,634		
City	<u>11,405,076</u>		
Total	12,732,710		
G. Net Actuarial (Gain)/Loss	(2,388,700)		

¹ Contributions developed as of 1/1/2023 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>
2023	113,664,765
2024	110,157,683
2025	106,422,641
2029	88,891,694
2033	66,338,719
2037	37,325,076
2041	0

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

		<u>Actual</u>	<u>Assumed</u>
Year Ended	12/31/2022	4.43%	3.88%
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%

(ii) 5 Year Comparison of Investment Return on Actuarial Value

		<u>Actual MVA</u>	<u>Actual AVA</u>	<u>Assumed</u>
Year Ended	12/31/2022	-15.53%	6.06%	6.25%
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%

DEVELOPMENT OF JANUARY 1, 2023 AMORTIZATION PAYMENT

(1)	Unfunded Actuarial Accrued Liability as of January 1, 2022	\$126,374,865
(2)	Sponsor Normal Cost developed as of January 1, 2022	2,330,623
(3)	Expected administrative expenses for the year ended December 31, 2022	45,642
(4)	Expected interest on (1), (2) and (3)	8,045,519
(5)	Sponsor contributions to the System during the year ended December 31, 2022	11,405,076
(6)	Expected interest on (5)	356,409
(7)	Expected Unfunded Actuarial Accrued Liability as of December 31, 2022, (1)+(2)+(3)+(4)-(5)-(6)	125,035,164
(8)	Change to UAAL due to Assumption/Method Change	(8,981,699)
(9)	Change to UAAL due to Actuarial (Gain)/Loss	(2,388,700)
(10)	Unfunded Accrued Liability as of January 1, 2023	113,664,765
(11)	UAAL Subject to Amortization (100% AAL less Actuarial Assets)	113,664,765

<u>Date</u> <u>Established</u>	<u>Years</u> <u>Remaining</u>	<u>1/1/2023</u> <u>Amount</u>	<u>Amortization</u> <u>Amount</u>
1/1/2023	18	113,664,765	10,230,321

DETAILED ACTUARIAL (GAIN)/LOSS ANALYSIS

(1) Unfunded Actuarial Accrued Liability (UAAL) as of January 1, 2022	\$126,374,865
(2) Expected UAAL as of January 1, 2023	125,035,164
(3) Summary of Actuarial (Gain)/Loss, by component:	
Investment Return (Actuarial Asset Basis)	296,584
Salary Increases	719,086
Active Decrements	(1,740,395)
Inactive Mortality	(2,209,574)
Other	<u>545,599</u>
Change in UAAL due to (Gain)/Loss	(2,388,700)
Change to UAAL due to Assumption/Method Change	<u>(8,981,699)</u>
(4) Actual UAAL as of January 1, 2023	\$113,664,765

RECONCILIATION OF CHANGES IN CONTRIBUTION REQUIREMENT

(1) Contribution Determined as of January 1, 2022	\$ 11,548,482
(2) Summary of Contribution Impact by component:	
Change in Normal Cost	(26,189)
Change in Assumed Administrative Expense	(922)
Investment Return (Actuarial Asset Basis)	27,908
Salary Increases	67,665
New Entrants	7,171
Active Decrements	(163,768)
Inactive Mortality	(207,917)
Contributions (More) or Less than Recommended	54,976
Increase in Amortization Payment Due to Payroll Growth Assumption	-
Change in Expected Member Contributions	(12,044)
Assumption/Method Change	1,812,119
Other	<u>107,520</u>
Total Change in Contribution	1,666,519
(3) Contribution Determined as of January 1, 2023	\$13,215,001

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	New Asmp/Mthd	Old Asmp/Mthd	
	1/1/2023	1/1/2023	1/1/2022
Applicable to Fiscal Year Ending	<u>12/31/2024</u>	<u>12/31/2024</u>	<u>12/31/2023</u>
Actuarial Accrued Liability (PUC)	268,361,259	277,187,269	274,598,279
Actuarial Value of Assets	<u>165,419,891</u>	<u>165,419,891</u>	<u>159,419,588</u>
Unfunded Actuarial Accrued Liability (UAAL)	102,941,368	111,767,378	115,178,691
UAAL Subject to Amortization	76,105,242	84,048,651	87,718,863
Normal Cost ¹	\$4,721,320	\$4,977,896	\$4,875,572
% of Total Annual Payroll ¹	33.3	35.1	34.7
Administrative Expenses ¹	47,685	47,573	48,495
% of Total Annual Payroll ¹	0.3	0.3	0.3
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 18 years (as of 1/1/2023) ¹	7,295,038	7,908,809	6,394,771
% of Total Annual Payroll ¹	51.4	55.8	45.5
Total Required Contribution	12,064,043	12,934,278	11,318,838
% of Total Annual Payroll ¹	85.0	91.2	80.5
Expected Member Contributions ¹	(1,405,907)	(1,405,907)	(1,393,863)
% of Total Annual Payroll ¹	(9.9)	(9.9)	(9.9)
Expected City Contribution	10,658,136	11,528,371	9,924,975
% of Total Annual Payroll ¹	75.1	81.3	70.6

Assumptions and Methods:

Actuarial Cost Method	Projected Unit Credit
Amortization Method	90% Funding by 2040

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

¹ Contributions developed as of 1/1/2023 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
2023	226,665	14,750,263	14,976,928
2024	551,419	14,612,092	15,163,511
2025	916,208	14,740,524	15,656,732
2026	1,341,900	14,836,405	16,178,305
2027	1,809,913	14,914,693	16,724,606
2028	2,337,690	14,964,815	17,302,505
2029	2,898,188	14,993,347	17,891,535
2030	3,527,493	15,033,687	18,561,180
2031	4,257,731	15,011,009	19,268,740
2032	4,969,630	14,955,910	19,925,540
2033	5,742,486	14,883,423	20,625,909
2034	6,532,108	14,754,420	21,286,528
2035	7,289,860	14,583,949	21,873,809
2036	7,975,133	14,399,316	22,374,449
2037	8,623,599	14,142,703	22,766,302
2038	9,240,591	13,869,841	23,110,432
2039	9,819,401	13,554,310	23,373,711
2040	10,379,712	13,173,037	23,552,749
2041	10,924,877	12,800,604	23,725,481
2042	11,500,935	12,353,238	23,854,173
2043	12,077,896	11,906,238	23,984,134
2044	12,743,581	11,416,617	24,160,198
2045	13,384,613	10,914,634	24,299,247
2046	14,051,098	10,435,939	24,487,037
2047	14,615,661	9,926,167	24,541,828
2048	15,169,150	9,418,307	24,587,457
2049	15,655,151	8,914,985	24,570,136
2050	16,111,321	8,417,828	24,529,149
2051	16,497,388	7,927,324	24,424,712
2052	16,840,925	7,443,236	24,284,161
2053	17,168,697	6,964,987	24,133,684
2054	17,466,260	6,492,062	23,958,322
2055	17,719,749	6,024,298	23,744,047
2056	17,922,610	5,561,938	23,484,548
2057	18,080,776	5,105,739	23,186,515
2058	18,199,988	4,657,249	22,857,237
2059	18,269,759	4,218,844	22,488,603
2060	18,291,898	3,793,573	22,085,471
2061	18,256,237	3,384,991	21,641,228
2062	18,160,337	2,996,727	21,157,064

ACTUARIAL ASSUMPTIONS AND METHODS

Interest Rate	6.50% 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 100% 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

<u>% Terminating During the Year</u>		<u>% Becoming Disabled During the Year</u>		<u>% Retiring During the Year (Tier 1)</u>		<u>% Retiring During the Year (Tier 2)</u>	
<u>Service</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>	<u>Age</u>	<u>Rate</u>
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 76.7% on January 1, 2020 to 59.4% on January 1, 2023, 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 69.5%. 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 49.8% on January 1, 2020 to 59.3% on January 1, 2023, due mainly 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 -0.3% on January 1, 2020 to -2.4% on January 1, 2023. The current Net Cash Flow Ratio of -2.4% 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>1/1/2023</u>	<u>1/1/2022</u>	<u>1/1/2021</u>	<u>1/1/2020</u>
<u>Support Ratio</u>				
Total Actives	130	132	146	155
Total Inactives	219	219	210	202
Actives / Inactives	59.4%	60.3%	69.5%	76.7%
 <u>Asset Volatility Ratio</u>				
Market Value of Assets (MVA)	150,950,058	182,575,170	158,136,437	141,309,841
Total Annual Payroll	14,186,746	14,065,216	15,135,330	15,720,848
MVA / Total Annual Payroll	1,064.0%	1,298.1%	1,044.8%	898.9%
 <u>Accrued Liability (AL) Ratio</u>				
Inactive Accrued Liability	194,049,896	199,987,742	187,689,292	173,849,068
Total Accrued Liability	279,084,656	285,794,453	273,132,875	263,181,756
Inactive AL / Total AL	69.5%	70.0%	68.7%	66.1%
 <u>Funded Ratio</u>				
Actuarial Value of Assets (AVA)	165,419,891	159,419,588	143,692,247	130,942,778
Total Accrued Liability	279,084,656	285,794,453	273,132,875	263,181,756
AVA / Total Accrued Liability	59.3%	55.8%	52.6%	49.8%
 <u>Net Cash Flow Ratio</u>				
Net Cash Flow ¹	(3,555,721)	(1,944,953)	(821,224)	(488,808)
Market Value of Assets (MVA)	150,950,058	182,575,170	158,136,437	141,309,841
Ratio	-2.4%	-1.1%	-0.5%	-0.3%

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

STATEMENT OF FIDUCIARY NET POSITION
December 31, 2022

<u>ASSETS</u>	MARKET VALUE
Total Cash and Equivalents	4,002,058
Receivables:	
From City	2,197,139
Accrued Past Due Interest	334,262
Total Receivable	2,531,401
Investments:	
Corporate Bonds	12,376,583
U.S. Gov't and Agency Obligations	29,716,315
Insurance Company Contracts	1,359,644
Stocks	44,736,352
Mutual Funds	56,227,705
Total Investments	144,416,599
Total Assets	150,950,058
 <u>LIABILITIES</u>	
Total Liabilities	0
Net Assets:	
Active and Retired Members' Equity	150,950,058
NET POSITION RESTRICTED FOR PENSIONS	150,950,058
TOTAL LIABILITIES AND NET ASSETS	150,950,058

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
 FOR THE YEAR ENDED December 31, 2022
 Market Value Basis

ADDITIONS

Contributions:

Member	1,327,634	
City	11,405,076	

Total Contributions 12,732,710

Investment Income:

Net Realized Gain (Loss)	1,433,970	
Unrealized Gain (Loss)	(32,547,654)	
Net Increase in Fair Value of Investments		(31,113,684)
Interest & Dividends		3,368,544
Less Investment Expense ¹		(324,251)

Net Investment Income (28,069,391)

Total Additions (15,336,681)

DEDUCTIONS

Distributions to Members:

Benefit Payments	14,789,057	
Refund of Contributions/Transfers	1,454,599	

Total Distributions 16,243,656

Administrative Expenses 44,775

Total Deductions 16,288,431

Net Increase in Net Position (31,625,112)

NET POSITION RESTRICTED FOR PENSIONS

Beginning of the Year 182,575,170

End of the Year 150,950,058

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

ACTUARIAL ASSET VALUATION
December 31, 2022

Development of Actuarial Value of Assets

Market Value of Assets, 12/31/2022	150,950,058
(Gains)/Losses Not Yet Recognized	<u>14,469,833</u>
Actuarial Value of Assets, 12/31/2022	165,419,891
12/31/2022 Limited Actuarial Assets:	165,419,891

Development of Investment Gain/Loss

Market Value of Assets, 12/31/2021	182,575,170
Contributions Less Benefit Payments & Administrative Expenses	(3,555,721)
Expected Investment Earnings ¹	11,299,832
Actual Net Investment Earnings	<u>(28,069,391)</u>
2022 Actuarial Investment Gain/(Loss)	(39,369,223)

¹ Expected Investment Earnings = 6.25% x (182,575,170 + 0.5 x -3,555,721)

Gains/(Losses) Not Yet Recognized

Plan Year Ending	Gain/(Loss)	Amounts Not Yet Recognized by Valuation Year				
		2022	2023	2024	2025	2026
12/31/2019	17,761,676	3,552,335	0	0	0	0
12/31/2020	8,841,618	3,536,647	1,768,324	0	0	0
12/31/2021	16,560,938	9,936,563	6,624,375	3,312,188	0	0
12/31/2022	(39,369,223)	(31,495,378)	(23,621,534)	(15,747,689)	(7,873,845)	0
Total		(14,469,833)	(15,228,835)	(12,435,501)	(7,873,845)	0

Development of Asset Returns

(A) 12/31/2021 Actuarial Assets:	159,419,588
(I) Net Investment Income:	
1. Interest and Dividends	3,368,544
2. Realized Gains (Losses)	1,433,970
3. Change in Actuarial Value	5,077,761
4. Investment Expenses	<u>(324,251)</u>
Total	9,556,024
(B) 12/31/2022 Actuarial Assets:	165,419,891
Actuarial Asset Rate of Return = (2 x I) / (A + B - I):	6.06%
Market Value of Assets Rate of Return:	-15.53%
Actuarial Gain/(Loss) due to Investment Return (Actuarial Asset Basis)	(296,584)

CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS
December 31, 2022
Actuarial Asset Basis

INCOME		
Contributions:		
Member	1,327,634	
City	11,405,076	
Total Contributions		12,732,710
Earnings from Investments		
Interest & Dividends	3,368,544	
Net Realized Gain (Loss)	1,433,970	
Change in Actuarial Value	5,077,761	
Total Earnings and Investment Gains		9,880,275
EXPENSES		
Administrative Expenses:		
Investment Related ¹	324,251	
Other	44,775	
Total Administrative Expenses		369,026
Distributions to Members:		
Benefit Payments	14,789,057	
Refund of Contributions/Transfers	1,454,599	
Total Distributions		16,243,656
Change in Net Assets for the Year		6,000,303
Net Assets Beginning of the Year		159,419,588
Net Assets End of the Year ²		165,419,891

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

² Net Assets may be limited for actuarial consideration.

STATISTICAL DATA

	<u>1/1/2023</u>	<u>1/1/2022</u>	<u>1/1/2021</u>	<u>1/1/2020</u>
<u>Actives - Tier 1</u>				
Number	81	87	99	109
Average Current Age	45.5	44.7	44.5	44.2
Average Age at Employment	26.7	27.0	27.5	27.4
Average Past Service	18.8	17.7	17.0	16.8
Average Annual Salary	\$119,675	\$114,946	\$111,500	\$108,387
<u>Actives - Tier 2</u>				
Number	49	45	47	46
Average Current Age	34.6	34.3	33.5	32.8
Average Age at Employment	28.9	28.3	28.0	27.7
Average Past Service	5.7	6.0	5.5	5.1
Average Annual Salary	\$91,696	\$90,331	\$87,167	\$84,927
<u>Service Retirees</u>				
Number	147	149	142	138
Average Current Age	70.3	70.2	70.0	70.4
Average Annual Benefit	\$82,962	\$80,879	\$79,325	\$76,869
<u>Beneficiaries</u>				
Number	33	29	32	27
Average Current Age	72.6	76.1	77.0	77.8
Average Annual Benefit	\$50,354	\$49,262	\$46,009	\$42,750
<u>Disability Retirees</u>				
Number	17	18	18	18
Average Current Age	66.5	65.4	64.4	63.4
Average Annual Benefit	\$49,865	\$47,745	\$47,080	\$45,790
<u>Terminated Vested</u>				
Number	22	23	18	19
Average Current Age	41.4	41.6	43.4	41.0
Average Annual Benefit ¹	\$26,962	\$33,533	\$26,378	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	3	2	0	0	0	1	0	0	0	0	0	6
30 - 34	3	1	2	1	1	13	1	0	0	0	0	22
35 - 39	2	1	1	0	0	7	7	5	0	0	0	23
40 - 44	1	0	0	0	0	1	9	18	3	0	0	32
45 - 49	0	0	0	0	0	0	2	13	15	0	0	30
50 - 54	0	0	0	0	1	0	0	2	6	3	0	12
55 - 59	0	0	0	0	0	0	0	1	2	1	0	4
60 - 64	0	0	0	0	0	0	0	0	1	0	0	1
65+	0	0	0	0	0	0	0	0	0	0	0	0
Total	9	4	3	1	2	22	19	39	27	4	0	130

VALUATION PARTICIPANT RECONCILIATION

1. Active lives

a. Number in prior valuation 1/1/2022	132
b. Terminations	
i. Vested (partial or full) with deferred benefits	(6)
ii. Non-vested or full lump sum distribution received	0
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	(3)
f. Continuing participants	121
g. New entrants	9
h. Total active life participants in valuation	130

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	149	29	18	23	219
Retired	5	0	0	(2)	3
Vested Deferred	0	0	0	6	6
Death, With Survivor	(3)	5	(1)	0	1
Death, No Survivor	(4)	(1)	0	0	(5)
Disabled	0	0	0	0	0
Refund of Contributions	0	0	0	0	0
Transfer Service to New Fund	0	0	0	(5)	(5)
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	147	33	17	22	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.