CITY OF AURORA
POLICE PENSION FUND

ACTUARIAL VALUATION
AS OF DECEMBER 31, 2023

CONTRIBUTIONS APPLICABLE TO THE
PLAN/FISCAL YEAR ENDING DECEMBER 31, 2025

FOSTER & FOSTER
ACTUARIES AND CONSULTANTS

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May 24, 2024

Ms. Linda Read
City of Aurora Police Pension Fund

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

Dear Ms. Read:

We are pleased to present to the City this report of the annual actuarial valuation of the City of Aurora 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 City, 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.

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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 Aurora, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the City of Aurora 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

Jason L. Franken, FSA, EA, MAAA

By: Heidi Andorfer

Heidi E. Andorfer, FSA, EA, MAAA

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Enclosures

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SUMMARY OF REPORT

The regular annual actuarial valuation of the City of Aurora Police Pension Fund, performed as of December 31, 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, 2025.

The contribution requirements, compared with those set forth in the December 31, 2022 actuarial report, are as follows:

Valuation Date	12/31/2023	12/31/2022
Applicable to Fiscal Year Ending	12/31/2025	12/31/2024
Total Recommended Contribution[1]	$25,717,674	$22,746,696
% of Projected Annual Payroll	62.3%	61.1%
Member Contributions (Est.)	(4,090,340)	(3,691,846)
% of Projected Annual Payroll	(9.9%)	(9.9%)
City Recommended Contribution	21,627,334	19,054,850
% of Projected Annual Payroll	52.4%	51.2%

[1] Total Recommended Contribution reflects the greater of the contribution amount determined by the Plan's funding policy and the Statutory Minimum Required Contribution calculated pursuant to the Illinois Pension Code.

As you can see, the Total Recommended Contribution shows an increase when compared to the results determined in the December 31, 2022 actuarial valuation report. The increase is attributable to programming updates, the natural increase in the amortization payment due to the payroll growth assumptions, and unfavorable plan experience. The increase was offset in part by a change in the funding method.

Plan experience was unfavorable overall on the basis of the plan's actuarial assumptions. The primary source of unfavorable experience was an investment return of 6.50% (Actuarial Asset Basis) which fell short of the 6.80% assumption. There were no significant sources of favorable 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

There were no assumption changes since the prior valuation.

The following methods were changed since the prior valuation:

- The actuarial cost method was updated from the Projected Unit Credit Method to the Entry Age Normal Cost Method.
- The amortization of the unfunded liability will move to an open methodology amortized over 20 years.
- Funding Target will increase to 100% over the next 5 years, starting at 92% in 2024 and increasing by 2% each year until reaching 100% in 2028 and later.

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

	New Method 12/31/2023	Old Method 12/31/2023	12/31/2022
A. Participant Data			
Number Included			
Actives	327	327	303
Service Retirees	227	227	217
Beneficiaries	39	39	42
Disability Retirees	19	19	19
Terminated Vested	59	59	48
Total	671	671	629
Total Annual Payroll	$41,274,874	$41,274,874	$37,253,746
Payroll Under Assumed Ret. Age	41,274,874	41,274,874	37,253,746
Annual Rate of Payments to:			
Service Retirees	22,127,962	22,127,962	19,952,010
Beneficiaries	2,145,064	2,145,064	2,296,009
Disability Retirees	1,116,520	1,116,520	1,106,117
Terminated Vested	363,109	363,109	497,341
B. Assets			
Actuarial Value	329,104,408	329,104,408	310,948,587
Market Value	314,619,932	314,619,932	282,576,093
C. Liabilities			
Present Value of Benefits			
Actives			
Retirement Benefits	240,688,786	240,688,786	226,476,364
Disability Benefits	19,782,742	19,782,742	18,112,832
Death Benefits	2,624,660	2,624,660	2,413,046
Vested Benefits	13,673,834	13,673,834	12,292,537
Service Retirees	344,470,683	344,470,683	308,052,961
Beneficiaries	18,037,838	18,037,838	18,817,698
Disability Retirees	19,566,502	19,566,502	18,763,286
Terminated Vested	4,522,422	4,522,422	6,956,984
Total	663,367,467	663,367,467	611,885,708

C. Liabilities - (Continued)	New Method 12/31/2023	Old Method 12/31/2023	12/31/2022
Present Value of Future Salaries	425,176,457	425,176,457	379,172,286
Present Value of Future Member Contributions	42,134,987	42,134,987	37,575,974
Normal Cost (Retirement)	6,700,785	8,214,818	7,781,760
Normal Cost (Disability)	1,179,083	1,155,748	1,030,492
Normal Cost (Death)	148,267	189,977	167,684
Normal Cost (Vesting)	898,614	913,213	777,361
Total Normal Cost	8,926,749	10,473,756	9,757,297
Present Value of Future Normal Costs	81,625,265	104,228,469	96,363,816
Accrued Liability (Retirement)	178,409,485	152,341,361	144,065,396
Accrued Liability (Disability)	8,120,053	10,763,231	10,147,773
Accrued Liability (Death)	1,032,620	1,388,591	1,316,771
Accrued Liability (Vesting)	7,582,599	8,048,370	7,401,023
Accrued Liability (Inactives)	386,597,445	386,597,445	352,590,929
Total Actuarial Accrued Liability	581,742,202	559,138,998	515,521,892
Unfunded Actuarial Accrued Liability (UAAL)	252,637,794	230,034,590	204,573,305
Funded Ratio (AVA / AL)	56.6%	58.9%	60.3%

	New Method 12/31/2023	Old Method 12/31/2023	12/31/2022
D. Actuarial Present Value of Accrued Benefits			
Vested Accrued Benefits			
Inactives	386,597,445	386,597,445	352,590,929
Actives	67,543,101	67,543,101	61,631,150
Member Contributions	35,131,576	35,131,576	33,609,915
Total	489,272,122	489,272,122	447,831,994
Non-vested Accrued Benefits	8,763,607	8,763,607	8,835,584
Total Present Value Accrued Benefits	498,035,729	498,035,729	456,667,578
Funded Ratio (MVA / PVAB)	63.2%	63.2%	61.9%
Increase (Decrease) in Present Value of Accrued Benefits Attributable to:			
Plan Amendments	0	0	
Assumption Changes	0	0	
Plan Experience	0	35,553,773	
Benefits Paid	0	(24,409,108)	
Interest	0	30,223,486	
Other	0	0	
Total	0	41,368,151	

	New Method	Old Method	
Valuation Date	12/31/2023	12/31/2023	12/31/2022
Applicable to Fiscal Year Ending	12/31/2025	12/31/2025	12/31/2024
E. Pension Cost			
Normal Cost [1]	$9,533,768	$11,185,971	$10,420,793
% of Total Annual Payroll [1]	23.1	27.1	28.0
Administrative Expenses [1]	142,850	142,850	187,968
% of Total Annual Payroll [1]	0.3	0.3	0.5
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 20 years (as of 12/31/2023) [1]	15,193,355	14,388,853	12,137,935
% of Total Annual Payroll [1]	36.8	34.9	32.6
Total Recommended Contribution [2]	24,869,973	25,717,674	22,746,696
% of Total Annual Payroll [1]	60.2	62.3	61.1
Expected Member Contributions [1]	(4,090,340)	(4,090,340)	(3,691,846)
% of Total Annual Payroll [1]	(9.9)	(9.9)	(9.9)
Expected City Contribution	20,779,633	21,627,334	19,054,850
% of Total Annual Payroll [1]	50.3	52.4	51.2
F. Past Contributions			
Plan Years Ending:	12/31/2023		
Total Recommended Contribution	22,255,206		
City	18,345,376		
Actual Contributions Made:			
Members (excluding buyback)	3,909,830		
City	18,391,410		
Total	22,301,240		
G. Net Actuarial (Gain)/Loss	23,907,133		

[1] Contributions developed as of 12/31/2023 displayed above have been adjusted to account for assumed interest.

[2] Contribution developed above reflects the Plan's funding policy. Final recommended contribution on page 5 will reflect the greater of the Statutory Minimum Contribution and the contribution developed above.

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

Year	Projected Unfunded Accrued Liability [1]
2023	206,098,418
2024	204,919,755
2025	203,747,832
2030	197,987,989
2034	193,497,573
2039	188,027,500
2043	183,762,991

[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

		Actual	Assumed
Year Ended	12/31/2023	5.95%	5.36%
Year Ended	12/31/2022	14.17%	5.35%
Year Ended	12/31/2021	5.79%	5.25%
Year Ended	12/31/2020	3.13%	5.07%
Year Ended	12/31/2019	1.46%	4.79%

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

		Actual MVA	Actual AVA	Assumed
Year Ended	12/31/2023	12.08%	6.50%	6.80%
Year Ended	12/31/2022	-11.25%	4.84%	6.50%
Year Ended	12/31/2021	11.00%	9.91%	6.50%
Year Ended	12/31/2020	11.08%	8.96%	6.50%
Year Ended	12/31/2019	16.73%	6.57%	6.50%

DEVELOPMENT OF DECEMBER 31, 2023 AMORTIZATION PAYMENT

(1)	Unfunded Actuarial Accrued Liability as of December 31, 2022	$204,573,305
(2)	Sponsor Normal Cost developed as of December 31, 2022	6,065,451
(3)	Expected administrative expenses for the year ended December 31, 2023	176,000
(4)	Expected interest on (1), (2) and (3)	14,329,419
(5)	Sponsor contributions to the System during the year ended December 31, 2023	18,391,410
(6)	Expected interest on (5)	625,308
(7)	Expected Unfunded Actuarial Accrued Liability as of December 30, 2023, (1)+(2)+(3)+(4)-(5)-(6)	206,127,457
(8)	Change to UAAL due to Method Change	22,603,204
(9)	Change to UAAL due to Actuarial (Gain)/Loss	23,907,133
(10)	Unfunded Accrued Liability as of December 31, 2023	252,637,794
(11)	UAAL Subject to Amortization (92% AAL less Actuarial Assets)	206,098,418

Date Established	Years Remaining	12/31/2023 Amount	Amortization Amount
12/31/2023	20	206,098,418	14,225,988

DETAILED ACTUARIAL (GAIN)/LOSS ANALYSIS

(1)	Unfunded Actuarial Accrued Liability (UAAL) as of December 31, 2022	$204,573,305
(2)	Expected UAAL as of December 31, 2023	206,127,457
(3)	Summary of Actuarial (Gain)/Loss, by component:	
	Investment Return (Actuarial Asset Basis)	944,234
	Salary Increases	1,307,377
	Active Decrements	1,265,293
	Inactive Mortality	(1,090,659)
	Programming Updates	13,650,073
	Other	7,830,815
	Change in UAAL due to (Gain)/Loss	23,907,133
	Change to UAAL due to Method Change	22,603,204
(4)	Actual UAAL as of December 31, 2023	$252,637,794

RECONCILIATION OF CHANGES IN CONTRIBUTION REQUIREMENT

(1)	Contribution Determined as of December 31, 2022	$ 19,054,850
(2)	Summary of Contribution Impact by component:	
	Change in Normal Cost	765,178
	Change in Assumed Administrative Expense	(45,118)
	Investment Return (Actuarial Asset Basis)	63,655
	Salary Increases	88,136
	New Entrants	9,835
	Active Decrements	85,299
	Inactive Mortality	(73,526)
	Contributions (More) or Less than Recommended	(510)
	Increase in Amortization Payment Due to Payroll Growth Assumption	364,138
	Change in Expected Member Contributions	(398,494)
	Method Change	(847,701)
	Programming Updates	920,210
	Other	793,681
	Total Change in Contribution	1,724,783
(3)	Contribution Determined as of December 31, 2023[1]	$20,779,633

[1] Note, this is based on the contributions developed in Section E, prior to consideration of the Statutory Minimum.

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 Method	Old Method	
Valuation Date	12/31/2023	12/31/2023	12/31/2022
Applicable to Fiscal Year Ending	12/31/2025	12/31/2025	12/31/2024
Actuarial Accrued Liability (PUC)	559,138,998	559,138,998	515,521,892
Actuarial Value of Assets	329,104,408	329,104,408	310,948,587
Unfunded Actuarial Accrued Liability (UAAL)	230,034,590	230,034,590	204,573,305
UAAL Subject to Amortization	174,120,690	174,120,690	153,021,116
Normal Cost [1]	$11,185,971	$11,185,971	$10,420,793
% of Total Annual Payroll [1]	27.1	27.1	28.0
Administrative Expenses [1]	142,850	142,850	187,968
% of Total Annual Payroll [1]	0.3	0.3	0.5
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 17 years (as of 12/31/2023) [1]	14,388,853	14,388,853	12,137,935
% of Total Annual Payroll [1]	34.9	34.9	32.6
Total Required Contribution	25,717,674	25,717,674	22,746,696
% of Total Annual Payroll [1]	62.3	62.3	61.1
Expected Member Contributions [1]	(4,090,340)	(4,090,340)	(3,691,846)
% of Total Annual Payroll [1]	(9.9)	(9.9)	(9.9)
Expected City Contribution	21,627,334	21,627,334	19,054,850
% of Total Annual Payroll [1]	52.4	52.4	51.2

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 12/31/2023 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	753,394	25,446,217	26,199,611
2024	1,636,974	25,709,176	27,346,150
2025	2,647,214	26,259,252	28,906,466
2026	3,769,189	26,841,825	30,611,014
2027	4,926,638	27,302,151	32,228,789
2028	6,075,049	27,717,133	33,792,182
2029	7,382,026	28,150,072	35,532,098
2030	8,740,508	28,564,015	37,304,523
2031	10,127,677	28,858,916	38,986,593
2032	11,605,470	29,113,766	40,719,236
2033	13,208,931	29,405,034	42,613,965
2034	14,776,623	29,584,026	44,360,649
2035	16,420,326	29,806,165	46,226,491
2036	18,104,230	29,919,549	48,023,779
2037	19,771,429	29,940,774	49,712,203
2038	21,446,750	29,969,978	51,416,728
2039	23,043,588	29,877,240	52,920,828
2040	24,627,727	29,722,986	54,350,713
2041	26,216,244	29,505,558	55,721,802
2042	27,877,026	29,248,066	57,125,092
2043	29,533,430	28,902,815	58,436,245
2044	31,385,379	28,493,158	59,878,537
2045	33,318,994	28,019,183	61,338,177
2046	35,231,345	27,480,798	62,712,143
2047	37,198,287	26,877,969	64,076,256
2048	39,353,481	26,210,690	65,564,171
2049	41,427,146	25,478,994	66,906,140
2050	43,397,739	24,682,869	68,080,608
2051	45,250,273	23,822,509	69,072,782
2052	47,005,667	22,898,467	69,904,134
2053	48,655,638	21,912,252	70,567,890
2054	50,134,329	20,866,456	71,000,785
2055	51,337,138	19,764,475	71,101,613
2056	52,327,569	18,611,267	70,938,836
2057	53,178,311	17,413,483	70,591,794
2058	53,812,056	16,179,161	69,991,217
2059	54,244,030	14,918,510	69,162,540
2060	54,490,024	13,643,705	68,133,729
2061	54,553,409	12,368,485	66,921,894
2062	54,433,456	11,108,279	65,541,735

ACTUARIAL ASSUMPTIONS AND METHODS

Interest Rate	6.80% per year compounded annually, net of investment related expenses.
Mortality Rate	***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. ***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). ***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). ***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). The mortality assumptions sufficiently accommodate anticipated future mortality improvements.
Retirement Age	See table at end of this section. This is based on a 2022 experience study performed for the Illinois Police Officers' Pension Investment Fund.
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 for the Illinois Police Officers' Pension Investment Fund.
Cost-of-Living Adjustment	<u>Tier 1</u>: 3.00% per year after age 55. Those that retire prior to age 55 receive an increase of 1/12 of 3.00% for each full month since benefit commencement upon reaching age 55. <u>Tier 2:</u> 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 2022 experience study performed for the Illinois Police Officers' Pension Investment Fund.

Salary Scale	
Service	Rate
0	11.00%
1	9.50%
2	8.00%
3	7.50%
4	7.00%
5	6.00%
6	5.00%
7 - 11	4.00%
12 - 29	3.75%
30+	3.50%

Inflation	2.50%.
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. 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 Percentage of Payroll method over an open 20-year period. The initial amortization amount is a percentage of the Accrued Liability less the Actuarial Value of Assets as shown below.

Year	Funding Target %
2024	92%
2025	94%
2026	96%
2027	98%
2028+	100%

	The use of a rolling amortization methodology with a reasonable amortization period and coupled with a payroll growth rate that is not too high will produce a significant annual payment towards the principal on the UAAL, resulting in an annual decrease in the UAAL, assuming the actuarial assumptions materialize.
Payroll Growth	3.00% per year.
Administrative Expenses	Expenses paid out of the fund other than investment-related expenses are assumed to be equal to those paid in the previous year.

Decrement Tables

% Terminating During the Year		% Becoming Disabled During the Year		% Retiring During the Year (Tier 1)		% Retiring During the Year (Tier 2)	
Service	Rate	Age	Rate	Age	Rate	Age	Rate
0	13.00%	20	0.000%	50 - 54	20%	50 - 54	5%
1	8.00%	25	0.029%	55 - 62	25%	55	40%
2	7.00%	30	0.133%	63	33%	56 - 62	25%
3	6.00%	35	0.247%	64	40%	63	33%
4	5.00%	40	0.399%	65 - 69	55%	64	40%
5	4.50%	45	0.561%	70+	100%	65 - 69	55%
6	4.00%	50	0.675%			70+	100%
7	3.50%	55	0.855%				
8	3.00%	60	1.093%				
9	2.50%						
10	2.25%						
11	2.00%						
12	1.75%						
13	1.50%						
14+	1.25%						

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 an open 20-year period. 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.

- <u>Investment Return</u>: 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.

- <u>Salary Increases</u>: 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.

- <u>Payroll Growth</u>: 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.

- <u>Demographic Assumptions:</u> 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 108.5% on December 31, 2020 to 95.1% on December 31, 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 66.5%. 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 stayed approximately the same from December 31, 2020 to December 31, 2023.

- 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 0.9% on December 31, 2020 to -0.6% on December 31, 2023. The current Net Cash Flow Ratio of -0.6% indicates that contributions are not currently covering the plan's benefit payments and administrative expenses.

Low Default-Risk Obligation Measure

ASOP No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions, was revised as of December 2021 to include a "low-default-risk obligation measure" (LDROM). This liability measure is consistent with the determination of the actuarial accrued liability shown on page 8 in terms of member data, plan provisions, and assumptions/methods, including the use of the Entry Age Normal Cost Method, except that the interest rate is tied to low-default-risk fixed income securities. The S&P Municipal Bond 20 Year High Grade Rate Index (daily rate closest to, but not later than, the measurement date) was selected to represent a current market rate of low risk but longer-term investments that could be included in a low-risk asset portfolio. The interest rate used in this valuation was 4.00%, resulting in an LDROM of $887,549,015. The LDROM should not be considered the "correct" liability measurement; it simply shows a possible outcome if the Board elected to hold a very low risk asset portfolio. Given that plan benefits are paid over time through the combination of contributions and investment returns, prudent investments selected by the Board help to balance asset accumulation through these two sources.

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

	12/31/2023	12/31/2022	12/31/2021	12/31/2020
Support Ratio				
Total Actives	327	303	297	307
Total Inactives	344	326	308	283
Actives / Inactives	95.1%	92.9%	96.4%	108.5%
Asset Volatility Ratio				
Market Value of Assets (MVA)	314,619,932	282,576,093	316,957,528	283,055,530
Total Annual Payroll	41,274,874	37,253,746	33,031,272	33,075,951
MVA / Total Annual Payroll	762.3%	758.5%	959.6%	855.8%
Accrued Liability (AL) Ratio				
Inactive Accrued Liability	386,597,445	352,590,929	333,911,832	305,976,210
Total Accrued Liability	581,742,202	515,521,892	502,096,428	476,771,142
Inactive AL / Total AL	66.5%	68.4%	66.5%	64.2%
Funded Ratio				
Actuarial Value of Assets (AVA)	329,104,408	310,948,587	295,284,009	266,152,376
Total Accrued Liability	581,742,202	515,521,892	502,096,428	476,771,142
AVA / Total Accrued Liability	56.6%	60.3%	58.8%	55.8%
Net Cash Flow Ratio				
Net Cash Flow [1]	(1,977,223)	1,346,273	2,619,206	2,653,755
Market Value of Assets (MVA)	314,619,932	282,576,093	316,957,528	283,055,530
Ratio	-0.6%	0.5%	0.8%	0.9%

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

STATEMENT OF FIDUCIARY NET POSITION
December 31, 2023

ASSETS	MARKET VALUE
Cash and Cash Equivalents:	
Cash and Short-Term Investments	5,028,095
Total Cash and Equivalents	5,028,095
Receivables:	
Pension Service Credit	100,817
Accrued Past Due Interest	825,271
Total Receivable	926,088
Investments:	
Fixed Income Securities	115,921,562
International Equity Securities	49,977,887
Real Estate Investment Trusts	27,247,730
Domestic Equity Securities	115,720,856
Total Investments	308,868,035
Total Assets	314,822,218
LIABILITIES	
Liabilities:	
Payable:	
Accounts Payable	201,974
To Municipality	312
Total Liabilities	202,286
Net Assets:	
Active and Retired Members' Equity	314,619,932
NET POSITION RESTRICTED FOR PENSIONS	314,619,932
TOTAL LIABILITIES AND NET ASSETS	314,822,218

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
FOR THE YEAR ENDED December 31, 2023
Market Value Basis

<u>ADDITIONS</u>		
Contributions:		
Member	3,909,830	
Miscellaneous Member Revenue	264,400	
City	18,391,410	
Total Contributions		22,565,640
Investment Income:		
Net Increase in Fair Value of Investments		27,973,769
Interest & Dividends		6,665,129
Less Investment Expense [1]		(617,836)
Net Investment Income		34,021,062
Total Additions		56,586,702
<u>DEDUCTIONS</u>		
Distributions to Members:		
Benefit Payments	24,353,692	
Refund of Contributions/Transfers	55,416	
Total Distributions		24,409,108
Administrative Expenses		133,755
Total Deductions		24,542,863
Net Increase in Net Position		32,043,839
NET POSITION RESTRICTED FOR PENSIONS		
Beginning of the Year		282,576,093
End of the Year		314,619,932

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

ACTUARIAL ASSET VALUATION
December 31, 2023

Development of Actuarial Value of Assets

Market Value of Assets, 12/31/2023	314,619,932
(Gains)/Losses Not Yet Recognized	14,484,476
Actuarial Value of Assets, 12/31/2023	329,104,408
12/31/2023 Limited Actuarial Assets:	329,104,408

Development of Investment Gain/Loss

Market Value of Assets, 12/31/2022	282,576,093
Contributions Less Benefit Payments & Administrative Expenses	(1,977,223)
Expected Investment Earnings[1]	19,147,949
Actual Net Investment Earnings	34,021,062
2023 Actuarial Investment Gain/(Loss)	14,873,113

[1] Expected Investment Earnings = 6.80% x (282,576,093 + 0.5 x -1,977,223)

Gains/(Losses) Not Yet Recognized

Plan Year		Amounts Not Yet Recognized by Valuation Year				
Ending	Gain/(Loss)	2023	2024	2025	2026	2027
12/31/2020	11,608,158	2,321,632	0	0	0	0
12/31/2021	12,799,058	5,119,623	2,559,812	0	0	0
12/31/2022	(56,373,701)	(33,824,221)	(22,549,480)	(11,274,740)	0	0
12/31/2023	14,873,113	11,898,490	8,923,868	5,949,245	2,974,623	0
Total		(14,484,476)	(11,065,800)	(5,325,495)	2,974,623	0

Development of Asset Returns

(A) 12/31/2022 Actuarial Assets:	310,948,587
(I) Net Investment Income:	
1. Interest and Dividends	6,665,129
2. Realized Gains (Losses)	0
3. Change in Actuarial Value	14,085,751
4. Investment Expenses	(617,836)
Total	20,133,044
(B) 12/31/2023 Actuarial Assets:	329,104,408
Actuarial Asset Rate of Return = (2 x I) / (A + B - I):	6.50%
Market Value of Assets Rate of Return:	12.08%
Actuarial Gain/(Loss) due to Investment Return (Actuarial Asset Basis)	(944,234)

CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS
December 31, 2023
Actuarial Asset Basis

INCOME		
Contributions:		
Member	3,909,830	
Miscellaneous Member Revenue	264,400	
City	18,391,410	
Total Contributions		22,565,640
Earnings from Investments		
Interest & Dividends	6,665,129	
Change in Actuarial Value	14,085,751	
Total Earnings and Investment Gains		20,750,880
EXPENSES		
Administrative Expenses:		
Investment Related[1]	617,836	
Other	133,755	
Total Administrative Expenses		751,591
Distributions to Members:		
Benefit Payments	24,353,692	
Refund of Contributions/Transfers	55,416	
Total Distributions		24,409,108
Change in Net Assets for the Year		18,155,821
Net Assets Beginning of the Year		310,948,587
Net Assets End of the Year[2]		329,104,408

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

STATISTICAL DATA

	12/31/2023	12/31/2022	12/31/2021	12/31/2020
Actives - Tier 1				
Number	148	158	172	187
Average Current Age	45.6	45.3	45.4	44.8
Average Age at Employment	25.2	25.4	25.6	25.7
Average Past Service	20.4	19.9	19.8	19.1
Average Annual Salary	$142,470	$136,098	$127,122	$123,670
Actives - Tier 2				
Number	179	145	125	120
Average Current Age	31.0	30.7	30.5	29.6
Average Age at Employment	26.8	26.7	26.7	26.6
Average Past Service	4.2	4.0	3.8	3.0
Average Annual Salary	$112,789	$108,623	$89,331	$82,914
Service Retirees				
Number	227	217	207	197
Average Current Age	64.8	64.7	65.1	64.8
Average Annual Benefit	$97,480	$91,945	$87,676	$84,982
Beneficiaries				
Number	39	42	37	34
Average Current Age	76.7	77.2	78.9	77.8
Average Annual Benefit	$55,002	$54,667	$52,951	$51,328
Disability Retirees				
Number	19	19	17	18
Average Current Age	58.9	57.9	57.5	56.6
Average Annual Benefit	$58,764	$58,217	$52,752	$51,809
Terminated Vested				
Number	59	48	47	34
Average Current Age	33.9	34.6	34.6	34.5
Average Annual Benefit [1]	$45,389	$55,260	$55,983	$39,955

[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	8	3	1	2	0	0	0	0	0	0	0	14
25 - 29	16	6	6	10	5	10	0	0	0	0	0	53
30 - 34	16	8	0	6	13	27	5	0	0	0	0	75
35 - 39	2	5	1	3	4	8	11	17	0	0	0	51
40 - 44	0	1	0	0	3	4	4	30	12	0	0	54
45 - 49	0	0	0	0	0	0	1	16	22	5	0	44
50 - 54	0	0	0	0	0	0	0	7	6	16	2	31
55 - 59	0	0	0	0	0	0	0	0	0	2	1	3
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	2	2
Total	42	23	8	21	25	49	21	70	40	23	5	327

VALUATION PARTICIPANT RECONCILIATION

1. Active lives

a. Number in prior valuation 12/31/2022	303
b. Terminations	
i. Vested (partial or full) with deferred benefits	(8)
ii. Non-vested or full lump sum distribution received	(2)
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	(11)
f. Continuing participants	282
g. New entrants	45
h. Total active life participants in valuation	327

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	217	42	19	48	326
Retired	13	0	0	(2)	11
Vested Deferred	0	0	0	8	8
Death, With Survivor	(1)	1	0	0	0
Death, No Survivor	(2)	(4)	0	0	(6)
Disabled	0	0	0	0	0
Refund of Contributions	0	0	0	(2)	(2)
Rehires	0	0	0	0	0
Expired Annuities	0	0	0	0	0
Data Corrections	0	0	0	1	1
Hired/Termed in Same Year	0	0	0	6	6
b. Number current valuation	227	39	19	59	344

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 (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.