

CITY OF GENEVA  
FIREFIGHTERS' PENSION FUND  
ACTUARIAL VALUATION  
AS OF MAY 1, 2023  
CONTRIBUTIONS APPLICABLE TO THE  
PLAN/FISCAL YEAR ENDING APRIL 30, 2025



**FOSTER & FOSTER**  
ACTUARIES AND CONSULTANTS



August 2, 2023

Ms. Rita Kruse  
City of Geneva Firefighters' Pension Fund

Re: Actuarial Valuation Report – City of Geneva Firefighters' Pension Fund

Dear Ms. Kruse:

We are pleased to present to the City this report of the annual actuarial valuation of the City of Geneva Firefighters' 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 4, 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.

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.

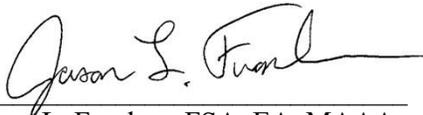
The undersigned are familiar with the immediate and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the 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 Geneva, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the City of Geneva Firefighters' 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 Geneva Firefighters' Pension Fund, performed as of May 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 April 30, 2025.

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

Valuation Date	5/1/2023	5/1/2022
Applicable to Fiscal Year Ending	<u>4/30/2025</u>	<u>4/30/2024</u>
Total Recommended Contribution	\$1,377,761	\$1,269,590
% of Projected Annual Payroll	60.1%	56.8%
Member Contributions (Est.)	(216,844)	(211,243)
% of Projected Annual Payroll	(9.5%)	(9.5%)
City Recommended Contribution	1,160,917	1,058,347
% of Projected Annual Payroll	50.6%	47.3%

As you can see, the Total Recommended Contribution shows an increase when compared to the results determined in the May 1, 2022 actuarial valuation report. The increase is attributable to the natural increase in the amortization payment due to the payroll growth assumption and unfavorable plan experience.

Plan experience was unfavorable overall on the basis of the plan's actuarial assumptions. Sources of unfavorable experience included an investment return of 3.46% (Actuarial Asset Basis) which fell short of the 7.00% assumption and lower than expected inactive mortality. These losses were offset in part by a gain associated with favorable active mortality 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 following assumption change was made:

- Reduced assumed payroll growth rate from 3.50% to 3.00%.

There were no method changes since the prior valuation.

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

	New Assump <u>5/1/2023</u>	Old Assump <u>5/1/2023</u>	<u>5/1/2022</u>
A. Participant Data			
Number Included			
Actives	22	22	22
Service Retirees	13	13	13
Beneficiaries	5	5	4
Disability Retirees	0	0	0
Terminated Vested	<u>4</u>	<u>4</u>	<u>4</u>
Total	44	44	43
Total Annual Payroll	\$2,293,427	\$2,293,427	\$2,234,192
Payroll Under Assumed Ret. Age	2,293,427	2,293,427	2,234,192
Annual Rate of Payments to:			
Service Retirees	976,052	976,052	945,148
Beneficiaries	194,105	194,105	107,012
Disability Retirees	0	0	0
Terminated Vested	4,977	4,977	4,977
B. Assets			
Actuarial Value	19,590,384	19,590,384	18,883,395
Market Value	18,277,301	18,277,301	18,103,753
C. Liabilities			
Present Value of Benefits			
Actives			
Retirement Benefits	15,293,331	15,293,331	15,143,029
Disability Benefits	1,635,316	1,635,316	1,617,901
Death Benefits	193,304	193,304	191,474
Vested Benefits	512,580	512,580	548,354
Service Retirees	14,640,960	14,640,960	14,468,910
Beneficiaries	2,079,438	2,079,438	981,121
Disability Retirees	0	0	0
Terminated Vested	<u>66,948</u>	<u>66,948</u>	<u>63,055</u>
Total	34,421,877	34,421,877	33,013,844

C. Liabilities - (Continued)	New Assump <u>5/1/2023</u>	Old Assump <u>5/1/2023</u>	<u>5/1/2022</u>
Present Value of Future Salaries	23,750,674	23,750,674	23,091,584
Present Value of Future Member Contributions	2,245,626	2,245,626	2,183,309
Normal Cost (Retirement)	430,074	430,074	425,031
Normal Cost (Disability)	79,780	79,780	78,429
Normal Cost (Death)	14,064	14,064	13,628
Normal Cost (Vesting)	<u>30,846</u>	<u>30,846</u>	<u>33,471</u>
Total Normal Cost	554,764	554,764	550,559
Present Value of Future Normal Costs	5,397,510	5,397,510	5,348,584
Accrued Liability (Retirement)	11,103,845	11,103,845	10,976,362
Accrued Liability (Disability)	775,309	775,309	780,742
Accrued Liability (Death)	53,772	53,772	55,526
Accrued Liability (Vesting)	304,095	304,095	339,544
Accrued Liability (Inactives)	<u>16,787,346</u>	<u>16,787,346</u>	<u>15,513,086</u>
Total Actuarial Accrued Liability	29,024,367	29,024,367	27,665,260
Unfunded Actuarial Accrued Liability (UAAL)	9,433,983	9,433,983	8,781,865
Funded Ratio (AVA / AL)	67.5%	67.5%	68.3%

	New Assump <u>5/1/2023</u>	Old Assump <u>5/1/2023</u>	<u>5/1/2022</u>
D. Actuarial Present Value of Accrued Benefits			
Vested Accrued Benefits			
Inactives	16,787,346	16,787,346	15,513,086
Actives	4,443,564	4,443,564	4,123,513
Member Contributions	<u>2,186,602</u>	<u>2,186,602</u>	<u>2,158,399</u>
Total	23,417,512	23,417,512	21,794,998
Non-vested Accrued Benefits	<u>256,335</u>	<u>256,335</u>	<u>470,189</u>
Total Present Value Accrued Benefits	23,673,847	23,673,847	22,265,187
Funded Ratio (MVA / PVAB)	77.2%	77.2%	81.3%
Increase (Decrease) in Present Value of Accrued Benefits Attributable to:			
Plan Amendments	0	0	
Assumption Changes	0	0	
Plan Experience	0	995,895	
Benefits Paid	0	(1,107,051)	
Interest	0	1,519,816	
Other	<u>0</u>	<u>0</u>	
Total	0	1,408,660	

	New Assump	Old Assump	
Valuation Date	5/1/2023	5/1/2023	5/1/2022
Applicable to Fiscal Year Ending	<u>4/30/2025</u>	<u>4/30/2025</u>	<u>4/30/2024</u>
E. Pension Cost			
Normal Cost <sup>1</sup>	\$593,597	\$593,597	\$589,098
% of Total Annual Payroll <sup>1</sup>	25.9	25.9	26.4
Administrative Expenses <sup>1</sup>	23,836	23,836	24,307
% of Total Annual Payroll <sup>1</sup>	1.0	1.0	1.1
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 18 years (as of 5/1/2023) <sup>1</sup>	760,328	733,044	656,185
% of Total Annual Payroll <sup>1</sup>	33.2	32.0	29.3
Total Recommended Contribution	1,377,761	1,350,477	1,269,590
% of Total Annual Payroll <sup>1</sup>	60.1	58.9	56.8
Expected Member Contributions <sup>1</sup>	(216,844)	(216,844)	(211,243)
% of Total Annual Payroll <sup>1</sup>	(9.5)	(9.5)	(9.5)
Expected City Contribution	1,160,917	1,133,633	1,058,347
% of Total Annual Payroll <sup>1</sup>	50.6	49.4	47.3

F. Past Contributions

Plan Years Ending: 4/30/2023

Total Recommended Contribution 1,105,103  
City 885,139

Actual Contributions Made:

Members (excluding buyback) 219,964  
City 919,174  
Total 1,139,138

G. Net Actuarial (Gain)/Loss 602,152

<sup>1</sup> Contributions developed as of 5/1/2023 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	9,433,983
2024	9,334,034
2025	9,204,278
2029	8,328,465
2033	6,711,496
2037	4,064,156
2041	0

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

		<u>Actual</u>	<u>Assumed</u>
Year Ended	4/30/2023	5.03%	5.93%
Year Ended	4/30/2022	6.93%	5.58%
Year Ended	4/30/2021	1.82%	5.66%
Year Ended	4/30/2020	4.04%	5.00%
Year Ended	4/30/2019	4.62%	5.00%

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

		<u>Actual MVA</u>	<u>Actual AVA</u>	<u>Assumed</u>
Year Ended	4/30/2023	0.67%	3.46%	7.00%
Year Ended	4/30/2022	-5.35%	5.36%	7.00%
Year Ended	4/30/2021	33.27%	7.25%	7.25%
Year Ended	4/30/2020	-7.88%	1.67%	7.25%
Year Ended	4/30/2019	0.88%	4.11%	7.25%

DEVELOPMENT OF MAY 1, 2023 AMORTIZATION PAYMENT

(1)	Unfunded Actuarial Accrued Liability as of May 1, 2022	\$8,781,865
(2)	Sponsor Normal Cost developed as of May 1, 2022	339,316
(3)	Expected administrative expenses for the year ended April 30, 2023	22,717
(4)	Expected interest on (1), (2) and (3)	639,278
(5)	Sponsor contributions to the System during the year ended April 30, 2023	919,174
(6)	Expected interest on (5)	32,171
(7)	Expected Unfunded Actuarial Accrued Liability as of April 30, 2023, (1)+(2)+(3)+(4)-(5)-(6)	8,831,831
(8)	Change to UAAL due to Assumption Change	0
(9)	Change to UAAL due to Actuarial (Gain)/Loss	602,152
(10)	Unfunded Accrued Liability as of May 1, 2023	9,433,983
(11)	UAAL Subject to Amortization (100% AAL less Actuarial Assets)	9,433,983

<u>Date</u> <u>Established</u>	<u>Years</u> <u>Remaining</u>	<u>5/1/2023</u> <u>Amount</u>	<u>Amortization</u> <u>Amount</u>
5/1/2023	18	9,433,983	710,587

## DETAILED ACTUARIAL (GAIN)/LOSS ANALYSIS

(1) Unfunded Actuarial Accrued Liability (UAAL) as of May 1, 2022	\$8,781,865
(2) Expected UAAL as of May 1, 2023	8,831,831
(3) Summary of Actuarial (Gain)/Loss, by component:	
Investment Return (Actuarial Asset Basis)	668,737
Salary Increases	(56,616)
Active Decrements	(288,671)
Inactive Mortality	108,046
Other	<u>170,656</u>
Change in UAAL due to (Gain)/Loss	602,152
Change to UAAL due to Assumption Change	<u>0</u>
(4) Actual UAAL as of May 1, 2023	\$9,433,983

## RECONCILIATION OF CHANGES IN CONTRIBUTION REQUIREMENT

(1) Contribution Determined as of May 1, 2022	\$	1,058,347
(2) Summary of Contribution Impact by component:		
Change in Normal Cost		4,499
Change in Assumed Administrative Expense		(471)
Investment Return (Actuarial Asset Basis)		51,963
Salary Increases		(4,399)
New Entrants		1,125
Active Decrements		(22,430)
Inactive Mortality		8,395
Contributions (More) or Less than Recommended		(2,737)
Increase in Amortization Payment Due to Payroll Growth Assumption		22,966
Change in Expected Member Contributions		(5,601)
Assumption Change		27,284
Other		<u>21,976</u>
Total Change in Contribution		102,570
(3) Contribution Determined as of May 1, 2023		\$1,160,917

## STATUTORY MINIMUM REQUIRED CONTRIBUTION

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

	New Assump	Old Assump	
Valuation Date	5/1/2023	5/1/2023	5/1/2022
Applicable to Fiscal Year Ending	<u>4/30/2025</u>	<u>4/30/2025</u>	<u>4/30/2024</u>
Actuarial Accrued Liability (PUC)	27,854,787	27,854,787	26,473,343
Actuarial Value of Assets	<u>19,590,384</u>	<u>19,590,384</u>	<u>18,883,395</u>
Unfunded Actuarial Accrued Liability (UAAL)	8,264,403	8,264,403	7,589,948
UAAL Subject to Amortization	5,478,924	5,478,924	4,942,614
Normal Cost <sup>1</sup>	\$719,208	\$719,208	\$710,704
% of Total Annual Payroll <sup>1</sup>	31.4	31.4	31.8
Administrative Expenses <sup>1</sup>	23,836	23,836	24,307
% of Total Annual Payroll <sup>1</sup>	1.0	1.0	1.1
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 17 years (as of 5/1/2023) <sup>1</sup>	459,689	444,047	384,053
% of Total Annual Payroll <sup>1</sup>	20.0	19.4	17.2
Total Required Contribution	1,202,733	1,187,091	1,119,064
% of Total Annual Payroll <sup>1</sup>	52.4	51.8	50.1
Expected Member Contributions <sup>1</sup>	(216,844)	(216,844)	(211,243)
% of Total Annual Payroll <sup>1</sup>	(9.5)	(9.5)	(9.5)
Expected City Contribution	985,889	970,247	907,821
% of Total Annual Payroll <sup>1</sup>	42.9	42.3	40.6

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.

<sup>1</sup> Contributions developed as of 5/1/2023 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	27,999	1,168,601	1,196,600
2024	69,734	1,174,372	1,244,106
2025	114,227	1,185,997	1,300,224
2026	190,035	1,205,937	1,395,972
2027	286,342	1,225,471	1,511,813
2028	384,859	1,235,292	1,620,151
2029	486,639	1,256,183	1,742,822
2030	596,929	1,272,952	1,869,881
2031	716,350	1,288,412	2,004,762
2032	822,600	1,302,495	2,125,095
2033	929,822	1,315,167	2,244,989
2034	1,031,489	1,326,394	2,357,883
2035	1,129,977	1,336,088	2,466,065
2036	1,245,268	1,344,113	2,589,381
2037	1,355,120	1,350,276	2,705,396
2038	1,458,046	1,354,269	2,812,315
2039	1,569,598	1,355,702	2,925,300
2040	1,678,199	1,354,102	3,032,301
2041	1,781,962	1,348,935	3,130,897
2042	1,903,276	1,339,604	3,242,880
2043	2,040,459	1,325,478	3,365,937
2044	2,160,034	1,305,958	3,465,992
2045	2,267,060	1,280,611	3,547,671
2046	2,376,508	1,249,146	3,625,654
2047	2,514,728	1,211,460	3,726,188
2048	2,641,532	1,167,645	3,809,177
2049	2,763,555	1,117,994	3,881,549
2050	2,914,194	1,063,011	3,977,205
2051	3,041,347	1,003,370	4,044,717
2052	3,144,203	939,909	4,084,112
2053	3,236,141	873,589	4,109,730
2054	3,314,716	805,412	4,120,128
2055	3,385,052	736,378	4,121,430
2056	3,448,531	667,489	4,116,020
2057	3,502,865	599,652	4,102,517
2058	3,548,985	533,735	4,082,720
2059	3,585,361	470,535	4,055,896
2060	3,612,237	410,687	4,022,924
2061	3,628,410	354,742	3,983,152
2062	3,632,856	303,102	3,935,958

## ACTUARIAL ASSUMPTIONS AND METHODS

Interest Rate	7.00% per year compounded annually, net of investment related expenses.
Mortality Rate	<p><b>Active Lives:</b> PubS-2010 Employee mortality, unadjusted, with generational improvements with the most recent projection scale (currently Scale MP-2021). 20% of active deaths are assumed to be in the line of duty.</p> <p><b>Inactive Lives:</b> PubS-2010 Healthy Retiree mortality, adjusted by a factor of 1.081 for male retirees and unadjusted for female retirees, with generational improvements with the most recent projection scale (currently Scale MP-2021).</p> <p><b>Beneficiaries:</b> PubS-2010 Survivor mortality, unadjusted for male beneficiaries and adjusted by a factor of 1.098 for female beneficiaries, with generational improvements with the most recent projection scale (currently Scale MP-2021).</p> <p><b>Disabled Lives:</b> PubS-2010 Disabled mortality, adjusted by a factor of 1.178 for male disabled members and unadjusted for female disabled members, with generational improvements with the most recent projection scale (currently Scale MP-2021).</p> <p>The mortality assumptions sufficiently accommodate anticipated future mortality improvements.</p>
Retirement Age	See table later in this section. This is based on a 2021 experience study performed for the Illinois Firefighters' Pension Investment Fund.
Disability Rate	See table later in this section. 80% of the disabilities are assumed to be in the line of duty. This is based on a 2021 experience study performed for the Illinois Firefighters' Pension Investment Fund.
Termination Rate	See table later in this section. This is based on a 2021 experience study performed for the Illinois Firefighters' Pension Investment Fund.
Inflation	2.50%.

Cost-of-Living Adjustment Tier 1: 3.00% per year after age 55. Those that retire prior to age 55 receive an increase of 1/12 of 3.00% for each full month since benefit commencement upon reaching age 55.

Tier 2: 1.25% per year after the later of attainment of age 60 or first anniversary of retirement.

Salary Increases See table below, inclusive of inflation of 2.50%. This is based on a 2021 experience study performed for the Illinois Firefighters' Pension Investment Fund.

Salary Scale	
Service	Rate
0	12.78%
1	10.77%
2	9.77%
3	8.77%
4	7.76%
5	6.76%
6	5.26%
7	4.76%
8+	4.25%

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 a period ending in 2041. The initial amortization amount is 100% of the Accrued Liability less the Actuarial Value of Assets.

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)	
Age	Rate	Age	Rate	Age	Rate	Age	Rate
20	10.00%	20	0.010%	50-51	12%	50-54	3%
25	8.00%	25	0.016%	52-53	15%	55	30%
30	4.00%	30	0.068%	54-55	20%	56-59	20%
35	2.50%	35	0.220%	56-59	20%	60-62	25%
40	1.20%	40	0.420%	60-62	25%	63-64	33%
45+	1.00%	45	0.650%	63-64	33%	65-69	50%
		50	0.900%	65-69	50%	70+	100%
		55	1.240%	70+	100%		
		60	1.580%				

## 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 129.4% on May 1, 2020 to 100.0% on May 1, 2023, indicating that the plan has been 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 57.8%. With a plan of this maturity, losses due to lower than expected investment returns or demographic factors can be made up over a longer time horizon than would be needed for a more mature plan.
- The Funded Ratio, determined as the ratio of the Actuarial Value of Assets to the Total Accrued Liability, has decreased from 71.1% on May 1, 2020 to 67.5% on May 1, 2023, due mainly to unfavorable plan experience and changes in assumptions.
- The Net Cash Flow Ratio, determined as the ratio of the Net Cash Flow (contributions minus benefit payments and administrative expenses) to the Market Value of Assets, stayed approximately the same from May 1, 2020 to May 1, 2023. The current Net Cash Flow Ratio of 0.3% indicates that contributions are generally 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 4.14%, resulting in an LDROM of \$44,983,366. 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

	<u>5/1/2023</u>	<u>5/1/2022</u>	<u>5/1/2021</u>	<u>5/1/2020</u>
<u>Support Ratio</u>				
Total Actives	22	22	22	22
Total Inactives	22	21	17	17
Actives / Inactives	100.0%	104.8%	129.4%	129.4%
 <u>Asset Volatility Ratio</u>				
Market Value of Assets (MVA)	18,277,301	18,103,753	19,054,568	14,150,435
Total Annual Payroll	2,293,427	2,234,192	2,192,738	2,153,532
MVA / Total Annual Payroll	796.9%	810.3%	869.0%	657.1%
 <u>Accrued Liability (AL) Ratio</u>				
Inactive Accrued Liability	16,787,346	15,513,086	12,836,708	12,380,525
Total Accrued Liability	29,024,367	27,665,260	25,096,383	23,182,961
Inactive AL / Total AL	57.8%	56.1%	51.1%	53.4%
 <u>Funded Ratio</u>				
Actuarial Value of Assets (AVA)	19,590,384	18,883,395	17,853,414	16,483,533
Total Accrued Liability	29,024,367	27,665,260	25,096,383	23,182,961
AVA / Total Accrued Liability	67.5%	68.3%	71.1%	71.1%
 <u>Net Cash Flow Ratio</u>				
Net Cash Flow <sup>1</sup>	52,066	70,570	168,635	183,477
Market Value of Assets (MVA)	18,277,301	18,103,753	19,054,568	14,150,435
Ratio	0.3%	0.4%	0.9%	1.3%

<sup>1</sup> Determined as total contributions minus benefit payments and administrative expenses.

STATEMENT OF FIDUCIARY NET POSITION  
April 30, 2023

<u>ASSETS</u>	MARKET VALUE
Total Cash and Equivalents	671,452
Total Receivable	0
Investments:	
Pooled/Common/Commingled Funds	17,608,787
Mutual Funds	1
Total Investments	17,608,788
Total Assets	18,280,240
 <u>LIABILITIES</u>	
Liabilities:	
Payable:	
Expenses	2,939
Total Liabilities	2,939
Net Assets:	
Active and Retired Members' Equity	18,277,301
NET POSITION RESTRICTED FOR PENSIONS	18,277,301
TOTAL LIABILITIES AND NET ASSETS	18,280,240

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION  
FOR THE YEAR ENDED April 30, 2023  
Market Value Basis

ADDITIONS

Contributions:

Member	219,964
Miscellaneous Member Revenue	42,256
City	919,174

Total Contributions 1,181,394

Investment Income:

Miscellaneous Income	(957)
Net Realized Gain (Loss)	(807,545)
Unrealized Gain (Loss)	766,008
Net Increase in Fair Value of Investments	(42,494)
Interest & Dividends	179,894
Less Investment Expense <sup>1</sup>	(15,918)

Net Investment Income 121,482

Total Additions 1,302,876

DEDUCTIONS

Distributions to Members:

Benefit Payments	1,107,051
Refund of Contributions/Transfers	0

Total Distributions 1,107,051

Administrative Expenses 22,277

Total Deductions 1,129,328

Net Increase in Net Position 173,548

NET POSITION RESTRICTED FOR PENSIONS

Beginning of the Year 18,103,753

End of the Year 18,277,301

<sup>1</sup> Investment Related expenses include investment advisory, custodial and performance monitoring fees.

ACTUARIAL ASSET VALUATION

April 30, 2023

Development of Actuarial Value of Assets

Market Value of Assets, 4/30/2023	18,277,301
(Gains)/Losses Not Yet Recognized	1,313,083
Actuarial Value of Assets, 4/30/2023	<u>19,590,384</u>
4/30/2023 Limited Actuarial Assets:	19,590,384

Development of Investment Gain/Loss

Market Value of Assets, 4/30/2022	18,103,753
Contributions Less Benefit Payments & Administrative Expenses	52,066
Expected Investment Earnings <sup>1</sup>	1,269,085
Actual Net Investment Earnings	<u>121,482</u>
2023 Actuarial Investment Gain/(Loss)	(1,147,603)

<sup>1</sup> Expected Investment Earnings = 7.00% x (18,103,753 + 0.5 x 52,066)

Gains/(Losses) Not Yet Recognized

Plan Year Ending	Gain/(Loss)	Amounts Not Yet Recognized by Valuation Year				
		2023	2024	2025	2026	2027
4/30/2020	(2,308,936)	(461,787)	0	0	0	0
4/30/2021	3,703,478	1,481,391	740,696	0	0	0
4/30/2022	(2,357,675)	(1,414,605)	(943,070)	(471,535)	0	0
4/30/2023	(1,147,603)	(918,082)	(688,562)	(459,041)	(229,521)	0
Total		(1,313,083)	(890,936)	(930,576)	(229,521)	0

Development of Asset Returns

(A) 4/30/2022 Actuarial Assets:	18,883,395
(I) Net Investment Income:	
1. Interest and Dividends	178,937
2. Realized Gains (Losses)	(807,545)
3. Change in Actuarial Value	1,299,449
4. Investment Expenses	<u>(15,918)</u>
Total	654,923
(B) 4/30/2023 Actuarial Assets:	19,590,384
Actuarial Asset Rate of Return = (2 x I) / (A + B - I):	3.46%
Market Value of Assets Rate of Return:	0.67%
Actuarial Gain/(Loss) due to Investment Return (Actuarial Asset Basis)	(668,737)

CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS  
 April 30, 2023  
 Actuarial Asset Basis

INCOME		
Contributions:		
Member	219,964	
Miscellaneous Member Revenue	42,256	
City	919,174	
Total Contributions		1,181,394
Earnings from Investments		
Interest & Dividends	179,894	
Miscellaneous Income	(957)	
Net Realized Gain (Loss)	(807,545)	
Change in Actuarial Value	1,299,449	
Total Earnings and Investment Gains		670,841
EXPENSES		
Administrative Expenses:		
Investment Related <sup>1</sup>	15,918	
Other	22,277	
Total Administrative Expenses		38,195
Distributions to Members:		
Benefit Payments	1,107,051	
Refund of Contributions/Transfers	0	
Total Distributions		1,107,051
Change in Net Assets for the Year		706,989
Net Assets Beginning of the Year		18,883,395
Net Assets End of the Year <sup>2</sup>		19,590,384

<sup>1</sup> Investment Related expenses include investment advisory, custodial and performance monitoring fees.

<sup>2</sup> Net Assets may be limited for actuarial consideration.

STATISTICAL DATA

	<u>5/1/2023</u>	<u>5/1/2022</u>	<u>5/1/2021</u>	<u>5/1/2020</u>
<u>Actives - Tier 1</u>				
Number	11	12	14	14
Average Current Age	46.5	46.2	46.3	45.3
Average Age at Employment	25.1	25.3	25.2	25.2
Average Past Service	21.4	20.9	21.1	20.1
Average Annual Salary	\$116,021	\$112,383	\$107,319	\$106,606
<u>Actives - Tier 2</u>				
Number	11	10	8	8
Average Current Age	36.0	35.7	36.0	35.0
Average Age at Employment	31.2	31.5	31.8	31.8
Average Past Service	4.8	4.2	4.2	3.2
Average Annual Salary	\$92,472	\$88,560	\$86,284	\$82,631
<u>Service Retirees</u>				
Number	13	13	11	11
Average Current Age	64.6	63.6	64.1	63.1
Average Annual Benefit	\$75,081	\$72,704	\$74,797	\$72,824
<u>Beneficiaries</u>				
Number	5	4	1	1
Average Current Age	45.5	43.4	97.3	96.3
Average Annual Benefit	\$38,821	\$26,753	\$16,952	\$16,952
<u>Disability Retirees</u>				
Number	0	0	0	0
Average Current Age	N/A	N/A	N/A	N/A
Average Annual Benefit	N/A	N/A	N/A	N/A
<u>Terminated Vested</u>				
Number	4	4	5	5
Average Current Age	40.3	39.3	37.9	36.9
Average Annual Benefit <sup>1</sup>	\$4,977	\$4,977	\$3,287	\$3,287

<sup>1</sup> 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	1	1	0	1	0	0	0	0	0	0	0	3
30 - 34	0	0	0	0	1	1	0	0	0	0	0	2
35 - 39	0	1	0	0	1	2	1	0	0	0	0	5
40 - 44	0	0	0	0	0	0	1	2	0	0	0	3
45 - 49	0	0	0	0	0	0	0	1	3	1	0	5
50 - 54	0	0	0	0	0	0	0	0	1	2	0	3
55 - 59	0	0	0	0	0	0	0	0	0	0	0	0
60 - 64	0	0	0	0	0	1	0	0	0	0	0	1
65+	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	2	0	1	2	4	2	3	4	3	0	22

## VALUATION PARTICIPANT RECONCILIATION

### 1. Active lives

a. Number in prior valuation 5/1/2022	22
b. Terminations	
i. Vested (partial or full) with deferred benefits	0
ii. Non-vested or full lump sum distribution received	0
iii. Transferred service to other fund	0
c. Deaths	
i. Beneficiary receiving benefits	(1)
ii. No future benefits payable	0
d. Disabled	0
e. Retired	<u>0</u>
f. Continuing participants	21
g. New entrants	<u>1</u>
h. Total active life participants in valuation	22

### 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	13	4	0	4	21
Retired	0	0	0	0	0
Vested Deferred	0	0	0	0	0
Death, With Survivor	0	1	0	0	1
Death, No Survivor	0	0	0	0	0
Disabled	0	0	0	0	0
Refund of Contributions	0	0	0	0	0
Rehires	0	0	0	0	0
Expired Annuities	0	0	0	0	0
Data Corrections	0	0	0	0	0
Hired/Termed in Same Year	0	0	0	0	0
b. Number current valuation	13	5	0	4	22

SUMMARY OF CURRENT PLAN

Article 4 Pension Fund

The Plan is established and administered as prescribed by “Article 4. Firefighters’ 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 Fire Department elected by the Membership, and
- c.) One retired Member of the Fire Department elected by the Membership.

Credited Service

Years and fractional parts of years of service (except as noted below) as a sworn Firefighter employed by the Municipality.

Salary

Annual salary, including longevity, attached to firefighter’s rank, as established by the municipality appropriation ordinance, excluding overtime pay, bonus pay and holiday pay except for the base 8 hours of the 10 pensionable holidays which is included.

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%.

Normal Retirement

Date

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

**Tier 2:** Age 55 and 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 \$1,159.27 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 \$1,159.27 per month.

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	<b>Tier 1:</b> Age 60 and 10 years of Credited Service. <b>Tier 2:</b> Age 50 and 10 years of Credited Service.
Benefit	<b>Tier 1:</b> 1.50% plus 0.10% for each year of service in excess of 10 years, times salary x service (complete years). <b>Tier 2:</b> Normal Retirement Benefit, reduced 6.00% for 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. Seven years of service required for non-service connected disability.
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.

Vesting (Termination)

Vesting Service Requirement	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.
Termination Benefit	Based on the monthly salary attached to the Member's rank at separation from service and equals:  <b>Tier 1:</b> 1.50% plus 0.10% for each year of service in excess of 10 years, times salary x service (based on complete years).  <b>Tier 2:</b> 2.50% of 4-year final average salary times creditable service.

Contributions

Employee	9.455% of Salary.
Municipality	Remaining amount necessary for payment of Normal (current year's) Cost and amortization of the accrued past service liability.