

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



**FOSTER & FOSTER**  
ACTUARIES AND CONSULTANTS



August 26, 2022

Board of Trustees  
City of Evanston Firefighters' Pension Fund

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

Dear Board:

We are pleased to present to the Board this report of the annual actuarial valuation of the City of Evanston 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 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.

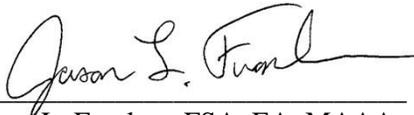
The undersigned are familiar with the immediate and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the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

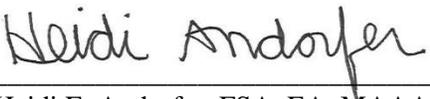
To our knowledge, no associate of Foster & Foster, Inc. working on valuations of the program has any direct financial interest or indirect material interest in the City of Evanston, nor does anyone at Foster & Foster, Inc. act as a member of the Board of Trustees of the City of Evanston Firefighters' 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:   
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By:   
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Enclosures

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## SUMMARY OF REPORT

The regular annual actuarial valuation of the City of Evanston Firefighters' Pension Fund, performed as of January 1, 2022, has been completed and the results are presented in this report. The contribution amounts set forth herein are applicable to the plan/fiscal year ended December 31, 2023.

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

Valuation Date	1/1/2022	1/1/2021
Applicable to Fiscal Year Ending	<u>12/31/2023</u>	<u>12/31/2022</u>
Total Recommended Contribution	\$11,487,213	\$10,997,986
% of Projected Annual Payroll	109.1%	110.5%
Member Contributions (Est.)	(995,875)	(941,110)
% of Projected Annual Payroll	(9.5%)	(9.5%)
City Recommended Contribution	10,491,338	10,056,876
% of Projected Annual Payroll	99.6%	101.0%

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

Plan experience was favorable overall on the basis of the plan's actuarial assumptions. Sources of favorable experience included an investment return of 10.60% (Actuarial Asset Basis) which exceeded the 6.25% assumption, higher than expected inactive mortality, and an average salary increase of 2.61% which fell short of the 4.24% assumption. These gains were offset in part by a loss associated with the disablements of 2 active employees.

## CHANGES SINCE PRIOR VALUATION

### Plan Changes Since Prior Valuation

There were no plan changes since the prior valuation.

### Actuarial Assumption/Method Changes Since Prior Valuation

Based on the results of the 2021 experience study performed for the Illinois Firefighters' Pension Investment Fund, the mortality, retirement, and termination rate tables were updated.

There were no method changes since the prior valuation.

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

	New Assump <u>1/1/2022</u>	Old Assump <u>1/1/2022</u>	<u>1/1/2021</u>
<b>A. Participant Data</b>			
Number Included			
Actives	104	104	95
Service Retirees	83	83	87
Beneficiaries	40	40	39
Disability Retirees	25	25	23
Terminated Vested	<u>5</u>	<u>5</u>	<u>2</u>
Total	257	257	246
Total Annual Payroll	\$10,532,785	\$10,532,785	\$9,953,574
Payroll Under Assumed Ret. Age	10,532,785	10,532,785	9,953,574
Annual Rate of Payments to:			
Service Retirees	7,215,963	7,215,963	7,199,098
Beneficiaries	1,691,403	1,691,403	1,668,576
Disability Retirees	1,767,326	1,767,326	1,625,981
Terminated Vested	0	0	0
<b>B. Assets</b>			
Actuarial Value	103,165,026	103,165,026	93,223,249
Market Value	114,592,514	114,592,514	101,034,113
<b>C. Liabilities</b>			
Present Value of Benefits			
Actives			
Retirement Benefits	77,454,797	74,153,829	71,252,508
Disability Benefits	8,757,455	8,967,136	8,566,313
Death Benefits	969,545	1,173,536	1,129,811
Vested Benefits	3,117,424	2,876,409	3,000,240
Service Retirees	109,402,470	107,290,311	106,395,594
Beneficiaries	16,105,649	15,972,425	15,538,126
Disability Retirees	27,197,216	26,878,135	24,767,831
Terminated Vested	<u>73,613</u>	<u>73,613</u>	<u>66,799</u>
Total	243,078,169	237,385,394	230,717,222

C. Liabilities - (Continued)	New Assump <u>1/1/2022</u>	Old Assump <u>1/1/2022</u>	<u>1/1/2021</u>
Present Value of Future Salaries	114,783,412	119,535,317	112,517,426
Present Value of Future Member Contributions	10,852,772	11,302,064	10,638,523
Normal Cost (Retirement)	2,423,485	2,341,554	2,224,478
Normal Cost (Disability)	474,559	480,537	454,840
Normal Cost (Death)	63,226	80,975	77,570
Normal Cost (Vesting)	<u>185,003</u>	<u>164,673</u>	<u>161,944</u>
Total Normal Cost	3,146,273	3,067,739	2,918,832
Present Value of Future Normal Costs	30,849,723	31,409,288	29,910,974
Accrued Liability (Retirement)	53,390,825	49,890,615	48,161,127
Accrued Liability (Disability)	3,993,628	3,968,379	3,838,234
Accrued Liability (Death)	278,872	265,563	264,532
Accrued Liability (Vesting)	1,786,173	1,637,065	1,774,005
Accrued Liability (Inactives)	<u>152,778,948</u>	<u>150,214,484</u>	<u>146,768,350</u>
Total Actuarial Accrued Liability	212,228,446	205,976,106	200,806,248
Unfunded Actuarial Accrued Liability (UAAL)	109,063,420	102,811,080	107,582,999
Funded Ratio (AVA / AL)	48.6%	50.1%	46.4%

	New Assump <u>1/1/2022</u>	Old Assump <u>1/1/2022</u>	<u>1/1/2021</u>
D. Actuarial Present Value of Accrued Benefits			
Vested Accrued Benefits			
Inactives	152,778,948	150,214,484	146,768,350
Actives	18,963,499	17,375,370	16,305,004
Member Contributions	<u>10,163,555</u>	<u>10,163,555</u>	<u>9,726,986</u>
Total	181,906,002	177,753,409	172,800,340
Non-vested Accrued Benefits	<u>3,212,782</u>	<u>2,771,494</u>	<u>3,894,355</u>
Total Present Value Accrued Benefits	185,118,784	180,524,903	176,694,695
Funded Ratio (MVA / PVAB)	61.9%	63.5%	57.2%
Increase (Decrease) in Present Value of Accrued Benefits Attributable to:			
Plan Amendments	0	0	
Assumption Changes	4,593,881	0	
Plan Experience	0	3,662,243	
Benefits Paid	0	(10,545,894)	
Interest	0	10,713,859	
Other	<u>0</u>	<u>0</u>	
Total	4,593,881	3,830,208	

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

E. Pension Cost

Normal Cost <sup>1</sup>	\$3,342,915	\$3,259,473	\$3,101,259
% of Total Annual Payroll <sup>1</sup>	31.8	31.0	31.2
Administrative Expenses <sup>1</sup>	117,391	117,391	112,318
% of Total Annual Payroll <sup>1</sup>	1.1	1.1	1.1
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 19 years (as of 1/1/2022) <sup>1</sup>	8,026,907	7,512,700	7,784,409
% of Total Annual Payroll <sup>1</sup>	76.2	71.3	78.2
Total Recommended Contribution	11,487,213	10,889,564	10,997,986
% of Total Annual Payroll <sup>1</sup>	109.1	103.4	110.5
Expected Member Contributions <sup>1</sup>	(995,875)	(995,875)	(941,110)
% of Total Annual Payroll <sup>1</sup>	(9.5)	(9.5)	(9.5)
Expected City Contribution	10,491,338	9,893,689	10,056,876
% of Total Annual Payroll <sup>1</sup>	99.6	93.9	101.0

F. Past Contributions

Plan Years Ending:	<u>12/31/2021</u>
Total Recommended Contribution	11,146,091
City	10,144,265
Actual Contributions Made:	
Members (excluding buyback)	1,001,826
City	<u>9,710,377</u>
Total	10,712,203

G. Net Actuarial (Gain)/Loss (3,692,375)

<sup>1</sup> Contributions developed as of 1/1/2022 displayed above have been adjusted to account for assumed interest.

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

<u>Year</u>	<u>Projected Unfunded Accrued Liability</u> <sup>1</sup>
2022	87,840,575
2023	85,303,704
2024	82,608,279
2028	70,033,314
2033	49,355,967
2037	27,655,594
2041	0

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

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

		<u>Actual</u>	<u>Assumed</u>
Year Ended	12/31/2021	2.61%	4.24%
Year Ended	12/31/2020	3.44%	4.32%
Year Ended	12/31/2019	2.57%	4.21%
Year Ended	12/31/2018	7.51%	4.27%
Year Ended	12/31/2017	2.02%	4.36%

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

		<u>Actual MVA</u>	<u>Actual AVA</u>	<u>Assumed</u>
Year Ended	12/31/2021	13.36%	10.60%	6.25%
Year Ended	12/31/2020	12.64%	8.94%	6.25%
Year Ended	12/31/2019	19.23%	5.91%	6.25%
Year Ended	12/31/2018	-4.39%	3.73%	6.25%
Year Ended	12/31/2017	11.26%	6.36%	6.25%

DEVELOPMENT OF JANUARY 1, 2022 AMORTIZATION PAYMENT

(1)	Unfunded Actuarial Accrued Liability as of January 1, 2021	\$107,582,999
(2)	Sponsor Normal Cost developed as of January 1, 2021	1,977,722
(3)	Expected administrative expenses for the year ended December 31, 2021	105,711
(4)	Expected interest on (1), (2) and (3)	6,850,849
(5)	Sponsor contributions to the System during the year ended December 31, 2021	9,710,377
(6)	Expected interest on (5)	303,449
(7)	Expected Unfunded Actuarial Accrued Liability as of December 31, 2021, (1)+(2)+(3)+(4)-(5)-(6)	106,503,455
(8)	Change to UAAL due to Assumption Change	6,252,340
(9)	Change to UAAL due to Actuarial (Gain)/Loss	(3,692,375)
(10)	Unfunded Accrued Liability as of January 1, 2022	109,063,420
(11)	UAAL Subject to Amortization (90% AAL less Actuarial Assets)	87,840,575

<u>Date</u> <u>Established</u>	<u>Years</u> <u>Remaining</u>	<u>1/1/2022</u> <u>Amount</u>	<u>Amortization</u> <u>Amount</u>
1/1/2022	19	87,840,575	7,554,736

## DETAILED ACTUARIAL (GAIN)/LOSS ANALYSIS

(1) Unfunded Actuarial Accrued Liability (UAAL) as of January 1, 2021	\$107,582,999
(2) Expected UAAL as of January 1, 2022	106,503,455
(3) Summary of Actuarial (Gain)/Loss, by component:	
Investment Return (Actuarial Asset Basis)	(4,057,756)
Salary Increases	(792,889)
Active Decrements	1,730,285
Inactive Mortality	(1,883,139)
Other	<u>1,311,124</u>
Change in UAAL due to (Gain)/Loss	(3,692,375)
Change to UAAL due to Assumption Change	<u>6,252,340</u>
(4) Actual UAAL as of January 1, 2022	\$109,063,420

## RECONCILIATION OF CHANGES IN CONTRIBUTION REQUIREMENT

(1) Contribution Determined as of January 1, 2021	\$ 10,056,876
(2) Summary of Contribution Impact by component:	
Change in Normal Cost	158,214
Change in Assumed Administrative Expense	5,073
Investment Return (Actuarial Asset Basis)	(298,645)
Salary Increases	(58,355)
New Entrants	14,819
Active Decrements	127,346
Inactive Mortality	(138,596)
Contributions (More) or Less than Recommended	39,700
Increase in Amortization Payment Due to Payroll Growth Assumption	-
Change in Expected Member Contributions	(54,765)
Assumption Change	597,649
Other	42,022
Total Change in Contribution	434,462
(3) Contribution Determined as of January 1, 2022	\$10,491,338

## STATUTORY MINIMUM REQUIRED CONTRIBUTION

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

	New Assump	Old Assump	
Valuation Date	1/1/2022	1/1/2022	1/1/2021
Applicable to Fiscal Year Ending	<u>12/31/2023</u>	<u>12/31/2023</u>	<u>12/31/2022</u>
Actuarial Accrued Liability (PUC)	206,085,953	200,813,583	196,510,889
Actuarial Value of Assets	<u>103,165,026</u>	<u>103,165,026</u>	<u>93,223,249</u>
Unfunded Actuarial Accrued Liability (UAAL)	102,920,927	97,648,557	103,287,640
UAAL Subject to Amortization	82,312,332	77,567,199	83,636,551
Normal Cost <sup>1</sup>	\$3,706,838	\$3,548,720	\$3,370,965
% of Total Annual Payroll <sup>1</sup>	35.2	33.7	33.9
Administrative Expenses <sup>1</sup>	117,391	117,391	112,318
% of Total Annual Payroll <sup>1</sup>	1.1	1.1	1.1
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 19 years (as of 1/1/2022) <sup>1</sup>	6,118,990	5,436,011	5,635,508
% of Total Annual Payroll <sup>1</sup>	58.1	51.6	56.6
Total Required Contribution	9,943,219	9,102,122	9,118,791
% of Total Annual Payroll <sup>1</sup>	94.4	86.4	91.6
Expected Member Contributions <sup>1</sup>	(995,875)	(995,875)	(941,110)
% of Total Annual Payroll <sup>1</sup>	(9.5)	(9.5)	(9.5)
Expected City Contribution	8,947,344	8,106,247	8,177,681
% of Total Annual Payroll <sup>1</sup>	84.9	76.9	82.1
 Assumptions and Methods:			
Actuarial Cost Method	Projected Unit Credit		
Amortization Method	90% Funding by 2040		
Payroll Growth Assumption	2.75%		

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

<sup>1</sup> Contributions developed as of 1/1/2022 displayed above have been adjusted to account for assumed interest.

## PROJECTION OF BENEFIT PAYMENTS

Year	Payments for Current Actives	Payments for Current Inactives	Total Payments
2022	148,395	10,642,270	10,790,665
2023	396,134	10,718,873	11,115,007
2024	650,185	10,847,262	11,497,447
2025	923,568	10,968,691	11,892,259
2026	1,225,964	11,072,843	12,298,807
2027	1,544,754	11,164,900	12,709,654
2028	1,895,139	11,264,369	13,159,508
2029	2,239,508	11,329,367	13,568,875
2030	2,606,544	11,398,835	14,005,379
2031	2,997,415	11,427,719	14,425,134
2032	3,422,666	11,455,844	14,878,510
2033	3,869,632	11,438,907	15,308,539
2034	4,373,390	11,423,029	15,796,419
2035	4,900,086	11,389,199	16,289,285
2036	5,443,203	11,286,909	16,730,112
2037	6,002,272	11,149,660	17,151,932
2038	6,594,720	10,975,839	17,570,559
2039	7,202,818	10,763,713	17,966,531
2040	7,793,672	10,540,538	18,334,210
2041	8,357,521	10,252,120	18,609,641
2042	8,932,158	9,925,700	18,857,858
2043	9,509,231	9,563,346	19,072,577
2044	10,120,435	9,168,179	19,288,614
2045	10,704,126	8,745,291	19,449,417
2046	11,234,460	8,299,207	19,533,667
2047	11,723,203	7,835,725	19,558,928
2048	12,211,700	7,360,972	19,572,672
2049	12,715,799	6,881,000	19,596,799
2050	13,256,675	6,401,573	19,658,248
2051	13,727,568	5,928,095	19,655,663
2052	14,141,717	5,465,317	19,607,034
2053	14,497,759	5,017,187	19,514,946
2054	14,813,331	4,586,788	19,400,119
2055	15,084,248	4,176,825	19,261,073
2056	15,312,078	3,788,132	19,100,210
2057	15,497,378	3,421,472	18,918,850
2058	15,644,595	3,077,012	18,721,607
2059	15,750,722	2,754,646	18,505,368
2060	15,815,261	2,454,109	18,269,370
2061	15,834,088	2,175,012	18,009,100

## ACTUARIAL ASSUMPTIONS AND METHODS

Interest Rate	6.25% 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 Graded schedule based on age.

Age	Increase
25	7.36%
30	5.48%
35	4.53%
40	4.02%
45	3.81%
50	3.68%
55+	3.62%

Marital Status 80% of Members are assumed to be married.

Spouse's Age Males are assumed to be three years older than females.

Funding Method Entry Age Normal Cost Method.

Actuarial Asset Method Investment gains and losses are smoothed over a 5-year period. In the first year, 20% of the gain or loss is recognized. In the second year 40%, in the third year 60%, in the fourth year 80%, and in the fifth year 100% of the gain or loss is recognized. The actuarial investment gain or loss is defined as the actual return on investments minus the actuarial assumed investment return. Actuarial Assets shall not be less than 80% nor greater than 120% of the Market Value of Assets.

Funding Policy Amortization Method The UAAL is amortized according to a Level Dollar method over a period ending in 2040. The initial amortization amount is 90% of the Accrued Liability less the Actuarial Value of Assets.

Payroll Growth None.

Administrative Expenses Expenses paid out of the fund other than investment-related expenses are assumed to be equal to those paid in the previous year.

Decrement Tables

% Terminating During the Year		% Becoming Disabled During the Year		% Retiring During the Year (Tier 1)		% Retiring During the Year (Tier 2)	
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%				

## 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 stayed about the same from January 1, 2019 to January 1, 2022, indicating that the plan's maturity level has not significantly changed during the period.
- The Accrued Liability Ratio, determined as the ratio of the Inactive Accrued Liability, which is the liability associated with members who are no longer employed but are due a benefit from the plan, to the Total Accrued Liability, is 72.0%. With a plan of this maturity, losses due to lower than expected investment returns or demographic factors will need to be made up for over a shorter time horizon than would be needed for a less mature plan.
- The Funded Ratio, determined as the ratio of the Actuarial Value of Assets to the Total Accrued Liability, has increased from 43.3% on January 1, 2019 to 48.6% on January 1, 2022, due mainly to 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, stayed approximately the same from January 1, 2019 to January 1, 2022. The current Net Cash Flow Ratio of 0.0% indicates that contributions are generally covering the plan's benefit payments and administrative expenses.

It is important to note that the actuary has identified the risks above as the most significant risks based on the characteristics of the plan and the nature of the project, however, it is not an exhaustive list of potential risks that could be considered. Additional advanced modeling, as well as the identification of additional risks, can be provided at the request of the audience addressed on page 2 of this report.

PLAN MATURITY MEASURES AND OTHER RISK METRICS

	<u>1/1/2022</u>	<u>1/1/2021</u>	<u>1/1/2020</u>	<u>1/1/2019</u>
<u>Support Ratio</u>				
Total Actives	104	95	102	99
Total Inactives	153	151	148	146
Actives / Inactives	68.0%	62.9%	68.9%	67.8%

Asset Volatility Ratio

Market Value of Assets (MVA)	114,592,514	101,034,113	89,807,041	75,776,118
Total Annual Payroll	10,532,785	9,953,574	10,620,145	10,247,468
MVA / Total Annual Payroll	1,088.0%	1,015.1%	845.6%	739.5%

Accrued Liability (AL) Ratio

Inactive Accrued Liability	152,778,948	146,768,350	132,736,853	132,637,233
Total Accrued Liability	212,228,446	200,806,248	194,044,011	187,799,736
Inactive AL / Total AL	72.0%	73.1%	68.4%	70.6%

Funded Ratio

Actuarial Value of Assets (AVA)	103,165,026	93,223,249	85,683,402	81,390,583
Total Accrued Liability	212,228,446	200,806,248	194,044,011	187,799,736
AVA / Total Accrued Liability	48.6%	46.4%	44.2%	43.3%

Net Cash Flow Ratio

Net Cash Flow <sup>1</sup>	55,823	(117,315)	(501,658)	181,868
Market Value of Assets (MVA)	114,592,514	101,034,113	89,807,041	75,776,118
Ratio	0.0%	-0.1%	-0.6%	0.2%

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

STATEMENT OF FIDUCIARY NET POSITION  
December 31, 2021

<u>ASSETS</u>	MARKET VALUE
Cash and Cash Equivalents:	
Checking Account	44,084
Money Market	10,737,046
Total Cash and Equivalents	10,781,130
Receivables:	
From City	39,403
Prepays	9,081
Accrued Past Due Interest	106,447
Total Receivable	154,931
Investments:	
Municipal Obligations	338,768
Corporate Bonds	9,157,730
U.S. Gov't and Agency Obligations	12,679,136
Pooled/Common/Commingled Funds	10,294,535
Mutual Funds	71,240,853
Total Investments	103,711,022
Total Assets	114,647,083
<u>LIABILITIES</u>	
Liabilities:	
Payable:	
Expenses	54,569
Total Liabilities	54,569
Net Assets:	
Active and Retired Members' Equity	114,592,514
NET POSITION RESTRICTED FOR PENSIONS	114,592,514
TOTAL LIABILITIES AND NET ASSETS	114,647,083

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

ADDITIONS

Contributions:

Member	1,001,826
City	9,710,377

Total Contributions 10,712,203

Investment Income:

Miscellaneous Income	2,578	
Net Realized Gain (Loss)	(827,184)	
Unrealized Gain (Loss)	12,308,819	
Net Increase in Fair Value of Investments		11,484,213
Interest & Dividends		2,232,776
Less Investment Expense <sup>1</sup>		(214,411)

Net Investment Income 13,502,578

Total Additions 24,214,781

DEDUCTIONS

Distributions to Members:

Benefit Payments	10,545,894
Refund of Contributions/Transfers	0

Total Distributions 10,545,894

Administrative Expenses 110,486

Total Deductions 10,656,380

Net Increase in Net Position 13,558,401

NET POSITION RESTRICTED FOR PENSIONS

Beginning of the Year 101,034,113

End of the Year 114,592,514

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

ACTUARIAL ASSET VALUATION

December 31, 2021

Development of Actuarial Value of Assets

Market Value of Assets, 12/31/2021	114,592,514
(Gains)/Losses Not Yet Recognized	<u>(11,427,488)</u>
Actuarial Value of Assets, 12/31/2021	103,165,026
12/31/2021 Limited Actuarial Assets:	103,165,026

Development of Investment Gain/Loss

Market Value of Assets, 12/31/2020	101,034,113
Contributions Less Benefit Payments & Administrative Expenses	55,823
Expected Investment Earnings <sup>1</sup>	6,316,377
Actual Net Investment Earnings	<u>13,502,578</u>
2021 Actuarial Investment Gain/(Loss)	7,186,201

<sup>1</sup> Expected Investment Earnings = 6.25% x (101,034,113 + 0.5 x 55,823)

Gains/(Losses) Not Yet Recognized

Plan Year Ending	Gain/(Loss)	Amounts Not Yet Recognized by Valuation Year				
		2021	2022	2023	2024	2025
12/31/2018	(8,426,578)	(1,685,316)	0	0	0	0
12/31/2019	9,806,938	3,922,775	1,961,388	0	0	0
12/31/2020	5,735,113	3,441,068	2,294,045	1,147,023	0	0
12/31/2021	7,186,201	5,748,961	4,311,721	2,874,480	1,437,240	0
Total		11,427,488	8,567,154	4,021,503	1,437,240	0

Development of Asset Returns

(A) 12/31/2020 Actuarial Assets:	93,223,249
(I) Net Investment Income:	
1. Interest and Dividends	2,235,354
2. Realized Gains (Losses)	(827,184)
3. Change in Actuarial Value	8,692,195
4. Investment Expenses	<u>(214,411)</u>
Total	9,885,954
(B) 12/31/2021 Actuarial Assets:	103,165,026
Actuarial Asset Rate of Return = (2 x I) / (A + B - I):	10.60%
Market Value of Assets Rate of Return:	13.36%
Actuarial Gain/(Loss) due to Investment Return (Actuarial Asset Basis)	4,057,756

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

INCOME		
Contributions:		
Member	1,001,826	
City	9,710,377	
Total Contributions		10,712,203
Earnings from Investments		
Interest & Dividends	2,232,776	
Miscellaneous Income	2,578	
Net Realized Gain (Loss)	(827,184)	
Change in Actuarial Value	8,692,195	
Total Earnings and Investment Gains		10,100,365
EXPENSES		
Administrative Expenses:		
Investment Related <sup>1</sup>	214,411	
Other	110,486	
Total Administrative Expenses		324,897
Distributions to Members:		
Benefit Payments	10,545,894	
Refund of Contributions/Transfers	0	
Total Distributions		10,545,894
Change in Net Assets for the Year		9,941,777
Net Assets Beginning of the Year		93,223,249
Net Assets End of the Year <sup>2</sup>		103,165,026

<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>1/1/2022</u>	<u>1/1/2021</u>	<u>1/1/2020</u>	<u>1/1/2019</u>
<u>Actives - Tier 1</u>				
Number	56	59	67	68
Average Current Age	46.2	45.5	46.0	45.1
Average Age at Employment	28.3	28.4	28.0	28.2
Average Past Service	17.9	17.1	18.0	16.9
Average Annual Salary	\$114,583	\$112,882	\$112,126	\$109,606
<u>Actives - Tier 2</u>				
Number	48	36	35	31
Average Current Age	33.1	33.7	32.9	33.2
Average Age at Employment	27.5	27.3	27.1	27.6
Average Past Service	5.6	6.4	5.8	5.6
Average Annual Salary	\$85,753	\$91,487	\$88,791	\$90,138
<u>Service Retirees</u>				
Number	83	87	81	83
Average Current Age	69.0	69.1	69.9	69.2
Average Annual Benefit	\$86,939	\$82,748	\$78,877	\$76,435
<u>Beneficiaries</u>				
Number	40	39	42	39
Average Current Age	58.7	60.0	61.7	62.3
Average Annual Benefit	\$42,285	\$42,784	\$41,778	\$40,913
<u>Disability Retirees</u>				
Number	25	23	23	22
Average Current Age	59.8	60.6	61.2	61.3
Average Annual Benefit	\$70,693	\$70,695	\$66,533	\$65,582
<u>Terminated Vested</u>				
Number	5	2	2	2
Average Current Age	31.8	38.8	37.8	36.8
Average Annual Benefit <sup>1</sup>	N/A	N/A	N/A	N/A

<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	1	0	0	0	0	0	0	0	0	0	0	1
25 - 29	8	2	4	0	2	0	0	0	0	0	0	16
30 - 34	2	1	0	0	1	7	1	0	0	0	0	12
35 - 39	1	1	0	0	0	6	14	3	0	0	0	25
40 - 44	0	0	0	0	1	1	7	7	1	0	0	17
45 - 49	0	0	0	0	0	0	4	8	2	0	0	14
50 - 54	0	0	0	0	0	0	1	5	5	1	0	12
55 - 59	0	0	0	0	0	0	0	2	2	0	1	5
60 - 64	0	0	0	0	0	0	0	0	0	1	1	2
65+	0	0	0	0	0	0	0	0	0	0	0	0
Total	12	4	4	0	4	14	27	25	10	2	2	104

## VALUATION PARTICIPANT RECONCILIATION

### 1. Active lives

a. Number in prior valuation 1/1/2021	95
b. Terminations	
i. Vested (partial or full) with deferred benefits	(1)
ii. Non-vested or full lump sum distribution received	0
iii. Transferred service to other fund	0
c. Deaths	
i. Beneficiary receiving benefits	0
ii. No future benefits payable	0
d. Disabled	(2)
e. Retired	<u>(2)</u>
f. Continuing participants	90
g. New entrants	<u>14</u>
h. Total active life participants in valuation	104

### 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	87	39	23	2	151
Retired	2	0	0	0	2
Vested Deferred	0	0	0	1	1
Death, With Survivor	(2)	2	0	0	0
Death, No Survivor	(4)	(2)	0	0	(6)
Disabled	0	2	2	0	4
Refund of Contributions	0	0	0	0	0
Rehires	0	0	0	0	0
Expired Annuities	0	(2)	0	0	(2)
Data Corrections	0	1	0	0	1
Hired/Termed in Same Year	0	0	0	2	2
b. Number current valuation	83	40	25	5	153

## 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.