

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



**FOSTER & FOSTER**  
ACTUARIES AND CONSULTANTS



May 18, 2023

Board of Trustees  
City of Rochelle Firefighters' Pension Fund

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

Dear Board:

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

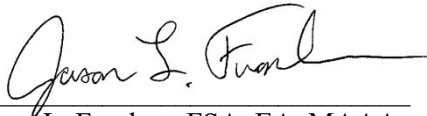
The undersigned are familiar with the immediate and long-term aspects of pension valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. All of the sections of this report are considered an integral part of the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

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SUMMARY OF REPORT

The regular annual actuarial valuation of the City of Rochelle Firefighters' Pension Fund, performed as of January 1, 2023, has been completed and the results are presented in this report. The contribution amounts set forth herein are applicable to the plan/fiscal year ended December 31, 2024.

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

Valuation Date	1/1/2023	1/1/2022
Applicable to Fiscal Year Ending	<u>12/31/2024</u>	<u>12/31/2023</u>
Total Recommended Contribution	\$647,095	\$633,907
% of Projected Annual Payroll	48.8%	49.9%
Member Contributions (Est.)	(125,456)	(120,218)
% of Projected Annual Payroll	(9.5%)	(9.5%)
City Recommended Contribution	521,639	513,689
% of Projected Annual Payroll	39.3%	40.4%

As you can see, the Total Recommended Contribution shows an increase when compared to the results determined in the January 1, 2022 actuarial valuation report. The increase is mainly attributable to net unfavorable plan experience and the natural increase in the amortization payment due to the payroll growth assumption. The increase was offset in part by a decrease in expected administrative expenses and City contributions in excess of the recommended amount.

Plan experience was unfavorable overall on the basis of the plan's actuarial assumptions. Sources of unfavorable experience included an investment return of 4.76% (Actuarial Asset Basis) which fell short of the 6.75% assumption and lower than expected inactive mortality. These losses were offset in part by gains associated with an average salary increase of 4.36% which fell short of the 5.39% assumption and fewer retirements than expected.

## CHANGES SINCE PRIOR VALUATION

### Plan Changes Since Prior Valuation

There were no plan changes since the prior valuation.

### Actuarial Assumption/Method Changes Since Prior Valuation

There were no assumption or method changes since the prior valuation.

COMPARATIVE SUMMARY OF PRINCIPAL VALUATION RESULTS

	<u>1/1/2023</u>	<u>1/1/2022</u>
A. Participant Data		
Number Included		
Actives	14	14
Service Retirees	8	8
Beneficiaries	0	0
Disability Retirees	1	1
Terminated Vested	<u>1</u>	<u>1</u>
Total	24	24
Total Annual Payroll	\$1,326,872	\$1,271,476
Payroll Under Assumed Ret. Age	1,326,872	1,271,476
Annual Rate of Payments to:		
Service Retirees	587,384	570,276
Beneficiaries	0	0
Disability Retirees	34,589	34,090
Terminated Vested	0	0
B. Assets		
Actuarial Value	12,142,848	11,393,962
Market Value	10,771,906	12,355,121
C. Liabilities		
Present Value of Benefits		
Actives		
Retirement Benefits	8,856,132	8,307,043
Disability Benefits	1,031,785	989,155
Death Benefits	124,413	121,692
Vested Benefits	426,077	426,272
Service Retirees	8,750,848	8,392,290
Beneficiaries	0	0
Disability Retirees	242,565	332,765
Terminated Vested	<u>37,425</u>	<u>37,425</u>
Total	19,469,245	18,606,642

C. Liabilities - (Continued)	<u>1/1/2023</u>	<u>1/1/2022</u>
Present Value of Future Salaries	15,389,729	15,224,678
Present Value of Future Member Contributions	1,455,099	1,439,493
Normal Cost (Retirement)	253,601	246,087
Normal Cost (Disability)	44,203	42,523
Normal Cost (Death)	7,511	7,200
Normal Cost (Vesting)	<u>21,684</u>	<u>21,619</u>
Total Normal Cost	326,999	317,429
Present Value of Future Normal Costs	3,484,280	3,510,476
Accrued Liability (Retirement)	6,155,157	5,583,019
Accrued Liability (Disability)	497,153	456,833
Accrued Liability (Death)	36,949	35,166
Accrued Liability (Vesting)	264,868	258,668
Accrued Liability (Inactives)	<u>9,030,838</u>	<u>8,762,480</u>
Total Actuarial Accrued Liability	15,984,965	15,096,166
Unfunded Actuarial Accrued Liability (UAAL)	3,842,117	3,702,204
Funded Ratio (AVA / AL)	76.0%	75.5%



	<u>1/1/2023</u>	<u>1/1/2022</u>
D. Actuarial Present Value of Accrued Benefits		
Vested Accrued Benefits		
Inactives	9,030,838	8,762,480
Actives	2,092,943	1,997,273
Member Contributions	<u>1,237,955</u>	<u>1,121,531</u>
Total	12,361,736	11,881,284
Non-vested Accrued Benefits	<u>179,584</u>	<u>281,883</u>
Total Present Value Accrued Benefits	12,541,320	12,163,167
Funded Ratio (MVA / PVAB)	85.9%	101.6%
Increase (Decrease) in Present Value of Accrued Benefits Attributable to:		
Plan Amendments	0	
Assumption Changes	0	
Plan Experience	200,104	
Benefits Paid	(621,973)	
Interest	800,022	
Other	<u>0</u>	
Total	378,153	

Valuation Date	1/1/2023	1/1/2022
Applicable to Fiscal Year Ending	<u>12/31/2024</u>	<u>12/31/2023</u>

E. Pension Cost

Normal Cost <sup>1</sup>	\$349,071	\$338,855
% of Total Annual Payroll <sup>1</sup>	26.3	26.7
Administrative Expenses <sup>1</sup>	0	18,893
% of Total Annual Payroll <sup>1</sup>	0.0	1.5
Payment Required to Amortize Unfunded Actuarial Accrued Liability over 18 years (as of 1/1/2023) <sup>1</sup>	298,024	276,159
% of Total Annual Payroll <sup>1</sup>	22.5	21.7
Total Recommended Contribution	647,095	633,907
% of Total Annual Payroll <sup>1</sup>	48.8	49.9
Expected Member Contributions <sup>1</sup>	(125,456)	(120,218)
% of Total Annual Payroll <sup>1</sup>	(9.5)	(9.5)
Expected City Contribution	521,639	513,689
% of Total Annual Payroll <sup>1</sup>	39.3	40.4

F. Past Contributions

Plan Years Ending:	<u>12/31/2022</u>
Total Recommended Contribution	716,487
City	600,063
Actual Contributions Made:	
Members (excluding buyback)	116,424
City	<u>706,853</u>
Total	823,277

G. Net Actuarial (Gain)/Loss 391,905

<sup>1</sup> Contributions developed as of 1/1/2023 displayed above have been adjusted to account for assumed interest.

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

<u>Year</u>	<u>Projected Unfunded Accrued Liability</u>
2023	3,842,117
2024	3,803,436
2025	3,752,459
2029	3,401,337
2033	2,744,536
2037	1,663,379
2041	0

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

		<u>Actual</u>	<u>Assumed</u>
Year Ended	12/31/2022	4.36%	5.39%
Year Ended	12/31/2021	4.72%	5.00%
Year Ended	12/31/2020	7.33%	5.18%
Year Ended	12/31/2019	5.94%	5.14%
Year Ended	12/31/2018	6.79%	4.97%

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

		<u>Actual MVA</u>	<u>Actual AVA</u>	<u>Assumed</u>
Year Ended	12/31/2022	-14.33%	4.76%	6.75%
Year Ended	12/31/2021	10.40%	9.94%	6.50%
Year Ended	12/31/2020	14.70%	8.42%	6.50%
Year Ended	12/31/2019	15.48%	5.45%	6.50%
Year Ended	12/31/2018	-2.83%	4.21%	6.50%

DEVELOPMENT OF JANUARY 1, 2023 AMORTIZATION PAYMENT

(1)	Unfunded Actuarial Accrued Liability as of January 1, 2022	\$3,702,204
(2)	Sponsor Normal Cost developed as of January 1, 2022	197,211
(3)	Expected administrative expenses for the year ended December 31, 2022	17,698
(4)	Expected interest on (1), (2) and (3)	263,808
(5)	Sponsor contributions to the System during the year ended December 31, 2022	706,853
(6)	Expected interest on (5)	23,856
(7)	Expected Unfunded Actuarial Accrued Liability as of December 31, 2022, (1)+(2)+(3)+(4)-(5)-(6)	3,450,212
(8)	Change to UAAL due to Assumption Change	0
(9)	Change to UAAL due to Actuarial (Gain)/Loss	391,905
(10)	Unfunded Accrued Liability as of January 1, 2023	3,842,117
(11)	UAAL Subject to Amortization (100% AAL less Actuarial Assets)	3,842,117

<u>Date Established</u>	<u>Years Remaining</u>	<u>1/1/2023 Amount</u>	<u>Amortization Amount</u>
1/1/2023	18	3,842,117	279,179

## DETAILED ACTUARIAL (GAIN)/LOSS ANALYSIS

(1) Unfunded Actuarial Accrued Liability (UAAL) as of January 1, 2022	\$3,702,204
(2) Expected UAAL as of January 1, 2023	3,450,212
(3) Summary of Actuarial (Gain)/Loss, by component:	
Investment Return (Actuarial Asset Basis)	228,304
Salary Increases	(87,065)
Active Decrements	(37,072)
Inactive Mortality	68,358
Other	<u>219,380</u>
Change in UAAL due to (Gain)/Loss	391,905
Change to UAAL due to Assumption Change	<u>0</u>
(4) Actual UAAL as of January 1, 2023	\$3,842,117

RECONCILIATION OF CHANGES IN CONTRIBUTION REQUIREMENT

(1) Contribution Determined as of January 1, 2022	\$	513,689
(2) Summary of Contribution Impact by component:		
Change in Normal Cost		10,216
Change in Assumed Administrative Expense		(18,893)
Investment Return (Actuarial Asset Basis)		17,709
Salary Increases		(6,753)
New Entrants		-
Active Decrements		(2,876)
Inactive Mortality		5,302
Contributions (More) or Less than Recommended		(8,563)
Increase in Amortization Payment Due to Payroll Growth Assumption		8,975
Change in Expected Member Contributions		(5,238)
Assumption Change		-
Other		<u>8,071</u>
Total Change in Contribution		7,950
(3) Contribution Determined as of January 1, 2023		\$521,639

PROJECTION OF BENEFIT PAYMENTS

Year	Payments for Current Actives	Payments for Current Inactives	Total Payments
2023	21,562	654,586	676,148
2024	53,754	632,651	686,405
2025	82,480	647,904	730,384
2026	116,949	662,813	779,762
2027	149,907	677,256	827,163
2028	177,673	691,084	868,757
2029	210,089	704,122	914,211
2030	247,121	716,162	963,283
2031	287,861	726,965	1,014,826
2032	324,572	736,263	1,060,835
2033	377,260	743,751	1,121,011
2034	442,492	749,101	1,191,593
2035	506,787	751,974	1,258,761
2036	573,874	752,023	1,325,897
2037	643,474	748,907	1,392,381
2038	720,489	742,313	1,462,802
2039	803,591	731,970	1,535,561
2040	879,589	717,663	1,597,252
2041	947,418	699,247	1,646,665
2042	1,052,046	676,687	1,728,733
2043	1,157,806	650,147	1,807,953
2044	1,254,694	620,024	1,874,718
2045	1,339,100	586,852	1,925,952
2046	1,436,508	551,254	1,987,762
2047	1,521,445	513,879	2,035,324
2048	1,612,245	475,333	2,087,578
2049	1,691,907	436,158	2,128,065
2050	1,757,559	396,837	2,154,396
2051	1,831,524	357,840	2,189,364
2052	1,897,249	319,654	2,216,903
2053	1,949,425	282,749	2,232,174
2054	1,994,484	247,588	2,242,072
2055	2,031,937	214,584	2,246,521
2056	2,064,340	184,038	2,248,378
2057	2,093,514	156,179	2,249,693
2058	2,117,197	131,121	2,248,318
2059	2,137,610	108,885	2,246,495
2060	2,154,143	89,430	2,243,573
2061	2,167,694	72,652	2,240,346
2062	2,177,853	58,379	2,236,232

## ACTUARIAL ASSUMPTIONS AND METHODS

Interest Rate	6.75% 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. This is based on a 2021 experience study performed for the Illinois Firefighters’ Pension Investment Fund.

Salary Scale	
Service	Rate
0	12.50%
1	10.50%
2	9.50%
3	8.50%
4	7.50%
5	6.50%
6	5.00%
7	4.50%
8+	4.00%

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 2040. The initial amortization amount is 100% of the Accrued Liability less the Actuarial Value of Assets.

Payroll Growth 3.25% 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%				

## 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 increased from 118.2% on January 1, 2020 to 140.0% on January 1, 2023, indicating that the plan has experienced a significant growth in active population.
- 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 56.5%. 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 increased from 63.9% on January 1, 2020 to 76.0% on January 1, 2023, due mainly to overall favorable plan experience during the period.
- 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, increased from -1.2% on January 1, 2020 to 1.9% on January 1, 2023. The current Net Cash Flow Ratio of 1.9% 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>1/1/2023</u>	<u>1/1/2022</u>	<u>1/1/2021</u>	<u>1/1/2020</u>
<u>Support Ratio</u>				
Total Actives	14	14	13	13
Total Inactives	10	10	11	11
Actives / Inactives	140.0%	140.0%	118.2%	118.2%
 <u>Asset Volatility Ratio</u>				
Market Value of Assets (MVA)	10,771,906	12,355,121	11,071,799	9,685,438
Total Annual Payroll	1,326,872	1,271,476	1,158,036	1,078,934
MVA / Total Annual Payroll	811.8%	971.7%	956.1%	897.7%
 <u>Accrued Liability (AL) Ratio</u>				
Inactive Accrued Liability	9,030,838	8,762,480	10,032,722	9,972,405
Total Accrued Liability	15,984,965	15,096,166	15,639,797	14,840,227
Inactive AL / Total AL	56.5%	58.0%	64.1%	67.2%
 <u>Funded Ratio</u>				
Actuarial Value of Assets (AVA)	12,142,848	11,393,962	10,244,594	9,482,192
Total Accrued Liability	15,984,965	15,096,166	15,639,797	14,840,227
AVA / Total Accrued Liability	76.0%	75.5%	65.5%	63.9%
 <u>Net Cash Flow Ratio</u>				
Net Cash Flow <sup>1</sup>	201,304	125,051	(34,674)	(115,610)
Market Value of Assets (MVA)	10,771,906	12,355,121	11,071,799	9,685,438
Ratio	1.9%	1.0%	-0.3%	-1.2%

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

STATEMENT OF FIDUCIARY NET POSITION  
December 31, 2022

<u>ASSETS</u>	MARKET VALUE
Cash and Cash Equivalents:	
Cash and Short-Term Investments	103,567
Total Cash and Equivalents	103,567
Total Receivable	0
Investments:	
Insurance Company Contracts	211,469
Pooled/Common/Commingled Funds	10,321,149
Mutual Funds	139,304
Total Investments	10,671,922
Total Assets	10,775,489
 <u>LIABILITIES</u>	
Liabilities:	
Payable:	
Accounts Payable	3,583
Total Liabilities	3,583
Net Assets:	
Active and Retired Members' Equity	10,771,906
NET POSITION RESTRICTED FOR PENSIONS	10,771,906
TOTAL LIABILITIES AND NET ASSETS	10,775,489



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

ADDITIONS

Contributions:

Member	116,424
City	706,853

Total Contributions 823,277

Investment Income:

Net Increase in Fair Value of Investments	(1,837,236)
Interest & Dividends	71,776
Less Investment Expense <sup>1</sup>	(19,059)

Net Investment Income (1,784,519)

Total Additions (961,242)

DEDUCTIONS

Distributions to Members:

Benefit Payments	621,973
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Total Distributions 621,973

Administrative Expenses 0

Total Deductions 621,973

Net Increase in Net Position (1,583,215)

NET POSITION RESTRICTED FOR PENSIONS

Beginning of the Year 12,355,121

End of the Year 10,771,906

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

ACTUARIAL ASSET VALUATION  
December 31, 2022

Development of Actuarial Value of Assets

Market Value of Assets, 12/31/2022	10,771,906
(Gains)/Losses Not Yet Recognized	<u>1,370,942</u>
Actuarial Value of Assets, 12/31/2022	12,142,848
12/31/2022 Limited Actuarial Assets:	12,142,848

Development of Investment Gain/Loss

Market Value of Assets, 12/31/2021	12,355,121
Contributions Less Benefit Payments & Administrative Expenses	201,304
Expected Investment Earnings <sup>1</sup>	840,765
Actual Net Investment Earnings	<u>(1,784,519)</u>
2022 Actuarial Investment Gain/(Loss)	(2,625,284)

<sup>1</sup> Expected Investment Earnings = 6.75% x (12,355,121 + 0.5 x 201,304)

Gains/(Losses) Not Yet Recognized

Plan Year Ending	Gain/(Loss)	Amounts Not Yet Recognized by Valuation Year				
		2022	2023	2024	2025	2026
12/31/2019	757,591	151,518	0	0	0	0
12/31/2020	792,608	317,043	158,522	0	0	0
12/31/2021	434,540	260,724	173,816	86,908	0	0
12/31/2022	(2,625,284)	(2,100,227)	(1,575,170)	(1,050,114)	(525,057)	0
Total		(1,370,942)	(1,242,832)	(963,206)	(525,057)	0

Development of Asset Returns

(A) 12/31/2021 Actuarial Assets:	11,393,962
(I) Net Investment Income:	
1. Interest and Dividends	71,776
2. Realized Gains (Losses)	0
3. Change in Actuarial Value	494,865
4. Investment Expenses	<u>(19,059)</u>
Total	547,582
(B) 12/31/2022 Actuarial Assets:	12,142,848
Actuarial Asset Rate of Return = (2 x I) / (A + B - I):	4.76%
Market Value of Assets Rate of Return:	-14.33%
Actuarial Gain/(Loss) due to Investment Return (Actuarial Asset Basis)	(228,304)

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

INCOME		
Contributions:		
Member	116,424	
City	706,853	
Total Contributions		823,277
Earnings from Investments		
Interest & Dividends	71,776	
Change in Actuarial Value	494,865	
Total Earnings and Investment Gains		566,641
EXPENSES		
Administrative Expenses:		
Investment Related <sup>1</sup>	19,059	
Other	0	
Total Administrative Expenses		19,059
Distributions to Members:		
Benefit Payments	621,973	
Total Distributions		621,973
Change in Net Assets for the Year		748,886
Net Assets Beginning of the Year		11,393,962
Net Assets End of the Year <sup>2</sup>		12,142,848

<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>1/1/2023</u>	<u>1/1/2022</u>	<u>1/1/2021</u>	<u>1/1/2020</u>
<u>Actives - Tier 1</u>				
Number	7	7	7	7
Average Current Age	46.1	45.1	44.1	43.1
Average Age at Employment	25.8	25.8	25.8	25.8
Average Past Service	20.3	19.3	18.3	17.3
Average Annual Salary	\$104,893	\$102,653	\$99,765	\$95,938
<u>Actives - Tier 2</u>				
Number	7	7	6	6
Average Current Age	33.3	32.3	32.4	30.4
Average Age at Employment	26.4	26.4	26.5	25.5
Average Past Service	6.9	5.9	5.9	4.9
Average Annual Salary	\$84,660	\$78,986	\$76,614	\$67,894
<u>Service Retirees</u>				
Number	8	8	9	9
Average Current Age	69.2	68.2	67.4	66.4
Average Annual Benefit	\$73,423	\$71,285	\$69,607	\$67,473
<u>Beneficiaries</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>Disability Retirees</u>				
Number	1	1	1	1
Average Current Age	78.2	77.2	76.2	75.2
Average Annual Benefit	\$34,589	\$34,090	\$33,592	\$33,093
<u>Terminated Vested</u>				
Number	1	1	1	1
Average Current Age	44.7	43.7	42.7	41.7
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	0	0	0	0	0	0	0	0	0	0	0	0
25 - 29	0	1	0	0	0	0	0	0	0	0	0	1
30 - 34	0	0	0	0	2	0	1	0	0	0	0	3
35 - 39	0	0	0	0	0	2	1	1	0	0	0	4
40 - 44	0	0	0	0	0	0	0	2	0	0	0	2
45 - 49	0	0	0	0	0	0	1	0	2	0	0	3
50 - 54	0	0	0	0	0	0	0	0	0	0	0	0
55 - 59	0	0	0	0	0	0	0	0	0	0	0	0
60 - 64	0	0	0	0	0	0	0	0	0	0	1	1
65+	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	2	2	3	3	2	0	1	14

VALUATION PARTICIPANT RECONCILIATION

1. Active lives

a. Number in prior valuation 1/1/2022	14
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	0
ii. No future benefits payable	0
d. Disabled	0
e. Retired	<u>0</u>
f. Continuing participants	14
g. New entrants	<u>0</u>
h. Total active life participants in valuation	14

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	8	0	1	1	10
Retired	0	0	0	0	0
Vested Deferred	0	0	0	0	0
Death, With Survivor	0	0	0	0	0
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	8	0	1	1	10

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.