



**CITY OF NORWICH
VOLUNTEER FIREFIGHTERS' PENSION PLAN**

**Actuarial Valuation as of January 1, 2024
To Determine Funding for Fiscal Years 2024-25 and 2025-26**

Prepared by

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Certification

As part of our engagement with the City of Norwich ("City"), we have performed an actuarial valuation of the Plan as of January 1, 2024. Our findings are set forth in this actuary's report. The main purposes of this valuation are to determine funding for fiscal years 2024-25 and 2025-26, to review the Plan's experience since the prior valuation, and to assess the funded position of the Plan.

Actuarial computations presented in this report are for the purposes of determining the recommended funding amounts for the Plan. The calculations in this report have been made on a basis consistent with our understanding of the Plan's funding policy and on our understanding of the plan provisions as summarized in this report. Determinations for purposes other than meeting these requirements, such as for financial reporting in accordance with GASB standards, may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

We believe that the measures of funded status contained herein are appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations and for assessing the need for or the amount of future contributions. Note that a Plan's funded status is dependent on the selection of both the actuarial cost method and the asset smoothing method; different measurements would result if, for instance, the Market Value of Assets were used in place of the Actuarial Value of Assets.

Actuarial assumptions, including interest rates, mortality tables, and others identified in this report, and actuarial cost methods are adopted by the City, who is responsible for selecting the Plan's funding policy, actuarial cost methods, asset valuation methods, and actuarial assumptions. The policies, methods, and assumptions used in this valuation are those that have been so adopted and are described in this report. The City is solely responsible for communicating to Milliman any changes thereto. All costs, liabilities, rates of interest, and other factors for the Plan have been determined on the basis of actuarial assumptions and methods which, in our professional opinion, are individually reasonable (taking into account the experience of the Plan and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated future experience affecting the Plan and are expected to have no significant bias.

This valuation is only an estimate of the Plan's financial condition as of a single date. It can neither predict the Plan's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of Plan benefits, only the timing of Plan contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or modifications to contribution calculations based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuarial assignment, we did not perform an analysis of the potential range of future measurements.

Certification

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the City. This information includes, but is not limited to, benefit provisions, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different, and our calculations may need to be revised.

Milliman's work is prepared solely for the use and benefit of the City. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) the City may provide a copy of Milliman's work, in its entirety, to the City's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the City; and (b) the City may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law. No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The valuation results were developed using models intended for valuations that use standard actuarial techniques. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board and the *Code of Professional Conduct and Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States*, published by the American Academy of Actuaries. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.



Rebecca A. Sielman, FSA
Consulting Actuary

Section I - Executive Summary Changes Since the Prior Valuation

Plan Experience

From January 1, 2022 to January 1, 2023, the plan's assets earned -15.73% on a Market Value basis. From January 1, 2023 to January 1, 2024, the plan's assets earned 14.46% on a Market Value basis. The interest rate assumption for this period was 6.25%; the result is an asset loss of about \$633,400 on a Market Value basis over the two-year period.

From January 1, 2022 to January 1, 2024, the Accrued Liability was expected to grow from \$6.77 million to \$7.00 million, based on expected changes in the plan's membership per the actuarial assumptions. Actual changes in the plan's membership during this period resulted in an Accrued Liability as of January 1, 2024 of \$7.10 million (measured before any changes in the plan provisions or the actuarial methods and assumptions). This difference of \$98,400 between the expected Accrued Liability and the actual Accrued Liability is termed a 'liability loss'. The primary factors contributing to this liability loss were: (1) a modest loss from a surviving beneficiary who was not reported as such in 2022; and (2) a modest gain from higher than expected turnover.

Plan Changes

None.

Changes in Actuarial Assumptions

We updated the mortality improvement assumption from the MP-2019 Ultimate Scale to the MP-2021 Ultimate Scale. This change caused the Unfunded Accrued Liability to decrease by about \$43,300 and the Actuarially Determined Contribution to decrease by about \$5,800.

Changes in Actuarial Methods

We implemented asset smoothing over a five-year period. This change caused the Unfunded Accrued Liability to decrease by about \$323,500 and the Actuarially Determined Contribution to decrease by about \$24,100.

Other Significant Changes

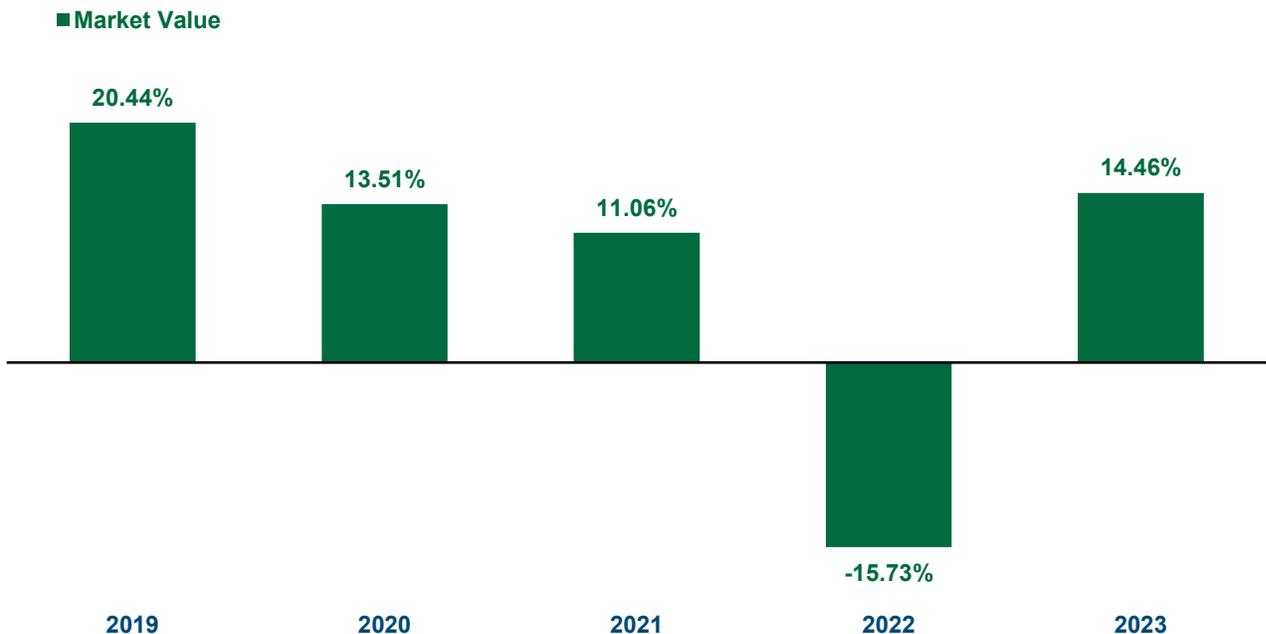
Although it is possible that the COVID-19 pandemic could have a material impact on the projected mortality, liabilities, and contribution requirements, we have chosen not to make an adjustment in the projections at this time, given the substantial current uncertainty regarding the impact of COVID-19 on mortality and plan costs, including whether the pandemic will increase or decrease mortality during the term of our projections. We will be monitoring this development closely and may adjust future projections to reflect the impact of COVID-19, if and when it becomes appropriate.

Section I - Executive Summary Assets

There are two different measures of the plan's assets that are used throughout this report. The Market Value is a snapshot of the plan's investments as of the valuation date. The Actuarial Value is a smoothed asset value designed to temper the volatile fluctuations in the market by recognizing investment gains or losses non-asymptotically over five years.

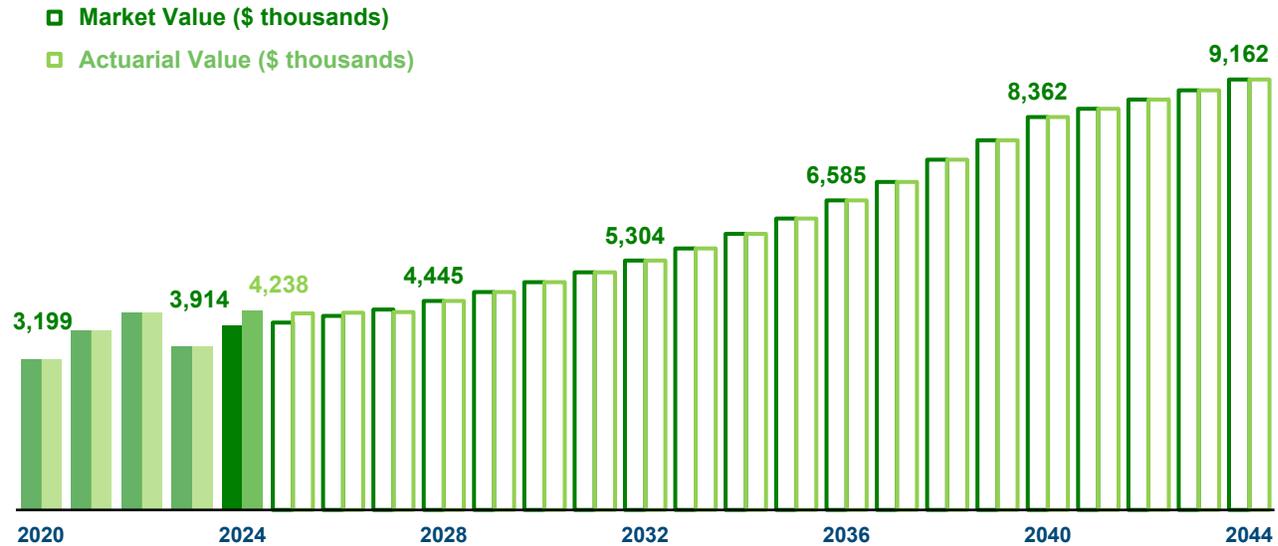
	Market
Value as of January 1, 2022	\$4,204,699
City and Member Contributions	324,857
Investment Income	(655,781)
Benefit Payments and Administrative Expenses	(397,241)
Value as of January 1, 2023	3,476,534
City and Member Contributions	342,075
Investment Income	498,302
Benefit Payments and Administrative Expenses	(402,446)
Value as of January 1, 2024	3,914,465

The Actuarial Value currently exceeds the Market Value by about \$324,000. This figure represents investment losses that will be gradually recognized in future years. This process will exert upward pressure on the City's contribution, unless there are offsetting market gains. Historical rates of return are shown in the graph below:

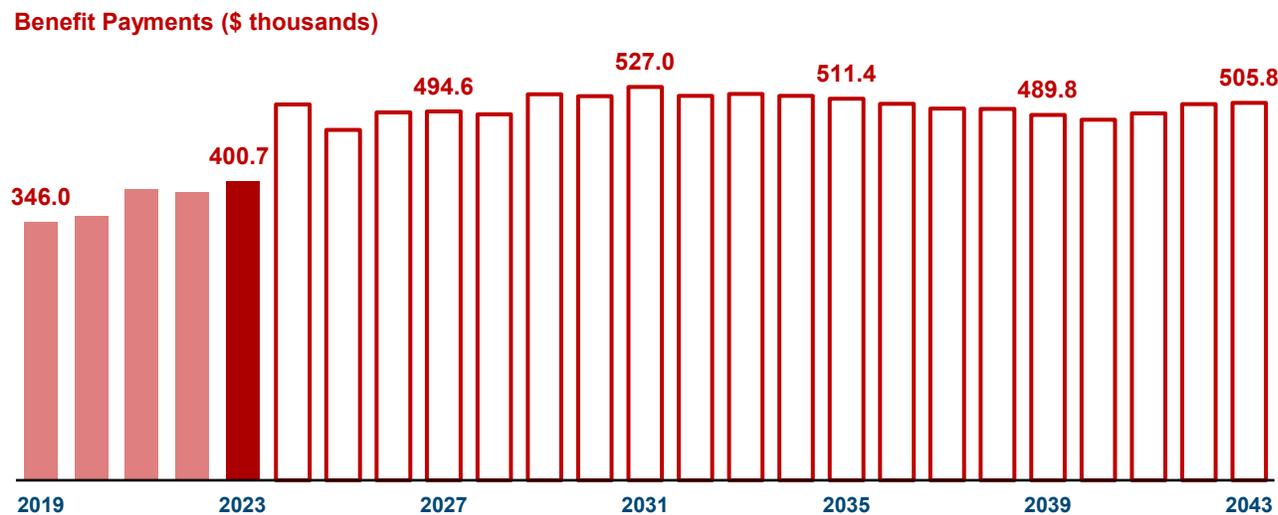


Section I - Executive Summary Assets (continued)

The graph below shows how this year's asset values compare to where the plan's assets have been over the past several years and how they are projected to change over the next 20 years. For purposes of this projection, we have assumed that the City always contributes the Actuarially Determined Contribution and the investments always earn the assumed interest rate each year.



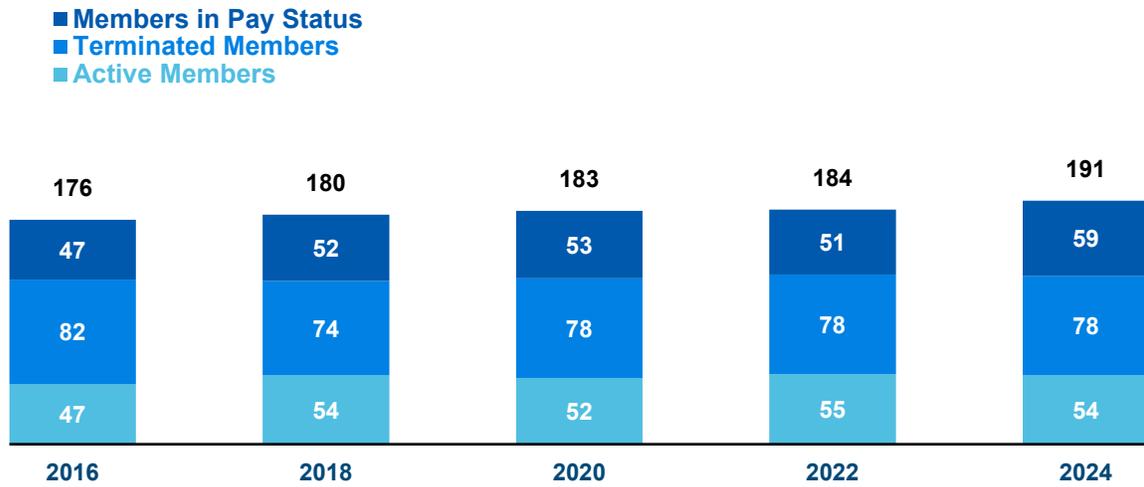
In 2023 the plan paid out \$400,700 in benefits to members. Over the next 20 years, the plan is projected to pay out a total of \$10.0 million in benefits to members.



This work product was prepared solely for the City for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Section I - Executive Summary Membership

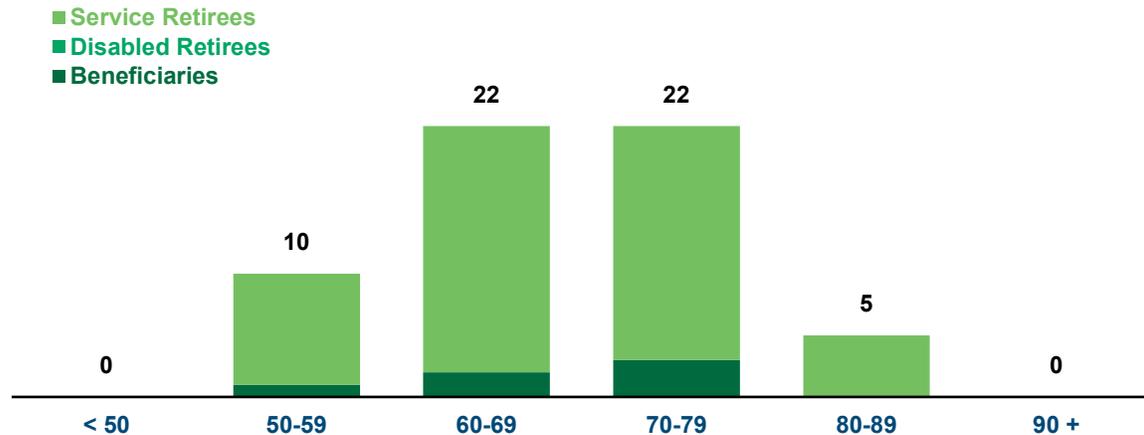
There are three basic categories of plan members included in the valuation: (1) members who are receiving monthly pension benefits, (2) former employees who have a vested right to benefits but have not yet started collecting, and (3) active employees who have met the eligibility requirements for membership. Because valuations are only prepared in even-numbered years, membership data is not available for odd-numbered years.



Members in Pay Status on January 1, 2024

Service Retirees	53	Average Age	68.9
Disabled Retirees	0	Total Annual Benefit	\$443,345
Beneficiaries	<u>6</u>	Average Annual Benefit	7,514
Total	59		

The members in pay status fall across a wide distribution of ages:



Section I - Executive Summary Membership (continued)

Terminated Vested Members on January 1, 2024

Count	2
Average Age	51.3
Total Annual Benefit	\$11,352
Average Annual Benefit	5,676

Members Due Refunds

Count	76
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Active Members on January 1, 2024

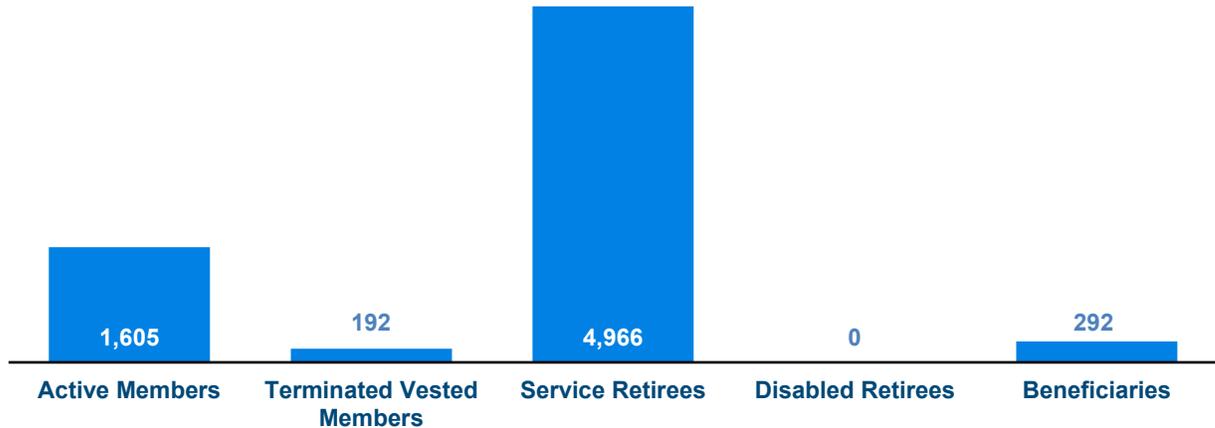
Count	54
Average Age	40.8
Average Service	11.9

The table below illustrates the age and years of service of the active membership:

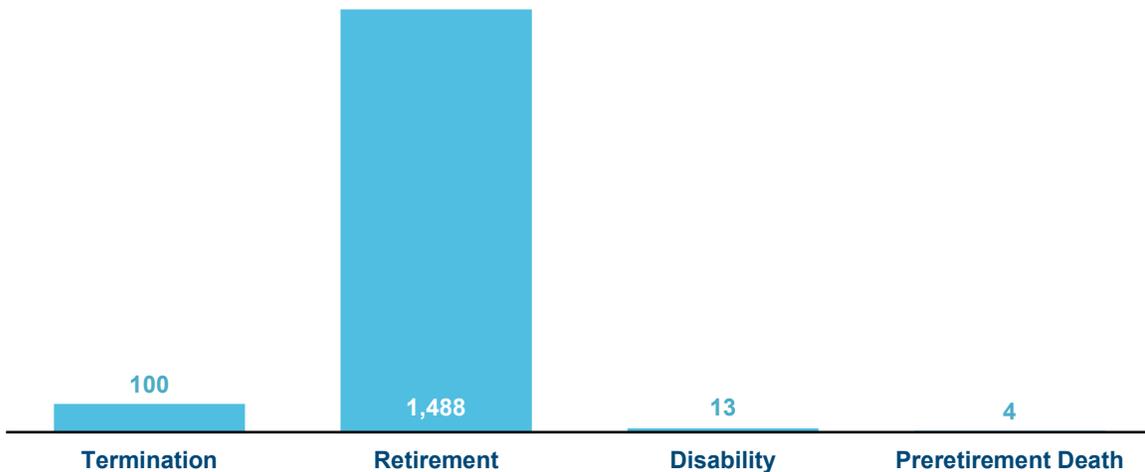
Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	3	1						4
25-29	5	3						8
30-34	6		1					7
35-39	5		1					6
40-44	4	4	1					9
45-49		1			4	1	1	7
50-54	3		1		1	1	2	8
55-59	1	1			1			3
60-64			2					2
65+								0
Total	27	10	6	0	6	2	3	54

Section I - Executive Summary Accrued Liability

The Accrued Liability as of January 1, 2024 is \$7,054,876, which consists of the following pieces (in \$ thousands):



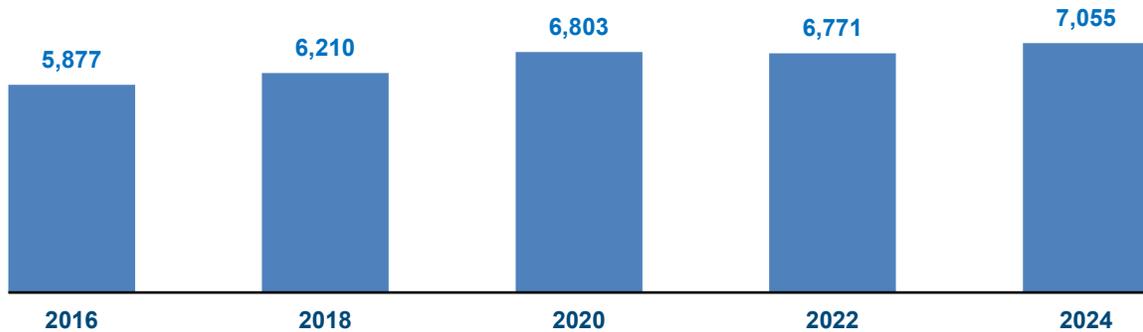
The Accrued Liability for active members can be broken down further by the different types of benefits provided by the plan:



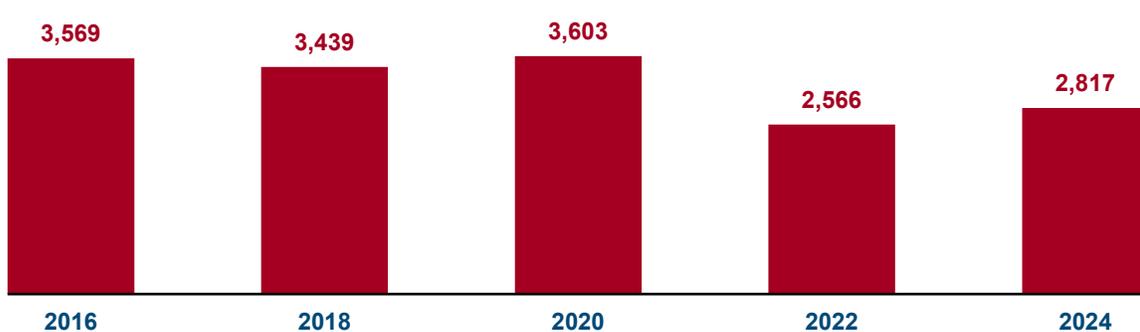
Section I - Executive Summary Funded Status

The Accrued Liability grows over time as active members earn additional benefits, and goes down over time as members receive benefits; it may also change when there are changes to the plan provisions or changes in the actuarial assumptions. The Unfunded Accrued Liability is the dollar difference between the Accrued Liability and the Actuarial Value of Assets; the Funded Ratio is the ratio of the two.

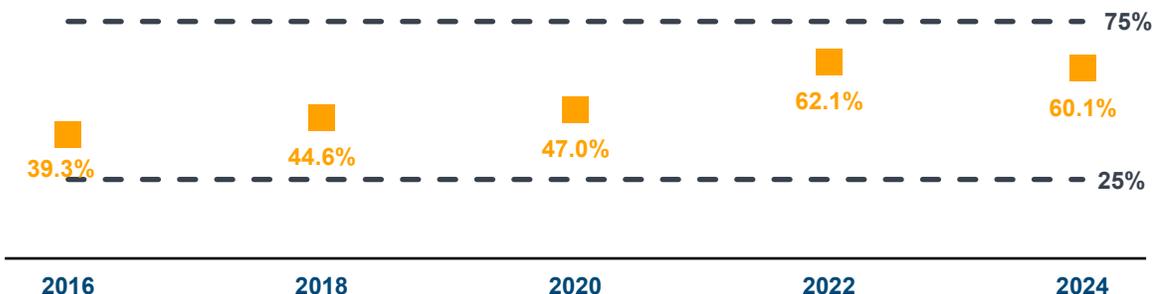
Accrued Liability (\$ thousands)



Unfunded Accrued Liability (\$ thousands)

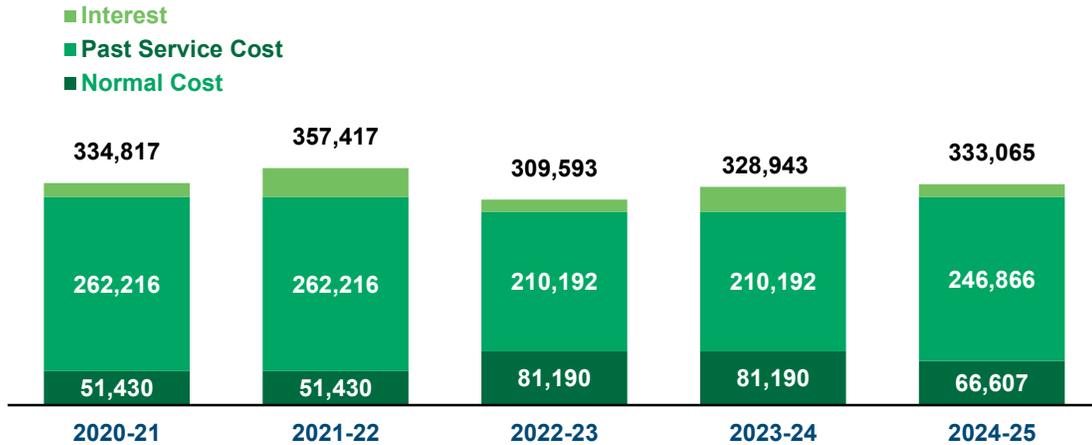


Funded Ratio



Section I - Executive Summary Actuarially Determined Contribution (ADC)

The ADC consists of three pieces: a Normal Cost payment to fund the benefits earned each year, a Past Service Cost to gradually reduce any unfunded or surplus liability, and Interest to reflect the timing of the contribution relative to the valuation date. The ADC for fiscal year 2024-25 is \$333,065:

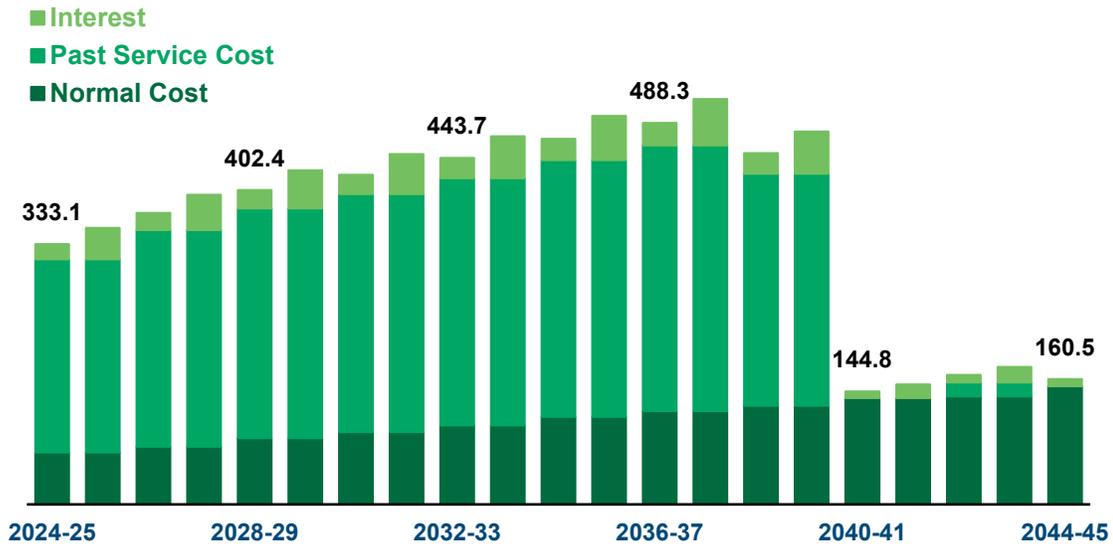


Since valuations are only performed in even-numbered years, each valuation also produces the Actuarially Determined Contribution for the off year between valuations. Based on the January 1, 2024 valuation, the Actuarially Determined Contribution for fiscal year 2025-26 is \$353,882.

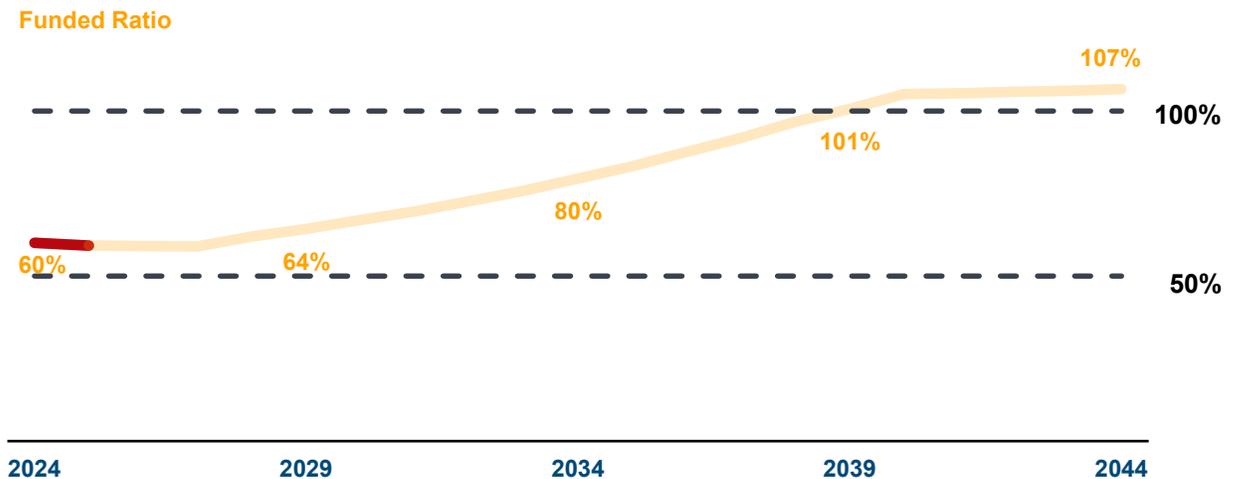
Actuarial Standard of Practice (ASOP) No. 4 requires the actuary to calculate and disclose a 'reasonable' ADC, which considers whether the actuarial methods and actuarial assumptions are in compliance with all applicable ASOPs. Based on the actuarial assumptions and methods used in this report, we believe the ADC is reasonable in accordance with ASOP 4 and reflects a balance among benefit security for plan members, intergenerational equity among stakeholders, and stability of periodic costs.

Section I - Executive Summary Long-Range Forecast

If the City pays the Actuarially Determined Contribution each year, the investments earn exactly the assumed interest rate each year, and there are no changes in the plan provisions or in the actuarial methods and assumptions, then we project the following long-range Actuarially Determined Contributions (in \$ thousands):



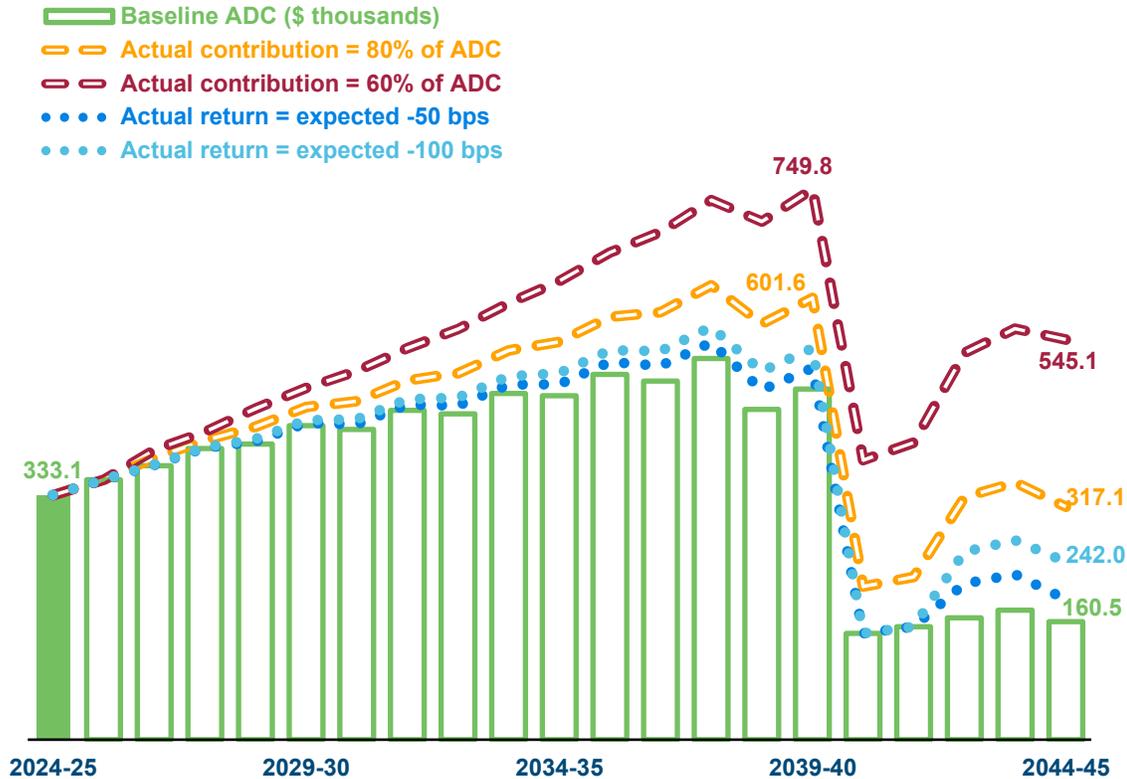
On the basis of this forecast, the Actuarially Determined Contribution currently exceeds the sum of the Normal Cost plus one year's interest on the Unfunded Accrued Liability and the Unfunded Accrued Liability is expected to be fully amortized by 2040. Over time, the funded ratio is expected to change as follows:



To the extent that there are future investment or liability gains or losses, changes in the actuarial assumptions or methods, or plan changes, the actual valuation results will differ from these forecasts. Please see Section III E for more details of the long range forecast.

Section I - Executive Summary Long-Range Forecast (continued)

Pension benefits are paid for through a combination of contributions from the City and from employees, and from investment income. If the City pays less than the Actuarially Determined Contribution each year, or if the investments persistently earn less than the assumed interest rate, then the plan's funded status would suffer, and to compensate, the City's contribution levels would be pushed higher. The risks of underfunding and underearning are illustrated in the hypothetical scenarios below:



The scenarios illustrated above are based on deterministic projections that assume emerging plan experience always exactly matches the actuarial assumptions; in particular that actual asset returns will be constant in every year of the projection period. Variation in asset returns, contribution amounts, and many other factors may have a significant impact on the long-term financial health of the plan, the liquidity constraints on plan assets, and the City's future contribution levels. Stochastic projections could be prepared that would enable the City to understand the potential range of future results based on the expected variability in asset returns and other factors. Such analysis was beyond the scope of this engagement.

Section I - Executive Summary Asset Allocation

Monies that flow out of a pension plan (benefits and expenses) must be matched over the long term by monies that flow into the plan (contributions and investment income). This is expressed in a classic equation: **B** (benefits) + **E** (expenses) = **C** (contributions) + **I** (investment income).

Actuarial assumptions enable us to anticipate the long-term levels of **B** (benefits) and **E** (expenses) that will be paid out of the plan. In order to determine the appropriate level of **C** (contributions) that should come in to the plan, we must first anticipate the long-term level of **I** (investment income) the plan is likely to receive. That is why, for purposes of calculating the Actuarially Determined Contribution, we measure this plan's liability using the long-term rate of investment returns this plan's portfolio is expected to generate.

Pension plans construct their portfolios by allocating assets across a wide range of asset classes with different risk and return profiles; the graph includes nearly 100 asset classes that pension plans invest in. As the graph illustrates, asset classes with higher expected returns also have higher risk levels; that is, a higher likelihood of experiencing both very good returns and very bad returns. Asset classes with lower expected returns also have lower risk levels.



The plan's target allocation represents a balance. Investing in lower-returning asset classes should reduce future investment returns and therefore increase future City contributions, but the lower risk levels would result in lower year-over-year volatility in the Actuarially Determined Contribution and might provide more benefit security for plan members. Conversely, investing in higher-returning asset classes should increase future investment returns and therefore reduce future City contributions, but would also increase the volatility of those contributions and potentially reduce benefit security for plan members.

In the graph above, the asset class with the lowest risk level is US Cash, and the asset class with the highest risk level is Private Equity. If the plan were invested 100% in either of these extremes, it would impact the interest rate assumption and therefore the Accrued Liability, Funded Ratio, and ultimately the City's annual contributions; the volatility of the contributions would also change based on the risk level of the portfolio:

	100% US Cash *	Plan's Interest Rate Assumption	100% Private Equity
Expected long-term return (median)	3.0%	6.25%	8.6%
Expected risk level (standard deviation)	1.1%	12.7%	30.0%
Accrued Liability on January 1, 2024 **	\$9,843,300	\$7,054,900	\$5,518,100
Funded Ratio on January 1, 2024 ***	43%	60%	77%

* This would be considered a "low-default-risk obligation measure" (LDRDM) using the language of ASOP 4.

** Calculated using the same actuarial assumptions and methods that were used for this valuation, except for the interest rate; the plan's duration on the valuation date, as measured for GASB 68 purposes, was used to estimate the impact of the interest rate difference relative to the valuation interest rate assumption.

*** Measured using the Actuarial Value of Assets

Section I - Executive Summary Summary of Principal Results

Membership as of	January 1, 2022	January 1, 2024
Active Members	55	54
Terminated Members	78	78
Members in Pay Status	<u>51</u>	<u>59</u>
Total Count	184	191

Assets and Liabilities as of	January 1, 2022	January 1, 2024
Market Value of Assets	\$4,204,699	\$3,914,465
Actuarial Value of Assets	4,204,699	4,237,932
Accrued Liability for Active Members	1,966,222	1,605,025
Accrued Liability for Terminated Members	332,276	191,812
Accrued Liability for Members in Pay Status	<u>4,472,179</u>	<u>5,258,039</u>
Total Accrued Liability	6,770,677	7,054,876
Unfunded Accrued Liability	2,565,978	2,816,944
Funded Ratio	62.1%	60.1%

Actuarially Determined Contribution for Fiscal Year	2022-23	2024-25
Normal Cost	\$81,190	\$66,607
Past Service Cost	210,192	246,866
Interest Adjustment	<u>18,211</u>	<u>19,592</u>
Actuarially Determined Contribution	309,593	333,065

Actuarially Determined Contribution for Second Fiscal Year	2023-24	2025-26
Interest Adjustment	\$19,350	\$20,817
Actuarially Determined Contribution	328,943	353,882

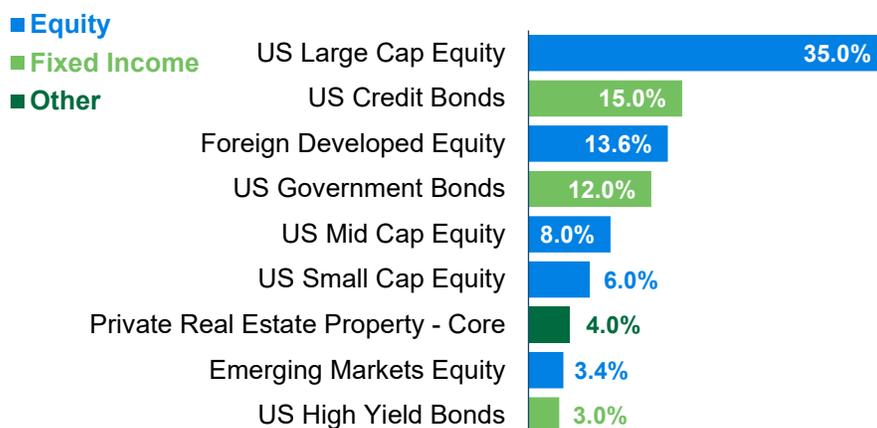
Section II - Plan Assets

A. Summary of Fund Transactions

Market Value as of January 1, 2022	\$4,204,699
City Contributions	309,593
Member Contributions	15,264
Net Investment Income	(655,781)
Benefit Payments	(385,811)
Administrative Expenses	<u>(11,430)</u>
Market Value as of December 31, 2022	3,476,534
Expected Return on Market Value of Assets	260,561
Market Value (Gain)/Loss	916,342
Approximate Rate of Return *	-15.73%
Market Value as of January 1, 2023	\$3,476,534
City Contributions	328,943
Member Contributions	13,132
Net Investment Income	498,302
Benefit Payments	(400,709)
Administrative Expenses	<u>(1,737)</u>
Market Value as of December 31, 2023	3,914,465
Expected Return on Market Value of Assets	215,379
Market Value (Gain)/Loss	(282,923)
Approximate Rate of Return *	14.46%

* The rate shown here is not the dollar or time weighted investment yield rate which measures investment performance. It is an approximate net return assuming all activity occurred on average midway through the fiscal year.

Target Asset Allocation as of December 31, 2023



Section II - Plan Assets

B. Development of Actuarial Value of Assets

In order to minimize the impact of market fluctuations on the contribution level, we use an Actuarial Value of Assets that recognizes gains and losses in equal installments ('non-asymptotically') over a five year period. The Actuarial Value of Assets as of January 1, 2024 is determined below.

1.	Expected Market Value of Assets:		
	a. Market Value of Assets as of January 1, 2023		\$3,476,534
	b. City and Member Contributions		342,075
	c. Benefit Payments and Administrative Expenses		(402,446)
	d. Expected Earnings Based on 6.25% Interest		<u>215,379</u>
	e. Expected Market Value of Assets as of January 1, 2024		3,631,542
2.	Actual Market Value of Assets as of January 1, 2024		3,914,465
3.	Market Value (Gain)/Loss: (1e) - (2)		(282,923)
4.	Delayed Recognition of Market (Gains)/Losses		
		Percent Not	Amount Not
	Plan Year End	(Gain)/Loss	Recognized
	12/31/2023	(\$282,923)	80%
	12/31/2022	916,342	60%
			<u>549,805</u>
			323,467
5.	Actuarial Value of Assets as of January 1, 2024: (2) + (4)		4,237,932
6.	Return on Actuarial Value of Assets		88,695
7.	Approximate Rate of Return on Actuarial Value of Assets		2.12%
8.	Actuarial Value (Gain)/Loss		172,788

Section III - Development of Contribution

A. Past Service Cost

In determining the Past Service Cost, the Unfunded Accrued Liability is amortized as a level percent using layered 20-year bases.

January 1, 2024

1.	Accrued Liability		
	Active Members		\$1,605,025
	Terminated Members		191,812
	Service Retirees*		4,965,938
	Disabled Retirees		0
	Beneficiaries		<u>292,101</u>
	Total Accrued Liability		7,054,876
2.	Actuarial Value of Assets (see Section IIB)		4,237,932
3.	Unfunded Accrued Liability: (1) - (2)		2,816,944
4.	Outstanding Balance of Amortization Bases Established in Prior Years (see Section IIIB)		2,431,108
5.	New Amortization Base Established January 1, 2024: (3) - (4)		385,836
6.	Amortization Growth Rate		2.25%
7.	New Past Service Cost: (5) amortized over 20 years		27,109
8.	Past Service Cost for Bases Established in Prior Years (see Section IIIB)		219,757
9.	Total Past Service Cost: (7) + (8)		246,866

Section III - Development of Contribution

B. Past Service Costs Established in Prior Years

The amortization base established with each valuation is gradually funded over time; the amortization payment is termed the Past Service Cost. The January 1, 2014 amortization base had a 25 year period. All subsequent bases have a 20 year period.

Date Established	Original Amount	Outstanding Balance as of January 1, 2022	Amortization Payment as of January 1, 2022	Outstanding Balance as of January 1, 2024	Years Remaining as of January 1, 2024	Past Service Cost as of January 1, 2024
January 1, 2014	\$2,921,763	\$2,723,265	\$213,953	\$2,600,338	15	\$223,689
January 1, 2018	517,184	476,824	39,125	451,615	14	40,906
January 1, 2020	325,164	319,526	24,117	307,289	16	25,214
January 1, 2022	(953,637)	(953,637)	(67,003)	(928,134)	18	(70,052)
January 1, 2024	385,836	0	0	385,836	20	27,109
Total		2,565,978	210,192	2,816,944		246,866

Section III - Development of Contribution

C. Actuarial Gains / (Losses)

From one valuation to the next, the Accrued Liability and Actuarial Value of Assets may change in ways that were not anticipated by the actuarial assumptions that were used in the last valuation. If the Accrued Liability is lower than expected or the Actuarial Value of Assets is higher than expected, we say that the plan has experienced an 'actuarial gain', and if the Accrued Liability is higher than expected or the Actuarial Value of Assets is lower than expected, we say that the plan has experienced an 'actuarial loss'. The actuarial gains / (losses) that arose during 2022-24 are shown below, along with the impact of plan changes and changes in the actuarial assumptions and method. Please see page 3 for more details on any changes since the last valuation.

	Accrued Liability A	Actuarial Value of Assets B	Unfunded Accrued Liability = A - B
1. Value as of January 1, 2022	\$6,770,677	\$4,204,699	\$2,565,978
2. Normal Cost as of January 1, 2022	87,742		87,742
3. City and Member Contributions during 2022		324,857	(324,857)
4. Benefit Payments during 2022	(385,811)	(385,811)	0
5. Administrative Expenses during 2022		(11,430)	11,430
6. One year of interest on (1) thru (2) at 6.25%	428,651	262,794	165,857
7. Half year of interest on (3) thru (5) at 6.25%	<u>(12,057)</u>	<u>(2,233)</u>	<u>(9,824)</u>
8. Expected value as of January 1, 2023	6,889,202	4,392,876	2,496,326
9. Actual value as of January 1, 2023	6,889,202	3,476,534	3,412,668
10. Experience gains / losses during 2022: (9) - (8)	0	(916,342)	916,342
11. Normal Cost as of January 1, 2023	87,742		87,742
12. City and Member Contributions during 2023		342,075	(342,075)
13. Benefit Payments during 2023	(400,709)	(400,709)	0
14. Administrative Expenses during 2023		(1,737)	1,737
15. One year of interest on (9) and (11) at 6.25%	436,059	217,283	218,776
16. Half year of interest on (12) thru (14) at 6.25%	<u>(12,522)</u>	<u>(1,904)</u>	<u>(10,618)</u>
17. Expected value as of January 1, 2024	6,999,772	3,631,542	3,368,230
18. Actual value as of January 1, 2024 before any plan, assumption, or method changes	7,098,195	3,914,465	3,183,730
19. Experience gains / losses during 2023: (18) - (17)	98,423	282,923	(184,500)
20. Experience gains / losses during 2021-23: (10) + (19)	98,423	(633,419)	731,842
21. Impact of plan changes (see page 3)	0	0	0
22. Impact of assumption changes (see page 3)	(43,319)	0	(43,319)
23. Impact of method changes (see page 3)	0	323,467	(323,467)
24. Final value as of January 1, 2024	7,054,876	4,237,932	2,816,944

Section III - Development of Contribution
D. Actuarially Determined Contribution

	Fiscal Years 2022-23 and 2023-24	Fiscal Years 2024-25 and 2025-26
1. Total Normal Cost	\$87,742	\$74,007
2. Expected Member Contributions	15,552	14,400
3. Expected Administrative Expenses	9,000	7,000
4. Net Normal Cost: (1) - (2) + (3)	81,190	66,607
5. Past Service Cost (see Section IIIA)	210,192	246,866
6. Interest on (4) + (5) to beginning of first fiscal year	18,211	19,592
7. Actuarially Determined Contribution for first FY: (4) + (5) + (6)	309,593	333,065
8. Interest on (7) to beginning of second fiscal year	19,350	20,817
9. Actuarially Determined Contribution for second FY: (7) + (8)	328,943	353,882

Section III - Development of Contribution E. Long Range Forecast

This forecast is based on the results of the January 1, 2024 actuarial valuation and assumes that the City will pay the Actuarially Determined Contribution each year, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets.

Valuation Date	Values as of the Valuation Date				Fiscal Year	Cash Flows Projected to the Following Fiscal Year			
	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio		City Contributions	Member Contributions	Benefit Payments	Net Cash Flows
1/1/2024	\$7,054,876	\$4,237,932	\$2,816,944	60.1%	2025-26	\$353,882	\$15,265	(\$469,436)	(\$100,289)
1/1/2025	7,061,000	4,182,000	2,879,000	59.2%	2026-27	373,000	15,000	(493,000)	(105,000)
1/1/2026	7,108,000	4,200,000	2,908,000	59.1%	2027-28	396,000	15,000	(495,000)	(84,000)
1/1/2027	7,137,000	4,210,000	2,927,000	59.0%	2028-29	402,000	16,000	(490,000)	(72,000)
1/1/2028	7,170,000	4,445,000	2,725,000	62.0%	2029-30	428,000	15,000	(517,000)	(74,000)
1/1/2029	7,213,000	4,636,000	2,577,000	64.3%	2030-31	422,000	15,000	(515,000)	(78,000)
1/1/2030	7,236,000	4,846,000	2,390,000	67.0%	2031-32	449,000	15,000	(527,000)	(63,000)
1/1/2031	7,268,000	5,056,000	2,212,000	69.6%	2032-33	444,000	15,000	(515,000)	(56,000)
1/1/2032	7,294,000	5,304,000	1,990,000	72.7%	2033-34	471,000	15,000	(518,000)	(32,000)
1/1/2033	7,339,000	5,564,000	1,775,000	75.8%	2034-35	468,000	16,000	(515,000)	(31,000)
1/1/2034	7,388,000	5,878,000	1,510,000	79.6%	2035-36	497,000	16,000	(511,000)	2,000
1/1/2035	7,447,000	6,198,000	1,249,000	83.2%	2036-37	488,000	16,000	(504,000)	0
1/1/2036	7,517,000	6,585,000	932,000	87.6%	2037-38	519,000	15,000	(498,000)	36,000
1/1/2037	7,602,000	6,982,000	620,000	91.8%	2038-39	449,000	15,000	(498,000)	(34,000)
1/1/2038	7,704,000	7,453,000	251,000	96.7%	2039-40	478,000	16,000	(490,000)	4,000
1/1/2039	7,817,000	7,869,000	(52,000)	100.7%	2040-41	145,000	16,000	(483,000)	(322,000)
1/1/2040	7,949,000	8,362,000	(413,000)	105.2%	2041-42	154,000	15,000	(492,000)	(323,000)
1/1/2041	8,100,000	8,536,000	(436,000)	105.4%	2042-43	166,000	14,000	(504,000)	(324,000)
1/1/2042	8,255,000	8,735,000	(480,000)	105.8%	2043-44	176,000	15,000	(506,000)	(315,000)
1/1/2043	8,416,000	8,930,000	(514,000)	106.1%	2044-45	160,000	15,000	(519,000)	(344,000)

Section III - Development of Contribution
F. History of Funded Status

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
January 1, 2014	\$2,139,179	\$5,040,812	\$2,901,633	42.4%
January 1, 2016	2,308,178	5,877,178	3,569,000	39.3%
January 1, 2018	2,771,076	6,210,023	3,438,947	44.6%
January 1, 2020	3,199,398	6,802,589	3,603,191	47.0%
January 1, 2022	4,204,699	6,770,677	2,565,978	62.1%
January 1, 2024	4,237,932	7,054,876	2,816,944	60.1%

Section III - Development of Contribution
G. History of City Contributions

Fiscal Year	Actuarially Determined Contribution	Actual City Contribution	Payroll	Actual Contribution as a Percent of Payroll
2013-14	\$308,987	\$344,664	N/A	N/A
2014-15	303,861	365,969	N/A	N/A
2015-16	303,861	373,322	N/A	N/A
2016-17	373,322	186,661	N/A	N/A
2017-18	373,322	369,396	N/A	N/A
2018-19	365,469	365,469	N/A	N/A
2019-20	365,469	517,552	N/A	N/A
2020-21	334,817	357,417	N/A	N/A
2021-22	357,417	309,593	N/A	N/A
2022-23	309,593	328,943	N/A	N/A
2023-24	328,943	TBD	N/A	N/A
2024-25	333,065	TBD	N/A	N/A
2025-26	353,882	TBD	N/A	N/A

Section IV - Membership Data

A. Reconciliation of Membership from Prior Valuation

Details of the changes in the Plan membership since the last valuation are shown below. Additional details on the Plan membership are provided in the remainder of Section IV.

	Active Members	Terminated Vested Members	Due Employee Contributions	Service Retirees	Disabled Retirees	Beneficiaries	Total
Count January 1, 2022	55	4	74	44	0	7	184
Terminated							
- no benefits due	-	-	-	-	-	-	0
- paid refund	(1)	-	(1)	-	-	-	(2)
- contributions due	(4)	-	4	-	-	-	0
- vested benefits due	-	-	-	-	-	-	0
Retired	(6)	(2)	-	8	-	-	0
Died							
- with beneficiary	-	-	-	(1)	-	1	0
- no beneficiary	-	-	-	-	-	(1)	(1)
Benefits expired	-	-	-	-	-	-	0
New member	9	-	-	-	-	1	10
Rehired	1	-	(1)	-	-	-	0
New Alternate Payee	-	-	-	-	-	-	0
Correction	-	-	-	2	-	(2)	0
Count January 1, 2024	54	2	76	53	0	6	191

Section IV - Membership Data
B. Statistics of Active Membership

	As of January 1, 2022	As of January 1, 2024
Number of Active Members	55	54
Average Age	41.8	40.8
Average Service	13.3	11.9

Section IV - Membership Data

C. Statistics of Inactive Membership

	As of January 1, 2022	As of January 1, 2024
Terminated Vested Members		
Number	4	2
Total Annual Benefit	\$23,496	\$11,352
Average Annual Benefit	5,874	5,676
Average Age	49.4	51.3
Members Due Refunds		
Number	74	76
Service Retirees		
Number	44	53
Total Annual Benefit	\$351,444	\$415,932
Average Annual Benefit	7,987	7,848
Average Age	69.2	68.9
Disabled Retirees		
Number	0	0
Total Annual Benefit	\$0	\$0
Average Annual Benefit	0	0
Average Age	0.0	0.0
Beneficiaries		
Number	7	6
Total Annual Benefit	\$21,473	\$27,413
Average Annual Benefit	3,068	4,569
Average Age	69.4	69.4

Section IV - Membership Data
D. Distribution of Inactive Members as of January 1, 2024

	Age	Number	Annual Benefits
Terminated Vested Members	< 50	1	\$5,280
	50 - 59	1	6,072
	60 - 69	0	0
	70 - 79	0	0
	80 - 89	0	0
	90 +	<u>0</u>	<u>0</u>
	Total	2	11,352
Service Retirees	< 50	0	\$0
	50 - 59	9	76,032
	60 - 69	20	162,972
	70 - 79	19	130,308
	80 - 89	5	46,620
	90 +	<u>0</u>	<u>0</u>
	Total	53	415,932
Disabled Retirees	< 50	0	\$0
	50 - 59	0	0
	60 - 69	0	0
	70 - 79	0	0
	80 - 89	0	0
	90 +	<u>0</u>	<u>0</u>
	Total	0	0
Beneficiaries	< 50	0	\$0
	50 - 59	1	2,019
	60 - 69	2	12,830
	70 - 79	3	12,564
	80 - 89	0	0
	90 +	<u>0</u>	<u>0</u>
	Total	6	27,413

Section V - Analysis of Risk

A. Introduction

The results of this actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match these assumptions. As an example, the plan's investments may perform better or worse than assumed in any single year and over any longer time horizon. It is therefore important to consider the potential impacts of these likely differences when making decisions that may affect the future financial health of the plan, or of the plan's members.

In addition, as plans mature they accumulate larger pools of assets and liabilities. The increase in size in turn increases the potential magnitude of adverse experience. As an example, the dollar impact of a 10% investment loss on a plan with \$1 billion in assets and liabilities is much greater than the dollar impact for a plan with \$1 million in assets and liabilities. Since pension plans make long-term promises and rely on long-term funding, it is important to consider how mature the plan is today, and how mature it may become in the future.

Actuarial Standard of Practice No. 51 (ASOP 51) directs actuaries to provide pension plan sponsors with information concerning the risks associated with the plan:

- Identify risks that may be significant to the plan.
- Assess the risks identified as significant to the plan. The assessment does not need to include numerical calculations.
- Disclose plan maturity measures and historical information that are significant to understanding the plan's risks.

This section of the report uses the framework of ASOP 51 to communicate important information about significant risks to the plan, the plan's maturity, and relevant historical plan data.

Please see Section III E for more information on the basis for the projected results shown on the following pages.

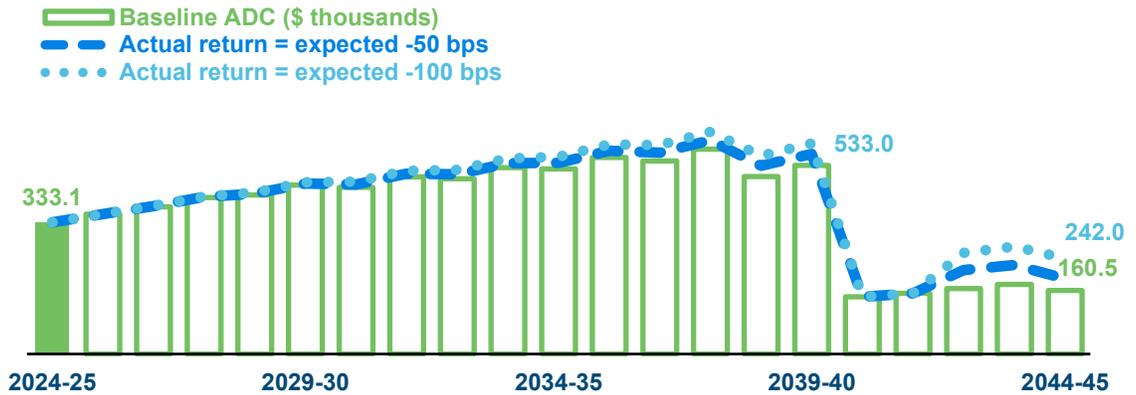
Section V - Analysis of Risk

B. Risk Identification and Assessment

Investment Risk

Definition: This is the potential that investment returns will be different than expected.

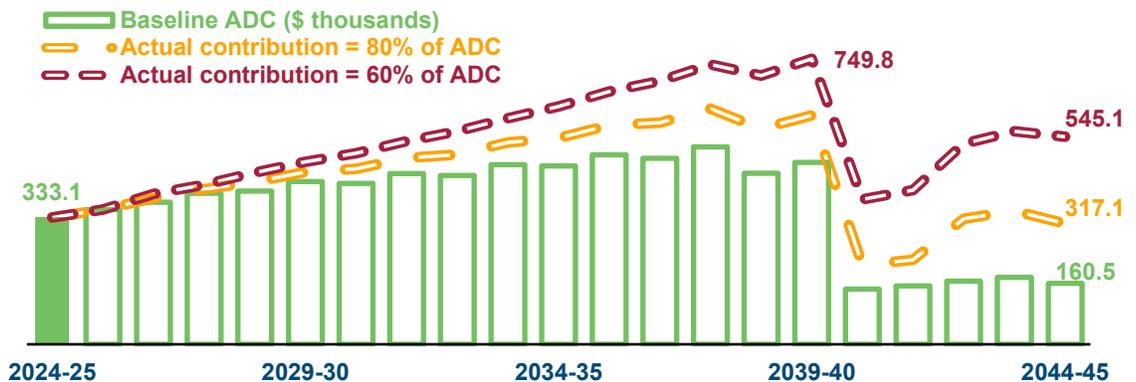
Identification: To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. The consequences of persistent underperformance on future Actuarially Determined Contribution levels are illustrated below:



Contribution Risk

Definition: This is the potential that actual future contributions will be less than the Actuarially Determined Contribution.

Identification: Over the past 10 years, actual contributions have been 103.6% of the Actuarially Determined Contribution in total. The consequences of persistent underfunding on future Actuarially Determined Contribution levels are illustrated below:



Section V - Analysis of Risk

B. Risk Identification and Assessment

Liquidity Risk

Definition: This is the potential that assets must be liquidated at a loss earlier than planned in order to pay for the plan's benefits and operating costs. This risk is heightened for plans with negative cash flows, in which contributions are not sufficient to cover benefit payments plus expenses.

Identification: In 2023, the plan had negative cash flow, with city and member contributions to the plan of \$342,075 compared to \$402,446 of benefit payments and administrative expenses paid out of the plan. We suggest that you consult with your investment advisors with respect to the liquidity characteristics of the plan's investment holdings.

Inflation Risk

Definition: This is the potential for a pension to lose purchasing power over time due to inflation.

Identification: The members of pension plans without fully inflation-indexed benefits are subject to the risk that their purchasing power will be reduced over time due to inflation.

Assessment: This plan does not contain a mechanism to regularly increase benefits after retirement, so members bear all of the inflation risk.

Insolvency Risk

Definition: This is the potential that a plan will become insolvent; that is, assets will be fully depleted.

Identification: If a plan becomes insolvent, contractually required benefits must be paid from the plan sponsor's other remaining assets.

Assessment: Under the GASB 68 depletion date methodology, the plan is not projected to become insolvent. Please see the GASB 68 report for more details on the underlying analysis.

Demographic Risks

Definition: This is the potential that mortality, turnover, retirement, or other demographic experience will be different than expected.

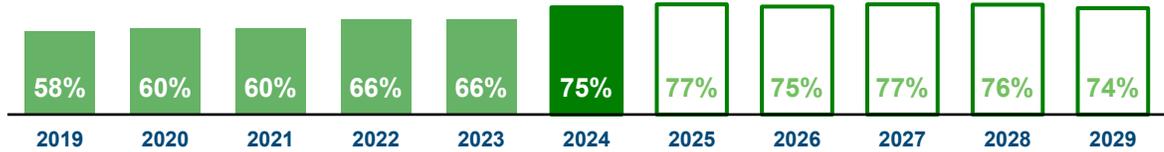
Identification: The pension liabilities reported herein have been calculated by assuming that members will follow patterns of demographic experience as described in Appendix B. If actual demographic experience or future demographic assumptions are different from what is assumed to occur in this valuation, future pension liabilities, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. Formal Experience Studies performed on a regular basis are helpful in ensuring that the demographic assumptions reflect emerging plan experience.

Section V - Analysis of Risk

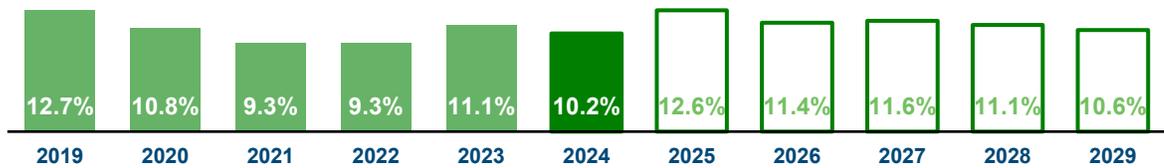
C. Maturity Measures

The metrics presented below are different ways of understanding the plan's maturity level, both in the past and as it is expected to change in the coming years.

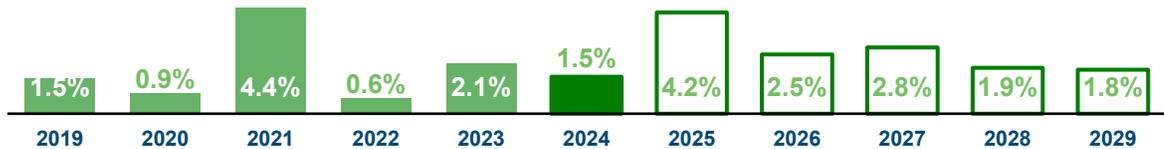
Accrued Liability for members in pay status compared to total Accrued Liability



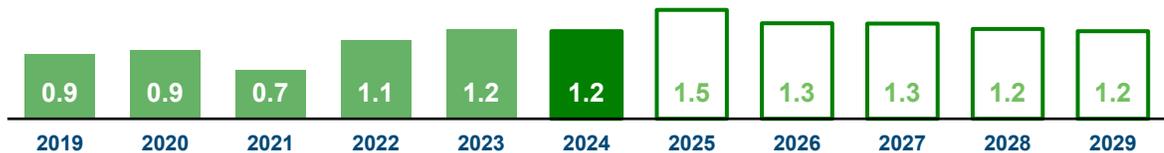
Benefit Payments compared to Market Value of Assets



Net Cash Flows compared to Market Value of Assets



Benefit Payments compared to City Contributions



Duration of Accrued Liability (based on GASB 68 sensitivity disclosures)



Appendix A - Actuarial Funding Method

The actuarial funding method used in the valuation of this Plan is known as the Entry Age Normal Method. The Actuarially Determined Contribution consists of three pieces: Normal Cost plus a Past Service Cost payment to gradually eliminate the Unfunded Accrued Liability plus Interest to reflect the timing of the contribution relative to the valuation date.

The Normal Cost is determined by calculating the present value of future benefits for present active Members that will become payable as the result of death, disability, retirement or termination. This cost is then spread as a level percentage from entry age to termination as an Active Member. If Normal Costs had been paid at this level for all prior years, a fund would have accumulated. Because this fund represents the portion of benefits that would have been funded to date, it is termed the Accrued Liability. In fact, it is calculated by adding the present value of benefits for Retired Members and Terminated Vested Members to the present value of benefits for Active Members and subtracting the present value of future Normal Cost contributions.

The funding cost of the Plan is derived by making certain specific assumptions as to rates of interest, mortality, turnover, etc. which are assumed to hold for many years into the future. Since actual experience may differ somewhat from the assumptions, the costs determined by the valuation must be regarded as estimates of the true costs of the Plan.

The Unfunded Accrued Liability is the excess of the Accrued Liability over the assets which have been accumulated for the plan. This Unfunded Accrued Liability is amortized using layered 20-year bases as a level percent.

Starting with the January 1, 2024 valuation, the Actuarial Value of Assets is determined by recognizing market gains and losses non-asymptotically over a five year period.

The long-range forecasts included in this report have been developed by assuming that members will terminate, retire, become disabled, and die according to the actuarial assumptions with respect to these causes of decrement, and that pay increases, cost of living adjustments, and so forth will likewise occur according to the actuarial assumptions. Members who are projected to leave active service are assumed to be replaced by new active members with the same age, service, and gender characteristics as those hired in the past few years.

Appendix B - Actuarial Assumptions

Each of the assumptions used in this valuation was set based on industry standard published tables and data, the particular characteristics of the plan, relevant information from the plan sponsor or other sources about future expectations, and our professional judgment regarding future plan experience. We believe the assumptions are reasonable for the contingencies they are measuring, and are not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

Interest Rate	6.25%		
Inflation	2.60% (prior: 2.25%)		
Amortization Growth Rate	2.25%		
Expenses	Average of prior 2 years' administrative expenses, increased by 3% and rounded to nearest \$1,000		
Mortality	PubS-2010 Mortality Table with generational projection per the MP-2021 Ultimate Scale (prior: MP-2019 Ultimate Scale), with employee rates before benefit commencement and healthy or disabled annuitant rates after benefit commencement. This assumption includes a margin for future improvements in longevity beyond the valuation date.		
Turnover	Age	Rate	
	25	5.00%	
	35	2.50%	
	45	0.75%	
	55	0.00%	
Retirement	100% at Normal Retirement Date		
Disability	Age	Male	Female
	25	0.0076%	0.0094%
	35	0.0138%	0.0272%
	45	0.0404%	0.0646%
	55	0.1444%	0.1904%
Marital Status	80% of members are assumed to be married with female spouses 3 years younger than the male spouses.		

Appendix C - Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan. It is not intended to be, nor should it be interpreted as a complete statement of all plan provisions. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself. To the extent that this summary does not accurately reflect the plan provisions, then the results of this valuation may not be accurate.

Eligibility	Volunteers become eligible on the first of the year after completing 12 months of continuous service.
Member's Contributions	\$288 per year. Contributions cease after 30 years of service (40 years of service for employees hired before January 1, 2015).
Credited Service	<p>At the end of each plan year, a Volunteer earns a year of Credited Service if he or she completes the Emergency Call Requirement and Training Requirement for the department during the preceding calendar year and makes the required employee contribution.</p> <p>Emergency Call Requirement: The lesser of 20% of the department's emergency calls or 150 emergency calls.</p> <p>Training Requirement: The lesser of 20% of the department's training sessions and drills or 20 hours of training and drills.</p>
Normal Retirement Date	Age 55 with 20 years of Credited Service for Members hired prior to January 1, 2015. Age 55 with 25 years of Credited Service for Members hired after January 1, 2015.
Normal Retirement Benefit	\$24.00 per month multiplied by years of Credited Service. Credited Service is limited to 30 years for employees hired after January 1, 2015 and 40 years for employees hired prior to January 1, 2015.
Deferred Retirement	Members may commence receiving retirement benefits and remain an active Volunteer after Normal Retirement Date. Benefits are adjusted annually to reflect additional years of Credited Service earned after Normal Retirement benefits commence.
Normal Form of Annuity	90% Joint and Survivor Annuity.
Disability Eligibility	Total and permanent disability in the line of duty.
Disability Benefit	\$24.00 per month multiplied by 30 years of Credited Service (40 years for employees hired prior to January 1, 2015).

Appendix C - Summary of Plan Provisions

Pre-Retirement Termination	Refund of employee contributions with interest at 3.0%.
Pre-Retirement Death Benefit	\$660 per month to the surviving spouse. A refund of employee contributions with interest is payable if there is no surviving spouse.

Appendix D - Glossary

Actuarial Cost Method - This is a procedure for determining the Actuarial Present Value of Benefits and allocating it to time periods to produce the Actuarial Accrued Liability and the Normal Cost.

Accrued Liability - This is the portion of the Actuarial Present Value of Benefits attributable to periods prior to the valuation date by the Actuarial Cost Method (i.e., that portion not provided by future Normal Costs).

Actuarial Assumptions - With any valuation of future benefits, assumptions of anticipated future events are required. If actual events differ from the assumptions made, the actual cost of the plan will vary as well. Some examples of key assumptions include the interest rate, salary scale, and rates of mortality, turnover and retirement.

Actuarial Present Value of Benefits - This is the present value, as of the valuation date, of future payments for benefits and expenses under the Plan, where each payment is: a) multiplied by the probability of the event occurring on which the payment is conditioned, such as the probability of survival, death, disability, termination of employment, etc.; and b) discounted at the assumed interest rate.

Actuarial Value of Assets - This is the value of cash, investments and other property belonging to the plan, typically adjusted to recognize investment gains or losses over a period of years to dampen the impact of market volatility on the Actuarially Determined Contribution.

Actuarially Determined Contribution (“ADC”) - This is the employer’s periodic contributions to a defined benefit plan, calculated in accordance with actuarial standards of practice.

Attribution Period - The period of an employee’s service to which the expected benefit obligation for that employee is assigned. The beginning of the attribution period is the employee’s date of hire and costs are spread across all employment.

Interest Rate - This is the long-term expected rate of return on any investments set aside to pay for the benefits. In a financial reporting context (e.g., GASB 68) this is termed the Discount Rate.

Normal Cost - This is the portion of the Actuarial Present Value of Benefits allocated to a valuation year by the Actuarial Cost Method.

Past Service Cost - This is a catch-up payment to fund the Unfunded Accrued Liability over time (generally 10 to 30 years). A closed amortization period is a specific number of years counted from one date and reducing to zero with the passage of time; an open amortization period is one that begins again or is recalculated at each valuation date. Also known as the Amortization Payment.

Return on Plan Assets - This is the actual investment return on plan assets during the fiscal year.

Unfunded Accrued Liability - This is the excess of the Accrued Liability over the Actuarial Value of Assets.