MILLIMAN ACTUARIAL VALUATION

City of Aurora General Employees' Retirement Plan

January 1, 2024 Actuarial Valuation

June 2024

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June 14, 2024

Board of Trustees
City of Aurora General Employees' Retirement Plan
12100 E. Iliff Avenue, Suite 108
Aurora, Colorado 80014

Dear Members of the Board:

As part of our engagement with the Board, we performed an actuarial valuation of the City of Aurora General Employees' Retirement Plan (the "Plan") as of January 1, 2024, for the Plan Year ending December 31, 2024. Our findings are set forth in this actuary's report. This report reflects the benefit provisions and contribution rates in effect as of January 1, 2024.

Purpose of the Valuation

The main purposes of this report are:

- to project the adequacy of the funding policy as set by City Code;
- to review the experience under the plan for the valuation year ending December 31, 2023; 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 the enclosed report have been made on a basis consistent with our understanding of the Plan's funding policy. The calculations in this report have been made on a basis consistent with our understanding of the plan provisions described in Appendix A of 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.

Actuarial Assumptions

Actuarial assumptions, including discount rates, mortality tables, and others identified in this report, and actuarial cost methods are adopted by the Board. That entity is responsible for selecting the plan's actuarial valuation methods, asset valuation methods, and assumptions. Funding policy is defined by City Code. The policies, methods, and assumptions used in this valuation are those that have been so adopted and are described in this report. The Board is solely responsible for communicating to Milliman any changes required 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.

Variability of Results

This valuation report 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. The Board has the final decision regarding the selection of the assumptions and actuarial cost methods, and the Board has adopted them as indicated in Appendix B.

Reliance

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the Plan's staff. 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.

Limited Distribution

Milliman's work is prepared solely for the use and benefit of City of Aurora General Employees' Retirement Plan. 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 exception(s):

a) The Plan may provide a copy of Milliman's work, in its entirety, to the Plan'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 Plan.

b) The Plan 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.

Models

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.

Qualifications and Certification

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, I hereby certify that, to the best of my 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. I am a member of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

We respectfully submit the following report, and we look forward to discussing it with you.

Sincerely,

Joel E. Stewart

Joel E. Stewart, FSA, EA, MAAA
Principal and Consulting Actuary
JES:fm

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Executive Summary

Overview

	Actuarial Valuation For Plan Year Beginning January 1, 2023	Actuarial Valuation For Plan Year Beginning January 1, 2024
Assets		
Market Value of Plan Assets	$ 579,063,885	$ 613,765,935
Actuarial Value of Plan Assets	$ 638,280,703	$ 647,869,821
Ratio of Actuarial Value to Market Value	110.2%	105.6%
Return on Market Value of Plan Assets	-11.8%	9.0%
Liabilities		
Actuarial Present Value of Future Benefits	$ 777,470,697	$ 825,121,617
Actuarial Liability	$ 669,516,926	$ 702,584,366
Assumed Average Annual Long-Term Future Investment Return (Discount Rate)	7.00%	7.00%
Unfunded Actuarial Liability (UAL) Relative to:		
Market Value of Plan Assets	$ 90,453,041	$ 88,818,431
Actuarial Value of Plan Assets	$ 31,236,223	$ 54,714,545
Funded Ratio Relative to:		
Market Value of Plan Assets	86.5%	87.4%
Actuarial Value of Plan Assets	95.3%	92.2%
Contribution Rates		
Total Normal Cost Rate	11.09%	10.86%
Employee Contribution Rate	7.00%	7.00%
Normal Cost Rate (Employer Portion)	4.09%	3.86%
UAL Rate	1.49%	2.85%
Employer Portion of the Actuarially Determined Contribution Rate	5.58%	6.71%
Employer Contribution Rate	7.00%	7.00%
Participant Data		
Active Participants	1,831	1,978
Retired Participants and Beneficiaries	1,296	1,333
Vested Terminated Participants	304	338
Total Participants	3,431	3,649

In our opinion, the funded status measure shown above on an actuarial value of assets basis is appropriate for assessing the need for and amount of future contributions as part of an ongoing long-term funding policy. Neither of the funded status measures above are intended to estimate the cost of settling the Plan's obligations through an annuity purchase or similar transaction.

The Actuarial Present Value of Future Benefits includes the effects of projected future service and pay increases for current active participants, stated in present value terms using the plan's investment return assumption as the discount rate. The Actuarial Accrued Liability is the portion of that amount that is allocated to service already completed as of the valuation date by participants.

Purpose of this Report

This report has been prepared for the City of Aurora General Employees' Retirement Plan as of January 1, 2024 to:

1. Review the experience for the plan year ending December 31, 2023. "Experience" encompasses the performance of the plan's assets during the year and changes in plan participant demographics that impact liabilities.
2. Determine the plan's funded ratio.
3. Calculate a Reasonable Actuarially Determined Contribution (ADC) for the plan year ending December 31, 2024 and project the adequacy of the funding policy as set by City Code.
4. Provide the basis for later financial reporting under Governmental Accounting Standards Board (GASB) Statements Nos. 67 and 68.

Plan Provisions

The valuation reflects our understanding of the plan provisions in effect as of January 1, 2024. There have not been any plan changes since the last valuation.

The Board granted a discretionary cost of living increase for the Base Benefit for Tier 2 Participants effective January 1, 2024 equal to 3.00%. This change increased the calculated Actuarial Liability by approximately $113,000. This liability increase is the effect of a single year's cost of living increase for the current retired population. Please see page 4 of this report for quantification of the effect recurring annual increases would have on key actuarial measurements.

Please see Appendix A for a detailed summary of plan provisions.

Actuarial Methods and Assumptions

The methods and assumptions used in this valuation are detailed in Appendix B. The Board of Trustees reviewed and adopted the use of the assumptions for the January 1, 2024 actuarial valuation at their April 2024 meeting. Other than as indicated in Appendix B, the assumptions are based on the 2019 Experience Study report dated February 17, 2020.

The following changes were made to the actuarial assumptions for this valuation:

- The mortality improvement projection scale was updated from MP-2018 to MP-2021. The impact of this change was a $5.8 million decrease in the Actuarial Liability.

Plan Experience

Actuarial gains or losses arise when actual experience differs from actuarial assumptions used in the valuation. During the year ending December 31, 2023, the Plan experienced an overall actuarial loss of approximately $32.7 million. The actuarial loss can be broken down as follows.

Source of (Gain) or Loss	Amount in Millions
Investment experience	$ 17.9
Demographic experience	14.8
Total (gain)/loss	$ 32.7

The market value of assets returned 9.0% during 2023, which is 2.0% more than the prior valuation's return assumption of 7.0% resulting in an actuarial investment experience gain of $11.3 million on a market value of assets basis. Under the smoothed actuarial value of assets basis used to calculate the actuarially determined contribution rate, the Plan defers two-thirds of this market value basis gain while recognizing an additional one-third of the 2022 market value basis loss of $125.0 million, resulting in a net actuarial investment loss of $17.9 million on a smoothed actuarial value of assets basis for the 2023 plan year.

The demographic experience was primarily due to salary increases for 2023 that were higher than expected, on average, and the 2024 Cost of Living Adjustment (COLA) higher than expected (3.0% compared to expected of 2.5%). Table 6 contains additional detail on the changes in the unfunded actuarial liability from January 1, 2023 to January 1, 2024.

Funding Analysis

Table 8 provides the detail on the calculation of the employer portion of the Actuarially Determined Contribution (ADC) to the Plan based on the January 1, 2024 actuarial valuation and the funding policy described in the City Code. The ADC is calculated with each year's actuarial valuation. The actuarially determined contribution (ADC) reflects the passage of time between the measurement date and the expected timing of actual contributions.

Beginning in 2017, employees contribute 7.00% of pay. Per City Code, employee contribution rates beyond 2017 may increase or decrease 0.25% of pay each year depending upon the funded ratio, but in no case would increase above 7.00% or decrease below 5.50%. Rate changes are based on a decision flowchart which increases rates (if permitted) when the funded ratio is less than 100% and decreases rates (if permitted) when the funded ratio is greater than 110%. One component used in determining the decision flowchart is the ADC. The ADC is only used to determine potential contribution rate increases, which are currently at the ceiling rate of 7.00% under the policy. The City's funding policy is to contribute the same rate of pay as employees.

The ADC consists of a rate related to the amortization of the unfunded actuarial liability (UAL) and the normal cost rate calculated under the Entry Age Normal actuarial cost method. The normal cost rate includes a component for anticipated administrative expenses to be paid from plan assets. The UAL-related portion of the ADC rate is determined via an open (i.e., rolling) 15-year level percent of projected payroll amortization calculation.

The normal cost component of the ADC should, when measured as a dollar amount, increase over time as the payroll for the active population increases (the normal cost is calculated as a level percentage of projected payroll).

The contribution determined by the City's funding policy is expected to exceed the normal cost, plus interest on the unfunded actuarial liability (UAL). Presuming that a) all actuarial assumptions are realized, b) there are no changes to assumptions, plan provisions or funding policy, and c) that the City makes contributions anticipated by the funding policy, the policy contribution is expected to reduce the outstanding balance of the UAL, and the UAL is expected to be fully amortized by the year 2048. The funding policy is consistent with the plan accumulating assets adequate to make benefit payments when due.

Actuarial standards require the actuary to calculate and disclose a reasonable actuarially determined contribution (ADC), which considers that the actuarial methods and actuarial assumptions are in compliance with actuarial standards of practice. Based on the assumptions and methods used in this report, we believe the ADC is reasonable in accordance with actuarial standards. In our opinion, the ADC reflects a balance among benefit security for plan members, intergenerational equity among stakeholders, and stability of periodic costs.

Table 14 provides a 30-year projection of employee and City contributions, as well as the funded ratio of the plan and the total normal cost rate. This projection assumes an open population with plan payroll that grows at 3.25% annually, market value asset returns of 7.00% in all future years, and both employees and the City each contribute 7.00% of payroll in all future years.

As shown in Table 14, if all future experience follows assumptions, there are no changes to assumptions, plan provisions or funding policy, and the 7.00% City and employee contributions are made each year, the Plan's funded ratio is expected to improve over the projection period once the 2022 loss has been fully recognized in the actuarial value of assets. That improvement is due to the normal cost rate decreasing over most of the projection period as new hire Tier 2 members replace departing Tier 1 members while the total contribution rate as a percent of payroll remains constant. As discussed further below, that projection assumes no future ad hoc COLAs are granted to Tier 2 members.

Evaluation of an Automatic COLA for Tier 2 Base Benefits

As disclosed in Appendix B, this valuation does **not** include the projected value of potential future ad hoc cost-of-living adjustments (COLAs) for Tier 2 base benefits in the calculation of the Actuarial Liability and Normal Cost. It is our understanding that Tier 2 base benefits for retirees have been provided the same percentage increase as the automatic COLA provided to Tier 1 base benefits each of the last six years. The following table illustrates the impact on key actuarial measurements of valuing recurring future annual COLAs on the base benefits of current and future Tier 2 retirees.

Assumed Future Tier 2 COLAs (Base Benefits)	**0.00%**	**1.25%**	**2.50%**
Unfunded Actuarial Liability (millions)	$54.7	$63.3	$73.6
Funded Ratio (Actuarial Value of Assets)	92.2%	91.1%	89.8%
Total Normal Cost Rate (including expenses)	10.86%	11.59%	12.46%
Tier 2 Normal Cost Rate (including expenses)	10.60%	11.56%	12.73%
Employer portion of the ADC (as a % of pay)	6.71%	7.89%	9.31%
Year UAL is Fully Amortized	2048	2080	Never

Over time the Plan's Normal Cost Rate will trend towards the Tier 2 rate, as Tier 1 employees retire and are replaced with new hire Tier 2 members. The difference between the total contribution rate and the Normal Cost Rate is the amount that goes towards paying down the UAL. When the Plan is 100% funded, the difference between the total contribution rate and the Normal Cost Rate provides a "margin" for adverse future experience.

Risk Assessment and Disclosure

Appendix D contains a risk assessment and disclosure summary, as required by Actuarial Standard of Practice No. 51 (ASOP 51). This appendix uses the framework of ASOP 51 to communicate important information about significant risks to the Plan and the Plan's maturity. The appendix also includes the low-default-risk obligation measure (LDROM) as required by ASOP 4.

Valuation Results

Table 1

STATEMENT OF PLAN NET ASSETS

	December 31, 2022	December 31, 2023
Cash and Cash Equivalents	$ 153,568	$ 170,862
Receivables		
Contributions	$ 755,863	$ 874,909
Interest and dividends	706,003	750,158
Securities sold	68,087	0
Other	22,661	27,206
Total receivables	$ 1,552,614	$ 1,652,273
Prepaid Expenses	$ 48,453	$ 48,662
Investments		
Short-term cash investments	$ 10,359,496	$ 9,431,822
Equity securities and funds	235,181,127	292,293,586
U.S. government and agency obligations	15,009,741	20,061,676
Corporate bonds and funds	106,298,864	105,718,709
Real estate funds	58,838,316	54,091,777
Alternative investments	152,321,774	131,435,049
Total Investments	$ 578,009,318	$ 613,032,619
Leased Assets		
Office lease	$ 178,704	$ 178,704
Accumulated amortization leased assets	(82,478)	(123,718)
Net leased assets	$ 96,226	$ 54,986
Liabilities		
Accounts payable and accrued expenses	$ 233,012	$ 257,210
Benefits and refunds payable	119,295	199,177
Securities purchased	344,687	679,775
Leased liability	99,300	57,305
Total Liabilities	$ 796,294	$ 1,193,467
Plan Net Assets	$ 579,063,885	$ 613,765,935

Table 2

STATEMENT OF CHANGES IN PLAN NET ASSETS

	2022	2023
Net market value at beginning of year	$ 673,636,548	$ 579,063,885
Beginning of Year Audit Adjustment	$ (2,233)	$ 0
Additions:		
Contributions:		
Plan member contributions	$ 9,394,498	$ 10,554,519
City of Aurora contributions	9,393,456	10,522,608
Total contributions	$ 18,787,954	$ 21,077,127
Investment Income		
Net appreciation/(depreciation)	$ (83,098,660)	$ 45,702,573
Interest	2,247,318	2,525,574
Dividends	5,029,934	5,437,837
Less investment expenses	(2,537,245)	(2,380,941)
Total	$ (78,358,653)	$ 51,285,043
Other income	$ 3,531	$ 0
Total additions	$ (59,567,168)	$ 72,362,170
Deductions:		
Benefit payments	$ 31,617,329	$ 34,720,297
Contribution refunds	2,774,106	2,282,084
Administrative and miscellaneous expenses	611,827	657,739
Total	$ 35,003,262	$ 37,660,120
Net change:	$ (94,570,430)	$ 34,702,050
Net market value at end of year	$ 579,063,885	$ 613,765,935

Table 3

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

For funding purposes, the Plan's asset valuation method recognizes investment gains and losses over a three-year period. The resulting Actuarial Value of Assets may not be less than 80% or more than 120% of the Market Value of Assets. The Actuarial Value of Assets as of January 1, 2024 is determined below.

Asset Reconciliation

Year	(1) Market Value of Assets Beginning of Year	(2) Contributions (City and Employee)	(3) Benefit Payments	(4) Administrative Expenses	(5) Cash Flow (2)+(3)+(4)	(6) Actual Investment Income	(7) Market Value of Assets End of Year (1)+(5)+(6)
2023	$579,063,885	$21,077,127	$(37,002,381)	$(657,739)	$(16,582,993)	$51,285,043	$613,765,935
2022	673,636,548	18,787,954	(34,391,435)	(611,827)	(16,215,308)	(78,357,355)	579,063,885
2021	576,750,526	17,464,791	(32,130,354)	(554,749)	(15,220,312)	112,106,334	673,636,548

Gain/(Loss) Calculation

Year	Actual Investment Rate of Return	Actual Investment Return	Expected Investment Return	Difference between Actual and Expected
2023	9.0%	$51,285,043	$39,963,884	$ 11,321,159
2022	-11.8%	(78,357,355)	46,596,621	(124,953,976)
2021	19.7%	112,106,334	39,848,836	72,257,498

Asset Gain/(Loss) Deferred for Systematic Recognition in Subsequent Years

66⅔% of 2023 Gain/(Loss)	$ 7,547,439
33⅓% of 2022 Gain/(Loss)	(41,651,325)
	$ (34,103,886)

Actuarial Value of Assets

1.	Market value as of January 1, 2024	$ 613,765,935
2.	Prior gains/(losses) deferred	(34,103,886)
3.	Preliminary Actuarial Value of Assets (1. - 2.)	$ 647,869,821
4.	Preliminary Actuarial Value of Assets as a Percentage of Market Value (3. ÷ 1.)	105.6%
5.	Actuarial Value of Assets as of January 1, 2024 (3., limited to 80% - 120% of Market Value))	$ 647,869,821

Table 4

ACTUARIAL BALANCE SHEET

Requirements

Present Value of Projected Benefits	Tier 1	Tier 2	Total
Retired Members			
Healthy Retirees	$ 402,668,473	$ 2,767,055	$ 405,435,528
Disabled Retirees	5,546,189	60,689	5,606,878
Beneficiaries	18,491,729	1,506,406	19,998,135
Total	$ 426,706,391	$ 4,334,150	$ 431,040,541
Vested Inactive Members			
Terminated Vested	$ 21,641,045	$ 4,371,190	$ 26,012,235
Deferred Disabled	1,955,342	345,559	2,300,901
Total	$ 23,596,387	$ 4,716,749	$ 28,313,136
Active Members			
Retirement	$ 189,083,257	$ 127,856,682	$ 316,939,939
Withdrawal	6,668,229	26,592,269	33,260,498
Death	2,040,620	2,214,661	4,255,281
Disability	4,571,490	6,740,732	11,312,222
Total	$ 202,363,596	$ 163,404,344	$ 365,767,940
Total Present Value of Projected Benefits	$ 652,666,374	$ 172,455,243	$ 825,121,617

Resources

Actuarial Value of Assets	$ 647,869,821
Present Value of Future Normal Costs	122,537,251
Unfunded Actuarial Liability	54,714,545
Total	$ 825,121,617

Table 5

UNFUNDED ACTUARIAL LIABILITY (UAL)

Actuarial Liability	Tier 1	Tier 2	Total
Retired Members	$ 426,706,391	$ 4,334,150	$ 431,040,541
Vested Inactive Members	23,596,387	4,716,749	28,313,136
Active Members	175,340,751	67,889,938	243,230,689
Total	$ 625,643,529	$ 76,940,837	$ 702,584,366
Actuarial Value of Assets			$ 647,869,821
Unfunded Actuarial Liability			$ 54,714,545

Table 6

ANALYSIS OF EXPERIENCE (GAINS) AND LOSSES

Expected Unfunded Actuarial Liability		
Unfunded Actuarial Liability as of January 1, 2023		$ 31,236,223
Normal Cost (mid-year), including actual administrative expenses		15,532,686
Employee and Employer Contributions		(21,077,127)
Interest at 7.0% (assumption for prior year)		1,995,762
Expected Unfunded Actuarial Liability as of January 1, 2024		$ 27,687,544
Changes		
Investment[1] (Gain)/Loss on an Actuarial Value of Assets Basis		17,936,950
Demographic Experience (Gain)/Loss		
Salary (Gain)/Loss	$ 12,800,977	
New Entrant Participants Loss	2,274,810	
Retirement (Gain)/Loss	(468,873)	
Pensioner Mortality (Gain)/Loss	(2,503,502)	
Tier 1 Cost of Living Adjustment (Below)/Above Assumed	1,892,115	
All Other Demographic Experience	804,828	
Total Demographic Experience (Gain)/Loss		14,800,355
Assumption Changes		(5,823,543)
Tier 2 COLA[2]		113,239
Plan Changes		0
Unfunded Actuarial Liability on January 1, 2024		$ 54,714,545

[1] The investment (gain)/loss is based on the return on the Actuarial Value of Assets, which recognizes market value returns in any given year that are different than the valuation's investment return assumption systematically over a three year period.

[2] Tier 2 retirees received a cost of living increase on the Base Benefit effective January 1, 2024 equal to 3.0%. City Code allows the Board to grant a discretionary cost of living increase for the Base Benefit for Tier 2 retirees.

Table 7

NORMAL COST

Entry Age Normal Cost	Tier 1	Tier 2	Total
Retirement	$ 3,033,863	$ 8,487,105	$ 11,520,968
Vested Withdrawal	1,089,932	2,822,227	3,912,159
Death	53,924	156,081	210,005
Disability	160,505	557,888	718,393
Total Normal Cost for Benefits	$ 4,338,224	$ 12,023,301	$ 16,361,525
Interest to Mid-Year			562,968
Assumed Administrative Expenses (mid-year)			625,000
Total Normal Cost			$ 17,549,493
As a Percentage of Valuation Salary*			10.86%

* Payroll for employees less than the assumed full retirement age (age 70) as of the valuation date.

Table 8

DEVELOPMENT OF EMPLOYER PORTION OF THE ACTUARIALLY DETERMINED CONTRIBUTION

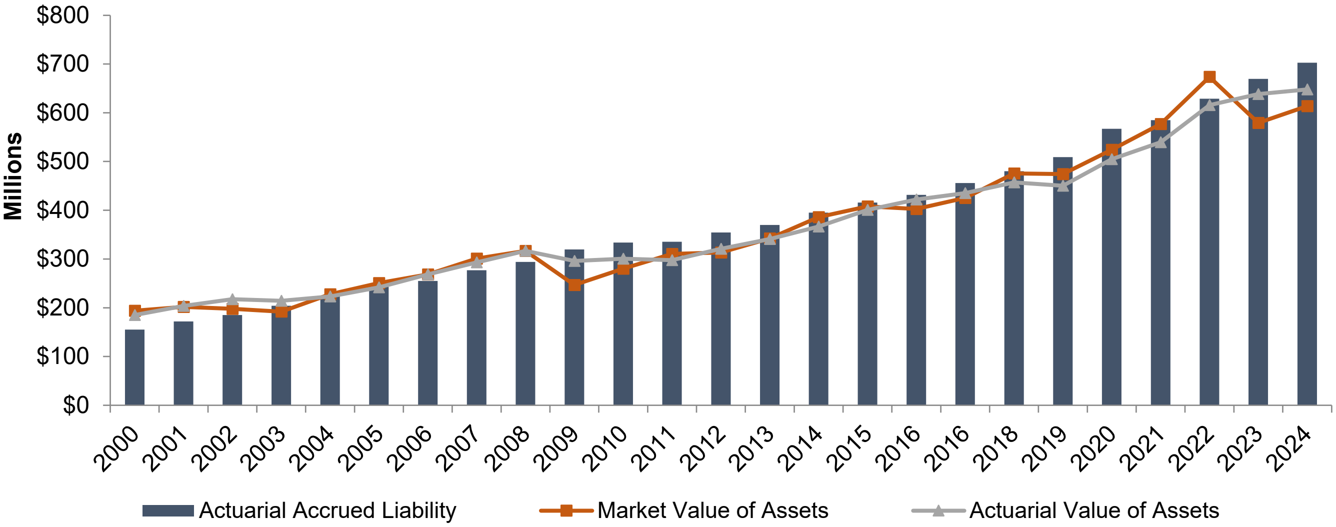
	January 1, 2023	January 1, 2024
1. Present Value of Projected Benefits	$ 777,470,697	$ 825,121,617
2. Present Value of Future Normal Costs	107,953,771	122,537,251
3. Entry Age Normal Accrued Liability [(1) – (2)]	$ 669,516,926	$ 702,584,366
4. Actuarial Value of Assets	638,280,703	647,869,821
5. Unfunded Actuarial Liability (UAL): [(3) – (4)]	$ 31,236,223	$ 54,714,545
6. Amortization Period for UAL	20 years	15 years
7. Entry Age Normal Cost (mid-year)	$ 15,459,947	$ 17,549,493
8. Amortization of UAL (mid-year)	2,220,036	4,786,442
9. Total Cost: [(7)+(8)]	$ 17,679,983	$ 22,335,935
10. Anticipated Employee Contributions	(9,839,546)	(11,406,232)
11. Employer Portion of the Actuarially Determined Contribution: [(9)+(10)]	$ 7,840,437	$ 10,929,703
12. Anticipated Total Payroll	$ 140,564,949	$ 162,946,172
13. Employer Portion of the Actuarially Determined Contribution as a Percent of Anticipated Total Payroll	5.58%	6.71%

Note: The actuarially determined contribution (ADC) reflects the passage of time between the measurement date and the expected timing of actual contributions.

Historical Information and Projections

Table 9

HISTORICAL FUNDING PROGRESS
PLAN ASSETS VS. ACTUARIAL ACCRUED LIABILITY



Jan. 1,	(A) Market Value of Assets (MVA)	(B) Actuarial Value of Assets (AVA)	(C) Actuarial Liability	(C) - (A) MVA Funding (Surplus)/ Shortfall	(A) / (C) MVA Funded Ratio	(C) - (B) AVA Funding (Surplus)/ Shortfall	(B) / (C) AVA Funded Ratio
2000	$193,982,980	$185,264,480	$155,169,044	$(38,813,936)	125%	$(30,095,436)	119%
2001	201,890,615	203,862,059	172,005,869	(29,884,746)	117	(31,856,190)	119
2002	198,007,236	217,476,110	184,999,951	(13,007,285)	107	(32,476,159)	118
2003	192,230,162	214,320,251	203,999,260	11,769,098	94	(10,320,991)	105
2004	227,797,938	223,140,793	223,126,549	(4,671,389)	102	(14,244)	100
2005	250,609,598	241,818,542	243,234,592	(7,375,006)	103	1,416,050	99
2006	268,374,886	268,566,265	255,005,107	(13,369,779)	105	(13,561,158)	105
2007	300,988,913	292,889,736	277,052,492	(23,936,421)	109	(15,837,244)	106
2008	316,737,760	316,567,579	294,142,225	(22,595,535)	108	(22,425,354)	108
2009	246,684,838	296,021,806	319,750,886	73,066,048	77	23,729,080	93
2010	280,221,050	300,704,227	333,831,950	53,610,900	84	33,127,723	90
2011	310,556,618	297,494,555	335,310,191	24,753,573	93	37,815,636	89
2012	313,281,809	320,996,231	354,416,941	41,135,132	88	33,420,710	91
2013	342,120,905	340,856,093	369,696,290	27,575,385	93	28,840,197	92
2014	385,882,442	366,577,369	395,063,666	9,181,224	98	28,486,297	93
2015	407,945,659	400,748,065	415,852,539	7,906,880	98	15,104,474	96
2016	402,516,572	422,124,860	431,659,846	29,143,274	93	9,534,986	98
2017	425,231,226	435,153,161	455,759,906	30,528,680	93	20,606,745	95
2018	475,556,466	457,124,471	479,969,556	4,413,090	99	22,845,085	95
2019	450,368,075	474,289,088	508,917,257	58,549,182	89	34,628,169	93
2020	524,036,473	504,806,469	567,006,106	42,969,633	92	62,199,637	89
2021	576,750,526	539,466,232	584,677,921	7,927,395	99	45,211,689	92
2022	673,636,548	615,781,429	628,618,281	(45,018,267)	107	12,836,852	98
2023	579,063,885	638,280,703	669,516,926	90,453,041	86	31,236,223	95
2024	613,765,935	647,869,821	702,584,366	88,818,431	87	54,714,545	92

Table 10

ANALYSIS OF EXPERIENCE (GAINS) AND LOSSES (HISTORICAL)

	Actuarial (Gains)/Losses					
Plan Year Ending	Asset Sources	Liability Sources	Total	Changes in Plan Provisions	Changes in Assumption/ Methods	Total (Gain)/Loss
December 31, 2010	23,485,448	(8,080,563)	15,404,885	0	(15,247,082)*	157,803
December 31, 2011	(4,483,174)	(5,162,188)	(9,645,362)	0	975,975*	(8,669,387)
December 31, 2012	(1,064,320)	(6,771,318)	(7,835,638)	0	0	(7,835,638)
December 31, 2013	(5,791,149)	(5,712,203)	(11,503,352)	0	8,841,210*	(2,662,142)
December 31, 2014	(12,639,488)	(1,020,194)	(13,659,682)	0	0	(13,659,682)
December 31, 2015	1,452,303	(6,389,686)	(4,937,383)	0	956,983	(3,980,400)
December 31, 2016	11,641,132	(5,754,735)	5,886,397	0	6,996,522	12,882,919
December 31, 2017	1,207,709	2,378,124	3,585,833	(83,708)	0	3,502,125
December 31, 2018	6,124,973	7,094,194	13,219,167	4,302	0	13,223,469
December 31, 2019	(8,866,867)	1,705,597	(7,161,270)	3,639	36,085,838	28,928,207
December 31, 2020	(12,342,172)	(4,018,060)	(16,360,232)	(1,825,024)	0	(18,185,256)
December 31, 2021	(54,296,574)	22,580,265	(31,716,309)	54,421	0	(31,661,888)
December 31, 2022	3,832,181	17,801,806	21,633,987	78,576	0	21,712,563
December 31, 2023	17,936,950	14,800,355	32,737,305	113,239	(5,823,543)	27,027,001

Values for plan year ending December 31, 2015 and earlier as reported by the prior actuary.

* Net “non-recurring” changes. Prior actuary’s report did not delineate between plan and assumption/method changes.

Table 11

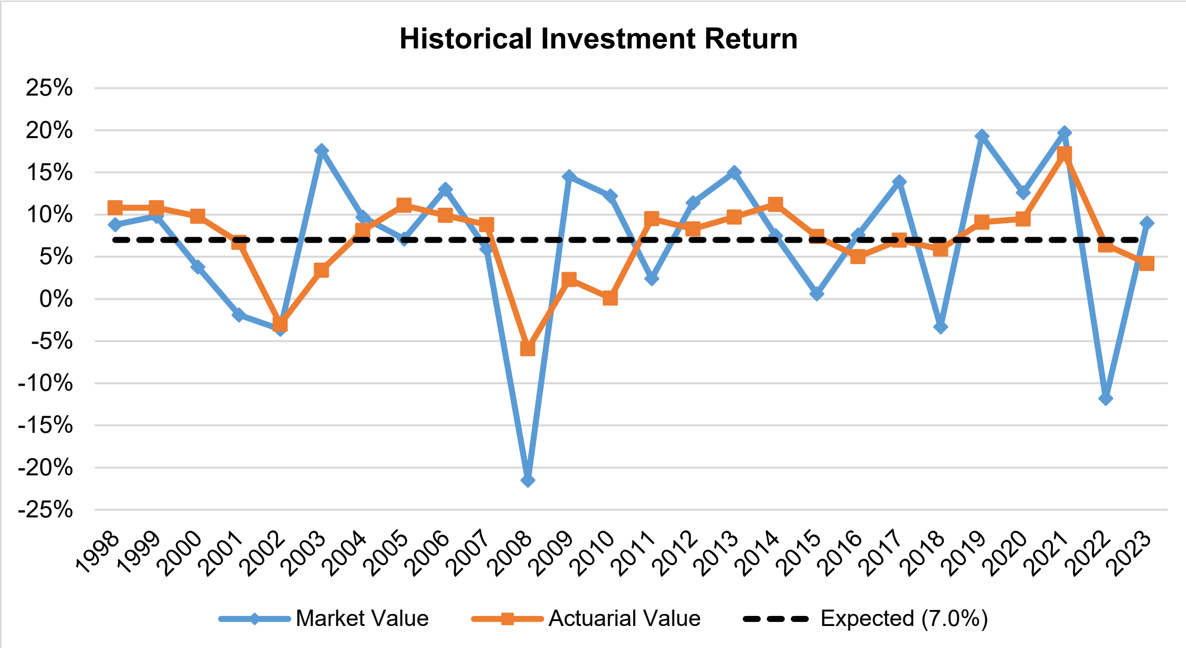
SOLVENCY TEST

	Actuarial Accrued Liabilities for:				Portion of Accrued Liabilities Covered by Valuation Assets		
Valuation Date	(1) Active Member Contributions	(2) Inactive Members	(3) Active Members	Valuation Assets	(1)	(2)	(3)
January 1, 2000	38,805,144	49,290,698	67,073,202	185,264,480	100%	100%	100%
January 1, 2001	41,631,805	56,856,612	73,517,451	203,862,059	100%	100%	100%
January 1, 2002	44,768,076	60,305,096	79,926,779	217,476,110	100%	100%	100%
January 1, 2003	48,736,137	66,075,645	89,187,478	214,320,251	100%	100%	100%
January 1, 2004	53,289,266	71,919,853	97,917,430	223,140,793	100%	100%	100%
January 1, 2005	58,118,119	80,238,773	104,877,700	241,818,542	100%	100%	99%
January 1, 2006	59,491,429	96,596,749	98,916,929	268,566,265	100%	100%	100%
January 1, 2007	61,700,894	108,083,741	107,267,857	292,889,736	100%	100%	100%
January 1, 2008	65,237,335	115,157,203	113,747,687	316,567,579	100%	100%	100%
January 1, 2009	68,764,295	131,939,654	119,046,937	296,021,806	100%	100%	80%
January 1, 2010	72,311,211	138,108,376	123,412,363	300,704,227	100%	100%	73%
January 1, 2011	74,768,249	142,446,528	118,095,414	297,494,555	100%	100%	68%
January 1, 2012	74,788,283	162,428,901	117,199,757	320,996,231	100%	100%	71%
January 1, 2013	74,453,807	179,793,207	115,449,276	340,856,093	100%	100%	75%
January 1, 2014	75,409,870	205,480,329	114,173,467	366,577,369	100%	100%	75%
January 1, 2015	74,299,208	226,648,240	114,905,091	400,748,065	100%	100%	87%
January 1, 2016	74,856,178	239,245,818	117,557,850	422,124,860	100%	100%	92%
January 1, 2017	73,701,869	261,377,011	120,681,026	435,153,161	100%	100%	83%
January 1, 2018	75,156,324	282,710,162	122,103,070	457,124,471	100%	100%	81%
January 1, 2019	74,072,180	312,151,820	122,693,257	474,289,088	100%	100%	72%
January 1, 2020	72,242,119	351,659,021	143,104,966	504,806,469	100%	100%	57%
January 1, 2021	75,147,460	366,787,270	142,743,191	539,466,232	100%	100%	68%
January 1, 2022	75,003,767	404,295,897	149,318,617	615,781,429	100%	100%	91%
January 1, 2023	74,931,355	441,945,310	152,640,261	638,280,703	100%	100%	80%
January 1, 2024	78,065,210	459,353,677	165,165,479	647,869,821	100%	100%	67%

Values for January 1, 2016 and earlier as reported by the prior actuary.

Table 12

HISTORICAL INVESTMENT RETURN



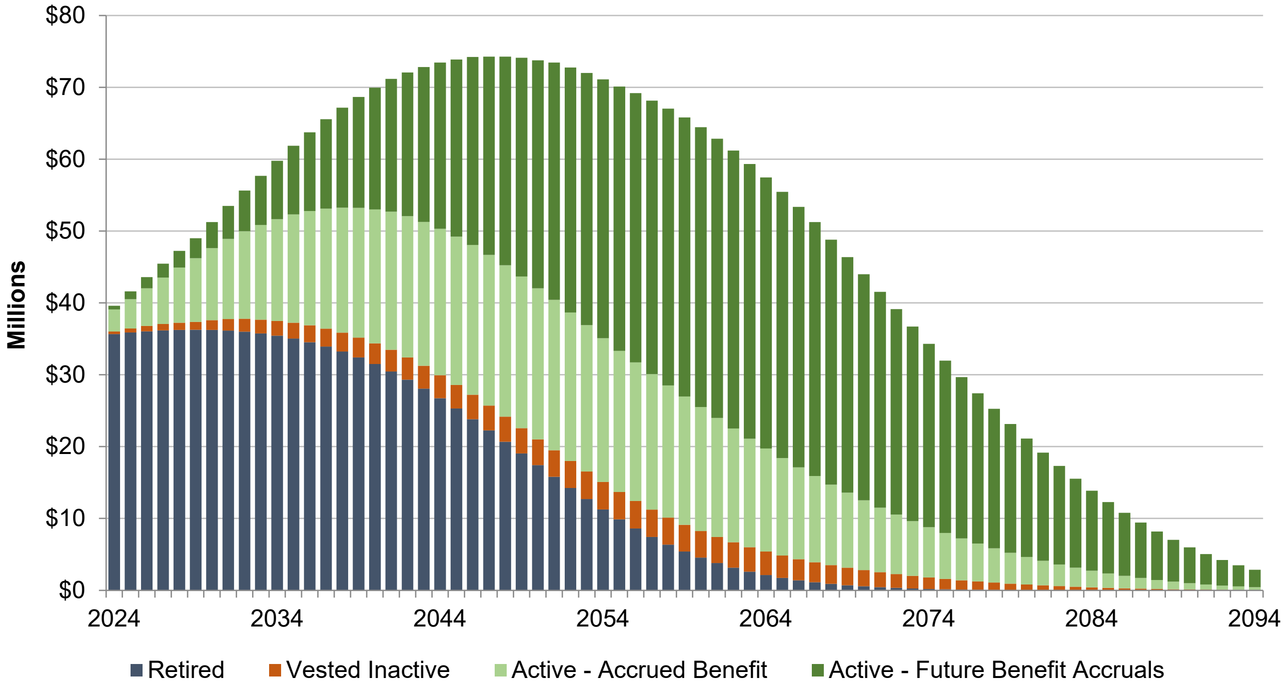
Annual Rate of Investment Return*

For One-Year Period			For Period Ending December 31, 2023		
Plan Year Ending December 31,	Market	Actuarial	Period	Market	Actuarial
2023	9.0%	4.2%	1 year	9.0%	4.2%
2022	-11.8%	6.4%	2 years	-2.0%	5.3%
2021	19.7%	17.2%	3 years	4.8%	9.1%
2020	12.6%	9.5%	4 years	6.7%	9.2%
2019	19.3%	9.1%	5 years	9.1%	9.2%
2018	-3.3%	5.9%	6 years	6.9%	8.6%
2017	13.9%	7.0%	7 years	7.9%	8.4%
2016	7.6%	5.0%	8 years	7.9%	8.0%
2015	0.6%	7.4%	9 years	7.0%	7.9%
2014	7.5%	11.2%	10 years	7.1%	8.2%
2013	15.0%	9.7%	11 years	7.8%	8.4%
2012	11.4%	8.3%	12 years	8.1%	8.4%
2011	2.4%	9.5%	13 years	7.6%	8.4%
2010	12.2%	0.1%	14 years	7.9%	7.8%
2009	14.5%	2.3%	15 years	8.4%	7.5%
2008	-21.5%	-5.9%	16 years	6.2%	6.6%
2007	5.9%	8.8%	17 years	6.2%	6.7%
2006	13.0%	9.9%	18 years	6.6%	6.9%
2005	7.1%	11.1%	19 years	6.6%	7.1%
2004	9.7%	8.1%	20 years	6.7%	7.1%
2003	17.6%	3.4%	21 years	7.2%	7.0%
2002	-3.6%	-3.0%	22 years	6.7%	6.5%
2001	-1.9%	6.7%	23 years	6.3%	6.5%
2000	3.8%	9.8%	24 years	6.2%	6.6%
1999	9.8%	10.8%	25 years	6.4%	6.8%
1998	8.8%	10.8%	26 years	6.5%	6.9%

* *For 2016 and prior, rates reflect total investment return, net of investment related and administrative expenses.*

Table 13

TWENTY-YEAR PROJECTION OF BENEFIT PAYMENTS FOR CURRENT PARTICIPANTS



Detail of Total Projected Benefit Payments and Contribution Refunds for Next 20 Years*

Plan Year	Projected Benefit Payments and Contribution Refunds	Plan Year	Projected Benefit Payments and Contribution Refunds
2024	$ 39,591,000	2034	$ 59,768,000
2025	41,610,000	2035	61,854,000
2026	43,594,000	2036	63,734,000
2027	45,461,000	2037	65,553,000
2028	47,225,000	2038	67,167,000
2029	49,000,000	2039	68,650,000
2030	51,251,000	2040	69,955,000
2031	53,493,000	2041	71,173,000
2032	55,622,000	2042	72,069,000
2033	57,668,000	2043	72,817,000

* *This valuation, including the projected benefit payments shown, reflects only participants as of the valuation date and does not reflect any projected payments to future new entrants.*

Table 14

30-YEAR PROJECTION OF CONTRIBUTIONS AND FUNDED RATIO (MILLIONS)

(1) Valuation as of January 1,	(2) Employer Contribution	(3) Employee Contribution	(4) Total Payroll	(5) Actuarial Liability	(6) Actuarial Value of Assets	(7) Unfunded Actuarial Liability	(8) Normal Cost Rate (w/Exp.)	(9) Funded Ratio
2024	$11.4	$11.4	$162.9	$702.6	$647.9	$54.7	10.8%	92%
2025	11.8	11.8	168.2	728.3	634.9	93.4	10.8%	87%
2026	12.2	12.2	173.7	754.2	664.1	90.1	10.8%	88%
2027	12.6	12.6	179.4	780.5	689.9	90.6	10.8%	88%
2028	13.0	13.0	185.2	807.2	716.5	90.7	10.7%	89%
2029	13.4	13.4	191.2	834.6	743.9	90.7	10.7%	89%
2030	13.8	13.8	197.4	862.6	772.2	90.4	10.7%	90%
2031	14.3	14.3	203.8	890.9	801.1	89.8	10.7%	90%
2032	14.7	14.7	210.5	919.5	830.5	89.0	10.7%	90%
2033	15.2	15.2	217.3	948.5	860.8	87.7	10.7%	91%
2034	15.7	15.7	224.4	978.2	892.1	86.1	10.6%	91%
2035	16.2	16.2	231.7	1,008.5	924.3	84.2	10.6%	92%
2036	16.7	16.7	239.2	1,039.5	957.7	81.8	10.6%	92%
2037	17.3	17.3	247.0	1,071.5	992.6	78.9	10.6%	93%
2038	17.8	17.8	255.0	1,104.7	1,029.1	75.6	10.6%	93%
2039	18.4	18.4	263.3	1,139.3	1,067.7	71.6	10.6%	94%
2040	19.0	19.0	271.8	1,175.7	1,108.6	67.1	10.6%	94%
2041	19.6	19.6	280.7	1,214.2	1,152.2	62.0	10.6%	95%
2042	20.3	20.3	289.8	1,255.0	1,198.8	56.2	10.6%	96%
2043	20.9	20.9	299.2	1,298.7	1,249.2	49.5	10.6%	96%
2044	21.6	21.6	308.9	1,345.7	1,303.6	42.1	10.6%	97%
2045	22.3	22.3	319.0	1,396.3	1,362.5	33.8	10.5%	98%
2046	23.1	23.1	329.3	1,451.0	1,426.6	24.4	10.5%	98%
2047	23.8	23.8	340.0	1,510.3	1,496.2	14.1	10.5%	99%
2048	24.6	24.6	351.1	1,574.9	1,572.2	2.7	10.5%	100%
2049	25.4	25.4	362.5	1,645.1	1,655.1	(10.0)	10.5%	101%
2050	26.2	26.2	374.3	1,721.5	1,745.6	(24.1)	10.5%	101%
2051	27.1	27.1	386.4	1,805.0	1,844.5	(39.5)	10.5%	102%
2052	27.9	27.9	399.0	1,895.8	1,952.3	(56.5)	10.5%	103%
2053	28.8	28.8	412.0	1,995.1	2,070.2	(75.1)	10.5%	104%

Note: These projections are based on the actuarial methods, assumptions and plan provisions disclosed in this report, including the use of a 7.00% future return on the market value of assets and a 3.25% future wage inflation. In addition, the projections assume future experience follows assumptions, there are no changes to assumptions, plan provisions or funding policy, and employee and employer contributions of 7.00% of compensation are made each year. In particular, the projection assumes Tier 2 members receive no future ad hoc COLAs.

Appendix A
Plan Summary

All actuarial calculations are based upon our understanding of the provisions of the City of Aurora General Employees' Retirement Plan, as amended through December 31, 2022. This summary does not attempt to cover all of the detailed provisions.

Plan

The City of Aurora General Employees' Retirement Plan is a single employer defined benefit pension plan created by the Aurora City Council in 1967 for the exclusive benefit of participants and their beneficiaries.

Plan Year

The Plan Year is the 12-month period beginning January 1 and ending December 31.

Effective Date

The original effective date of the Plan is March 1, 1967. The Plan was most recently amended effective January 1, 2021.

Employee

All full and part-time career service and Council-appointed employees of the City, other than police officers, firefighters, elected officials, certain executive-level personnel and temporary employees.

Participation

An Employee shall become a Participant upon completion of one hour of service.

Plan Tier

Participants in the plan prior to January 1, 2012 are Tier 1 participants. Participants who first enter the plan after December 31, 2011 are Tier 2 participants.

Final Average Monthly Compensation

An employee's compensation from the city during the 36 highest paid consecutive calendar months of the last ten years of credit service, divided by 36.

Compensation

Compensation means the total base pay, including acting pay, longevity credit, 414(h) and 457 contributions and Section 125 elective pre-tax employee contributions. Overtime, vacation and sick leave pay, and bonuses are excluded.

Compensation is limited under Internal Revenue Code Section 401(a)(17).

Credited Service

A participant's credited service is the elapsed time period from employment commencement date to the date of termination of such employment. Generally, one day of credited service shall be credited for each day in the elapsed period.

Employee Contributions

Beginning in 2017, employees contribute 7.00% of pay. Rates beyond 2017 may increase or decrease 0.25% each year upon the financial condition of the fund but in no case would the rate increase above 7.00% or decrease below 5.50%. Rate changes are based on a decision flowchart designed to keep the funded ratio between 100% and 110%. The employee’s contribution account is credited with interest of 4.0% compounded biweekly.

Employer (City) Contributions

The city contributes to the trust an amount equal to the contributions of the employee. Currently, the City contributes 7.00% of payroll.

Normal Retirement Date

Tier 1 Participants: 65th Birthday

Tier 2 Participants: 67th Birthday

Normal Retirement Pension

Each participant who becomes eligible for a Normal Retirement Pension under the Plan will be entitled to receive a monthly retirement pension benefit beginning at the participant’s Normal Retirement Date and payable in the Normal Benefit Form equal to 1.75% of Final Average Monthly Compensation multiplied by Years of Credited Service.

In lieu of a monthly pension, the participant may elect to receive a lump sum equal to the participant’s contribution accumulated and vested city contributions.

Normal Benefit Form

Life Annuity

Early Retirement Pension

(a) Eligibility

Termination on or after age 50 with 10 or more years of credited service, and not eligible for Normal Retirement Pension or Special Early Retirement Pension

(b) Amount (Base Benefit)

A participant's Early Retirement Pension is a monthly pension benefit equal to his Normal Retirement Pension based on Final Average Monthly Compensation and Credited Service at his date of retirement, and reduced as follows:

<u>Tier 1 Participants</u>

(i) After age 55: 2% per year prior to the earlier of age 65 (Normal Retirement) or Rule of 80 (age plus service equal to 80 or more)

(ii) Under age 55 with less than 25 years of credited service: 2% per year for each year that the participant’s years of credited service are less than 25 (up to a max of 20%), then further reduced by 6% per year for each year the commencement precedes age 55

(iii) Under age 55 with at least 25 years of credited service: 6% per year prior to Rule of 80 (age plus service equal to 80 or more)

Tier 2 Participants: 6% per year prior to the earlier of age 67 (Normal Retirement) or Rule of 80 (age plus service equal to 80 or more)

For determining Rule of 80 date for early retirement reductions, service is determined at date of retirement and age is projected forward.

In lieu of a monthly pension, the participant may elect to receive a lump sum equal to the participant's contribution accumulated and vested city contributions.

Special Early Retirement Pension – Rule of 80

(a) Eligibility

Termination on or after age 50 with age plus credited service equal to 80 or more, and not eligible for Normal Retirement Pension

(b) Amount (Base Benefit)

A participant's Special Early Retirement Pension is a monthly pension benefit equal to his Normal Retirement Pension based on Final Average Monthly Compensation and Credited Service at his date of retirement, without reduction.

In lieu of a monthly pension, the participant may elect to receive a lump sum equal to the participant's contribution accumulated and vested city contributions.

Deferred Vested Pension

(a) Eligibility

5 or more years of Credited Service.

(b) Amount (Base Benefit)

A participant's Deferred Vested Pension shall be equal to the participant's Accrued Benefit, payable at Normal Retirement Date. If a participant terminates employment after completing 10 years of credited service, the participant may retire with an Early Retirement Benefit any time after attainment of age 50 and prior to the participant's normal retirement date.

In lieu of a monthly pension, the participant may elect to receive a lump sum equal to the participant's contribution accumulated and vested city contributions.

Money Purchase Pension

(a) Eligibility

Eligible for a Normal Retirement, Early Retirement, Special Early Retirement, or Deferred Vested Pension, and the monthly money purchase pension is greater than the monthly pension calculated pursuant to any of these pensions.

(b) Amount (Base Benefit)

A participant's Money Purchase Pension shall be a monthly amount equal to the Actuarial Equivalent of the participant's contribution accumulation and vested city contributions as of the date the pension commences. The Money Purchase Pension is payable in lieu of a Normal Retirement, Early Retirement, Special Early Retirement, or Deferred Vested Pension.

Disability Retirement Pension

(a) Eligibility

Termination due to Disability, and the Participant received long-term disability insurance payments from the City until his Normal Retirement Date.

(b) Amount (Base Benefit)

A participant's Disability Retirement Pension shall be equal to the participant's Normal Retirement Pension based on the higher of the Final Average Monthly Compensation or the monthly rate of compensation on the date of disablement, and Credited Service the participant would have accrued had he continued employment through his Normal Retirement Date (or date of discontinuance of disability benefits, if earlier).

Supplemental Benefit

(a) Eligibility

In receipt of a monthly benefit under a Normal Retirement, Early Retirement, Special Early Retirement, Deferred Vested, Disability Retirement, or Money Purchase Pension.

(b) Amount (Supplemental Benefit)

A monthly amount equal to $176.00. This benefit is reduced proportionally if the years of credited service are less than 20.

Termination before Vested Benefit

If a participant terminates employment prior to 5 years of Credited Service, the participant will receive a refund of accumulated employee and vested employer contributions, if any.

Vesting Schedule

(a) For Defined Benefit:

Years of Credited Service	Vested Percentage
Less than 5	0%
5 or more	100%

Participants are fully vested at Normal Retirement Date.

(b) For Vesting in City Contributions:

Participants are vested in the City's contributions and interest according to the following schedule:

Years of Credited Service	Tier 1 Vested Percentage	Tier 2 Vested Percentage
0	25%	0%
1	30%	0%
2	35%	0%
3	40%	0%
4	45%	0%
5	50%	50%
6	55%	55%
7	60%	60%

Years of Credited Service	Tier 1 Vested Percentage	Tier 2 Vested Percentage
8	65%	65%
9	70%	70%
10	75%	75%
11	80%	80%
12	85%	85%
13	90%	90%
14	95%	95%
15+	100%	100%

Participants are 100% vested in Employee contributions and interest immediately.

Optional Benefit Forms

Optional Benefit Forms are available for base benefits and equal to the Actuarial Equivalent of the Normal Benefit Form. Such distribution may be as a Joint & 50%, 75%, or 100% Survivor Annuity with Pop-up feature, a 10 or 15 Year Certain and Life Annuity or a Partial Lump Sum up to 20% of the actuarial equivalent of the accrued benefit.

The Supplemental Benefit is paid as a monthly benefit as long as a monthly Base Benefit is being received by a participant or a participant's beneficiary.

Pre-Retirement Death Benefit

If a participant dies prior to completing 5 years of service, the Participant's beneficiary will receive a refund of accumulated employee and vested employer contributions, if any. If a Participant dies after completing 5 years of service, the participant's beneficiary will receive a monthly benefit equal to the supplemental benefit plus the larger of the actuarial equivalent of 60% of the defined benefit formula benefit or the actuarial equivalent of the vested employee and employer contributions. Benefit payments may begin at any time after the date the participant would have attained the earliest retirement age.

Lump Sum Death Benefit

Upon the death of a Retired member receiving a monthly pension, $6,250 shall be paid in a single sum to the member's designated beneficiary.

In addition, upon the last to die of a Retired member and any beneficiary receiving a monthly pension, a lump sum shall be paid to the estate. This amount shall be equal to the excess, if any, of the participant's contribution accumulation and vested city contributions on the date the pension commenced over the total monthly benefits paid from the time of pension commencement to the date of death.

Cost of Living Adjustment

Tier 1 Participants

(a) Base Benefit: The monthly amount of the base benefit provided by the Plan shall be increased annually on the first day of each January by the change in the U.S. Consumer Price Index for Urban Wage Earners and Clerical Works (CPI-W) for the averages of the third quarter, rounded to the nearest ½%. The benefit cannot be decreased and annual increases may not exceed 5%.

(b) Supplemental Benefit: Annual cost of living increases are discretionary and may be granted on an annual basis as determined by the board. The annual increase or decrease cannot exceed plus or minus 5%.

Tier 2 Participants

(a) Base Benefit: Annual cost of living increases are discretionary and may be granted on an annual basis as determined by the Board. The annual increase cannot exceed the lesser of 5% or the increase which applies to Tier 1 participants.

(b) Supplemental Benefit: Annual cost of living increases are discretionary and may be granted on an annual basis as determined by the Board. The annual increase or decrease cannot exceed plus or minus 5%.

Actuarial Equivalence

Actuarial Equivalence is calculated using the Society of Actuaries' Pub-2010 General Employees Retiree Mortality Table (amount weighted), blended 50% male, 50% female, and projected to 2028 using the ultimate rates from Scale MP-2018, a 7.0% interest rate, and a Cost-of-Living assumption of 2.5% for Tier 1 benefits and 0.25% for Tier 2 benefits.

Plan Changes

The Board granted a discretionary cost of living increase for the Base Benefit for Tier 2 Participants effective January 1, 2024 equal to 3.00%.

Appendix B
Actuarial Procedures and Assumptions

The actuarial assumptions used in the valuation are intended to estimate future experience affecting projected benefit flow and investment earnings. Any variations in future experience from that expected from these assumptions will result in corresponding changes in the estimated costs of the Plan's benefits.

The tables in this section give rates of decrement, referred to in actuarial notation by the general symbol "q'." The underlying theory is described more fully in Jordan, *Life Contingencies*, Society of Actuaries (Second Edition, 1967), page 277. Any age referred to in a table is always the age of the person at his or her nearest birthday.

Actuarial Cost Method

The actuarial cost method we use to calculate the funding requirements of the Plan is called the **entry age normal actuarial cost method**.

Under this cost method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit age. The portion of this actuarial present value allocated to a valuation year is called the Normal Cost. The portion of the actuarial present value not provided for at the valuation date by future Normal Costs is called the actuarial accrued liability.

Actuarial Value of Assets

The actuarial value of assets is determined by calculating the expected return on the prior year's market value of assets, adjusted for cash flows of contributions, administrative expenses, and benefit payments for the year, and interest credited using the Plan's long-term investment return assumption applicable to that plan year. The difference between this expected value and the actual return for the plan year is recognized over 3 years. The actuarial value of assets is then the actual market value minus the gains and losses for prior years that are still deferred. The resulting value is limited to between 80% and 120% of the market value of assets.

Actuarially Determined Contribution

The method for calculating the Actuarially Determined Contribution (ADC) was adopted by the Board of Trustees. The ADC is calculated using a 15-year amortization of the unfunded actuarial accrued liability or funding excess to determine the amortization component of the ADC. On each valuation date, the newly determined unfunded actuarial accrued liability or funding excess is amortized over an open (or rolling) 15-year amortization period as a level percent of projected pay.

Investment Earnings (Adopted January 1, 2020)

7.00% per annum, compounded annually, net of investment expenses.

The investment return assumption was selected based on the Plan's asset allocation and capital market assumptions from several sources, including published studies summarizing the expectations of various investment experts. This information was then used to develop forward looking long-term expected returns, producing a range of reasonable expectations according to industry experts. Based on the resulting range of potential assumptions, in our professional judgement the selected investment return assumption is reasonable and is not expected to have any significant bias.

Inflation (Adopted January 1, 2020)

2.50% per annum, compounded annually. The assumption is based on capital market assumption sources and published studies used to develop the Plan's investment return assumption.

Compensation Increase (Inflation and Real Wage Growth adopted January 1, 2020; Merit adopted January 1, 2014)

Annual salary increases are based on a table graded by service. Rates are as follows:

Years of Service	Percentage Increase at Age			
	Inflation	Real Wage Growth	Merit	Total
0-1	2.50%	0.75%	2.75%	6.00%
2	2.50	0.75	2.25	5.50
3	2.50	0.75	1.75	5.00
4-7	2.50	0.75	1.25	4.50
8	2.50	0.75	0.75	4.00
9	2.50	0.75	0.50	3.75
10+	2.50	0.75	0.00	3.25

The inflation and real wage growth assumptions are based on capital market assumption sources and published studies used to develop the Plan's inflation assumption. The merit component is based on City of Aurora experience as reviewed with the 2019 Experience Study. The Plan's experience was reviewed as of the most recent measurement date. The assumption remains reasonable.

Total Payroll Growth Rate (Adopted January 1, 2014)

3.25% per annum.

Expenses (Adopted January 1, 2018)

Expenses other than investment expenses are assumed to be $585,000 per year, payable mid-year.

Employee Contribution Rate

7.00% of compensation, the current employee contribution rate for 2023.

Per guidance provided in the City Code, actual future rates may increase or decrease 0.25% each year depending upon the financial condition of the Plan. Per the City Code, the contribution rate may not exceed 7.00% or be less than 5.50%.

Contribution Accumulation Rate (Adopted January 1, 2010)

4.00% per annum, compounded biweekly.

The contribution accumulation rate is established by the Board at a rate of at least three percent per annum compounded annually. The current rate is 4.00% per annum, compounded biweekly. The Retirement Board reviews this rate in December of each year and has the authority to change it.

Mortality (Adopted January 1, 2024)

Healthy Lives (post-retirement) – Pub-2010 General Employees Retiree Mortality Table (amount-weighted), projected generationally using Scale MP-2021

Healthy Lives (pre-retirement) – Pub-2010 General Employees Mortality Table (amount-weighted), projected generationally using Scale MP-2021

Disabled Lives – Pub-2010 Disabled Retiree (Non Safety) Mortality Table (amount-weighted), projected generationally using Scale MP-2021

The assumption includes a margin for future mortality improvements.

The size of the Plan population is not large enough to have a statistically credible independent study of retiree mortality serve as the sole basis for assumption setting. As such, we rely on a standard published table that is appropriate to the Plan's employee and retiree population while also taking into account statistically significant trends in the United States regarding improvements in life expectancy. The Plan's mortality experience was reviewed as of the most recent measurement date. The assumption remains reasonable.

Retirement (Adopted January 1, 2020)

For active participants, table of rates by age, based on Tier and eligibility for unreduced retirement, as follows:

	Reduced		Unreduced	
Age	**Tier 1**	**Tier 2**	**Tier 1**	**Tier 2**
50	2.0%	2.0%	3.0%	3.0%
51	3.0	3.0	3.0	3.0
52	3.0	3.0	10.0	10.0
53	3.0	3.0	10.0	10.0
54	3.0	3.0	10.0	10.0
55	3.0	3.0	8.0	8.0
56	6.0	6.0	8.0	8.0
57	6.0	6.0	8.0	8.0
58	6.0	6.0	8.0	8.0
59	6.0	6.0	8.0	8.0
60	6.0	6.0	8.0	8.0
61	6.0	6.0	15.0	15.0
62	15.0	15.0	25.0	25.0
63	15.0	15.0	20.0	20.0
64	15.0	15.0	15.0	15.0
65	N/A	30.0	30.0	30.0
66	N/A	30.0	30.0	30.0
67	N/A	N/A	30.0	30.0
68	N/A	N/A	50.0	50.0
69	N/A	N/A	50.0	50.0
70+	N/A	N/A	100.0	100.0

Current and future vested inactive members are assumed to retire as follows:

- Tier 1: Earlier of age 55 with 10 or more years of service, or age 65
- Tier 2: Normal retirement age (67)

This assumption is based on the 2019 Experience Study. The Plan's experience was reviewed as of the most recent measurement date. The assumption remains reasonable.

Disablement (Adopted January 1, 2014)

Graduated rates based on age and gender. Sample rates are as follows:

Age	Male	Female
30	0.03%	0.11%
35	0.05	0.16
40	0.06	0.21
45	0.10	0.35
50	0.14	0.48
55	0.25	0.87
60	0.36	1.26

Withdrawal Rates (Adopted January 1, 2020)

Graduated rates based on years of service, age and gender are used. Sample rates are as follows:

Years of Service	Male	Female
0-1	20.0%	23.0%
1-2	17.6	19.8
2-3	14.3	16.5
3-4	11.0	13.0
4-5	9.9	12.1
At Five or More Years of Service:		
Age		
30	8.5%	11.0%
40	5.8	7.2
50	3.8	3.9
60	2.3	1.7

This assumption is based on the 2019 Experience Study. The Plan's experience was reviewed as of the most recent measurement date. The assumption remains reasonable.

Marital Assumptions

85% of active and deferred vested members not currently receiving benefits are assumed to be married. Male spouses are assumed to be three years older than their female spouses.

Gender

Non-binary or missing genders are valued using assumptions for male participants.

Form of Payment Election Assumption (Adopted in 2020)

Current inactive vested members are assumed to take a monthly annuity at retirement in lieu of a lump sum distribution (refund of contribution accumulation plus vested city contributions). 0% of retirements from active service and 30% of terminations from active service are assumed to take lump sums. 100% of members who opt for a monthly annuity are assumed to elect the normal form of payment.

This assumption is based on the 2019 Experience Study. The Plan's experience was reviewed as of the most recent measurement date. The assumption remains reasonable.

Post Retirement Cost of Living Adjustment Assumption (Adopted January 1, 2020 for Tier 1 Base Benefits; Adopted January 1, 2011 for all other benefits)

Tier 1 Participants: 2.50% per annum for base benefits; 0.00% per annum for supplemental benefits

Tier 2 Participants: 0.00% per annum for base benefits; 0.00% per annum for supplemental benefits

Development of Demographic Assumptions

An experience study was performed based on data over the five-year period ending December 31, 2018, as documented in the Experience Study report dated February 17, 2020. The demographic assumptions are reviewed annually and refined as necessary based on demographic experience and expectations of future experience. Assumptions for which participant data are limited, such as retiree mortality, were also drawn from published actuarial tables. The assumptions used in this valuation are based on the Experience Study report noted above, and were approved by the Board of Trustees at their September 2019 meeting reviewing the 2019 Experience Study.

Changes in Actuarial Assumptions as of January 1, 2024

The mortality improvement projection scale was updated to MP-2021.

Appendix C
Member Data

Valuation Date	January 1, 2023	January 1, 2024	Percentage Change
Active Participants			
Number	1,831	1,978	8.0%
Tier 1	*461*	*405*	
Tier 2	*1,370*	*1,573*	
Average Anticipated Total Payroll (for year following valuation date)	$76,769	$82,379	
Tier 1	*$90,550*	*$100,101*	
Tier 2	*$72,132*	*$77,816*	
Average Age	44.9	44.6	
Tier 1	*53.8*	*54.3*	
Tier 2	*41.9*	*42.1*	
Average Credited Service	8.0	7.4	
Tier 1	*20.0*	*20.8*	
Tier 2	*3.9*	*4.0*	
Vested Terminated Participants			
Number	288	319	10.8%
Average Final Average Compensation	$56,465	$59,704	
Average Age	49.9	49.5	
Retired Members and Beneficiaries			
Number	1,296	1,333	2.9%
Average Monthly Benefit	$2,156	$2,215	
Average Age	71.6	72.0	
Deferred Disabled			
Number	12	14	16.7%
Average Monthly Benefit	$2,432	$2,219	
Average Age	53.7	56.5	
Deferred Beneficiaries			
Number	4	5	25.0%
Average Monthly Benefit	$665	$710	
Average Age	46.5	45.2	
Total Participants	3,431	3,649	6.4%

Table C-1

RECONCILIATION OF MEMBER DATA

	Actives	Inactive Deferred Participants	Retiree and Beneficiaries	Disabled Retirees	Total
Included in January 1, 2023 valuation:	1,831	304	1,264*	32	3,431
Change due to:					
New entrants	400	0	0	N/A	400
Rehired	0	0	0	0	0
Termination					
Nonvested	(139)	N/A	N/A	N/A	(139)
Vested	(51)	51	0	N/A	0
Retirement	(51)	(11)	62	0	0
Disabled	(1)	1	0	0	0
Death with no Beneficiary	0	(1)	(27)	(1)	(29)
Death with a Beneficiary	(1)	0	1	0	0
Alternate Payee	0	0	2	0	2
Lump sum/Refund of Contributions	(10)	(6)	0	0	(16)
Other	0	0	0	0	0
Net change	147	34	38	(1)	218
Included in January 1, 2024 valuation:	1,978	338	1,302*	31	3,649

* There are ten total participants as of January 1, 2023 and as of January 1, 2024 who are both a retiree and a beneficiary.

Table C-2

SUMMARY OF ACTIVE MEMBERS

Number of Members by Age and Service Groups

	Years of Service										
Age	**<1**	**1-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40&Up**	**Total**
0-24	46	39	-	-	-	-	-	-	-	-	85
25-29	84	104	13	-	-	-	-	-	-	-	201
30-34	58	135	59	11	-	-	-	-	-	-	263
35-39	41	104	60	15	16	1	-	-	-	-	237
40-44	36	76	69	28	25	7	-	-	-	-	241
45-49	29	57	58	17	18	18	4	-	-	-	201
50-54	41	70	48	26	35	36	10	2	-	-	268
55-59	23	46	48	21	39	25	16	3	2	3	226
60-64	10	40	39	16	28	14	11	10	5	3	176
65-69	1	16	18	7	12	3	2	3	1	2	65
70&Up	-	5	5	1	1	1	-	1	1	-	15
Total	369	692	417	142	174	105	43	19	9	8	1,978

Average Anticipated Total Payroll by Age and Service Groups

	Years of Service										
Age	**<1**	**1-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40&Up**	**Average**
0-24	54,696	55,447	-	-	-	-	-	-	-	-	55,041
25-29	60,222	67,922	74,952	-	-	-	-	-	-	-	65,159
30-34	65,526	73,296	81,979	85,472	-	-	-	-	-	-	74,040
35-39	79,588	74,214	89,486	87,534	85,451	98,925	-	-	-	-	80,716
40-44	83,560	81,248	83,512	98,825	99,369	102,541	-	-	-	-	86,782
45-49	77,867	80,723	92,061	105,052	114,475	96,500	83,116	-	-	-	90,123
50-54	78,092	84,894	84,690	87,533	90,926	104,296	103,640	73,892	-	-	88,084
55-59	88,844	85,807	88,812	98,356	101,188	99,765	96,474	86,314	100,745	118,375	93,445
60-64	73,409	79,866	83,149	83,795	100,362	96,142	118,392	106,764	115,759	108,259	90,579
65-69	55,099	69,557	93,049	94,615	90,457	77,203	124,677	129,641	91,000	126,472	89,300
70&Up	-	68,423	59,354	86,420	54,038	71,011	-	132,465	84,958	-	71,185
Average	70,295	75,369	85,911	93,218	97,646	99,534	103,816	105,040	106,249	116,606	82,379

HISTORICAL SUMMARY

	2020	2021	2022	2023	2024
Number	1,816	1,794	1,814	1,831	1,978
Anticipated Total Payroll	$119,182,291	$120,524,338	$131,336,348	$140,564,949	$162,946,172
Average Total Payroll	$65,629	$67,182	$72,402	$76,769	$82,379
Average Age	45.6	45.6	45.2	44.9	44.6
Average Service	8.5	8.7	8.3	8.0	7.4

Table C-2 (Continued)

SUMMARY OF ACTIVE MEMBERS

HISTORICAL SUMMARY OF ACTIVE MEMBER DATA

Year Beginning January 1,	Active Members Number	Active Members Percent Increase (Decrease)	Covered Payroll Amount in $ Millions	Covered Payroll Percent Increase (Decrease)	Average Salary $ Amount	Average Salary Percent Increase (Decrease)	Average Age	Average Service
2000	1,434	2.7%	51.2	7.6%	35,691	4.6%	44.3	9.3
2001	1,493	4.1%	56.2	9.8%	37,630	5.4%	44.6	9.2
2002	1,582	6.0%	62.2	10.7%	39,304	4.4%	44.6	9.0
2003	1,580	(0.1%)	65.4	5.1%	41,387	5.3%	45.1	9.4
2004	1,614	2.2%	69.2	5.8%	42,896	3.6%	45.5	9.7
2005	1,626	0.7%	72.7	5.1%	44,737	4.3%	45.7	9.9
2006	1,604	(1.4)%	72.0	(1.0)%	44,865	0.3%	46.1	10.0
2007	1,648	2.7%	76.6	6.4%	46,493	3.6%	46.2	9.9
2008	1,751	6.3%	84.5	10.3%	48,277	3.8%	45.8	9.7
2009	1,711	(2.3)%	86.1	1.9%	50,321	4.2%	46.3	10.0
2010	1,624	(5.1)%	84.4	(2.0)%	51,973	3.3%	47.1	10.9
2011	1,601	(1.4)%	84.0	(0.5)%	52,450	0.9%	47.4	11.3
2012	1.560	(2.6)%	81.5	(3.0)%	52,241	(0.4)%	47.9	11.5
2013	1,564	0.3%	81.5	0.0%	52,088	(0.3)%	47.9	11.3
2014	1,605	2.6%	84.1	3.2%	52,402	0.6%	47.5	11.0
2015	1,643	2.4%	92.0	9.4%	56,021	6.9%	47.3	10.5
2016	1,650	0.4%	95.9	4.2%	58,101	3.7%	47.1	10.4
2017	1,733	5.0%	102.8	7.2%	59,308	2.1%	46.4	9.6
2018	1,755	1.3%	107.4	4.5%	61,183	3.2%	46.3	9.5
2019	1,754	(0.1)%	111.9	4.2%	63,815	4.3%	45.8	9.1
2020	1,816	3.5%	119.2	6.5%	65,629	2.8%	45.6	8.5
2021	1,794	-1.2%	120.5	1.1%	67,182	2.4%	45.6	8.7
2022	1,814	1.1%	131.3	9.0%	72,402	7.8%	45.2	8.3
2023	1,831	0.9%	140.6	7.1%	76,769	6.0%	44.9	8.0
2024	1,978	8.0%	162.9	15.9%	82,379	7.3%	44.6	7.4

Table C-3

SUMMARY OF INACTIVE VESTED MEMBERS*

Number of Members by Age and Service Groups

	Years of Service									
Age	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40&Up	Total
0-29	-	4	-	-	-	-	-	-	-	4
30-34	-	22	-	-	-	-	-	-	-	22
35-39	-	27	6	1	-	-	-	-	1	35
40-44	-	30	13	7	-	-	-	1	-	51
45-49	-	30	19	8	4	1	-	-	1	63
50-54	-	37	9	6	3	-	-	-	-	55
55-59	-	30	5	3	-	1	-	1	1	41
60-64	-	37	2	2	-	1	-	-	1	43
65&Up	-	15	2	-	2	-	-	-	-	19
Total	-	232	56	27	9	3	-	2	4	333

Average Final Average Compensation by Age and Service Groups

	Years of Service									
Age	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40&Up	Average
0-29	-	49,008	-	-	-	-	-	-	-	49,008
30-34	-	63,980	-	-	-	-	-	-	-	63,980
35-39	-	57,918	82,661	103,921	-	-	-	-	63,893	63,645
40-44	-	61,499	54,121	58,574	-	-	-	28,909	-	58,578
45-49	-	69,161	67,705	70,103	59,833	65,010	-	-	39,068	67,706
50-54	-	57,994	84,223	67,063	52,587	-	-	-	-	62,980
55-59	-	56,433	46,716	50,665	-	56,408	-	22,596	50,151	53,847
60-64	-	46,367	49,400	51,916	-	43,883	-	-	48,159	46,750
65&Up	-	51,000	52,416	-	30,255	-	-	-	-	48,965
Average	-	57,787	65,735	64,184	50,845	55,100	-	25,752	50,318	59,148

HISTORICAL SUMMARY

	2020	2021	2022	2023	2024
Deferred Vested					
Number	240	234	250	288	319
Average Final Average Compensation	$50,545	$53,204	$54,727	$56,465	$59,704
Average Service	8.6	8.5	8.8	8.8	8.8
Average Age	51.2	51.0	50.7	49.9	49.5
Deferred Disabled					
Number	14	14	13	12	14
Average Final Average Compensation	$44,887	$44,290	$44,274	$45,484	$46,474
Average Service	27.4	30.1	32.4	32.8	29.8
Average Age	54.9	53.3	53.2	53.7	56.5

* Does not include five deferred beneficiaries.

Table C-4

SUMMARY OF RETIREES AND BENEFICIARIES

Members in Pay Status

Age	Number of Members	Monthly Benefit Amount
< 55	16	$30,958
55 - 59	55	104,000
60 - 64	166	421,459
65 - 69	339	801,481
70 - 74	310	711,708
75 - 79	229	469,516
80 - 84	121	240,666
85 - 89	61	122,170
90 & Up	36	50,355
Total	1,333	$2,952,313

HISTORICAL SUMMARY

	2020	2021	2022	2023	2024
Number	1,134	1,184	1,240	1,296	1,333
Total Monthly Benefit	$2,175,218	$2,308,307	$2,552,584	$2,794,204	$2,952,313
Average Monthly Benefit	$1,918	$1,950	$2,059	$2,156	$2,215
Average Age	70.8	71.1	71.3	71.6	72.0

Table C-5

SCHEDULE OF RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS

Plan Year Ending	Number Added to Rolls	Allowances Added to Rolls(1)	Number Removed from Rolls	Annual Allowances Removed from Rolls	Number of Annual Allowances	Annual Allowances	% Increase in Annual Allowances	Average Annual Allowances
12/31/1998	24	$336,386	10	$92,939	334	$3,142,316	8.4%	$9,408
12/31/1999	26	494,602	12	86,138	348	3,550,780	13.0	10,204
12/31/2000	29	424,053	7	40,491	370	4,059,627	14.3	10,972
12/31/2001	34	522,592	19	141,937	385	4,440,282	9.4	11,533
12/31/2002	29	519,243	17	141,245	397	4,818,280	8.5	12,137
12/31/2003	16	439,456	17	114,998	396	5,142,738	6.7	12,987
12/31/2004	42	432,739	17	155,755	421	5,731,232	11.4	13,613
12/31/2005	53	1,360,120	12	148,221	462	6,943,131	21.1	15,028
12/31/2006	44	983,775	9	91,156	497	7,835,750	12.9	15,766
12/31/2007	36	797,303	19	196,227	514	8,436,826	7.7	16,414
12/31/2008	54	1,429,071	16	271,603	552	9,594,295	13.7	17,381
12/31/2009	41	604,010	19	213,688	574	9,984,617	4.1	17,395
12/31/2010	59	1,188,630	19	231,051	614	10,942,196	9.6	17,821
12/31/2011	67	1,844,967	19	255,630	662	12,531,532	14.5	18,930
12/31/2012	66	1,573,353	13	144,397	715	13,960,488	11.4	19,525
12/31/2013	55	1,246,991	13	180,841	757	15,026,638	7.6	19,850
12/31/2014	75	1,893,779	18	243,569	814	16,676,848	11.0	20,488
12/31/2015	65	1,496,283	21	439,176	858	17,733,955	6.3	20,669
12/31/2016	99	1,961,129	12	141,738	945	19,553,346	10.3	20,691
12/31/2017	64	1,981,956	13	193,799	996	21,341,503	9.1	21,427
12/31/2018	99	2,869,920	17	242,026	1,078	23,969,397	12.3	22,235
12/31/2019	86	2,632,899	30	499,676	1,134	26,102,620	8.9	23,018
12/31/2020	76	1,984,935	26	387,871	1,184	27,699,684	6.1	23,395
12/31/2021	81	3,387,402	25	456,078	1,240	30,631,008	10.6	24,702
12/31/2022	70	3,332,791	14	433,352	1,296	33,530,447	9.5	25,872
12/31/2023	65	2,521,866	28	624,547	1,333	35,427,766	5.7	26,577

(1) Includes Cost of Living adjustments

Appendix D
Risk Assessment and Disclosure

The purpose of this appendix is to identify, assess, and provide illustrations of risks that are significant to the Plan. Historical data is included.

The results of the actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match the assumptions. As an example, 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 potential differences when making decisions that may affect the future financial health of the Plan, or of the Plan's participants.

In addition, as plans mature they accumulate larger pools of assets and liabilities. This increases the potential risk to plan funding and the finances of those who are responsible for plan funding. As an example, it is more difficult for a plan sponsor to deal with the effects of a 10% investment loss on a plan with $1 Billion in assets and liabilities than if the same plan sponsor is responsible for a 10% investment loss on 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) addresses these issues by providing actuaries with guidance for assessing and disclosing the risk associated with measuring pension liabilities and the determination of pension plan contributions. Specifically, it directs the actuary to:

- 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.

ASOP 51 states that if in the actuary's professional judgment, a more detailed assessment would be significantly beneficial in helping the individuals responsible for the plan to understand the risks identified by the actuary, then the actuary should recommend that such an assessment be performed.

This appendix 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.

A summary of maturity statistics and historical information is below.

	2020	2021	2022	2023	2024
Assets and Payroll					
Market Value of Assets (MVA)	$524,036,473	$576,750,526	$673,636,548	$579,063,885	$613,765,935
Covered Payroll	$119,182,291	$120,524,338	$131,336,348	$140,564,949	$162,945,172
Ratio, MVA to Covered Payroll	4.4	4.8	5.1	4.1	3.8
Actuarial Liability					
For Retirees and Beneficiaries	$330,411,123	$347,180,009	$382,324,136	$416,866,704	$431,040,541
For Deferred Vested Participants	21,247,898	19,607,261	21,971,761	25,078,606	28,313,136
For Active Participants	215,347,085	217,890,651	224,322,384	227,571,616	243,230,689
Total	$567,006,106	$584,677,921	$628,618,281	$669,516,926	$702,584,366
In-pay Liability as a % of Total	58.3%	59.4%	60.8%	62.3%	61.4%
Duration (years)	15.1	15.0	14.9	14.8	14.9
Cash Flow Measures					
Prior Year MVA	$450,368,075	$524,036,473	$576,750,526	$673,636,548	$579,063,885
Benefit Payments	28,079,798	28,912,900	32,130,354	34,391,435	37,002,381
Contributions (City + Member)	16,377,838	16,862,206	17,464,791	18,787,954	21,077,127
Benefit Payments as a % of Contributions	171.4%	171.5%	184.0%	183.1%	175.6%
Benefit Payments as a % of Prior MVA	6.2%	5.5%	5.6%	5.1%	6.4%
Net Cash Flow as a % of Prior MVA	-2.6%	-2.3%	-2.5%	-2.3%	-2.7%

Liquidity Risk

- **Identification:** 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 flow, in which contributions do not exceed annual benefit payments plus expenses.
- **Assessment:** This Plan has high cash flow requirements because benefit payments are approximately 176% of Plan contributions. The Plan also allows for lump sum distributions, which may add volatility to the amount and timing of benefit distributions. As a result, there is liquidity risk that assets may need to be liquidated at a loss before planned in order to pay benefits.

Maturity Risk

- **Identification:** This is the potential for total plan liabilities to become more heavily weighted toward inactive liabilities over time.
- **Assessment:** The Plan is subject to maturity risk because as Plan assets and liabilities continue to grow, the impact of any gains or losses on the assets or liabilities also becomes larger. Currently assets are equal to 3.8 times payroll indicating a one-year loss of 10% would be equal to 38% of payroll. Last year's net cash flow was equal to -2.7% of the beginning of year assets, which means asset needed to return 2.7% last year to remain level.

Retirement Risk

- **Identification:** This is the potential for participants to retire and receive subsidized benefits more valuable than expected.
- **Assessment:** The plan has valuable early retirement subsidies, including unreduced benefits for Rule of 80 retirements. In addition, retiring participants have the option to take an annuity or receive a refund of contributions plus the City match. When participants retire earlier than expected or elect a form of payment more valuable than the valuation form of payment assumption, the plan incurs a loss.

Investment Risk

- **Identification:** The potential that investment returns will be different than expected.
- **Assessment:** To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, funding contributions and funded status may differ significantly from those presented in this valuation. In addition, as discussed under the liquidity and maturity risk assessments above, this risk will be exacerbated as the Plan matures and possibly needs to liquidate assets in a down market to pay benefits to participants, losing the recovery on those assets when the market goes back up.
- **Additional Assessment:** The plan's target allocation represents a balance of risk and return. 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. If the plan were invested in a low-default-risk portfolio, with returns consistent with the December corporate bond yield curve, it would impact the interest rate assumption and therefore the Accrued Liability, Funded Ratio, and ultimately the City's Actuarially Determined Contributions; the volatility of the contributions would also change based on the risk level of the portfolio.

	Valuation Assumption	Corporate Bond Yield Curve*
Discount Rate for Liabilities	7.00%	5.16%
1. Actuarial Liability		
a. For Retirees and Beneficiaries	$ 431.1 million	$ 512.2 million
b. For Deferred Vested Participants	28.3 million	40.1 million
c. For Active Participants	243.2 million	330.2 million
d. Total [(a) + (b) + (c)]	$ 702.6 million	$ 882.5 million**
2. Market Value of Assets	613.8 million	613.8 million
3. Funded Percentage [(2) ÷ (3)]	87%	70%

∗ This would be considered a "low-default-risk obligation measure (LDROM)" 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.

Interest Rate Risk

- **Identification:** The potential that interest rates will be different than expected.
- **Assessment:** The pension liabilities reported herein have been calculated by computing the present value of expected future benefit payments using the interest rate described in Appendix B. If interest rates in future valuations are different from that used in this valuation, future pension liabilities, funding contributions and funded status may differ significantly from those presented in this valuation. As a general rule, using a higher interest rate to compute the present value of future benefit payments will result in a lower pension liability, and vice versa. One aspect that can be used to estimate the impact of different interest rates is the plan's duration.

  If the interest rate changes by 1%, the estimated percentage change in pension liability is the Plan's duration in years. The approximate duration of this Plan is 14.9 years. As such, if the interest rate changes by 1%, the estimated change in pension liability is 14.9%.

Demographic Risk

- **Identification:** The potential that mortality or other demographic experience will be different than expected.
- **Assessment:** The pension liabilities reported herein have been calculated by assuming that participants will follow patterns of demographic experience (e.g. mortality, withdrawal, disability, retirement, form of payment election, etc.) 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, funding contributions and funded status may differ significantly from those presented in this valuation.