City of Fort Collins
General Employees' Retirement Plan
January 1, 2019 Actuarial Valuation

Prepared by:

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March 18, 2019

Retirement Committee Members
City of Fort Collins
215 North Mason Street
Fort Collins, Colorado 80522

Re: City of Fort Collins General Employees' Retirement Plan - 2019 Actuary's Report

Dear Retirement Committee Members:

As requested, we performed an actuarial valuation of the City of Fort Collins General Employees' Retirement Plan as of January 1, 2019, for the plan year ending December 31, 2019. Our findings are set forth in this actuary's report. This report reflects the benefit provisions in effect as of January 1, 2019.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by City staff. This information includes, but is not limited to, plan provisions, participant 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.

All costs, liabilities, rates of interest, and other factors for the Plan have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the Plan and reasonable expectations); and which, in combination, offer our best estimate of anticipated experience affecting the Plan. Further, in our opinion, each actuarial assumption used is reasonably related to the experience of the Plan and to reasonable expectations which, in combination, represent our best estimate of anticipated experience under the Plan.

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 such factors as 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 additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The Retirement Committee has the final decision regarding the appropriateness of the assumptions and adopted them at their February 2019 meeting.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the Plan. Actuarial computations presented in this report under GASB Statements Nos. 67 and 68 are for purposes of assisting the Plan and Sponsor in fulfilling their financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the Plan's funding requirements and goals and of the plan provisions described in Appendix B of this report. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the use and benefit of the City of Fort Collins General Employees' Retirement Plan ("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 System.

(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.

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

The signing actuary is 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. We are members 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.

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

Katie E. Antoline, FSA, EA, MAAA
Consulting Actuary

JES:kea

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EXECUTIVE SUMMARY

Overview

	Actuarial Valuation For Plan Year Beginning	
	January 1, 2018	**January 1, 2019**
Assets		
Market Value of Plan Assets	$ 48,807,729	$ 43,059,069
Return on Market Value of Plan Assets	16.4%	-5.2%
Liabilities		
Actuarial Present Value of Future Benefits	$ 61,351,183	$ 63,402,784
Actuarial Liability	$ 60,025,297	$ 62,288,923
Assumed Average Annual Long-Term Future Investment Return (Discount Rate)	6.25%	6.25%
Normal Cost and Annual Expenses	$ 318,155	$ 279,729
(as a % of Payroll)	6.71%	7.13%
Unfunded Actuarial Liability (UAL) Relative to:		
Market Value of Plan Assets	$ 11,217,568	$ 19,229,854
Funded Ratio Relative to:		
Market Value of Plan Assets	81.31%	69.13%
GASB 67/68 Disclosure Information		
Measurement Date	December 31, 2017	December 31, 2018
Discount Rate for Liabilities	6.25%	5.56%
Total Pension Liability (TPL)	$ 60,025,297	$ 66,247,577
Fiduciary Net Position (FNP)	$ 48,807,729	$ 43,059,069
Net Pension Liability (NPL)	$ 11,217,568	$ 23,188,508
FNP as a % of TPL	81.31%	65.00%
Participant Data		
Active Participants	70	57
Retired Participants and Beneficiaries	242	257
Vested Terminated Participants	89	78
Total Participants	401	392

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 Fort Collins General Employees' Retirement Plan as of January 1, 2019 to:

1. Review the experience for the plan year ending December 31, 2018. "Experience" encompasses the performance of the plan's assets during the year and changes in plan participant demographics that impact liabilities.
2. Review the plan's funded ratio.
3. Review the adequacy of plan funding based on the City's current funding policy for the plan.
4. Provide the basis for later financial reporting under Governmental Accounting Standards Board (GASB) Statements Nos. 67 and 68.
5. Provide a risk assessment and disclosure summary, as required by Actuarial Standard of Practice NO. 51 (ASOP 51).

Actuarial Methods and Assumptions

The methods and assumptions used in this valuation are detailed in Appendix A. An annual assumption review was performed based on data through 2018, as documented in our annual assumption review document dated February 13, 2019. The assumptions used in this valuation are based on the recommendations from that report, as approved by the Retirement Committee at their February 28, 2019 meeting.

The mortality assumption was updated to the most recently published tables by the Society of Actuaries (SOA) developed exclusively from public-sector pension plan experience. The assumption change increased the calculated Actuarial Liability by $2.9 million.

The form of payment assumption for participants retiring from deferred vested status was updated to better reflect anticipated future experience. The assumption change decreased the calculated Actuarial Liability by $0.2 million.

Plan Provisions

The valuation reflects our understanding of the plan provisions in effect as of January 1, 2019. Since the last valuation, our understanding is that the plan provisions have not been amended. Please see Appendix B for a detailed summary of plan provisions.

Plan Experience

Actuarial gains or losses arise when actual experience differs from actuarial assumptions used in the valuation. During the year ending December 31, 2018, the Plan experienced an overall actuarial loss of approximately $6.0 million. The actuarial loss can be broken down as follows.

Source of (Gain) or Loss	Amount
Investment experience	$ 5,407,238
Demographic experience	554,889
Total (gain)/loss	$ 5,962,127

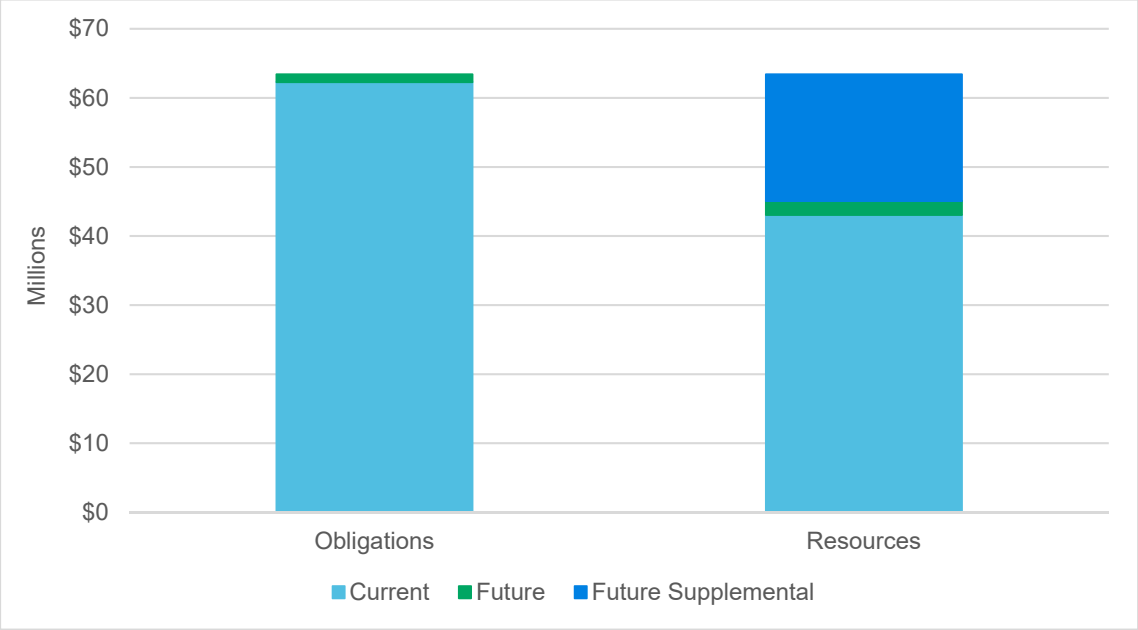
Plan assets returned -5.2% during 2018, falling short of the prior valuation's return assumption of 6.25%, and resulting in a loss of $5.4 million for the 2018 plan year.

The demographic loss was primarily due to losses on retiree mortality. Table 5 contains additional detail on the changes in the unfunded actuarial liability from January 1, 2018 to January 1, 2019.

Funding Analysis

The City's current funding policy is to contribute 10.5% of compensation for active plan participants, plus a supplemental contribution necessary for the Plan to remain solvent. The supplemental contribution is currently budgeted at $1.12 million per year.

The following chart compares the obligations of the Plan to the resources available to pay those obligations. The obligations of the Plan are equal to the present value of all benefits projected to be accrued for all current participants through their anticipated termination date. This includes the present value of benefits attributable to service already completed as of the valuation date ("Current"), also known as the Actuarial Liability, as well as the amounts attributable to projected future service for current active participants ("Future"). The resources of the Plan include the value of the assets set aside to pay for the benefits ("Current"), plus the present value of the future expected contributions for participants in the Plan as of the valuation date ("Future") equal to 10.5% of projected future compensation plus the supplemental contribution of $1.12 million per year.



The present value of future benefits is $63.4 million, versus the current market value of assets of $43.1 million and the present value of future payroll contributions of $2.0 million. The shortfall of approximately $18.3 million is anticipated to be funded through the supplemental contribution. This represents approximately 70 years of the $1.12 million supplemental contribution as of the actuarial valuation date. However, the Plan is projected to become insolvent within the next 25 years, as discussed below. Table 6 provides additional analysis on the current funding policy of the City.

If all future experience follows assumptions, there are no changes to assumptions, plan provisions or funding policy, and the policy contributions (including the supplemental contribution) are made each year, the Plan's funded status is projected to deteriorate, with the

Plan projected to become insolvent in 2042. The declining active participant population should result in declining contributions as the compensation base declines, absent an increase to the supplemental funding amount.

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.

VALUATION RESULTS

TABLE 1
STATEMENT OF MARKET VALUE OF ASSETS

	December 31, 2017	December 31, 2018
CASH AND CASH EQUIVALENTS	$ 2,518,092	$ 1,151,371
INVESTMENTS		
US Government Securities	$ 10,717,989	$ 11,580,251
Corporate Bonds	1,390,291	553,496
Mutual Funds	34,114,235	29,699,337
Total	$ 46,222,515	$ 41,833,084
RECEIVABLES		
Employer Contributions	$ 0	$ 0
Accrued Interest and Dividends	67,122	74,614
Total	$ 67,122	$ 74,614
LIABILITIES		
Expenses and Benefits Payable	$ 0	$ 0
Investment Transaction	0	0
Total	$ 0	$ 0
TOTAL MARKET VALUE OF ASSETS	$ 48,807,729	$ 43,059,069

TABLE 2
CHANGE IN MARKET VALUE OF ASSETS

	2017	2018
Market value at end of prior year	$ 43,869,306	$ 48,807,729
Audit Adjustment	0	3
Adjusted market value at beginning of year	$ 43,869,306	$ 48,807,732
Income:		
Contributions	$ 1,652,786	$ 1,576,991
Interest Income	208,423	227,393
Net appreciation/(depreciation)	6,824,288	(2,685,425)
Total	$ 8,685,497	$ (881,041)
Disbursements:		
Benefit payments:		
Periodic Payments	$ 3,422,656	$ 3,748,406
Lump Sum Distributions	297,666	1,099,085
Expenses	26,752	20,131
Total	$ 3,747,074	$ 4,867,622
Net increase/(decrease):	$ 4,938,423	$ (5,748,663)
Market value at end of year	$ 48,807,729	$ 43,059,069

TABLE 3
INVESTMENT RETURN

Annual Rate of Investment Return			
For One-Year Period		For Period Ending December 31, 2018	
Ending December 31	Annual Rate	Period	Average Annual Rate
2018	-5.2%	1 year	-5.2%
2017	16.4	2 years	5.0
2016	5.9	3 years	5.3
2015	-0.6	4 years	3.8
2014	6.0	5 years	4.2
2013	18.7	6 years	6.5
2012	11.6	7 years	7.2
2011	-3.1	8 years	5.9
2010	11.1	9 years	6.5
2009	20.5	10 years	7.8
2008	-26.5	11 years	4.1
2007	12.2	12 years	4.7
2006	13.6	13 years	5.4
2005	8.5	14 years	5.6
2004	9.5	15 years	5.9
2003	18.8	16 years	6.6
2002	-9.3	17 years	5.6
2001	-4.0	18 years	5.1
2000	-3.5	19 years	4.6
1999	21.1	20 years	5.4
1998	8.8	21 years	5.5
1997	10.5	22 years	5.8
1996	10.1	23 years	5.9
1995	13.8	24 years	6.3
1994	-0.2	25 years	6.0

* Rates of return for 1999 and earlier as reported by the prior actuary and used without audit.

** Rates of return for 2013 and earlier are net of all expenses. Rate of return for 2014 and later are net of investment expenses only.

TABLE 4
ACTUARIAL BALANCE SHEET
AS OF JANUARY 1, 2019

The following table contains information on the actuarial balance sheet: the Plan's resources and requirements. The Plan requirements consist of the actuarial present value of projected plan benefits as of the valuation date. Plan resources consist of plan assets, projected future normal costs and the Plan's unfunded actuarial liability.

REQUIREMENTS

Present Value of Projected Benefits		
Retired Participants		$ 40,250,755
Vested Inactive Participants		7,057,296
Active Participants		
Retirement	$ 14,975,537	
Vested Withdrawal	186,018	
Death	92,446	
Disability	840,732	
Total Active		16,094,733
Total Present Value of Projected Benefits		$ 63,402,784

RESOURCES

Market Value of Assets	$ 43,059,069
Present Value of Future Normal Costs	1,113,861
Unfunded Actuarial Liability	19,229,854
Total	$ 63,402,784

TABLE 5
UNFUNDED ACTUARIAL LIABILITY

Actuarial Liability as of January 1, 2019		
Retired Participants and Beneficiaries		$ 40,250,755
Vested Inactive Participants		7,057,296
Active Participants		14,980,872
Total		$ 62,288,923
Market Value of Assets		$ 43,059,069
Unfunded Actuarial Liability as of January 1, 2019		$ 19,229,854
Expected Unfunded Actuarial Liability on January 1, 2019		
Unfunded Actuarial Liability as of January 1, 2018		$ 11,217,568
Normal Cost		291,421
Employer Contributions		(1,576,991)
Administrative Expenses		20,131
Interest		671,397
Expected, January 1, 2019		$ 10,623,526
Changes		
Experience (Gain)/Loss		
Asset (Gain)/Loss	5,407,238	
Salary (Gain)/Loss	(60,809)	
Pensioner Mortality (Gain)/Loss	445,778	
Retirement and Withdrawal (Gain)/Loss	121,630	
Other Demographic	48,290	
Total Experience (Gain)/Loss		5,962,127
Assumption Changes		2,644,201
Plan Changes		0
Unfunded Actuarial Liability on January 1, 2019		$ 19,229,854

TABLE 6
FUNDING ANALYSIS

The current annual budgeted contribution is 10.5% of payroll, plus an additional supplemental contribution of $1,120,000 per year while the Plan is underfunded. Annual costs of the Plan include the value of benefit accrual allocated to the current year (normal cost) plus a payment towards the Unfunded Actuarial Liability, and includes a provision for administrative expenses paid out of plan assets. The following table shows the development of the anticipated number of years of supplemental contribution necessary to pay off the UAL based on the current annual valuation, if all future experience follows assumptions, there are no changes to assumptions, plan provisions or funding policy, and the policy contributions (including the supplemental contribution) are made each year.

Annual Cost	
1. Entry Age Normal Cost	$ 253,853
2. Anticipated Administrative Expenses	25,876
3. Total Annual Cost: 1. + 2.	279,729
4. Total Payroll	$ 3,923,740
5. Annual Cost as a Percentage of Payroll: 3. ÷ 4.	7.13%
Percent of Payroll Contribution	
6. Percent of Payroll Contribution Rate	10.50%
7. Present Value of Future Salary	$ 19,220,487
8. Present Value of Future Payroll Contributions: 6. x 7.	$ 2,018,151
9. Present Value of Future Normal Costs	1,113,861
10. Present Value of Payroll Contributions in excess of Normal Cost, available to fund UAL: 8. - 9.	$ 904,290
Unfunded Actuarial Liability (UAL)	
11. UAL at January 1, 2019	$ 19,229,854
12. Present Value of Payroll Contributions in excess of Normal Cost, available to fund UAL: Line 10. above	904,290
13. Net UAL to be funded by Supplemental Contributions: 11. - 12.	$ 18,325,564
Supplemental Contribution	
14. Budgeted Annual Supplemental Contribution	$ 1,120,000
15. Anticipated Annual Administrative Expenses	25,876
16. Net Annual Supplemental Contribution to fund UAL: 14. - 15.	$ 1,094,124
Number of Years of Supplemental Contribution (as a Flat Dollar Amount) Necessary to Fund UAL	70*

* 70 is the number of years it would take for the Supplemental Contribution (net of administrative expenses) to pay off the unfunded actuarial liability as of the valuation date. However, the Plan's assets are projected to be depleted (i.e. insufficient to meet benefit obligations) within the next 25 years. See pages 3 and 4 of the Executive Summary for additional discussion.

TABLE 7
HISTORICAL STATISTICS

	2019	2018	2017	2016	2015
Assets					
Market Value of Assets	$ 43,059,069	$ 48,807,729	$ 43,869,306	$ 43,050,288	$ 45,722,416
Market Value Return	-5.2%	16.4%	5.9%	-0.6%	6.0%
Present Value of Projected Benefits					
For retirees and beneficiaries	$ 40,250,755	$ 35,043,479	$ 32,987,654	$ 29,416,757	$ 25,057,100
For terminated vested participants	7,057,296	7,781,483	7,376,146	8,310,826	8,522,860
For active participants	16,094,733	18,526,221	19,430,245	22,132,668	26,532,164
Total	$ 63,402,784	$ 61,351,183	$ 59,794,045	$ 59,860,251	$ 60,112,124
Actuarial Liability	$ 62,288,923	$ 60,025,297	$ 58,377,767	$ 57,914,989	$ 57,796,305
Market Value Funded Status	69.1%	81.3%	75.1%	74.3%	79.1%
Normal Cost	$ 253,853	$ 291,421			
Experience (Gain)/Loss					
Investment Experience	$ 5,407,238	$ (4,248,199)			
Demographic Experience	554,889	21,369			
Total	$ 5,962,127	$ (4,226,830)			
Participant Statistics					
Retired Participants					
Number	257	242	238	222	205
Average Monthly Benefits	$ 1,249	$ 1,213	$ 1,169	$ 1,124	$ 1,060
Vested Inactive Participants					
Number	78	89	94	103	113
Average Monthly Benefits	$ 854	$ 859	$ 834	$ 857	$ 838
Active Participants					
Number of Participants	57	70	78	95	113
Average Compensation	$ 68,838	$ 67,700	$ 67,375	$ 65,172	$ 64,661
Average Years of Service	28.2	27.2	26.5	25.9	25.7
Average Age	59.1	59.7	59.3	59.3	59.0
Actuarial Assumptions					
Interest	6.25%	6.25%	6.50%	6.50%	6.50%
Salary Growth	Table	Table	Table	Table	Table
Mortality Table Utilized	Pub-2010; Proj Gen (MP2018)	RP-2000; Proj Gen (AA)	RP-2000; Proj Gen (AA)	RP-2000; Proj Gen (AA)	RP-2000; Proj Gen (AA)

TABLE 8
TWENTY-YEAR PROJECTION OF BENEFIT PAYMENTS

The following table provides a projection of benefit payments over the next twenty years. This can be useful for the investment manager in planning future liquidity requirements.

Plan Year	Estimated Annual Benefit Payments
2019	4,964,000
2020	4,719,000
2021	5,133,000
2022	5,010,000
2023	5,177,000
2024	5,040,000
2025	5,276,000
2026	5,005,000
2027	5,102,000
2028	4,959,000
2029	4,906,000
2030	4,698,000
2031	4,706,000
2032	4,597,000
2033	4,443,000
2034	4,266,000
2035	4,108,000
2036	4,063,000
2037	3,902,000
2038	3,708,000

APPENDIX A
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.

An annual assumption review was performed based on data through 2018, as documented in our annual assumption review document dated February 13, 2019. The assumptions used in this valuation are based on the recommendations from that report, as approved by the Retirement Committee at their February 28, 2019 meeting.

Actuarial Cost Method

The actuarial cost method we use to calculate the funding requirements of the Plan is called the *entry age normal 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 the actuarial present value of the projected benefits allocated to all service prior to the valuation date is called the Actuarial Liability. The portion of this actuarial present value of projected benefits allocated to a valuation year is called the Normal Cost.

Asset Valuation Method

The actuarial value of assets is equal to the market value.

Investment Earnings

6.25% per annum, compounded annually net of investment-related 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.

COLA

None.

Wage Increase

3.50%

Earnings Progression

Annual salary increases are based on a table graded by age, as displayed below:

Age	Percentage Increase at Age			
	Inflation	Productivity	Merit	Total
40	2.5%	1.0%	1.0%	4.5%
45	2.5	1.0	0.8	4.3
50	2.5	1.0	0.7	4.2
55	2.5	1.0	0.5	4.0
60	2.5	1.0	0.2	3.7
65+	2.5	1.0	0.1	3.6

Retirement

The following table sets forth the probability of retirement according to age.

Age	Probability of Retirement
55-60	5%
61-64	10
65	65
66-68	40
69 & Over	100

Deferred Vested participants were assumed to retire at age 65.

Disablement

Graduated rates are used. See table below for sample rates.

Withdrawal Rates

Graduated rates are used. Sample rates are as follows:

Age at Termination	Withdrawal		Disability
	Male	Female	
35	8.58%	9.53%	0.19%
45	3.88	5.23	0.44
55	2.00	3.29	1.19
60	1.50	2.15	1.80

Mortality

Healthy Lives – Pub-2010 Healthy Employee and Retiree Mortality Tables for General Employees projected generationally using Scale MP2018

Disabled Lives – Pub-2010 Disabled Retiree Mortality Table for Non-Safety Employees projected generationally using Scale MP2018

This assumption includes a margin for future mortality improvement relative to recent plan experience.

Expenses

The average of the prior three year's expenses:

Year	Expenses
2018	$ 20,131
2017	26,752
2016	30,745
Average	$ 25,876

Marriage Rates

85% of all active and terminated participants not currently receiving benefits are assumed to be married. Male spouses are assumed to be three years older than their female spouses.

Future Credited Service

The Future Credited Service rate is equal to the member's Full Time Equivalent (FTE) rate as of December 31 preceding the current valuation year.

Form of Payment

15% of participants retiring from active service are assumed to elect a lump sum.

30% of participants retiring from deferred vested status are assumed to elect a lump sum.

Changes in Actuarial Assumptions and Methods as of January 1, 2019

The mortality assumption was updated to the most recently published tables by the Society of Actuaries (SOA) developed exclusively from public-sector pension plan experience.

The form of payment assumption for participants retiring from deferred vested status was updated to better reflect anticipated future experience.

APPENDIX B
PLAN SUMMARY

All actuarial calculations are based upon our understanding of the provisions of City of Fort Collins General Employees' Retirement Plan, as adopted and in effect on January 1, 2019. This summary does not attempt to cover all of the detailed provisions.

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 January 1, 1971. The Plan was most recently amended and restated effective January 1, 2016.

Eligible Employee Classification

All persons employed to fill a classified position defined by the city, excluding police officers and firefighters, shall become a member of the Plan on the later of the Effective Date of the Plan or Date of Hire.

The Plan was frozen to new entrants as of January 1, 1999.

Accrued Benefit

The Accrued Benefit for each Member is the Member's Normal Retirement Benefit calculated using Average Monthly Compensation and Credited Service as of the calculation date. In no event will a Member's Accrued Benefit be less than the Accrued Benefit earned as of June 30, 2003.

Average Monthly Compensation

A Member's Average Monthly Compensation, as of a given date, is the average of the highest 60 consecutive months of considered compensation during the last 120 months of Credited Service. In the event that a participant was employed on a part time basis during any portion of this period, the compensation will be converted to a full time equivalent for purposes of calculating the Average Monthly Compensation.

Compensation

Compensation is the gross compensation included as taxable income on Form W-2, excluding bonuses, compensatory time recorded as additional hours, overtime pay, workers' compensation accrued vacation pay, taxable fringe benefits, but including any amounts contributed by the City to a salary reduction agreement including Code Sections 125, 132(f)(4), 402(a)(8), 403(b), 402(a), and 457.

Credited Service

A Year of Service is credited for each plan year a member works 2,080 hours. If the member works less than 2,080 hours, a partial Year of Service will be credited on a prorate basis based on the number of hours for which compensation is paid. Service is credited while a member is on long-term disability as long as no benefits are being paid from the Plan.

Vested Accrued Benefit

A Participant's Vested Accrued Benefit as of a given date is equal to the product of his Accrued Benefit multiplied by his Vested Percentage as of that same date.

Vesting Schedule

Members become vested in their Accrued Benefit according to the following schedule:

Years of Credited Service	Percent Vested
Less than 2	0%
2	40%
3	60%
4	80%
5 and over	100%

Normal Retirement Date

A Participant's Normal Retirement Age is the first of the month coincident with or next following the attainment of age 65.

Normal Retirement Benefits

Each Member who becomes eligible for a Normal Retirement Benefit under the Plan will be entitled to receive a monthly retirement pension benefit beginning at the Member's Normal Retirement Date and payable in the Normal Benefit Form equal to:

- 1.5% of Average Monthly Compensation, multiplied by Credited Service.

Normal Benefit Form

Life Annuity - Monthly pension benefit payable for the lifetime of the Member.

Early Retirement

(a) Early Retirement Date

A Member's Early Retirement Date is the first day of the month so elected by the Member which coincides with or next follows the date upon which the Member attains age 55 and completes 2 Years of Service.

(b) Early Retirement Benefit

A Member's Early Retirement Benefit is a monthly pension benefit equal to his Accrued Benefit determined as of his Early Retirement Date, reduced by $1/15^{th}$ for the first 5 years and $1/30^{th}$ for each of the next 5 years payments commence prior to age 65.

Optional Benefit Forms

Optional Benefit Forms are available and equal to the Actuarial Equivalent of the Normal Benefit Form and may be in an amount more than or less than that provided by the Normal Benefit Form depending on the option selected. Such distribution may be as a Joint & 50% or 100% Survivor Annuity, a Life Annuity with 120 payments guaranteed, or a Lump Sum.

Pre-Retirement Death Benefit

If a Member dies prior to commencing pension payments, the Member's beneficiary will receive a single sum benefit in an amount equal to 47% of the actuarial equivalent value of the Member's Accrued Benefit. If the beneficiary is the Member's spouse, the spouse may elect a monthly benefit which is the actuarial equivalent of the single sum benefit. (The 47% factor is stated in the Plan Document Article XI, Section 11. It was developed assuming that the participant quit the day prior to death and elected a 50% joint and survivor benefit.)

Termination Benefit

In the event of the termination of a Member's employment for any reason other than death, disability or retirement after completing 2 Years of Service, the Member will become entitled to receive a monthly pension benefit commencing on his Normal Retirement Date equal to his Vested Accrued Benefit.

If the deferred benefit to which the Member is to be paid at his Normal Retirement Date has an actuarial equivalent value less than $5,000, the entire benefit will be paid to the terminated participant as a single lump sum.

Disability Benefit

(a) Total Disability

The monthly benefit, payable for life commencing at normal retirement date, is equal to the normal retirement benefit considering annual rate of compensation at disability and credited service he would have accumulated if employment had continued uninterrupted to his normal retirement date.

(b) Permanent Partial Disability

A member may accrue Credited Service under the Plan for any period of time up to a maximum accrual of two (2) years.

Instead of the disability benefit described above, the disabled participant may elect to take a lump-sum distribution at any time.

City Contributions

The entire cost of the Plan is to be paid by the City.

Plan Changes

None

APPENDIX C
PARTICIPANT DATA

The actuarial valuation of the Plan is based on the participant data provided to us by the City. The data includes active participants, terminated vested participants who retain benefits under the Plan, and retirees and beneficiaries receiving benefits as of January 1, 2019. A total of 392 participants were reported to us and included in this valuation. Table 1 includes a reconciliation of the participant data from January 1, 2018 to January 1, 2019.

The age and service characteristics of the 57 active participants in the Plan as of January 1, 2019 are shown in Table 2. As indicated in Table 2, the average age of the active participants on the valuation date was 59.1, down from the average age of 59.7 of the active participants on January 1, 2018. The average years of service of the active participants on January 1, 2019 was 28.2, up from the 27.2 average years of service of the active participants on January 1, 2018.

In addition to the active members, there were 78 inactive participants not yet in pay status retaining benefits under the Plan. Table 3 contains a summary of the number of inactive participants not yet in pay status but retaining benefits under the Plan, and the amounts of those benefits.

Tables 4 and 5 summarize the information provided on the 257 members and beneficiaries who are currently receiving monthly benefits. Table 4 contains a summary of the number of participants receiving benefits and the amounts of those benefits, while Table 5 lists the benefits being paid as of January 1 of each year from 1988 to 2018. Counts and total annual benefit amounts are separated by status and sex.

Table 6 displays the list of the retirement dates and status of participants eligible for normal or delayed retirement in the next five years.

Because participation in the Plan was frozen as of January 1, 1999, the number of participants in the Plan has declined over the years, as illustrated below:

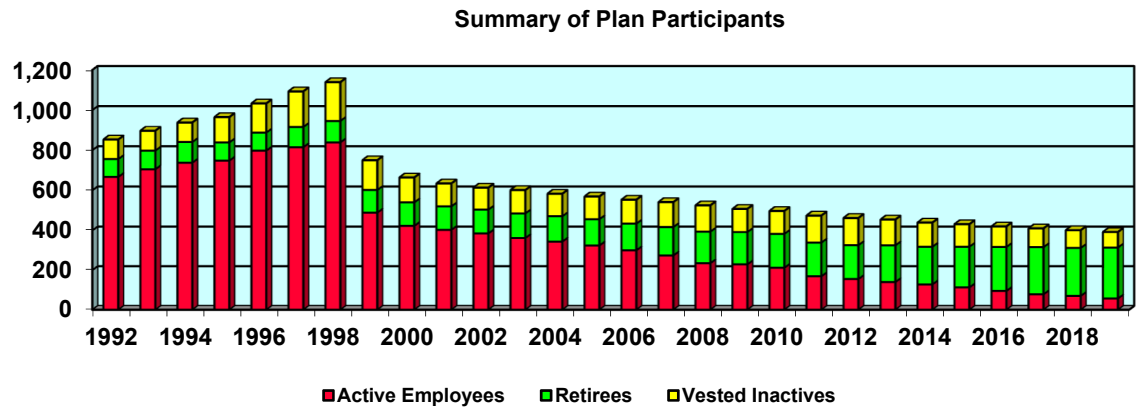


TABLE C-1
RECONCILIATION OF PARTICIPANT DATA
(JANUARY 1, 2018 TO JANUARY 1, 2019)

	Actives	Terminated Vested	Retired	Beneficiary	Total
Included in January 1, 2018 Valuation:	70	89	216	26	401
Change due to:					
New entrants	N/A	N/A	N/A	N/A	N/A
Rehired	0	0	0	N/A	0
Termination					
Nonvested	0	N/A	N/A	N/A	0
Vested	0	0	N/A	N/A	0
Retirement	(10)	(9)	19	0	0
Disabled	0	0	0	0	0
Death no Beneficiary	0	0	(1)	(3)	(4)
Death with Beneficiary	0	0	(1)	1	0
Cash out	(3)	(2)	0	0	(5)
Other	0	0	0	0	0
Net change	(13)	(11)	17	(2)	(9)
Included in January 1, 2019 Valuation:	57	78	233	24	392

TABLE C-2
SUMMARY OF ACTIVE PARTICIPANTS AS OF JANUARY 1, 2019

	Years of Service							
	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 & Up	Total
Age	**Number of Participants**							
Under 25	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	1	0	0	1
45 to 49	0	0	0	0	4	0	0	4
50 to 54	0	0	0	0	3	4	0	7
55 to 59	0	0	1	1	1	6	4	13
60 to 64	0	0	0	0	5	9	11	25
65 & Up	0	0	0	0	2	4	1	7
Total	0	0	1	1	16	23	16	57
	Salary							
Under 25	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	71,508	0	0	71,508
45 to 49	0	0	0	0	262,574	0	0	262,574
50 to 54	0	0	0	0	187,523	255,821	0	443,344
55 to 59	0	0	52,075	52,075	65,048	424,097	249,518	842,813
60 to 64	0	0	0	0	343,347	654,664	773,396	1,771,407
65 & Up	0	0	0	0	139,375	308,693	84,026	532,094
Total	0	0	52,075	52,075	1,069,375	1,643,275	1,106,940	3,923,740

TABLE C-2 (CONTINUED)
SUMMARY OF ACTIVE PARTICIPANTS AS OF JANUARY 1, 2019

	Years of Service							
	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 & Up	Total
Age	**Average Compensation**							
Under 25	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	71,508	0	0	71,508
45 to 49	0	0	0	0	65,643	0	0	65,643
50 to 54	0	0	0	0	62,508	63,955	0	63,335
55 to 59	0	0	52,075	52,075	65,048	70,683	62,379	64,832
60 to 64	0	0	0	0	68,669	72,740	70,309	70,856
65 & Up	0	0	0	0	69,688	77,173	84,026	76,013
Total	0	0	52,075	52,075	66,836	71,447	69,184	68,838

HISTORICAL SUMMARY

	2013	2014	2015	2016	2017	2018	2019
Not Vested:	0	0	0	0	0	0	0
Partially Vested:	0	0	0	0	0	0	0
Fully Vested:	140	128	113	95	78	70	57
Total:	140	128	113	95	78	70	57
Total Compensation:	$8,834,557	$8,202,862	$7,306,661	$6,191,383	$5,255,224	$4,738,991	$3,923,740
Average Rate of Pay:	$63,104	$64,085	$64,661	$65,172	$67,375	$67,700	$68,838
Average Service:	24.7	25.3	25.7	25.9	26.5	27.2	28.2
Average Age:	57.9	58.6	59.0	59.3	59.3	59.7	59.1

TABLE C-3
SUMMARY OF DEFERRED VESTED AND DEFERRED DISABLED PARTICIPANTS AS OF JANUARY 1, 2019

Age	Number	Total Annual Benefit	Average Monthly Benefit
30-34	0	$ 0	$ 0
35-39	0	0	0
40-44	1	8,328	694
45-49	2	19,884	829
50-54	4	40,128	836
55-59	22	223,308	846
60-64	44	432,576	819
65 & Up	5	74,760	1,246
Total	78	$ 798,984	$ 854

HISTORICAL SUMMARY

	2013	2014	2015	2016	2017	2018	2019
Deferred Vested							
Number:	128	120	112	102	93	88	77
Total Annual Benefit:	$1,320,218	$1,162,402	$1,123,187	$1,046,364	$927,624	$904,296	$785,724
Average Monthly Benefit:	$860	$807	$836	$855	$831	$856	$850
Average Age:	57.6	58.0	58.4	59.0	59.3	59.9	60.4
Deferred Disabled							
Number:	1	1	1	1	1	1	1
Total Annual Benefit:	$13,260	$13,260	$13,260	$13,260	$13,260	$13,260	$13,260
Average Monthly Benefit:	$1,105	$1,105	$1,105	$1,105	$1,105	$1,105	$1,105
Average Age:	56.0	57.0	58.0	59.0	60.0	61.0	62.0

TABLE C-4
SUMMARY OF HEALTHY RETIREES, DISABLED RETIREES, AND BENEFICIARIES AS OF JANUARY 1, 2019

Age	Healthy Retirees			Disabled Retirees			Beneficiaries			Total		
	Number	Annual Benefit	Average Monthly Benefit	Number	Annual Benefit	Average Monthly Benefit	Number	Annual Benefit	Average Monthly Benefit	Number	Annual Benefit	Average Monthly Benefit
55-59	1	$14,163	$1,180	0	$0	$0	0	$0	$0	1	$14,163	$1,180
60-64	13	185,894	1,192	0	0	0	2	10,276	428	15	196,170	1,090
65-69	77	1,511,288	1,636	0	0	0	2	61,620	2,568	79	1,572,908	1,659
70-74	58	842,791	1,211	2	54,010	2,250	3	25,936	720	63	922,737	1,221
75-79	33	561,794	1,419	2	21,960	915	3	17,293	480	38	601,047	1,318
80-84	32	309,375	806	0	0	0	3	12,965	360	35	322,340	767
Above 85	14	127,532	759	1	11,258	938	11	83,401	632	26	222,191	712
Total	228	$3,552,837	$1,299	5	$87,228	$1,454	24	$211,491	$734	257	$3,851,556	$1,249

HISTORICAL SUMMARY

	2013	2014	2015	2016	2017	2018	2019
Healthy Retirees							
Number:	157	163	179	193	208	211	228
Total Annual Benefit:	$1,836,582	$2,057,107	$2,363,969	$2,734,731	$3,074,702	$3,206,708	$3,552,837
Average Monthly Benefit:	$975	$1,052	$1,101	$1,181	$1,232	$1,266	$1,299
Average Age:	72.6	72.8	72.7	72.6	72.6	73.1	73.3
Disabled Retirees							
Number:	5	6	5	5	5	5	5
Total Annual Benefit:	$61,091	$91,047	$87,228	$87,228	$87,228	$87,228	$87,228
Average Monthly Benefit:	$1,018	$1,265	$1,454	$1,454	$1,454	$1,454	$1,454
Average Age:	72.4	72.2	73.8	74.8	75.8	76.8	77.8
Beneficiaries							
Number:	23	21	21	24	25	26	24
Total Annual Benefit:	$160,626	$151,954	$157,192	$172,028	$177,130	$229,817	$211,491
Average Monthly Benefit:	$582	$603	$624	$597	$590	$737	$734
Average Age:	82.4	82.1	82.6	82.7	81.7	81.9	81.2

TABLE C-5
NUMBER OF PENSIONERS AND AMOUNT OF ANNUAL ANNUITY AS OF THE END OF EACH YEAR

Year	Retirement*				Beneficiaries*				Disability**				All	
	Male		Female		Male		Female		Male		Female			
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount
1988	70	264,467			6	9,299							76	273,766
1989	75	355,402			5	15,931							80	371,333
1990	65	370,147	19	38,437	2	3,561	3	12,370	2	2,041	0	0	91	426,556
1991	64	370,359	17	42,832	3	4,736	3	14,349	2	2,041	0	0	89	434,317
1992	65	375,014	18	51,214	3	4,736	4	15,640	2	2,041	1	5,692	93	454,337
1993	67	393,340	22	79,136	3	4,736	7	35,056	3	18,485	1	5,692	103	536,445
1994	60	394,223	17	75,333	1	3,099	8	39,381	3	21,369	2	10,884	91	544,287
1995	55	359,659	17	77,358	1	3,099	11	55,120	4	25,825	2	10,884	90	531,945
1996	66	466,177	18	84,593	1	3,099	10	50,512	4	25,825	2	10,884	101	641,090
1997	68	477,993	21	104,091	1	3,099	10	50,512	5	35,717	2	10,884	107	682,296
1998	70	547,160	23	121,654	1	3,099	11	53,600	6	40,722	2	10,884	113	777,119
1999	74	593,649	23	133,013	1	3,099	12	61,432	5	32,577	2	10,884	117	834,654
2000	74	650,175	22	136,795	1	3,572	13	71,763	5	34,506	2	11,825	117	908,636
2001	74	656,815	23	143,199	1	3,572	13	71,763	6	45,764	2	11,825	119	932,938
2002	73	691,385	29	194,447	1	3,572	12	68,051	6	45,764	2	11,825	123	1,015,044
2003	75	750,807	31	214,130	2	9,855	12	70,742	6	45,764	1	5,543	127	1,096,841
2004	77	807,941	33	215,275	2	9,855	13	80,089	6	45,764	1	5,543	132	1,164,467
2005	78	809,581	33	215,275	2	9,855	14	87,665	6	45,764	1	5,543	134	1,173,683
2006	83	889,557	36	241,760	2	9,855	14	87,665	7	63,995	1	5,543	143	1,298,375
2007	90	1,080,910	43	310,359	2	9,855	16	97,728	7	63,994	1	5,543	159	1,568,389
2008	90	1,050,492	47	338,564	2	9,855	17	114,736	7	63,995	0	0	163	1,577,642
2009	92	1,160,329	49	384,191	2	9,855	20	128,436	8	88,050	0	0	171	1,770,861
2010	90	1,151,934	51	399,867	3	18,484	20	129,032	6	76,483	0	0	170	1,775,800
2011	90	1,141,103	53	412,155	3	18,484	19	121,869	6	76,483	0	0	171	1,770,094
2012	101	1,382,769	56	453,813	3	18,484	20	142,142	5	61,091	0	0	185	2,058,299
2013	103	1,512,466	60	544,641	2	12,201	19	139,753	6	91,047	0	0	190	2,300,108
2014	115	1,764,025	64	599,944	1	3,572	20	153,620	5	87,228	0	0	205	2,608,389
2015	122	2,024,794	71	709,937	1	3,572	23	168,456	5	87,228	0	0	222	2,993,987
2016	128	2,178,732	80	895,970	1	3,572	24	173,558	5	87,228	0	0	238	3,339,060
2017	131	2,277,008	80	929,700	1	3,572	25	226,245	5	87,228	0	0	242	3,523,753
2018	142	2,529,072	86	1,023,765	1	3,572	23	207,919	5	87,228	0	0	257	3,851,556

* Male and female splits are not available prior to 1990.
** Retirement and disability splits are not available prior to 1990.

TABLE C-6
SCHEDULE OF MEMBERS ELIGIBLE FOR NORMAL OR DELAYED RETIREMENT IN THE NEXT FIVE YEARS

Normal Retirement Date	Current Status
4/1/2016	Deferred Vested
12/1/2016	Active
4/1/2017	Active
7/1/2017	Deferred Vested
12/1/2017	Deferred Vested
2/1/2018	Deferred Vested
7/1/2018	Deferred Vested
8/1/2018	Active
9/1/2018	Active
9/1/2018	Active
10/1/2018	Active
1/1/2019	Active
2/1/2019	Deferred Vested
3/1/2019	Active
3/1/2019	Deferred Vested
4/1/2019	Active
4/1/2019	Deferred Vested
4/1/2019	Deferred Vested
5/1/2019	Active
5/1/2019	Active
5/1/2019	Deferred Vested
6/1/2019	Deferred Vested
7/1/2019	Active
10/1/2019	Deferred Vested
11/1/2019	Deferred Vested
11/1/2019	Deferred Vested
2/1/2020	Deferred Vested
3/1/2020	Active
4/1/2020	Deferred Vested
5/1/2020	Active
6/1/2020	Active
7/1/2020	Deferred Vested
8/1/2020	Deferred Vested
10/1/2020	Deferred Vested
10/1/2020	Deferred Vested
11/1/2020	Active
12/1/2020	Deferred Vested
12/1/2020	Deferred Vested
2/1/2021	Active
3/1/2021	Deferred Vested
3/1/2021	Deferred Vested
5/1/2021	Active
5/1/2021	Deferred Vested

Normal Retirement Date	Current Status
6/1/2021	Active
6/1/2021	Active
7/1/2021	Deferred Vested
8/1/2021	Deferred Vested
10/1/2021	Deferred Vested
12/1/2021	Active
12/1/2021	Deferred Vested
1/1/2022	Active
1/1/2022	Deferred Vested
2/1/2022	Deferred Vested
2/1/2022	Deferred Vested
2/1/2022	Deferred Vested
5/1/2022	Deferred Vested
6/1/2022	Active
8/1/2022	Deferred Vested
9/1/2022	Active
9/1/2022	Active
11/1/2022	Deferred Vested
12/1/2022	Active
12/1/2022	Deferred Vested
1/1/2023	Active
1/1/2023	Active
1/1/2023	Deferred Vested
3/1/2023	Deferred Vested
3/1/2023	Deferred Vested
4/1/2023	Active
4/1/2023	Active
4/1/2023	Deferred Vested
4/1/2023	Deferred Vested
5/1/2023	Deferred Vested
6/1/2023	Active
8/1/2023	Deferred Vested
8/1/2023	Deferred Vested
9/1/2023	Deferred Vested
10/1/2023	Deferred Vested
11/1/2023	Active
11/1/2023	Deferred Vested
12/1/2023	Deferred Vested

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.

	2019	2018	2017	2016
Assets and Payroll				
Market Value of Assets (MVA)	$43,059,069	$48,807,729	$43,869,306	$43,050,288
Covered Payroll	$3,923,740	$4,738,991	$5,255,224	$6,191,383
Ratio, MVA to Covered Payroll	11.0	10.3	8.3	7.0
Actuarial Liability				
For Retirees and Beneficiaries	$40,250,755	$35,043,479	32,987,654	29,416,757
For Deferred Vested Participants	7,057,296	7,781,483	7,376,146	8,310,826
For Active Participants	14,980,872	17,200,335	18,013,967	20,187,406
Total	$62,288,923	$60,025,297	$58,377,767	$57,914,989
In Pay Liability as a % of Total	64.6%	58.4%	56.5%	50.8%
Duration (years)	9.8	9.9	10.0	10.2
Cash Flow Measures				
Prior Year MVA	$48,807,729	$43,869,306	$43,050,288	$45,722,416
Benefit Payments	4,847,491	3,720,322	3,367,735	4,205,104
Contributions	1,576,991	1,652,786	1,720,650	1,830,265
Benefit Payments as a % of Contributions	307.4%	225.1%	195.7%	229.8%
Benefit Payments as a % of Prior MVA	9.9%	8.5%	7.8%	9.2%
Net Cash Flow as a % of Prior MVA	-6.7%	-4.7%	-3.8%	-5.2%

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 308% of Plan contributions. Due to the closed participant group, percent of payroll based contributions and therefore total contributions are projected to decrease and benefit payments are projected to increase. 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 covers a closed group of employees, so the number of inactive participant is expected to grow as the active population decreases. Currently over 64% of plan's liability is for inactive participants. Current assets are equal to 27 times last year's contributions, indicating a one-year asset loss of 10% would be equal to 2.7 times last year's contributions. Thinking of it another way, current assets are equal to 11 times covered payroll, indicating a one-year asset loss of 10% would be equal to 110% of payroll. Last year's net cash flow was equal to -6.7% of the beginning of year assets, which means asset needed to return 6.7% 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. In addition, retiring participants have the option to take an annuity or a lump sum form of payment. Currently, the lump sum amount is calculated using a mortality table that expects lower longevity than the valuation mortality assumption which results in a lower lump sum amount than would be calculated using the valuation's mortality assumption. This means that if less participants elect a lump sum than expected under the valuation assumptions, the plan incurs a loss.

Contribution Risk

- **Identification:** This is the potential for the City to fail to fund the expected contribution for one or more years. Currently, the City contributes 10.5% of payroll, in addition to a supplemental contribution amount of $1,120,000.
- **Assessment:** The Plan is subject to the contribution risk that the expected contribution will not be made. If contributions are deferred to the future, investment income is lost in the intervening period and the Plan becomes more expensive. The City has made contributions equal to the expected amount for the last five years.

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:** This is one of the most substantial risks the plan faces. You may wish to explore asset/liability modeling or other plan forecasts to see what impact investment volatility has on the Plan's funded status.

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 A. 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 9.8 years. As such, if the interest rate changes by 1%, the estimated change in pension liability is 9.8%.

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 A. 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.