CITY OF BARTLETT, TENNESSEE
RETIREMENT PLAN
(CASH BALANCE PLAN)

Results of Actuarial Valuation
As of June 30, 2022

CITY OF BARTLETT, TENNESSEE
RETIREMENT PLAN

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APPENDICES

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August 12, 2022

VIA EMAIL

Mr. Dick Phebus
Finance Director
City of Bartlett
6400 Stage Road
Bartlett, TN 38134

Dear Mr. Phebus:

Actuarial Valuation of
CITY OF BARTLETT, TENNESSEE
RETIREMENT PLAN

As requested, the enclosed report sets forth the results of the actuarial valuation for the City of Bartlett Retirement Plan as of June 30, 2022. The information in this report should be used to complete the Retirement Plan Section of your Financial Statement.

The information in this report is intended to comply with the requirements of Governmental Accounting Standards Board Statements No. 67 and No. 68.

Risk Discussion

The risks that may reasonably be anticipated to significantly affect the plan's future financial condition are discussed below. It is recommended that these risks be continually monitored.

Investment Risk

The investment risk is expected to be the single most important factor in determining the future cost of the plan. Due to the plan's significant equity exposure and low correlation between fixed income assets and liabilities, there is risk that the funded status (and required cash contributions) of the plan could be very volatile. The history of approximate annual investment returns is shown in the Trend Information Table E. The historical returns highlight the substantial volatility from year to year.

Interest Rate Risk

Related to the investment risk section above, the assumed future returns implied in the interest rate used to value the liabilities is a significant factor in determining the plan's funded status. Due to the plan's liability duration (a measurement of how sensitive the liability is to change in the interest rate) of around 11-12, a 1% decrease in the assumed interest rate would increase the liability by approximately 11-12%.

Inflation Risk

Since benefit amounts are pay-related, pay increases in excess of the valuation assumption will result in an increase in the liabilities (and required cash contributions) of the plan. An increase in inflation is one factor that could lead to higher pay increases. However, the inflation risk is dampened due to inflation being a component of the interest rate used to value the liabilities. An increase in inflation would likely result in an increase in the interest rate, which could mitigate the pay increases.

Mortality Risk

Since the primary benefits of the plan can be paid as annuities, the plan is sensitive to changes in the longevity of the population. As a result, the liabilities (and required cash contributions) of the plan will increase if the participants live longer than expected and decrease if they live shorter than expected.

Contribution Risk

The required contributions calculated in this report are based on the actuarial methods and assumptions as documented in the Summary of Actuarial Methods and Assumptions section of the appendices. The required contribution includes the normal cost for new benefits being earned during the year, plus an amortization to cover any unfunded accrued liability over a period of 20 years or less. Based on this contribution method, all plan benefits are projected to be systematically funded. This method is not expected to cause additional volatility in the required contribution beyond the underlying risk factors discussed above.

Actuarial Opinion

This valuation has been completed in accordance with generally accepted actuarial principles and practices and is based on our interpretation of the plan provisions as shown in the Appendices.

In preparing this report, we relied on the financial statements as submitted to us by the plan's trustee and on the employee data as submitted to us by the plan administrator. Based on comparisons of this data with information received in prior years, it is our opinion that the financial statements and the employee data are sufficient and reliable for the purposes of our calculations.

I am a Member of the American Academy of Actuaries and an Enrolled Actuary under ERISA. I meet the Qualification Standards of these organizations.

If you have any questions concerning this information, please do not hesitate to call or write.

Sincerely,

Ellis & Ward
Consulting Group, Inc.

Richard O. Ellis, MAAA, EA
Consulting Actuary

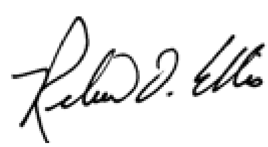
ROE/am
Enclosures

TABLE A

Summary And Certification Of Valuation
As Of June 30, 2022

1.	**Basic data included in valuation**	
	a. Active participants	**249**
	b. Individuals receiving benefits	**1**
	c. Vested terminated participants	**21**
	d. Total participants	**271**
	e. Total annual compensation	**$11,121,326**
2.	**Actuarial accrued liability**	
	a. Active participants	**4,027,660**
	b. Individuals receiving benefits	**48,727**
	c. Vested terminated participants	**146,611**
	d. Total	**4,222,998**
3.	**Market value of assets as of valuation date**	**4,319,090**
4.	**Unfunded actuarial accrued liability**	**0**
5.	**Actuarially determined contribution**	**382,352**

Certified by: **Ellis & Ward**
Consulting Group, Inc.



Richard O. Ellis, MAAA, EA
Consulting Actuary

TABLE B

Comparison of Valuation Results

	Valuation as of 06-30-21 (1)	Valuation as of 06-30-22 (2)
1. Basic data		
a. Active participants	204	249
b. Individuals receiving benefits	0	1
c. Vested terminated participants	12	21
d. Total participants	216	271
e. Total annual compensation	$9,136,336	$11,121,326
2. Averages for active participants		
a. Age	38.1	37.7
b. Past service	3.3	3.4
3. Actuarial accrued liability		
a. Active participants	3,178,587	4,027,660
b. Inactive participants	169,461	195,338
c. Total	3,348,048	4,222,998
4. Market value of assets	4,194,926	4,319,090
5. Unfunded actuarial accrued liability	0	0
6. Actuarially determined contribution	338,669	382,352

TABLE C

Change in Assets During Plan Year
Ending June 30, 2022

1.	Assets in trust fund as of beginning of plan year	$4,194,926
2.	Employer contributions	380,549
3.	Employee contributions	555,865
4.	Benefit payments made	(242,890)
5.	Expenses	(24,318)
6.	Investment return	(517,347)
7.	Assets in trust fund as of end of plan year	4,346,785
8.	Payments due Legacy plan	(27,695)
9.	Net Assets Available	4,319,090
10.	Money-Weighted Rate of Return	(11.60)%

TABLE D

Funded Status of Accumulated Plan Benefits
Valuation as of June 30, 2022

1. **Market value of assets** — **$4,319,090**

2. **Actuarial present value of accumulated plan benefits**

	Number of Participants Partially or Fully Vested	Actuarial Present Value
a. Vested accumulated plan benefits for:		
1) Retired and deferred vested participants	22	195,338
2) Active Participants	249	3,140,315
3) Total	271	$3,335,653
4) Vested benefit security ratio		129%
b. Nonvested accumulated plan benefits for active participants		887,345
c. Total vested and nonvested accumulated plan benefits		$4,222,998
Total benefit security ratio		102%

The interest rate used for these calculations is 5.0%.

TABLE E

Trend Information

Year (1)	Total Number of Participants (2)	Average Age (3)	Covered Payroll (4)	Unfunded Accrued Liability (5)	Actuarial Asset Value (6)	Approximate Return on Assets (7)
2015	37	34.0	544,418	0	56,631	n/a
2016	70	35.0	1,841,278	0	242,346	0.3%
2017	100	37.0	3,276,689	0	609,313	6.7%
2018	160	37.0	3,213,226	0	1,195,787	5.1%
2019	185	36.6	7,118,575	0	2,028,300	7.60%
2020	203	37.3	8,140,394	0	2,804,196	3.91%
2021	216	38.1	9,136,336	0	4,194,926	24.51%
2022	271	37.7	11,121,326	0	4,319,030	(11.60)%

TABLE F-1

Changes In Net Pension Liability – Pension Expense

	Increase/(Decrease)			
	Total Pension Liability (1)	Plan Fiduciary Net Position (2)	Net Pension Liability (3)	Pension Expense (4)
1. Balances at 06/30/2021	3,348,048	4,194,926	(846,878)	
2. Changes for the year:				
a. Service Cost	1,073,360		1,073,360	1,073,360
b. Interest	160,637		160,637	160,637
c. Experience	(88,462)		(88,462)	(11,393)
d. Contributions - Employer		380,549	(380,549)	
e. Contributions - Employees		555,865	(555,865)	(555,865)
f. Expected Investment Income		225,784	(225,784)	(225,784)
g. Actual vs Expected Income		(743,131)	743,131	24,622
h. Benefit Payments	(270,585)	(270,585)	0	
i. Administrative Expense		(24,318)	24,318	24,318
j. Other changes	0	0	0	0
k. Net changes	874,950	124,164	750,786	
3. Balances at 06/30/22	4,222,998	4,319,090	(96,092)	489,895
4. Net Pension Liability Using 4% Discount Rate			928,899	
5. Net Pension Liability Using 6% Discount Rate			(869,700)	

TABLE F-2

Schedule of Unrecognized (Gains)/Losses

A. Schedule of Unrecognized Demographic (Gains)/Losses

Date Established (1)	(Gains)/Losses (2)	Amortization Years (3)	Remaining Last Year (4)	Recognized (5)	Remaining (6)
6/30/2016	-5,166	27	-4,020	-191	-3,829
6/30/2017	-14,657	25	-11,727	-586	-11,141
6/30/2018	-31,534	25	-26,490	-1,261	-25,229
6/30/2019	-7,216	25	-6,349	-289	-6,060
6/30/2020	-53,898	25	-49,586	-2,156	-47,430
6/30/2021	-77,364	24	-74,140	-3,224	-70,916
6/30/2022	-88,462	24		-3,686	-84,776
			-172,312	-11,393	-249,381

B. Schedule of Unrecognized (Gains) and Losses from Assumption Changes

Date Established (1)	(Gains)/Losses (2)	Amortization Years (3)	Remaining Last Year (4)	Recognized (5)	Remaining (6)
n/a	0	0			

C. Schedule of Unrecognized Investment(Gains)/Losses

Date Established (1)	(Gains)/Losses (2)	Amortization Years (3)	Remaining Last Year (4)	Recognized (5)	Remaining (6)
6/30/2018	-8,219	5	-1,643	-1,643	0
6/30/2019	-33,793	5	-13,516	-6,759	-6,757
6/30/2020	25,936	5	15,562	5,187	10,375
6/30/2021	-603,945	5	-483,156	-120,789	-362,367
6/30/2022	743,131	5		148,626	594,505
			-482,753	24,622	235,756

TABLE G

Schedule Of Changes In Net Pension Liability And Related Ratios

Last 10 Fiscal Years ending June 30,

	2022	2021	2020	2019	2018	2017	2016
Total pension liability							
Service cost	1,073,360	881,465	830,971	702,503	539,160	336,506	189,455
Interest	160,637	124,604	86,538	51,353	26,318	11,062	2,915
Changes of benefit items	0	0	0	0	0	0	0
Differences between expected and actual experience	(88,462)	(77,364)	(53,898)	(7,216)	(31,534)	(14,657)	(5,166)
Changes of assumptions	0	0	0	0	0	0	0
Benefit payments	(270,585)	(145,484)	(59,106)	(26,765)	(33,688)	(21,897)	(9,519)
Net change in total pension liability	874,950	783,221	804,505	719,875	497,256	311,014	177,685
Total pension liability – beginning	3,348,048	2,564,827	1,760,322	1,040,447	543,191	232,177	54,492
Total pension liability – ending	4,222,998	3,348,048	2,564,827	1,760,332	1,040,447	543,191	232,177
Plan fiduciary net position							
Contributions – employer	380,549	338,669	331,144	405,977	299,953	180,556	97,392
Contributions - employee	555,865	456,847	428,294	355,855	275,499	180,556	97,392
Net investment income	(517,347)	759,925	92,562	355,855	52,038	36,579	5,687
Benefit payments	(270,585)	(145,484)	(59,106)		(33,688)	(21,897)	(9,519)
Administrative expense	(24,318)	(19,227)	(16,998)	(14,158)	(7,328)	(8,827)	(5,237)
Other	0	0	0	0	0	0	0
Net change in plan fiduciary net position	124,164	1,390,730	775,896	832,513	586,474	366,967	185,715
Plan fiduciary net position – beginning (a)	4,194,926	2,804,196	2,028,300	1,195,787	609,313	242,346	56,631
Plan fiduciary net position – ending (b)	4,319,090	4,194,926	2,804,196	2,028,300	1,195,787	609,313	242,346
City's net pension liability	(96,092)	(846,878)	(239,369)	(267,978)	(155,340)	(66,122)	(10,169)
Plan's fiduciary net position as a percentage of the total pension liability	102.27%	125.29%	109.33%	115.22%	114.93%	112.17%	104.92%
Covered employee payroll	11,121,326	9,136,336	8,140,394	7,118,575	5,213,226	3,276,689	1,841,278
City's net pension liability as a percentage of covered employee payroll	(00.86%)	(9.27%)	(2.94%)	(3.76)	(2.98%)	(2.02%)	(0.55%)

TABLE H

Schedule Of City Contributions
Last 10 Years ending June 30,

	2022	2021	2020	2019	2018	2017	2016
Actuarially determined contribution (ADC)	382,352	338,669	331,144	346,648	260,661	163,832	92,064
Contributions	380,549	338,669	331,144	405,977	299,953	180,556	97,392
Contribution deficiency	1,803	0	0	(59,329)	(39,292)	(16,721)	(5,328)
Covered Employee Payroll	11,121,326	9,136,336	8,140,394	7,118,575	5,213,226	3,276,689	1,841,278
Contribution as a percentage of covered Employee payroll	3.42%	3.71%	4.07%	5.70%	5.75%	5.51%	5.29%

Notes to Schedule

Valuation date:	**Actuarially determined contributions are calculated as of December 31st, prior to fiscal year end**

Methods and assumptions used to determine contribution rates:

Actuarial cost method	**Entry Age Normal**
Amortization method	**Level Dollar, closed**
Remaining amortization period	**n/a**
Asset valuation method	**Market Value**
Inflation	**2.50%**
Salary increases	**3.5%, including inflation**
Investment rate of return	**5.0%, net of plan investment expense, including inflation**
Retirement age	**Age 62**
Mortality	**IRS Applicable Mortality - Post Retirement Only**
Withdrawals	**None**
Other Information:	**Plan adopted effective July 1, 2014**

Actuarial Methods and Assumptions
(Adopted Effective June 30, 2015)

A. Actuarial Assumptions

1. **Interest** .... 5.00% Pre-retirement
   5.00% Post-retirement

2. **Mortality** .... IRS Applicable Mortality
   Post Retirement Only

3. **Disability Rates** .... None

4. **Withdrawal Rates** .... None

5. **Salary Scales**

   In the computations, salary scales were used in which it was assumed that future compensation would increase at the rate of 3.5% per year, compounded annually.

6. **Retirement Age**

   It was assumed that Participants will retire upon attainment of age 62.

   Professional judgment was used to develop retirement probabilities. It is anticipated that an average retirement age of 62 will not cause liabilities to differ significantly from those calculated using retirement rates varying from early retirement age to normal retirement age as defined in the plan document.

7. **Expense Loading** .... None

8. **Marriage**

   100% of active participants are assumed to be married and wives are assumed to be three years younger than husbands.

B. Actuarial Methods

The Entry Age Normal Level Percent of Pay cost method was used to determine liabilities for retirement benefits.

C. Method of Valuing Investments

The investments in the trust fund are valued using the market value of assets.

D. Changes in Actuarial Methods or Assumptions

None

Summary of Principal Provisions
As Effective July 1, 2014

1. **Employees Included in Plan**: Employees hired on and after July 1, 2014 participate on their date of hire. Employees contribute five percent (5%) of Compensation.

2. **Credited Service**: Credited service is the number of completed years and months from the Employee's first date of employment.

3. **Initial Vesting Date**: A participant's Initial Vesting Date is the date he has completed five (5) years of Credited Service.

4. **Vested Percentage**:

Years of Credit Service (1)	Vested Percentage (2)
Less than 5 years	0%
5 years	100%

   If employment is terminated prior to the completion of five years of service, a refund of the participant's contributions with interest, is payable.

5. **Normal Retirement Date and Normal Form of Retirement Income**: Normal Retirement Date is the first day of the month coinciding with or next following the date on which the Participant attains age 65, and has completed at least five (5) years of Credited Service.

   Normal form of retirement income is life income.

6. **Retirement Benefit**: Monthly income is equal to a single life annuity which is the actuarial equivalent of the Participant's Accumulation Account.

7. <u>Death Benefits</u>: In the event of the death of a Participant prior to his Annuity Starting Date who was in active employment at any time after his Early Retirement Date, his Beneficiary will receive an amount equal to the credits in the Participant's Accumulation Account.