



Cavanaugh Macdonald
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**Report of the Actuary on the Annual Valuation
of the Charlotte Firefighters' Retirement System**

Prepared as of July 1, 2023





Cavanaugh Macdonald

CONSULTING, LLC

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October 18, 2023

Board of Trustees
Charlotte Firefighters' Retirement System
428 East Fourth Street
Suite 205
Charlotte, NC 28202

Dear Members of the Board:

We are pleased to submit herewith the results of the annual actuarial valuation of the City of Charlotte Firefighters' Retirement System prepared as of July 1, 2023. The purpose of this report is to provide a summary of the funded status of the System as of July 1, 2023 and to recommend rates of contribution. In performing the valuation, we relied on data provided by the System. While not verifying the data at source, the actuary performed tests for consistency and reasonability.

The asset values used to determine unfunded liabilities are not market values but less volatile market related values. A smoothing technique is applied to market values to determine the market related values. The unfunded liability amounts using the market value of assets would be different. The interest rate used for determining liabilities is based on the expected return on assets. Therefore, liability amounts in the report cannot be used to assess a settlement of the obligation.

The City council has agreed to an increase in the City's contribution rate effective July 1, 2020 to 14% of payroll, increasing by 2% each year until reaching a maximum of 24% of payroll. Legislation has been introduced to amend the Charlotte Firefighters' Retirement System Act to increase the City contribution rates according to the schedule described above.

The promised benefits of the System are included in the actuarially calculated contribution rates which are developed using the entry age cost method. A five-year smoothed market value of plan assets was used for the actuarial value of assets. Consistent with the Board's funding policy, gains and losses are reflected in the unfunded accrued liability that is being amortized by regular annual contributions as a level percentage of payroll, on the assumption that payroll will increase by 2.50% annually. The actuarially determined employer contribution rate based upon the Board's adopted funding policy is 38.57% of payroll for the fiscal year ending June 30, 2025. It is important to note that the employer contribution rate for the year ending June 30, 2025 based on the new City contribution rate schedule is equal to 22.00%, leaving a contribution shortfall of 16.57% of payroll. Contribution shortfalls could lead to insolvency in the future.

The plan's unfunded liability was projected to be \$242,943,584 as of June 30, 2023. The actual unfunded liability is \$275,650,694. The components of the increase of \$32,707,110 in the unfunded liability are as follows:

1. \$19,179,151 increase due to an investment loss
2. \$11,759,284 increase due to higher than anticipated salary increases
3. \$1,768,675 increase due to the difference in expected and actual demographic experience

Separate reports will be issued to provide the disclosure information required under GASB Statements No. 67 and 68.



We have prepared the Schedule of Active Member Valuation Data, Schedule of Retired Members and Beneficiaries Added to and Removed from Rolls, the Solvency Test and the Analysis of Financial Experience for the actuarial section of the Annual Report and the Schedule of Funding Progress and Trend Information for the financial section of the Annual Report.

In order to prepare the results in this report, we have utilized actuarial models that were developed to measure liabilities and develop actuarial costs. These models include tools that we have produced and tested, along with commercially available valuation software that we have reviewed to confirm the appropriateness and accuracy of the output. In utilizing these models, we develop and use input parameters and assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

This is to certify that the independent consulting actuary is a Member of the American Academy of Actuaries and has experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the System and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System.

Future actuarial results may differ significantly from the current results 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. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

We trust that the report will meet the approval of the Board and will furnish the desired information concerning the financial condition of the System.

Respectfully submitted,

A handwritten signature in blue ink that reads 'Todd B. Green' followed by a horizontal line.

Todd B. Green, ASA, EA, FCA, MAAA
President

A handwritten signature in blue ink that reads 'Cathy Turcot'.

Cathy Turcot
Principal and Managing Director

A handwritten signature in blue ink that reads 'Jennifer Johnson'.

Jennifer Johnson
Senior Consultant



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Section I – Summary of Principal Results

CHARLOTTE FIREFIGHTERS' RETIREMENT SYSTEM REPORT OF THE ACTUARY ON THE ANNUAL VALUATION PREPARED AS OF JULY 1, 2023

1. For convenience of reference, the principal results of the current and preceding valuations are summarized below.

Valuation Date	July 1, 2023	July 1, 2022
Active members:		
Number	1,086	1,091
Annualized compensation	\$94,594,617	\$89,178,953
Retired members and beneficiaries:		
Number	849	826
Annual allowances	\$47,016,238	\$44,634,953*
Number of terminated vested members	16	15
Assets:		
Market Value	\$603,780,667	\$574,603,333
Actuarial Value	645,260,661	637,713,637
Unfunded actuarial accrued liability	\$275,650,694	\$232,426,518
Funded Ratio	70.1%	73.3%
Fiscal Year Ending	June 30, 2025	June 30, 2024
City actuarially determined employer contribution rate (ADEC):		
Normal (including expenses of 0.75%)	15.49%	15.52%
Accrued liability	<u>23.08</u>	<u>19.28</u>
Total	38.57%	34.80%
Employer contribution rate	22.00%	20.00%
Member contribution rate	12.65%	12.65%

*Includes ad hoc COLA granted to certain members in 2022





Section I – Summary of Principal Results

2. The major benefit and contribution provisions of the System as reflected in the valuation are summarized in Schedule G. The City council has agreed to an increase in the City's contribution to 14% of payroll, increasing by 2% each year until reaching a maximum of 24% of payroll (not more than the Actuarially Determined Contribution and not less than 14%). Legislation has been introduced to amend the Charlotte Firefighters' Retirement System Act to increase the City contribution rates according to the schedule described above. Please note, the contributions noted above are not sufficient to amortize the unfunded actuarial accrued liability on either a market value of assets basis or an actuarial value of assets basis which could lead to insolvency.
3. The July 1, 2023, market value of assets is \$41,479,994 less than the actuarial value of assets. This is due to the smoothing of investment gains and losses over a five-year period. The funded ratio on a market value basis would be 65.6%.
4. Schedule E of this report outlines the full set of actuarial assumptions and methods used in the valuation. There have been no changes in actuarial assumptions since the previous valuation.
5. The entry age actuarial cost method was used to prepare the valuation. Schedule F contains a brief description of the actuarial cost method.
6. Comments on the valuation results as of July 1, 2023 are given in Section IV and further discussion of the contributions is set out in Section V.





Section II – Membership Data

1. Data regarding the membership of the System for use as a basis of the valuation were furnished by the City. The valuation included 1,086 active members with annualized compensation totaling \$94,594,617.
2. The following table shows the number of retired members and beneficiaries as of July 1, 2023 together with the amount of their annual retirement benefits payable under the System as of that date.

**THE NUMBER AND ANNUAL BENEFITS OF
RETIRED MEMBERS AND BENEFICIARIES
AS OF JULY 1, 2023**

GROUP	NUMBER*	ANNUAL RETIREMENT BENEFITS
Service Retirements	756	\$44,914,796
Disability Retirements	33	857,319
Beneficiaries of Deceased Members	<u>60</u>	<u>1,244,123</u>
Total	849	<u>\$47,016,238</u>

*In addition, there are 16 terminated members entitled to deferred vested benefits.

3. Table 1 of Schedule H shows the distribution by age and years of membership service of the number of active members included in the valuation, while Table 2 shows the number and annual benefits of retired members and beneficiaries included in the valuation, distributed by age. Table 3 shows the schedule of active member valuation data and Table 4 shows the schedule of retired members and beneficiaries added to and removed from the rolls.





Section III – Assets

As of July 1, 2023, the total market value of assets amounted to \$603,780,667. The actuarial value of assets used for the current valuation was \$645,260,661. Schedule C shows the development of the actuarial value of assets as of July 1, 2023. Schedule D shows the allocation of the System's assets and the market value of assets for three years.





Section IV – Comments on Valuation

1. Schedule B of this report contains the valuation balance sheet which shows the present and prospective assets and liabilities of the System as of July 1, 2023. The valuation was prepared in accordance with the actuarial assumptions set forth in Schedule E and the actuarial cost method which is described in Schedule F.
2. The valuation balance sheet shows that the System has total prospective liabilities of \$1,193,267,902 of which \$503,467,747 is for the prospective benefits payable on account of present retired members, beneficiaries of deceased members, and terminated members entitled to deferred benefits, and \$689,800,155 is for the prospective benefits payable on account of present active members. Against these liabilities, the System has a total present actuarial value of assets of \$645,260,661 as of July 1, 2023. The difference of \$548,007,241 between the total liabilities and the total present assets represents the present value of future contributions.
3. The contributions to the System consist of normal contributions and accrued liability contributions. The valuation indicates that normal contributions at the rate of 27.39% of payroll are required under the entry age method. Of this amount, 12.65% is paid by the members and the remaining 14.74% is required by the City.
4. Prospective normal contributions at the rate of 27.39% have a present value of \$272,356,547. When this amount is subtracted from \$548,007,241, which is the present value of the total future contributions to be made, there remains \$275,650,694 as the amount of unfunded accrued liability contributions. The development of the unfunded accrued liability is shown in Schedule A.





Section V – Contributions Payable

1. The contributions consist of a normal contribution and an accrued liability contribution as determined by actuarial valuation.
2. The normal contribution rate is calculated as the level percentage of payroll which, if applied for the average member during the entire period of his anticipated covered service, would be required to meet the cost of all benefits payable on his behalf. The normal contribution rate was determined to be 27.39%.
3. Section 24 of Title V of the Charlotte Firefighters' Retirement System Act states that each member shall contribute an amount equal to the Member's Compensation multiplied by 12.65%.
4. The City normal contribution rate is equal to the difference between the normal contribution rate of 27.39% and the member contribution rate of 12.65%, or 14.74% of payroll. An additional 0.75% is required for expenses, making the total City normal rate 15.49% of payroll.
5. Pending legislation to amend Section 25 of Title V of the Charlotte Firefighters' Retirement System Act states that effective July 1, 2020, the City of Charlotte shall contribute an amount equal to the Member's Compensation multiplied by 14%, to be increased each Plan Year by 2% for the next five years to a maximum of 24%. Please note, these contributions are not sufficient to fund the system in an actuarially sound manner.
6. As part of the experience investigation performed as of June 30, 2019, the Board adopted a closed layered amortization method for the UAL. This method provides that the UAL as of June 30, 2019 (Transitional UAL) will be amortized as a level percent of payroll over a closed 30-year period. In each subsequent valuation, additional increases or decreases in the UAL will determine a New Incremental UAL. Each New Incremental UAL will be amortized as a level percent of payroll over a separate closed period from the valuation date it is measured according to the following:
 - Experience gains and losses amortized over a closed 15-year period,
 - Changes to assumptions and methods amortized over a closed 30-year period,
 - Plan changes/benefit improvements amortized over a closed 20-year period, and
 - Exceptional plan changes/benefit improvements amortized over a closed 5-year period.





Section V – Contributions Payable

Total payroll is assumed to grow 2.50% annually. For the ten-year period ended July 1, 2023, payroll has grown by 4.23%. On this basis, we have determined the accrued liability contribution rate to be 23.08% of payroll. Schedule I of this report shows amortization schedules for all bases as of July 1, 2023.

7. The employer statutory contribution rate for the fiscal year ended June 30, 2025 is equal to 22% which is not sufficient to fund the System within the parameters defined by the Board adopted funding policy.
8. The following table shows the components of the total UAL and the derivation of the UAL contribution rate:

TOTAL UAAL AND UAAL CONTRIBUTION RATE

	Remaining Balance UAAL	Remaining Amortization Period	Amortization Payment
Transitional	\$122,071,292	26	\$7,630,806
New Incremental 7/1/2020-Experience	\$21,245,332	12	\$2,217,917
New Incremental 7/1/2020-Assumptions	\$36,227,264	27	\$2,219,211
New Incremental 7/1/2021-Experience	\$6,650,883	13	\$653,579
New Incremental 7/1/2022-Experience	\$20,154,341	14	\$1,875,148
New Incremental 7/1/2022-Benefit Change	\$1,118,757	4	\$297,965
New Incremental 7/1/2022-Assumptions	\$24,189,182	29	\$1,428,091
New Incremental 7/1/2023-Experience*	<u>\$43,993,643</u>	15	<u>\$3,894,581</u>
Total	\$275,650,694		\$20,217,298
Total Amortization Payment Adjusted for Timing			\$22,376,841
Projected Payroll			\$96,959,482
UAAL Contribution Rate			23.08%

* Includes the impact of contribution shortfall and timing of payments equal to \$11,286,532





Section V – Contributions Payable

9. Therefore the total actuarially determined employer contribution (ADEC) rate beginning July 1, 2024 is 38.57% of payroll. The following table summarizes the employer contributions which were determined by the July 1, 2023 valuation and are recommended for use.
10. The funding policy produces a reasonable actuarial required contribution as defined in Actuarial Standard of Practice Number 4. Contributions are developed with the intent of being level as a percentage of covered payroll, assuming the number of active members remains stable. The funding policy is expected to accumulate sufficient assets to make all future benefit payments as they become due, if all assumptions are met. Please note, the Statutory Employer Contribution Rate noted below is not sufficient to fund the System in an actuarial sound manor.

**CITY ACTUARIALLY DETERMINED EMPLOYER CONTRIBUTIONS (ADEC)
FOR FISCAL YEAR ENDING June 30, 2025**

CONTRIBUTION	PERCENTAGE OF ACTIVE MEMBERS' COMPENSATION
Normal (including expenses of 0.75%)	15.49%
Accrued Liability	<u>23.08</u>
Total	38.57%
Statutory Employer Contribution	22.00%
Contribution Shortfall	16.57%





Section VI – Accounting Information

The information required under the Governmental Accounting Standards Board (GASB) Statements No. 67 and 68 for the Plan and the City will be issued in separate reports. We are providing the following information for the informational purposes only.

1. The following is a distribution of the number of employees by type of membership:

NUMBER OF ACTIVE AND RETIRED PARTICIPANTS AS OF JULY 1, 2023

GROUP	NUMBER
Retired participants and beneficiaries currently receiving benefits	849
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	16
Active Participants	<u>1,086</u>
Total	1,951

2. The schedule of funding progress is shown below.

SCHEDULE OF FUNDING PROGRESS (dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Liability Entry Age (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / c)
7/01/2018	\$548,685	\$626,518	\$77,834	87.6%	\$71,781	108.4%
7/01/2019	566,042	684,387	118,345	82.7	77,041	153.6
7/01/2020 ¹	580,144	758,667	178,523	76.5	82,533	216.3
7/01/2021	620,429	806,628	186,198	76.9	88,998	209.2
7/01/2022 ²	637,714	870,141	232,427	73.3	89,179	260.6
7/01/2023	645,261	920,912	275,651	70.1	94,595	291.4

¹Economic and demographic assumptions were changed due to an experience review.

²Reflects change in assumed rate of return.





Section VI – Accounting Information

3. Additional information as of July 1, 2023 follows:

Valuation date	7/01/2023
Actuarial cost method	Entry age
Amortization period	Level Percent of Pay, Closed
Remaining amortization period	4 – 29 years
Asset valuation method	Five-year smoothed market value
Actuarial assumptions:	
Investment rate of return (includes inflation)	7.00%
Projected salary increases (includes inflation)	3.75 – 9.00%
Inflation	2.50%
Cost-of-living adjustments	None





Section VII – Experience

- As an aid to the Board in adopting service and mortality tables, we have prepared an experience investigation for the five-year period ending June 30, 2019. The valuation was based on the assumptions adopted by the Board at the May 28, 2020 Board meeting as a result of that investigation.
- The following tables show the estimated change in the unfunded accrued liability from various factors that resulted in an increase of \$43,224,176 in the unfunded accrued liability from \$232,426,518 to \$275,650,694 during the fiscal year ending June 30, 2023.

ANALYSIS OF FINANCIAL EXPERIENCE – RECONCILIATION OF UNFUNDED ACCRUED LIABILITY

1. Unfunded Accrued Liability June 30, 2022	\$232,426,518
2. Normal Cost (including Expenses)	23,858,925
3. Actual Contributions	30,224,000
4. Interest [(1 + 2) x 7.00% - (3 x 7.00% x 0.5)]	<u>16,882,141</u>
5. Expected Unfunded Accrued Liability June 30, 2023 [1 + 2 - 3 + 4]	\$242,943,584
6. Actual Unfunded Accrued Liability June 30, 2023	\$275,650,694
7. (Gain)/Loss [6 - 5]	\$32,707,110

ANALYSIS OF FINANCIAL EXPERIENCE – (GAINS)/LOSSES BY SOURCE

Recognized Asset (Gain)/Loss	\$19,179,151
Liability (Gain)/Loss	1,768,675
Salary Increases	11,759,284
Amendments (COLA)	0
Assumption and Method Changes	<u>0</u>
Total (Gain)/Loss	\$32,707,110





Section VIII – Risk

1. Measuring pension obligations and actuarially determined contributions requires the use of assumptions regarding future economic and demographic experience. Whenever assumptions are made about future events, there is risk that actual experience will differ from expected. Actuarial valuations include the risk that actual future measurements will deviate from expected future measurements due to actual experience that is different than the actuarial assumptions.
2. The primary areas of risk in this actuarial valuation are:
 - Investment Risk – the potential that investment returns will be different than expected.
 - Longevity and Other Demographic Risks – the potential that mortality or other demographic experience will be different than expected.
 - Interest Rate Risk – To the extent market rates of interest affect the expected return on assets, there is a risk of change to the discount rate which determines the present value of liabilities and actuarial valuation results.
 - Contribution Risk – The potential that actual contributions are different than the actuarially determined contributions.
3. Annual actuarial valuations are performed for CFRS which re-measure the assets and liabilities and compute a new actuarially determined contribution. CFRS also has experience studies performed every five years to analyze the discrepancies between actuarial assumptions and actual experience and determine if the actuarial assumptions need to be changed. Annual actuarial valuations and periodic experience studies are practical ways to monitor and reassess risk.
4. Under the revised Actuarial Standards of Practice (ASOP) No. 4 effective for valuations after February 15, 2023, we include a low-default-risk obligation measure of the System's liability in our funding valuation report. This is an informational disclosure as described below and would not be appropriate for assessing the funding progress or health of the plan. This measure uses the unit credit cost method and reflects all the assumptions and provisions of the funding valuation except that the discount rate is derived from considering low-default-risk fixed income securities. We considered the FTSE Pension Discount Curve based on market bond rates published by the





Section VIII – Risk

Society of Actuaries as of June 30, 2023 and with the 30-year spot rate used for all durations beyond 30. Using these assumptions, we calculate a liability of \$1.05 billion. This amount approximates the termination liability if the plan (or all covered employment) ended on the valuation date and all of the accrued benefits had to be paid with cash-flow matched bonds. This assurance of funded status and benefit security is typically more relevant for corporate plans than for governmental plans since governments rarely have the need or option to completely terminate a plan.





Schedule A – Development of the Unfunded Actuarial Accrued Liability

AS OF JULY 1, 2023

(1)	Present value of prospective benefits:	
(a)	Present active members	\$689,800,155
(b)	Present retired members, beneficiaries and former members entitled to deferred vested benefits	<u>503,467,747</u>
(c)	Subtotal	1,193,267,902
(2)	Present value of future System and member normal contributions before expenses	<u>272,356,547</u>
(3)	Actuarial accrued liabilities 1(c) – (2)	920,911,355
(4)	Actuarial value of assets	<u>645,260,661</u>
(5)	Unfunded actuarial accrued liability (3) – (4)	\$ 275,650,694





Schedule B – Valuation Balance Sheet and Solvency Test

The present and prospective assets and liabilities of the System as of July 1, 2023:

<u>ACTUARIAL LIABILITIES</u>	
Present value of prospective benefits payable on account of present retired members, beneficiaries of deceased members, and terminated members entitled to deferred benefits	\$503,467,747
Present value of prospective benefits payable on account of present active members	<u>689,800,155</u>
Total liabilities	<u>\$1,193,267,902</u>
<u>PRESENT AND PROSPECTIVE ASSETS</u>	
Actuarial value of assets	\$645,260,661
Present value of future contributions	
City and member normal contributions	\$272,356,547
Unfunded accrued liability contributions	<u>275,650,694</u>
Total prospective contributions	<u>548,007,241</u>
Total assets	<u>\$1,193,267,902</u>





Schedule B – Valuation Balance Sheet and Solvency Test

SOLVENCY TEST (dollar amounts in millions)

Valuation Date	Aggregate Accrued Liabilities For			Reported Assets	Portion of Accrued Liabilities Covered by Reported Assets		
	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Members (Employer Financed Portion)		(1)	(2)	(3)
7/1/23	\$109.0	\$503.5	\$308.5	\$645.3	100%	100%	10.6%
7/1/22 ³	104.4	477.8	287.9	637.7	100	100	19.3
7/1/21	103.3	426.5	276.8	620.4	100	100	32.7
7/1/20 ²	97.8	408.8	252.1	580.1	100	100	29.2
7/1/19	92.7	384.3	207.4	566.0	100	100	42.9
7/1/18	94.9	340.1	191.6	548.7	100	100	59.3
7/1/17	92.8	328.2	183.2	520.6	100	100	54.4
7/1/16 ¹	92.2	297.9	174.4	490.9	100	100	57.8
7/1/15	89.8	261.1	153.6	467.5	100	100	75.9
7/1/14	89.6	235.5	153.1	425.2	100	100	65.4

¹Economic and demographic assumptions were changed as of July 1, 2016 due to an experience review.

²Economic and demographic assumptions were changed as of July 1, 2020 due to an experience review.

³Reflects change in assumed rate of return.





Schedule C – Development of the Actuarial Value of Assets

(1)	Actuarial Value of Assets as of July 1, 2022	\$637,713,637
(2)	Market Value of Assets as of July 1, 2023	603,780,667
(3)	Market Value of Assets as of July 1, 2022	574,603,333
(4)	Net Cash Flow During Plan Year	
(a)	Contributions	30,224,000
(b)	Benefit Payments and Administrative Expenses	<u>47,532,000</u>
(c)	Net Cash Flow (a) – (b)	(17,308,000)
(5)	Investment Return	
(2) – (3) – (4c)		46,485,334
(6)	Expected Investment Return	
[(3) x 7.00%] + [(4)c x 7.00% x 0.5]		39,616,453
(7)	Investment Gain/(Loss) for Phased-In Recognition (5) – (6)	6,868,881
(8)	Recognized Amounts for Plan Year	
(a)	Current Year 0.20 x (7)	1,373,776
(b)	First Prior Year	(26,688,105)
(c)	Second Prior Year	18,953,429
(d)	Third Prior Year	(4,817,646)
(e)	Fourth Prior Year	<u>(3,582,883)</u>
(f)	Total Recognized Investment Gain/(Loss)	(14,761,429)
(9)	Actuarial Value of Assets as of July 1, 2023	
(1) + (4)(c) + (6) + (8)(f)		<u>\$645,260,661</u>
(10)	Rate of Return on Actuarial Value	3.95%
(11)	Rate of Return on Market Value	8.21%





Schedule D – Asset Information

Reconciliation of Market value of Assets (In Thousands)

	Years Ended June 30	
	2023	2022
Market Value of Assets - Beginning of Year	\$574,603	\$676,330
ADDITIONS:		
Contributions:		
Member	12,605	12,418
Employer	17,619	14,942
Total Contributions	30,224	27,360
Investment Income (loss):		
Net Appreciation (depreciation) in fair value of investments	42,123	(86,920)
Interest	3,277	2,425
Dividends	3,574	2,398
Other	0	0
Total Investment Income	48,974	(82,097)
Less Investment Expense	2,437	2,850
Net Investment Income (loss)	46,537	(84,947)
Total Additions	76,761	(57,587)
DEDUCTIONS:		
Benefits	45,951	42,415
Refunds	774	945
Administration	807	714
Depreciation	51	66
Total Deductions	47,583	44,140
Change in Net Assets	29,178	(101,727)
Market Value of Assets - End of Year	\$603,781	\$574,603

Allocation of Market Value of Assets

	June 30, 2023	June 30, 2022	June 30, 2021
Cash	\$ 21,495	\$ 104,499	\$ 18,418
Cash Equivalents	6,582,444	8,389,938	6,353,353
Fixed Income Investments	101,130,893	98,409,174	97,204,118
Equity Investments	495,322,237	466,574,028	571,963,018
Other	86,642	137,171	201,769
Accrued Income	716,462	589,849	506,908
Accrued Contributions	606,814	1,024,733	783,864
Accrued Liabilities/Expenses	(686,319)	(626,058)	(701,619)
Total Market Value	\$ 603,780,667	\$ 574,603,333	\$ 676,329,830





Schedule E – Outline of Actuarial Assumptions and Methods

The assumptions and methods used in the valuation were selected by the Actuary and adopted by the Board June 1, 2020. The investment rate of return was adopted by the Board July 28, 2022.

INVESTMENT RATE OF RETURN: 7.00% per year, compounded annually, including 2.50% inflation.

SALARY INCREASES: Representative values of the assumed annual rates of salary increases are as follows:

<u>Years of Service</u>	<u>Rate*</u>
≤ 5	9.00%
6	7.25
7	7.00
8	6.50
9	5.50
10 - 14	4.75
15	4.25
16+	3.75

*Includes price inflation of 2.50% and wage inflation component of 1.25%

SEPARATIONS FROM ACTIVE SERVICE: For death rates, the Pub-2010 Safety Employee Headcount-Weighted Mortality Table projected generationally with projection Scale MP-2019 was used. Representative values of the assumed annual rates of separation from active service are as follows:

<u>Years of Service</u>	<u>Annual Rate of</u>		
	<u>Withdrawal</u>	<u>Age</u>	<u>Disability*</u>
0-5	1.40%	20	0.04%
6-10	0.80	25	0.04
11-15	0.60	30	0.06
16-25	0.30	35	0.16
26+	0.00	40	0.29
		45	0.43
		50	0.70
		55	1.00

*65% of the disabilities are assumed to be in the line of duty.





Schedule E – Outline of Actuarial Assumptions and Methods

Age	Annual Rate of Retirement			
	Age 60 with 5 Years but with less than 25 Years of Service	25 Years of Service*	26-29 Years of Service	30 Years of Service
< 50		7%		50%
50		45	35%	50
51 – 59		45	35	50
60 – 64	45%	45	45	50
65	100	100	100	100

DEATHS AFTER RETIREMENT: The Pub-2010 Safety Retiree Headcount-Weighted Below Median Mortality Table adjusted by 87.5% for males projected generationally with Scale MP-2019 is used for the period after service retirement. The Pub-2010 Safety Disabled Retiree Headcount-Weighted Mortality Table projected generationally with Scale MP-2019 is used for the period after disability retirement.

EXPENSES: 0.75% of payroll.

PERCENT MARRIED: 100% of active members are assumed to be married with the male three years older than his spouse.

ASSETS: Actuarial value, as developed in Schedule B. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected actuarial value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected actuarial value.

VALUATION METHOD: Entry age actuarial cost method. See Schedule F for a brief description of this method.

UNUSED SICK AND VACATION DAYS: 17.3% load on Final Average Salary at Retirement for cashed-in vacation and sick days. In addition, 1 year added to credited service at retirement.

PAYROLL GROWTH ASSUMPTION: 2.50% per year.





Schedule F – Actuarial Cost Method

1. The valuation is prepared on the projected benefit basis, under which the present value, at the interest rate assumed to be earned in the future (currently 7.00%), of each member's expected benefits at retirement or death is determined, based on age, service and sex. The calculations take into account the probability of a member's death or termination of employment prior to becoming eligible for a benefit, as well as the possibility of his terminating with a service, disability or survivor's benefit. The present value of the expected benefits payable on account of the active members is added to the present value of the expected future payments to retired members and beneficiaries to obtain the present value of all expected benefits payable from the System on account of the present group of members and beneficiaries.
2. The employer contributions required to support the benefits of the System are determined following a level funding approach, and consist of a normal contribution and an accrued liability contribution.
3. The normal contribution is determined using the entry age actuarial cost method. Under this method, a calculation is made to determine the level percentage of payroll which, if applied for the average new member during the entire period of his anticipated covered service, would be required in addition to the contributions of the member to meet the cost of all benefits payable on his behalf.
4. The unfunded accrued liability is determined by subtracting the present value of prospective employer normal contributions and member contributions, together with the current actuarial value of assets held, from the present value of expected benefits to be paid from the System.





Schedule G – Summary of Main System Provisions

Member	An employee of the Charlotte Fire Department who is subject to the provisions of the Civil Service Act.
Membership Service Credit	Service for all periods of employment with the Charlotte Fire Department for which contributions have been paid.
Final Average Salary	A member's average monthly compensation for the highest 2 consecutive years within the last 5 years of membership service. Salary in the final year includes cashed-in vacation and sick days.
Accrued Benefit	The monthly amount of retirement benefits earned by a member as of any date computed on his Final Average Salary and Membership Service Credit at that date.
Service Retirement Benefit	
Eligibility	Age 50 and 25 years of membership service credit, age 60 and 5 years of membership service credit or 30 years of membership service credit.
Benefit	Monthly benefit is 2.6% of final average salary multiplied by years of membership service credit. The minimum monthly benefit is \$902.75.
Early Retirement Benefit	
Eligibility	25 years of membership service credit.
Benefit	Accrued benefit reduced by 3% for each year member is under age 50.
In the Line of Duty Disability Retirement Benefit	
Eligibility	No requirements.
Benefit	78% of final average salary or normal retirement benefit if greater.
Not in the Line of Duty Disability Retirement Benefit	
Eligibility	10 years of service.
Benefit	39% of final average salary plus 1.95% of such salary for each year of membership service credit in excess of 10 years, not less than \$902.75 per month.





Schedule G – Summary of Main System Provisions

Deferred Vested Retirement Benefit

Eligibility	5 years of service. Member contributions not withdrawn.
Benefit	Accrued benefit payable at age 60. A member may choose a refund of contributions with 4% interest in lieu of this benefit.

Termination Benefit

If a member is terminated with less than 5 years of membership service credit, he is entitled to a return of his accumulated contributions.

Death Benefit

If a member dies in service, his beneficiary is entitled to receive a lump sum equal to the return of the member's accumulated contributions, plus those contributions made by the City on his behalf, plus interest of 4% per year. In lieu of the lump sum, his beneficiary may elect an annuity which is the actuarial equivalent of the lump sum. If the deceased member was eligible for a service or early retirement on the day before death, the spouse may elect to receive the actuarial equivalent monthly benefit under the 66-2/3% Joint and Survivor Option.

Optional Forms of Benefit

- (1) 10 year certain and life annuity.
- (2) 100%, 75%, 66-2/3% or 50% joint and survivorship annuity.
- (3) Joint and survivorship annuity with a pop-up provision.

Contributions

The City and the members each contribute 12.65%.

Effective July 1, 2020 the City contributes 14.00%, to be increased each Plan Year by 2% for the next five years to a maximum rate of 24.00%.





Schedule H – Tables of Membership Data

TABLE 1

**DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND SERVICE GROUPS
AS OF JULY 1, 2023**

Attained Age	Completed Years of Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Over	
Under 25	9	18	1							28
Total Pay										\$1,556,191
25 to 29	16	75	34							125
Total Pay										\$8,057,508
30 to 34	10	73	97	33						213
Total Pay										\$15,853,856
35 to 39	2	34	63	91	44	1				235
Total Pay										\$20,443,454
40 to 44	4	11	23	32	72	46	1			189
Total Pay										\$18,119,754
45 to 49		3	6	17	42	88	34			190
Total Pay										\$19,547,778
50 to 54		2	2	3	10	41	22	1		81
Total Pay										\$8,450,423
55 to 59					4	8	5		2	19
Total Pay										\$1,912,681
60 to 64						2	3	1		6
Total Pay										\$652,972
65 to 69										0
Total Pay										\$0
70 & up										0
Total Pay										\$0
Total Count	41	216	226	176	172	186	65	2	2	1,086
Total Pay										\$94,594,617

Average Age: 39.2
Average Service: 12.6





Schedule H – Tables of Membership Data

TABLE 2

**NUMBER OF RETIRED MEMBERS AND BENEFICIARIES
AND THEIR BENEFITS BY AGE**

<u>Attained Age</u>	<u>Number of Members</u>	<u>Total Annual Benefits</u>	<u>Average Annual Benefits</u>
50 & Under	24	\$ 1,459,766	\$60,824
51 - 55	118	8,836,408	74,885
56 - 60	153	9,802,771	64,070
61 - 65	167	9,164,131	54,875
66 - 70	142	7,425,024	52,289
71 - 75	109	4,757,365	43,646
76 - 80	70	2,758,659	39,409
Over 80	66	2,812,114	42,608
Total	849	\$47,016,238	\$55,378

TABLE 3

SCHEDULE OF ACTIVE MEMBER VALUATION DATA

<u>Valuation Date</u>	<u>Number Prior Year</u>	<u>Exits</u>	<u>New Entrants & Rehires</u>	<u>Number Current Year</u>	<u>Annual Payroll</u>	<u>Annual Average Pay</u>	<u>% Increase in Average Pay</u>
7/1/2023	1,091	46	41	1,086	\$94,594,617	\$87,104	6.6%
7/1/2022	1,103	61	49	1,091	89,178,953	81,741	1.3%
7/1/2021	1,067	35	71	1,103	88,997,989	80,687	4.3%
7/1/2020	1,047	32	52	1,067	82,532,520	77,350	5.1%
7/1/2019	1,058	63	52	1,047	77,040,854	73,582	8.5%
7/1/2018	1,037	31	52	1,058	71,781,041	67,846	-0.4%
7/1/2017	1,030	56	63	1,037	70,610,001	68,091	5.0%
7/1/2016	1,029	46	47	1,030	66,796,597	64,851	1.4%
7/1/2015	1,027	59	61	1,029	65,820,571	63,966	2.3%
7/1/2014	1,026	43	44	1,027	64,190,190	62,503	2.6%





Schedule H – Tables of Membership Data

TABLE 4

SCHEDULE OF RETIRED MEMBERS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS

Year Ended	Rolls – Beginning of Year		Added to Rolls		Removed from		Rolls – End of		% Increase in Annual Allowances	Average Annual Allowances
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances		
7/1/2023	826	\$44,634,953	41	\$2,999,602	18	\$618,317	849	\$47,016,238	5.3%	\$55,378
7/1/2022	780	40,791,950	60	4,337,445	14	494,443	826	44,634,953 **	9.4%	54,037
7/1/2021	765	39,098,752	36	2,440,777	21	747,578	780	40,791,950	4.3%	52,297
7/1/2020	750	37,719,709	26	1,797,008	11	417,965	765	39,098,752	3.7%	51,109
7/1/2019	697	33,569,732	66	4,586,146	13	436,169	750	37,719,709 *	12.4%	50,293
7/1/2018	684	32,289,898	26	1,699,726	13	419,892	697	33,569,732	4.0%	48,163
7/1/2017	647	29,422,479	52	3,411,374	15	543,955	684	32,289,898	9.7%	47,207
7/1/2016	615	27,388,370	46	2,517,541	14	483,432	647	29,422,479	7.4%	45,475
7/1/2015	575	24,864,206	52	2,879,892	12	355,728	615	27,388,370	10.2%	44,534
7/1/2014	546	23,015,232	42	2,222,162	13	373,188	575	24,864,206	8.0%	43,242

* Includes benefit increases due to Kurzel lawsuit

** Includes ad hoc COLA granted to certain members in 2022





Schedule I – Amortization of UAAL

<u>Valuation Date</u>	<u>Total UAAL</u>	
	<u>Balance</u>	<u>Annual Amortization Payment</u>
7/1/2023	275,650,694	20,217,298
7/1/2024	273,313,733	20,722,731
7/1/2025	270,272,373	21,240,799
7/1/2026	266,463,784	21,771,819
7/1/2027	261,820,403	22,316,114
7/1/2028	256,621,509	22,536,897
7/1/2029	250,470,534	23,100,320
7/1/2030	243,286,129	23,677,828
7/1/2031	234,980,882	24,269,774
7/1/2032	225,460,886	24,876,518
7/1/2033	214,625,274	25,498,431
7/1/2034	202,365,722	26,135,892
7/1/2035	188,565,919	23,806,437
7/1/2036	176,292,646	23,500,632
7/1/2037	163,487,454	21,438,614
7/1/2038	151,992,260	16,334,062
7/1/2039	145,154,272	16,742,413
7/1/2040	137,400,689	17,160,973
7/1/2041	128,656,495	17,589,998
7/1/2042	118,841,153	18,029,748
7/1/2043	107,868,203	18,480,491
7/1/2044	95,644,852	18,942,504
7/1/2045	82,071,512	19,416,066
7/1/2046	67,041,327	19,901,468
7/1/2047	50,439,649	20,399,005
7/1/2048	32,143,490	20,908,980
7/1/2049	12,020,926	6,930,940
7/1/2048	32,143,490	20,908,980
7/1/2049	12,020,926	6,930,940
7/1/2050	5,446,285	2,781,635
7/1/2051	2,851,176	2,851,176
7/1/2052	0	0





Schedule J – Estimated Projected Benefit Payments

<u>Year End</u>	<u>Total Projected Benefits*</u>
2023	\$48,107,778
2024	\$49,906,538
2025	\$51,982,477
2026	\$54,813,536
2027	\$57,795,871
2028	\$60,961,742
2029	\$64,047,582
2030	\$67,183,807
2031	\$70,824,561
2032	\$74,177,559
2033	\$77,526,281
2034	\$81,053,823
2035	\$84,685,395
2036	\$88,399,634
2037	\$92,224,336
2038	\$95,758,500
2039	\$99,296,953
2040	\$103,347,543
2041	\$107,546,125
2042	\$111,915,524
2043	\$116,160,544
2044	\$120,174,391
2045	\$124,430,609
2046	\$129,012,368
2047	\$133,527,178
2048	\$137,150,095
2049	\$139,342,419
2050	\$140,249,918
2051	\$140,087,967
2052	\$139,102,371
2053	\$137,477,270
2054	\$135,267,148
2055	\$132,791,810
2056	\$129,992,706
2057	\$126,966,088
2058	\$123,805,847
2059	\$120,535,476
2060	\$117,112,892
2061	\$113,631,901
2062	\$110,060,702
2063	\$106,438,824
2064	\$102,724,243
2065	\$98,954,858
2066	\$95,135,127
2067	\$91,270,002
2068	\$87,365,826
2069	\$83,429,658
2070	\$79,469,131
2071	\$75,492,642
2072	\$71,508,846
2073	\$67,527,481

*Amounts shown are the cash flows for current members only, based on the current benefit structure and assuming that all actuarial assumptions are met each year. To the extent that actual experience deviates from that expected, results will vary. Amounts are shown in future nominal dollars and have not been discounted to the valuation date.

