



# Cavanaugh Macdonald

CONSULTING, LLC

*The experience and dedication you deserve*

October 22, 2009

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, 2009. The purpose of this report is to provide a summary of the funded status of the System as of July 1, 2009, to recommend rates of contribution and to provide accounting information under Governmental Accounting Standards Board Statements No. 25 and 27 (GASB 25 and 27). While not verifying the data at source, the actuary performed tests for consistency and reasonability.

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. Gains and losses are reflected in the unfunded accrued liability that is being amortized by regular annual contributions as a level percentage of payroll within a 30-year period, on the assumption that payroll will increase by 3.75% annually. The annual required employer contribution rate is 13.41% of payroll for the fiscal year ending June 30, 2011. The assumptions recommended by the actuary and adopted by the Board are in the aggregate reasonably related to the experience under the System and to reasonable expectations of anticipated experience under the System. There have been no changes to assumptions, methods, or plan provisions since the previous valuation.

The valuation has been prepared in accordance with the parameters set forth in Statement Nos. 25 and 27 of the Governmental Accounting Standards Board. The annual required contribution (ARC) of the City under GASB for the fiscal year ending June 30, 2011 is 13.41% of payroll, which will amortize the unfunded accrued liability of \$16,023,982 over a 30-year period.

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.

3550 Busbee Pkwy, Suite 250, Kennesaw, GA 30144

Phone (678) 388-1700 • Fax (678) 388-1730

[www.CavMacConsulting.com](http://www.CavMacConsulting.com)

Offices in Englewood, CO • Kennesaw, GA • Hilton Head Island, SC



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.

In our opinion, the System will operate on an actuarially sound basis through the fiscal year ending June 30, 2010. Based on the results of the July 1, 2009 valuation, beginning in the fiscal year ending June 30, 2011, City contributions outlined in Section 25 of Title V of the Act will not be sufficient to fund the System in an actuarially sound manner. Assuming that the annual required employer contributions to the System are made by the City from year to year in the future at the rates recommended on the basis of the successive actuarial valuations, the continued sufficiency of the retirement fund to provide the benefits called for under the System may be safely anticipated.

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,

Edward A. Macdonald, ASA, FCA, MAAA  
President

Cathy Turcot  
Principal and Managing Director

EAM/CT:dw



**CHARLOTTE FIREFIGHTERS' RETIREMENT SYSTEM  
REPORT OF THE ACTUARY  
ON THE ANNUAL VALUATION  
PREPARED AS OF JULY 1, 2009**

**SECTION I – SUMMARY OF PRINCIPAL RESULTS**

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

Valuation Date	July 1, 2009	July 1, 2008
Active members:		
Number	991	957
Annualized compensation	\$ 56,890,253	\$ 55,219,358
Retired members and beneficiaries:		
Number	477	466
Annual allowances	\$ 18,461,651	\$ 17,656,422
Number of terminated vested members*	4	3
Assets:		
Market Value	\$ 272,103,751	\$ 342,895,604
Actuarial Value	360,002,951	358,536,167
Unfunded actuarial accrued liability	\$ 16,023,982	\$ 2,839,245
Amortization Period	30 years	7 years
Fiscal Year Ending	June 30, 2011	June 30, 2010
City annual required contribution rate (ARC):		
Normal (including expenses of 0.75%)	11.81%	11.74%
Accrued liability	<u>1.60</u>	<u>0.91</u>
Total	13.41%	12.65%
Member contribution rate	12.65%	12.65%

\*In addition, there are 16 inactive members as of July 1, 2009 that are expected to receive a refund of member contributions that have not yet been paid.

2. The major benefit and contribution provisions of the System as reflected in the valuation are summarized in Schedule G. There have been no changes since the previous valuation.



3. Schedule E of this report outlines the full set of actuarial assumptions and methods used in the valuation. There have been no changes since the previous valuation.
4. The entry age actuarial cost method was used to prepare the valuation. Schedule F contains a brief description of the actuarial cost method.
5. Comments on the valuation results as of July 1, 2009 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 991 active members with annualized compensation totaling \$56,890,253.
2. The following table shows the number of retired members and beneficiaries as of July 1, 2009 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, 2009**

GROUP	NUMBER*	ANNUAL RETIREMENT BENEFITS
Service Retirements	395	\$ 16,726,580
Disability Retirements	54	1,257,195
Beneficiaries of Deceased Members	<u>28</u>	<u>477,876</u>
Total	477	\$ 18,461,651

\*In addition, there are 4 terminated members entitled to deferred vested benefits and 16 other inactive members expected to receive a refund of member contributions that have not yet been paid.



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, 2009, the total market value of assets amounted to \$272,103,751. The actuarial value of assets used for the current valuation was \$360,002,951. Schedule C shows the development of the actuarial value of assets as of July 1, 2009. 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, 2009. 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 \$529,968,268 of which \$171,215,581 is for the prospective benefits payable on account of present retired members, beneficiaries of deceased members, and terminated members entitled to deferred benefits, and \$358,752,687 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 \$360,002,951 as of July 1, 2009. The difference of \$169,965,317 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 23.71% of payroll are required under the entry age method. Of this amount, 12.65% is paid by the members and the remaining 11.06% is required by the City.



4. Prospective normal contributions at the rate of 23.71% have a present value of \$153,941,335. When this amount is subtracted from \$169,965,317, which is the present value of the total future contributions to be made, there remains \$16,023,982 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 new member during the entire period of his anticipated covered service, would be required to meet the cost of all benefits payable on his behalf. On the basis of the valuation, the normal contribution rate was determined to be 23.71%.
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 23.71% and the member contribution rate of 12.65%, or 11.06% of payroll. An additional 0.75% is required for expenses, making the total City normal rate 11.81% of payroll.
5. Section 25 of Title V of the Charlotte Firefighters' Retirement System Act states that the City of Charlotte shall contribute an amount equal to the Member's Compensation multiplied by 12.65%. For the fiscal year ending June 30, 2011, these contributions are no longer sufficient to fund the system in an actuarially sound manner. The annual required employer contribution (ARC) rate beginning July 1, 2010 is 13.41% of payroll.
6. Based on a total employer rate of 13.41%, the annual accrued liability contribution rate is determined to be 1.60% of payroll. This rate will be sufficient to amortize the unfunded actuarial accrued liability of \$16,023,982 within approximately 30 years following the valuation date, on the assumption that the payroll will increase 3.75% each year.



7. The following table summarizes the employer contributions which were determined by the July 1, 2009 valuation and are recommended for use.

**CITY ANNUAL REQUIRED CONTRIBUTIONS (ARC)  
FOR FISCAL YEAR ENDING JUNE 30, 2011**

CONTRIBUTION	PERCENTAGE OF ACTIVE MEMBERS' COMPENSATION
Normal (including expenses of 0.75%)	11.81%
Accrued Liability	<u>1.60</u>
Total	13.41%

**SECTION VI – ACCOUNTING INFORMATION**

1. Governmental Accounting Standards Board Statements 25 and 27 set forth certain items of required supplementary information to be disclosed in the financial statements of the System and the employer. One such item is a distribution of the number of employees by type of membership, as follows:

**NUMBER OF ACTIVE AND RETIRED PARTICIPANTS  
AS OF JULY 1, 2009**

GROUP	NUMBER*
Retired participants and beneficiaries currently receiving benefits	477
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	4
Active Participants	<u>991</u>
Total	1,472

\*In addition, there are 16 inactive members expected to receive a refund of member contributions that have not yet been paid.



2. Another such item is the schedule of funding progress as shown below.

**SCHEDULE OF FUNDING PROGRESS**  
(dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / c)
7/01/2004	\$274,948	\$292,341	\$17,393	94.1%	\$44,009	39.5%
7/01/2005 <sup>1</sup>	291,244	300,345	9,101	97.0	47,165	19.3
7/01/2006	309,859	316,907	7,048	97.8	50,038	14.1
7/01/2007	336,423	334,816	(1,607)	100.5	52,463	(3.1)
7/01/2008 <sup>2</sup>	358,536	361,375	2,839	99.2	55,219	5.1
7/01/2009	360,003	376,027	16,024	95.7	56,890	28.2

All figures prior to July 1, 2005 were reported by a prior actuarial firm.

<sup>1</sup>Demographic assumptions were changed as of July 1, 2005 due to an experience review.

<sup>2</sup>Reflects 4% COLA effective January 1, 2008.

3. Following is the calculation of the annual pension cost and net pension obligation for the fiscal year ending June 30, 2009.

**Annual Pension Cost and Net Pension Obligation for Fiscal Year Ending June 30, 2009**

(a)	Employer annual required contribution	\$ 6,703,000
(b)	Interest on net pension obligation	(536,000)
(c)	Adjustment to annual required contribution	<u>(393,000)</u>
(d)	Annual pension cost (a) + (b) - (c)	\$ 6,560,000
(e)	Employer contributions made for fiscal year ending June 30, 2009	<u>7,341,000</u>
(f)	Increase (decrease) in net pension obligation (d) - (e)	\$ (781,000)
(g)	Net pension obligation beginning of fiscal year	<u>(6,911,000)</u>
(h)	Net pension obligation end of fiscal year (f) + (g)	\$ (7,692,000)





**TREND INFORMATION**  
(dollar amounts in thousands)

<u>Year Ending</u>	<u>Annual Pension Cost (APC)</u>	<u>Percentage of APC Contributed</u>	<u>Net Pension Obligation (NPO)</u>
June 30, 2007	\$6,703	98.1%	\$(6,818)
June 30, 2008	6,825	101.4	(6,911)
June 30, 2009	6,560	111.9	(7,692)

4. The annual required contribution (ARC) as a percentage of payroll, determined in accordance with the parameters of GASB 25/27, is shown below.

**EMPLOYER ANNUAL REQUIRED CONTRIBUTION (ARC)  
FOR FISCAL YEAR ENDING JUNE 30, 2011**

<b>CONTRIBUTION</b>	<b>PERCENTAGE OF ACTIVE MEMBERS' COMPENSATION</b>
Normal (including expenses)	11.81%
Accrued liability	<u>1.60</u>
Total	13.41%

5. Additional information as of July 1, 2009 follows:

Valuation date	7/01/2009
Actuarial cost method	Entry age
Amortization period	Level Percent of Pay, Open
Remaining amortization period	30 years
Asset valuation method	Five-year smoothed market value
Actuarial assumptions:	
Investment rate of return (includes inflation)	7.75%
Projected salary increases (includes inflation)	4.75 - 7.75%
Inflation	3.75%
Cost-of-living adjustments	None



**SECTION VII – EXPERIENCE**

1. As an aid to the Board in adopting service and mortality tables, the actuary prepared an experience investigation for the five-year period ending June 30, 2004. The valuation was based on the assumptions adopted by the Board at the October 27, 2004 Board meeting as a result of that investigation.
2. The following table shows the estimated change in the unfunded accrued liability from various factors that resulted in an increase of \$13,184,737 in the unfunded accrued liability from \$2,839,245 to \$16,023,982 during the fiscal year ending June 30, 2009.

**ANALYSIS OF FINANCIAL EXPERIENCE – CHANGE IN UNFUNDED ACCRUED LIABILITY**  
(dollar amounts in thousands)

<b>ITEM</b>	<b>AMOUNT OF INCREASE/(DECREASE)</b>
Interest (7.75%) added to previous unfunded accrued liability	\$ 220
Accrued Liability Contribution	(958)
Recognized Asset (Gain)/Loss	22,471
Liability (Gain)/Loss	1,319
Salary Increases	(9,867)
Amendments (COLA)	0
Assumption and Method Changes	<u>0</u>
Increase/(Decrease) in Unfunded Accrued Liability	\$13,185



**SCHEDULE A**

**DEVELOPMENT OF THE UNFUNDED ACTUARIAL ACCRUED LIABILITY  
AS OF JULY 1, 2009**

(1)	Present value of prospective benefits:	
(a)	Present active members	\$ 358,752,687
(b)	Present retired members, beneficiaries and former members entitled to deferred vested benefits	<u>171,215,581</u>
(c)	Total	\$ 529,968,268
(2)	Present value of future System and member normal contributions before expenses	<u>153,941,335</u>
(3)	Actuarial accrued liabilities 1(c) – (2)	\$ 376,026,933
(4)	Actuarial value of assets	<u>360,002,951</u>
(5)	Unfunded actuarial accrued liability (3) – (4)	\$ 16,023,982



**SCHEDULE B**  
**VALUATION BALANCE SHEET**

The present and prospective assets and liabilities of the System as of July 1, 2009:

<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		\$ 171,215,581
Present value of prospective benefits payable on account of present active members		<u>358,752,687</u>
Total liabilities		<u>\$ 529,968,268</u>
<u>PRESENT AND PROSPECTIVE ASSETS</u>		
Actuarial value of assets		\$ 360,002,951
Present value of future contributions		
City and member normal contributions	\$ 153,941,335	
Unfunded accrued liability contributions		<u>16,023,982</u>
Total prospective contributions		\$ 169,965,317
Total assets		<u>\$ 529,968,268</u>



**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)
7/1/09	\$69.0	\$171.2	\$135.8	\$360.0	100%	100%	88.2%
7/1/08 <sup>1</sup>	62.6	164.6	134.1	358.5	100	100	97.9
7/1/07	60.1	151.4	123.2	336.4	100	100	100.0
7/1/06	52.8	149.7	114.4	309.9	100	100	93.9
7/1/05 <sup>2</sup>	49.8	145.5	105.0	291.2	100	100	91.3
7/1/04	46.7	139.5	106.1	274.9	100	100	83.6
7/1/03	42.5	137.3	98.0	261.0	100	100	82.9
7/1/02	39.7	130.5	95.5	254.0	100	100	87.7
7/1/01	37.7	121.1	96.0	246.6	100	100	91.5
7/1/00 <sup>3</sup>	34.0	123.8	82.0	235.9	100	100	95.2

All figures prior to July 1, 2005 were reported by a prior actuarial firm.

<sup>1</sup>Reflects 4% COLA effective January 1, 2008.

<sup>2</sup>Demographic assumptions were changed as of July 1, 2005 due to an experience review.

<sup>3</sup>Economic and demographic assumptions were changed as of July 1, 2000 due to an experience review. In addition, the asset valuation method was changed.



**SCHEDULE C**

**DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS**

(1)	Actuarial Value of Assets as of July 1, 2008	\$ 358,536,167
(2)	Market Value of Assets as of July 1, 2009	272,103,751
(3)	Market Value of Assets as of July 1, 2008	342,895,604
(4)	Net Cash Flow During Plan Year	
(a)	Contributions	15,052,000
(b)	Benefit Payments	<u>18,757,000</u>
(c)	Net Cash Flow (a) – (b)	(3,705,000)
(5)	Investment Return	
(2) – (3) – (4c)		(67,086,853)
(6)	Expected Investment Return	
[(3) x 7.75%] + [(4)c x 7.75% x 0.5]		26,430,841
(7)	Investment Gain/(Loss) for Phased-In Recognition (5) – (6)	(93,517,694)
(8)	Recognized Amounts for Plan Year	
(a)	Current Year 0.20 x (7)	(18,703,539)
(b)	First Prior Year	(9,184,882)
(c)	Second Prior Year	6,534,564
(d)	Third Prior Year	1,400,473
(e)	Fourth Prior Year	<u>(1,305,673)</u>
(f)	Total Recognized Investment Gain/(Loss)	(21,259,057)
(9)	Actuarial Value of Assets as of July 1, 2009	
(1) + (4)(c) + (6) + (8)(f)		\$ 360,002,951
(10)	Rate of Return on Actuarial Value	1.45%



**SCHEDULE D**

**ASSET INFORMATION**

**Reconciliation of Market value of Assets**  
(In Thousands)

	<u>Years Ended June 30</u>	
	<u>2009</u>	<u>2008</u>
Market Value of Assets - Beginning of Year	<u>342,896</u>	<u>364,151</u>
ADDITIONS:		
Contributions:		
Member	\$ 7,711	\$ 7,327
Employer	7,341	6,918
Total Contributions	<u>15,052</u>	<u>14,245</u>
Investment Income (loss):		
Net Appreciation (depreciation) in fair value of investments	(69,654)	(20,516)
Interest	1,732	1,860
Dividends	2,584	2,943
	<u>(65,338)</u>	<u>(15,713)</u>
Less Investment Expense	1,732	2,105
Net Investment Income (loss)	<u>(67,070)</u>	<u>(17,818)</u>
Total Additions (loss)	<u>(52,018)</u>	<u>(3,573)</u>
DEDUCTIONS:		
Benefits	18,146	17,081
Refunds	138	112
Administration	473	472
Depreciation	17	17
Total Deductions	<u>18,774</u>	<u>17,682</u>
Change in Net Assets	<u>(70,792)</u>	<u>(21,255)</u>
Market Value of Assets - End of Year	<u>\$ 272,104</u>	<u>\$ 342,896</u>

**Allocation of Market Value of Assets**

	June 30, 2009	June 30, 2008	June 30, 2007
Cash	\$ (995,230)	\$ 155,976	\$ (36,571)
Cash Equivalents	5,072,587	6,654,444	4,294,349
Fixed Income Investments	83,781,080	66,698,812	61,956,329
Equity Investments	183,953,108	269,084,653	297,406,180
Other	251,484	268,891	286,298
Accrued Income	377,499	384,411	393,084
Accrued Contributions	407,991	323,258	299,479
Accrued Liabilities/Expenses	(744,767)	(674,840)	(448,297)
Total Market Value	<u>\$ 272,103,751</u>	<u>\$ 342,895,604</u>	<u>\$ 364,150,850</u>



**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 October 27, 2004 unless otherwise indicated.

INVESTMENT RATE OF RETURN: 7.75% per year, compounded annually. (Adopted 10-26-2000)

SALARY INCREASES: Representative values of the assumed annual rates of salary increases (adopted 10-26-2000) are as follows:

<u>Age</u>	<u>Rate*</u>
20	7.75%
25	7.75
30	7.75
35	7.25
40	6.25
45	4.75
50	4.75
55	4.75

\*Includes inflation of 3.75%

SEPARATIONS FROM ACTIVE SERVICE: For death rates, the UP 1994 Male Table was used. Representative values of the assumed annual rates of separation from active service are as follows:

<u>Age</u>	<u>Annual Rate of</u>		
	<u>Withdrawal</u>	<u>Disability*</u>	<u>Death</u>
20	1.8%	0.05%	0.06%
25	1.8	0.05	0.07
30	1.0	0.09	0.09
35	1.0	0.23	0.09
40	1.0	0.41	0.12
45	0.6	0.61	0.17
50		1.00	0.28
55		1.00	0.48

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





Annual Rate of Retirement\*

Age	Age 60 with 5 Years Service or 25 Years Service	Age 50 with 25 Years Service*	30 Years Service
<50	12%	N/A	30%
50 – 52	12	30%	30
53 – 57	12	40	30
58 – 64	12	20	30
65	100	100	100

\*An additional 30% are assumed to retire when first eligible.

DEATHS AFTER RETIREMENT: The UP 1994 Male Table is used for the period after retirement and for dependent beneficiaries. The same table is used for the period after disability set forward five years.

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. (Adopted 10-26-2000)

VALUATION METHOD: Entry age actuarial cost method (Adopted 7-1-98). See Schedule F for a brief description of this method.

UNUSED SICK AND VACATION DAYS: 12% load on Final Average Salary at Retirement for cashed-in vacation and sick days. In addition, 1/2 year added to credited service at retirement.



**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 7.75%), 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  
AS INTERPRETED FOR VALUATION PURPOSES**

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.



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 contribution 12.65%.



**SCHEDULE H**

**TABLE 1**

**DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND SERVICE GROUPS  
AS OF JULY 1, 2009**

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	22	27	1							50
Average Pay	\$35,563	\$39,041	\$51,364							\$37,757
25 to 29	18	57	42							117
Average Pay	\$36,238	\$43,059	\$52,567							\$45,423
30 to 34	9	42	93	38	1					183
Average Pay	\$36,359	\$42,979	\$54,742	\$59,811	\$73,996					\$52,296
35 to 39	5	21	51	72	29	2				180
Average Pay	\$36,539	\$43,487	\$54,014	\$63,218	\$65,704	\$81,661				\$58,172
40 to 44		5	14	55	51	54				179
Average Pay		\$41,993	\$55,347	\$58,876	\$66,260	\$67,351				\$62,789
45 to 49	1		7	15	38	83	21			165
Average Pay	\$38,329		\$52,483	\$55,446	\$63,492	\$65,076	\$69,249			\$63,671
50 to 54			2	4	17	47	22	3		95
Average Pay			\$51,425	\$56,783	\$64,183	\$65,469	\$79,320	\$66,452		\$67,816
55 to 59			1		1	6	4	7		19
Average Pay			\$46,589		\$73,996	\$59,785	\$61,004	\$78,729		\$67,074
60 to 64					2	1				3
Average Pay					\$55,412	\$73,996				\$61,607
65 to 69										0
Average Pay										\$0
70 & up										0
Average Pay										\$0
<b>Total Count</b>	55	152	211	184	139	193	47	10	0	991
<b>Average Pay</b>	\$36,053	\$42,347	\$54,012	\$60,443	\$65,089	\$65,862	\$73,261	\$75,046	\$0	\$57,407

Average Age: 39.1  
Average Service: 12.9



**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	13	\$ 296,395	\$ 22,800
51 - 55	67	3,023,020	45,120
56 - 60	106	4,606,602	43,459
61 - 65	106	3,664,737	34,573
66 - 70	63	2,791,973	44,317
71 - 75	64	2,416,055	37,751
76 - 80	31	985,917	31,804
Over 80	<u>27</u>	<u>676,952</u>	<u>25,072</u>
Total	477	\$ 18,461,651	\$ 38,704

**TABLE 3**  
**SCHEDULE OF ACTIVE MEMBER VALUATION DATA**

<u>Valuation Date</u>	<u>Number Prior Year</u>	<u>Exits</u>	<u>New Entrants &amp; Rehires</u>	<u>Number Current Year</u>	<u>Annual Payroll</u>	<u>Annual Average Pay</u>	<u>% Increase in Average Pay</u>
7/1/09	957	22	56	991	\$56,890,253	\$57,407	-0.5%
7/1/08	948	27	36	957	55,219,358	57,700	4.3
7/1/07	953	25	20	948	52,462,717	55,340	5.4
7/1/06	935	25	43	953	50,037,809	52,506	4.1
7/1/05	897	22	60	935	47,165,418	50,444	2.8
7/1/04	876	17	38	897	44,009,056	49,062	3.9
7/1/03	856	29	49	876	41,354,976	47,209	1.4
7/1/02	853	31	34	856	39,848,691	46,552	4.3
7/1/01	780	15	88	853	38,079,024	44,641	5.3
7/1/00	783	35	32	780	33,079,899	42,410	2.3

Results prior to the 7/1/05 valuation were reported by a prior actuarial firm.



TABLE 4

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

<u>Year Ended</u>	<u>Rolls – Beginning of Year</u>		<u>Added to Rolls</u>		<u>Removed from Rolls</u>		<u>Rolls – End of Year</u>		<u>% Increase in Annual Allowances</u>	<u>Average Annual Allowances</u>
	<u>No.</u>	<u>Annual Allowances</u>	<u>No.</u>	<u>Annual Allowances</u>	<u>No.</u>	<u>Annual Allowances</u>	<u>No.</u>	<u>Annual Allowances</u>		
7/1/09	466	\$17,656,422***	23	\$1,176,339	12	\$371,110	477	\$18,461,651	4.6%	\$38,704
7/1/08	456	16,204,943	22	1,813,530***	12	362,051	466	17,656,422***	9.0	37,889
7/1/07	452	15,910,529	15	652,817	11	358,403	456	16,204,943	1.9	35,537
7/1/06	443	15,438,131	18	707,890	9	235,492	452	15,910,529	3.1	35,200
7/1/05	435	14,887,728	19	854,621	11	304,218	443	15,438,131	3.7	34,849
7/1/04	427	14,512,752	16	629,172	8	254,196	435	14,887,728	2.6	34,225
7/1/03	411	13,754,121	23	970,560	7	211,929	427	14,512,752	5.5	33,988
7/1/02	389	12,824,893	29	1,202,320	7	273,092	411	13,754,121	7.2	33,466
7/1/01	394	13,000,973**	11	287,966	16	464,046	389	12,824,893	(1.4)	32,969
7/1/00	377	9,946,747*	28	3,260,650**	11	206,424	394	13,000,973**	30.7	32,997

Results prior to the 7/1/05 valuation were reported by the prior actuarial firm.

\* Includes 8.33% benefit adjustment effective July 1, 1998 for members retired prior to July 1, 1989.

\*\* Includes ad hoc benefit adjustments granted since the previous valuation.

\*\*\* Includes 4.00% benefit adjustment effective January 1, 2008.