



**Cavanaugh Macdonald**  
CONSULTING, LLC

*The experience and dedication you deserve*



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

**Prepared as of July 1, 2018**





# Cavanaugh Macdonald

CONSULTING, LLC

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October 18, 2018

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, 2018. The purpose of this report is to provide a summary of the funded status of the System as of July 1, 2018 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 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 within a 30-year period, on the assumption that payroll will increase by 3.00% annually. The actuarially determined employer contribution rate is 17.81% of payroll for the fiscal year ending June 30, 2020.

There have been no changes to assumptions, methods, or plan provisions since the previous valuation.

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.



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, FCA, MAAA  
Principal and Consulting Actuary

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

Cathy Turcot  
Principal and Managing Director



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**CHARLOTTE FIREFIGHTERS' RETIREMENT SYSTEM  
REPORT OF THE ACTUARY  
ON THE ANNUAL VALUATION  
PREPARED AS OF JULY 1, 2018**

**SECTION I – SUMMARY OF PRINCIPAL RESULTS**

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

<b>Valuation Date</b>	<b>July 1, 2018</b>	<b>July 1, 2017</b>
Active members:		
Number	1,058	1,037
Annualized compensation	\$71,781,041	\$70,610,001
Retired members and beneficiaries:		
Number	697	684
Annual allowances	\$33,569,732	\$32,289,898
Number of terminated vested members*	16	14
Assets:		
Market Value	\$551,892,495	\$519,764,363
Actuarial Value	548,684,512	520,579,663
Unfunded actuarial accrued liability	\$77,833,564	\$83,589,774
Funded Ratio	87.6%	86.2%
Amortization Period (ADEC)	30 years	30 years
Amortization Period (Statutory)	N/A	N/A
<b>Fiscal Year Ending</b>	<b>June 30, 2020</b>	<b>June 30, 2019</b>
City actuarially determined employer contribution rate (ADEC):		
Normal (including expenses of 0.75%)	11.01%	10.99%
Accrued liability	<u>6.80</u>	<u>7.16</u>
Total	17.81%	18.15%
Employer Statutory contribution rate	12.65%	12.65%
Member contribution rate	12.65%	12.65%

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.



- 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.
- The entry age actuarial cost method was used to prepare the valuation. Schedule F contains a brief description of the actuarial cost method.
- Comments on the valuation results as of July 1, 2018 are given in Section IV and further discussion of the contributions is set out in Section V.

### **SECTION II – MEMBERSHIP DATA**

- Data regarding the membership of the System for use as a basis of the valuation were furnished by the City. The valuation included 1,058 active members with annualized compensation totaling \$71,781,041.
- The following table shows the number of retired members and beneficiaries as of July 1, 2018 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, 2018**

<b>GROUP</b>	<b>NUMBER*</b>	<b>ANNUAL RETIREMENT BENEFITS</b>
Service Retirements	614	\$31,655,793
Disability Retirements	41	1,062,538
Beneficiaries of Deceased Members	<u>42</u>	<u>851,401</u>
Total	697	<u>\$33,569,732</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, 2018, the total market value of assets amounted to \$551,892,495. The actuarial value of assets used for the current valuation was \$548,684,512. Schedule C shows the development of the actuarial value of assets as of July 1, 2018. 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, 2018. 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 \$798,253,647 of which \$340,115,495 is for the prospective benefits payable on account of present retired members, beneficiaries of deceased members, and terminated members entitled to deferred benefits, and \$458,138,152 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 \$548,684,512 as of July 1, 2018. The difference of \$249,569,135 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 22.91% of payroll are required under the entry age method. Of this amount, 12.65% is paid by the members and the remaining 10.26% is required by the City.



4. Prospective normal contributions at the rate of 22.91% have a present value of \$171,735,571. When this amount is subtracted from \$249,569,135, which is the present value of the total future contributions to be made, there remains \$77,833,564 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. On the basis of the valuation, the normal contribution rate was determined to be 22.91%.
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 22.91% and the member contribution rate of 12.65%, or 10.26% of payroll. An additional 0.75% is required for expenses, making the total City normal rate 11.01% 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%. These contributions are not sufficient to fund the system in an actuarially sound manner. The actuarially determined employer contribution (ADEC) rate beginning July 1, 2019 is 17.81% of payroll.
6. Consistent with the Board's funding policy, based on a total employer rate of 17.81%, the annual accrued liability contribution rate is determined to be 6.80% of payroll. This rate will be sufficient to amortize the unfunded actuarial accrued liability of \$77,833,564 within 30 years following the valuation date, on the assumption that the payroll will increase 3.00% each year. For the ten year period ended July 1, 2018, payroll has grown by 2.66%.



7. The following table summarizes the employer contributions which were determined by the July 1, 2018 valuation and are recommended for use.

**CITY ACTUARIALLY DETERMINED EMPLOYER CONTRIBUTIONS (ADEC)  
FOR FISCAL YEAR ENDING JUNE 30, 2020**

<b>CONTRIBUTION</b>	<b>PERCENTAGE OF ACTIVE MEMBERS' COMPENSATION</b>
Normal (including expenses of 0.75%)	11.01%
Accrued Liability	<u>6.80</u>
Total	<u>17.81%</u>



**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.

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

**NUMBER OF ACTIVE AND RETIRED PARTICIPANTS  
AS OF JULY 1, 2018**

GROUP	NUMBER*
Retired participants and beneficiaries currently receiving benefits	697
Terminated participants and beneficiaries entitled to benefits but not yet receiving benefits	16
Active Participants	<u>1,058</u>
Total	1,771

- 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 (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)
7/01/2013	\$381,254	\$451,579	\$70,325	84.4%	\$62,523	112.5%
7/01/2014	425,166	478,213	53,048	88.9	64,190	82.6
7/01/2015	467,545	504,486	36,941	92.7	65,821	56.1
7/01/2016 <sup>1</sup>	490,864	564,546	73,682	86.9	66,797	110.3
7/01/2017	520,579	604,169	83,590	86.2	70,610	118.4
7/01/2018	548,685	626,518	77,834	87.6	71,781	108.4

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



3. Additional information as of July 1, 2018 follows:

Valuation date	7/01/2018
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)	7.50%
Projected salary increases (includes inflation)	3.75 – 9.00%
Inflation	3.00%
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, 2014. The valuation was based on the assumptions adopted by the Board at the January 21, 2016 Board meeting as a result of that investigation.
2. The following tables show the estimated change in the unfunded accrued liability from various factors that resulted in a decrease of \$5,756,210 in the unfunded accrued liability from \$83,589,774 to \$77,833,564 during the fiscal year ending June 30, 2018.

### **ANALYSIS OF FINANCIAL EXPERIENCE – RECONCILIATION OF UNFUNDED ACCRUED LIABILITY**

1. Unfunded Accrued Liability June 30, 2017	\$83,589,774
2. Normal Cost (including Expenses)	15,818,267
3. Actual Contributions	19,242,000
4. Interest [ (1 + 2) x 7.50% - (3 x 7.50% x 0.5) ]	<u>6,734,028</u>
5. Expected Unfunded Accrued Liability June 30, 2018 [ 1 + 2 - 3 + 4 ]	\$86,900,069
6. Actual Unfunded Accrued Liability June 30, 2018	\$77,833,564
7. (Gain)/Loss [ 6 - 5 ]	(\$9,066,505)

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

Recognized Asset (Gain)/Loss	(\$4,442,312)
Liability (Gain)/Loss	1,132,152
Salary Increases	(5,756,345)
Amendments (COLA)	0
Assumption and Method Changes	<u>0</u>
Total (Gain)/Loss	(\$9,066,505)



**SCHEDULE A**

**DEVELOPMENT OF THE UNFUNDED ACTUARIAL ACCRUED LIABILITY  
AS OF JULY 1, 2018**

(1)	Present value of prospective benefits:	
(a)	Present active members	\$458,138,152
(b)	Present retired members, beneficiaries and former members entitled to deferred vested benefits	<u>340,115,495</u>
(c)	Subtotal	798,253,647
(2)	Present value of future System and member normal contributions before expenses	<u>171,735,571</u>
(3)	Actuarial accrued liabilities 1(c) – (2)	626,518,076
(4)	Actuarial value of assets	<u>548,684,512</u>
(5)	Unfunded actuarial accrued liability (3) – (4)	\$ 77,833,564



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

The present and prospective assets and liabilities of the System as of July 1, 2018:

<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		\$340,115,495
Present value of prospective benefits payable on account of present active members		<u>458,138,152</u>
Total liabilities		<u>\$798,253,647</u>
<u>PRESENT AND PROSPECTIVE ASSETS</u>		
Actuarial value of assets		\$548,684,512
Present value of future contributions		
City and member normal contributions	\$171,735,571	
Unfunded accrued liability contributions	<u>77,833,564</u>	
Total prospective contributions		<u>249,569,135</u>
Total assets		<u>\$798,253,647</u>



**SOLVENCY TEST**  
(dollar amounts in millions)

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Assets		
	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Members (Employer Financed Portion)	Reported Assets	(1)	(2)	(3)
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 <sup>2</sup>	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
7/1/13	87.7	216.9	147.0	381.3	100	100	52.2
7/1/12	84.8	202.8	144.3	367.2	100	100	55.2
7/1/11	77.9	191.7	139.3	366.1	100	100	69.3
7/1/10 <sup>1</sup>	73.4	185.9	136.0	357.7	100	100	72.4
7/1/09	69.0	171.2	135.8	360.0	100	100	88.2

<sup>1</sup>Economic and demographic assumptions were changed as of July 1, 2010 due to an experience review.

<sup>2</sup>Economic and demographic assumptions were changed as of July 1, 2016 due to an experience review.



**SCHEDULE C**

**DEVELOPMENT OF THE ACTUARIAL VALUE OF ASSETS**

(1)	Actuarial Value of Assets as of July 1, 2017	\$520,579,663
(2)	Market Value of Assets as of July 1, 2018	551,892,495
(3)	Market Value of Assets as of July 1, 2017	519,764,363
(4)	Net Cash Flow During Plan Year	
	(a) Contributions	19,242,000
	(b) Benefit Payments and Administrative Expenses	<u>34,067,000</u>
	(c) Net Cash Flow (a) – (b)	(14,825,000)
(5)	Investment Return (2) – (3) – (4c)	46,953,132
(6)	Expected Investment Return [(3) x 7.50%] + [(4)c x 7.50% x 0.5]	38,426,390
(7)	Investment Gain/(Loss) for Phased-In Recognition (5) – (6)	8,526,742
(8)	Recognized Amounts for Plan Year	
	(a) Current Year 0.20 x (7)	1,705,348
	(b) First Prior Year	4,504,501
	(c) Second Prior Year	(6,966,873)
	(d) Third Prior Year	(3,193,174)
	(e) Fourth Prior Year	<u>8,453,657</u>
	(f) Total Recognized Investment Gain/(Loss)	4,503,459
(9)	Actuarial Value of Assets as of July 1, 2018 (1) + (4)(c) + (6) + (8)(f)	<u>\$548,684,512</u>
(10)	Rate of Return on Actuarial Value	8.37%
(11)	Rate of Return on Market Value	9.16%



**SCHEDULE D**

**ASSET INFORMATION**

Reconciliation of Market value of Assets  
(In Thousands)

	<u>Years Ended June 30</u>	
	<u>2018</u>	<u>2017</u>
Market Value of Assets - Beginning of Year	<u>\$519,764</u>	<u>\$475,120</u>
ADDITIONS:		
Contributions:		
Member	9,909	9,636
Employer	9,333	9,106
Total Contributions	<u>19,242</u>	<u>18,742</u>
Investment Income (loss):		
Net Appreciation (depreciation) in fair value of investments	43,781	54,521
Interest	2,442	2,133
Dividends	3,615	3,762
Other	3	0
Less Investment Expense	<u>49,841</u>	<u>60,416</u>
Net Investment Income (loss)	<u>2,860</u>	<u>2,735</u>
Total Additions	<u>46,981</u>	<u>57,681</u>
	<u>66,223</u>	<u>76,423</u>
DEDUCTIONS:		
Benefits	33,120	31,075
Refunds	212	70
Administration	735	621
Depreciation	28	13
Total Deductions	<u>34,095</u>	<u>31,779</u>
Change in Net Assets	32,128	44,644
Market Value of Assets - End of Year	<u><u>\$551,892</u></u>	<u><u>\$519,764</u></u>

Allocation of Market Value of Assets

	June 30, 2018	June 30, 2017	June 30, 2016
Cash	\$ 136,298	\$ 258,735	\$ 137,755
Cash Equivalents	6,438,484	4,374,447	5,377,977
Fixed Income Investments	84,689,622	75,940,080	75,809,876
Equity Investments	460,097,119	438,699,029	393,117,862
Other	266,832	145,100	158,367
Accrued Income	575,010	530,401	485,301
Accrued Contributions	358,535	342,068	594,640
Accrued Liabilities/Expenses	(669,405)	(525,497)	(561,539)
Total Market Value	<u>\$ 551,892,495</u>	<u>\$ 519,764,363</u>	<u>\$ 475,120,239</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 January 21, 2016.**

INVESTMENT RATE OF RETURN: 7.50% per year, compounded annually, including 3.00% 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 inflation of 3.00% and real rate of salary increase component of 0.75%

SEPARATIONS FROM ACTIVE SERVICE: For death rates, the RP 2000 Employee Mortality Table set back 2 years for males and projected generationally with Scale AA 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>
20	1.40%	0.04%
25	1.10	0.04
30	0.90	0.06
35	0.60	0.16
40	0.45	0.29
45	0.25	0.43
50		0.70
55		1.00

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



Annual Rate of Retirement\*

Age	Age 60 with 5 Years but with less than 25 Years of Service	25 Years of Service*	30 Years of Service
< 50		6%	40%
50		25	40
51 – 56		25	30
57 – 64	12%	20	30
65	100	100	100

\*An additional 10% are assumed to retire when first eligible at 25 years of service from age 50 to age 53, an additional 25% are assumed to retire when first eligible at 25 years of service from age 54 to age 56, and an additional 30% are assumed to retire when first eligible at 25 years of service for ages greater than 56.

DEATHS AFTER RETIREMENT: The RP-2000 Combined Mortality Table projected generationally with Scale AA is used for the period after service retirement. The RP-2000 Combined Mortality Table set forward 1 year for males and set forward 2 years for females, and projected generationally with Scale AA is used for dependent beneficiaries. The RP-2000 Disabled Retiree Mortality Table set back 6 years for males and set forward 1 year for females 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: 15% load on Final Average Salary at Retirement for cashed-in vacation and sick days. In addition, 2/3 year added to credited service at retirement.

PAYROLL GROWTH ASSUMPTION: 3.00% 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 7.50%), 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**

**TABLES OF MEMBERSHIP DATA**

**TABLE 1**

**DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND SERVICE GROUPS  
AS OF JULY 1, 2018**

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	
<b>Under 25</b>	16	23								39
Average Pay	\$24,199	\$48,282								\$38,402
<b>25 to 29</b>	14	91	31							136
Average Pay	\$30,816	\$51,425	\$61,043							\$51,496
<b>30 to 34</b>	13	63	90	43	1					210
Average Pay	\$24,341	\$53,386	\$64,185	\$71,245	\$75,400					\$59,978
<b>35 to 39</b>	7	18	33	72	46	1				177
Average Pay	\$27,360	\$55,113	\$65,173	\$71,491	\$79,620	\$63,783				\$68,971
<b>40 to 44</b>	1	6	19	42	88	39	1			196
Average Pay	\$11,182	\$51,609	\$63,201	\$73,214	\$77,865	\$81,471	\$62,227			\$74,941
<b>45 to 49</b>	1	1	3	12	44	82	35	1		179
Average Pay	\$34,731	\$53,932	\$64,113	\$68,619	\$75,466	\$80,177	\$84,378	\$88,269		\$78,441
<b>50 to 54</b>				5	13	34	23	5		80
Average Pay				\$69,614	\$71,836	\$76,617	\$88,915	\$93,597		\$79,999
<b>55 to 59</b>					6	14	8	6		34
Average Pay					\$72,096	\$71,221	\$89,508	\$92,268		\$79,392
<b>60 to 64</b>					1	2		2	1	6
Average Pay					\$63,703	\$68,431		\$94,705	\$106,867	\$82,807
<b>65 to 69</b>									1	1
Average Pay									\$151,248	\$151,248
<b>70 &amp; up</b>										0
Average Pay										\$0
<b>Total Count</b>	52	202	176	174	199	172	67	14	2	1,058
Average Pay	\$26,394	\$52,025	\$63,709	\$71,594	\$77,089	\$78,806	\$86,217	\$92,805	\$129,058	\$67,846

Average Age: 39.3  
Average Service: 13.0



**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	23	\$ 1,107,263	\$48,142
51 - 55	93	5,415,193	58,228
56 - 60	138	7,542,276	54,654
61 - 65	144	7,407,870	51,444
66 - 70	114	4,929,633	43,242
71 - 75	83	3,095,030	37,290
76 - 80	51	2,201,302	43,163
Over 80	51	1,871,165	36,690
Total	697	\$33,569,732	\$48,163

**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>
7/1/2018	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%
7/1/2013	1,028	36	34	1,026	62,523,240	60,939	2.4%
7/1/2012	1,028	32	32	1,028	61,158,264	59,492	3.5%
7/1/2011	1,031	30	27	1,028	59,086,270	57,477	0.3%
7/1/2010	991	25	65	1,031	59,079,990	57,304	-0.2%
7/1/2009	957	22	56	991	56,890,253	57,407	-0.5%
7/1/2008	948	27	36	957	55,219,358	57,700	4.3%



**TABLE 4**

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

<b>Year Ended</b>	<b>Rolls – Beginning of Year</b>		<b>Added to Rolls</b>		<b>Removed from</b>		<b>Rolls – End of</b>		<b>% Increase in Annual Allowances</b>	<b>Average Annual Allowances</b>
	<b>No.</b>	<b>Annual Allowances</b>	<b>No.</b>	<b>Annual Allowances</b>	<b>No.</b>	<b>Annual Allowances</b>	<b>No.</b>	<b>Annual Allowances</b>		
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
7/1/2013	522	21,528,876	33	1,745,808	9	259,452	546	23,015,232	6.9%	42,152
7/1/2012	505	20,386,139	28	1,478,178	11	335,441	522	21,528,876	5.6%	41,243
7/1/2011	492	19,428,912	22	1,180,748	9	223,521	505	20,386,139	4.9%	40,369
7/1/2010	477	18,461,651	22	1,136,772	7	169,511	492	19,428,912	5.2%	39,490
7/1/2009	466	17,656,422 *	23	1,176,339	12	371,110	477	18,461,651	4.6%	38,704
7/1/2008	456	16,204,943	22	1,813,530 *	12	362,051	466	17,656,422 *	9.0%	37,889

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