



Cavanaugh Macdonald
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**Report on the Actuarial Valuation of the
City of Chattanooga General Pension Plan**

Prepared as of January 1, 2014





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CONSULTING, LLC

The experience and dedication you deserve

May 15, 2014

General Pension Board of Trustees
City of Chattanooga
101 East 11th Street
Suite 201, City Hall
Chattanooga, TN 37402

Ladies and Gentlemen:

We are pleased to submit the results of the annual pension actuarial valuation of the City of Chattanooga General Pension Plan, prepared as of January 1, 2014 in accordance with the provisions of Subsection (2) of Section 3.39 of the Chattanooga City Charter. The purpose of the report is to provide a summary of the funded status of the Plan as of January 1, 2014, to recommend rates of contribution and to provide accounting information under Governmental Accounting Standards Board Statements No. 25 and 27 (GASB 25 and 27).

On the basis of the valuation, it is recommended that the City contributions be set at a rate of 13.92% of compensation for the fiscal year ending June 30, 2015, to support the benefits of the Plan as in effect as of the valuation. In preparing the valuation, the actuary relied on data provided by the Plan. While not verifying data at the source, the actuary performed tests for consistency and reasonableness.

Since the previous valuation various assumptions and methods have been revised to reflect the results of the experience investigation for the four year period ending December 31, 2012. These revised assumptions were adopted by the Board on December 19, 2013.

The Plan is funded on an actuarial reserve basis. The actuarial assumptions recommended by the previous actuary and adopted by the Board are reasonably related to the experience under the Plan and to reasonable expectations of anticipated experience under the Plan. The assumptions and methods used for funding purposes meet the parameters set for the disclosures presented in the financial section by Government Accounting Standards Board (GASB) Statement Nos. 25 and 27. The valuation method used in the most recent valuation is the entry age normal cost method. The normal contribution rate to cover current cost has been determined as a level percent of payroll. Gains and losses are reflected in the unfunded accrued liability which is being amortized by regular annual contributions within a 30-year period beginning January 1, 2013.

In our opinion the Plan is operating on an actuarially sound basis and the sufficiency of the retirement funds to provide the benefit called for by the Plan may be safely anticipated.

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 Pension Plans, 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 Pension Plan and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the Plan.

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May 15, 2014
General Pension Board of Trustees
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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.

Sincerely yours,

A handwritten signature in blue ink that reads "Edward J. Koebel".

Edward J. Koebel, EA, FCA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink that reads "Alisa A. Bennett".

Alisa A. Bennett, FSA, EA, FCA, MAAA
Principal and Consulting Actuary

EJK/AAB:jj



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**REPORT ON THE ACTUARIAL VALUATION OF
THE CITY OF CHATTANOOGA
GENERAL PENSION PLAN
PREPARED AS OF JANUARY 1, 2014**

SECTION I – SUMMARY OF PRINCIPAL RESULTS

1. For convenience of reference, the principal results of the valuation and a comparison with the results of the previous valuation are summarized below:

VALUATION DATE	JANUARY 1, 2014	JANUARY 1, 2013
Number of active participants	1,381	1,393
Annual compensation	\$ 55,815,216	\$ 56,270,053
Number of retired participants and beneficiaries	999	934
Annual benefits	\$ 15,744,312	\$ 14,066,808
Number of former participants entitled to deferred vested benefits	101	93
Annual deferred vested benefits	\$ 760,147	\$ 712,839
Assets:		
Actuarial value	\$ 262,356,948	\$ 253,442,165
Market value	265,302,777	233,032,513
Unfunded accrued liability	\$ 33,926,860	\$ 34,311,493
Amortization Period	29 years	30 years
Funded Ratio	88.5%	88.1%
CONTRIBUTION RATES FOR FISCAL YEAR ENDING	JUNE 30, 2015	JUNE 30, 2014
ARC as a % of payroll:		
Normal*	8.91%	8.62%
Unfunded accrued liability	<u>5.01</u>	<u>5.10</u>
Total	13.92%	13.72%
Annual required contribution (ARC) of City:		
Normal*	\$ 4,974,254	\$ 4,850,227
Unfunded accrued liability	<u>2,797,666</u>	<u>2,867,173</u>
Total	\$ 7,771,920	\$ 7,717,400

* Includes administrative expenses as of January 1, 2014.



2. Comments on the valuation results as of January 1, 2014 are given in Section IV and further discussion of the contribution levels is set out in Section V. In addition, comments on the experience and actuarial gains and losses during the year are provided in Section VII.
3. Schedule C shows the development of the actuarial value of assets. The Entry Age actuarial cost method was used to prepare the valuation. Schedule F contains a brief description of the actuarial cost method.
4. Schedule E of this report outlines the full set of actuarial assumptions and methods employed. Since the previous valuation various assumptions and methods have been revised to reflect the results of the experience investigation for the four year period ending December 31, 2012. These revised assumptions as summarized in the following table were adopted by the Board on December 19, 2013.

Summary of Recommended Assumptions	
Economic Assumptions	
Price Inflation	No change.
Real Rate of Investment Return	Changed from 4.75% to 4.50%.
Total Rate of Investment Return	Changed from 7.75% to 7.50%.
Demographic Assumptions	
Withdrawal	Changed assumed rates.
Retirement	Changed assumed rates.
Mortality	Changed assumed rates.
Disability	Changed assumed rates.
Merit/Promotion Scale	Lowered salary scale by 0.50% at all years of service.
Other Assumptions and Methods and Administrative Changes	
Asset Smoothing	No change in method.
Administrative Expenses	Added 0.35% to normal rate for administrative expenses.
Amortization Method	Changed from an open amortization to a closed amortization basis.
All others	No change to other actuarial methods.

5. Schedule G of this report outlines the main Plan provisions employed. There have been no changes since the previous valuation.



SECTION II – PARTICIPANT DATA

1. Data regarding the participants of the Plan for use as a basis of the valuation were furnished by the Plan. The valuation included 1,381 active participants with annualized compensation totaling \$55,815,216.
2. The following table shows the number of retired participants and beneficiaries in receipt of a benefit as of January 1, 2014 together with the amount of their annual retirement allowances payable under the Plan as of that date.

**THE NUMBER AND ANNUAL RETIREMENT BENEFITS OF
RETIRED PARTICIPANTS AND BENEFICIARIES
AS OF JANUARY 1, 2014**

GROUP	NUMBER	ANNUAL RETIREMENT BENEFITS
Service Retirements	784	\$ 13,213,064
Disability Retirements	64	637,878
Beneficiaries of Deceased Participants	<u>151</u>	<u>1,893,370</u>
Total	999	\$ 15,744,312

In addition, there are 101 former participants entitled to deferred vested retirement benefits totaling \$760,147.

3. Table 1 in Schedule H gives a reconciliation of participating members for the past plan year; Table 2 shows the distribution by age and service groups of the number and average pay of active participants included in the valuation. Tables 3, 4, 5 and 6 give the number and annual benefits of retired participants and beneficiaries included in the valuation, distributed by age.



SECTION III – ASSETS

As of January 1, 2014, the market value of assets amounted to \$265,302,777, as provided by First Tennessee Bank. The actuarial value of assets used for valuation purposes was \$262,356,948. Schedule C shows the development of the actuarial value of assets as of January 1, 2014. Schedule D shows a reconciliation of the market value of assets from January 1, 2013 to January 1, 2014.

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 Plan as of January 1, 2014. The valuation was prepared in accordance with the actuarial assumption set forth in Schedule E and the actuarial cost method which is described in Schedule F.
2. The valuation balance sheet shows that the Plan has total prospective liabilities of \$339,280,943. Of this amount, \$175,964,450 is for the prospective benefits payable on account of present retired participants, beneficiaries of deceased participants and former participants entitled to deferred vested benefits or a refund of contributions, and \$163,316,493 is for the prospective benefits payable on account of present active participants. Against these liabilities, the Plan has total present assets of \$262,356,948 as of January 1, 2014. The difference of \$76,923,995 between the total liabilities and the total present assets represents the present value of future contributions.
3. The contributions to the Plan consist of normal contributions and accrued liability contributions. The valuation indicates that normal contributions at the rate of 10.56% of payroll are required under the entry age cost method. Of this amount, 2.00% will be paid by the participants and the remaining 8.56% is payable by the City. An additional contribution of 0.35% of payroll is required for administrative expenses. The total normal contribution rate including administrative expenses is, therefore, 8.91% of payroll.
4. Prospective normal contributions at the rate of 10.56% have a present value of \$42,997,135. When this amount is subtracted from \$76,923,995, which is the present value of total future contributions, there remains \$33,926,860 as the amount of unfunded accrued liability (UAL)



contributions. The UAL is expected to be fully amortized within 29 years at a rate of 5.01% of payroll. The development of the unfunded accrued liability is shown in Schedule A. The funded ratio of the Plan is the ratio of the actuarial value of assets to the actuarial accrued liability. This ratio as of January 1, 2014 is 88.5%.

5. Therefore, the total contribution rate required for the fiscal year ending June 30, 2015 is 13.92% of payroll.
6. As can be seen from Schedule I of our report, the Plan had a small overall composite actuarial loss for the year. This consisted of a large investment loss for the year and some offsetting gains due to assumption changes and salary increases less than expected. Although the Plan had a positive investment return on a market value basis for 2013 of 17.05%, the Plan still had a loss of \$3.6 million due to the continued recognition of asset gains and losses using the 10 year actuarial smoothing method. This is mainly due to the 2008 economic downturn and the loss generated from the 2011 fiscal year which saw the market value of assets return around 1%. Offsetting the investment loss were gains due to the assumption changes adopted by the Board after the most recent experience study, salary increases which were less than expected, plus gains due to withdrawals.

SECTION V – CONTRIBUTIONS PAYABLE BY CITY

It is recommended on the basis of the present valuation that the City make contributions during the fiscal year ending June 30, 2015 to the Plan according to the rates shown in the following table:

CONTRIBUTION	PERCENTAGE OF PARTICIPANTS' COMPENSATION
Normal	8.91%
Unfunded accrued liability	<u>5.01</u>
Total	13.92%



SECTION VI – ACCOUNTING INFORMATION

- 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 Plan 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 JANUARY 1, 2014**

GROUP	NUMBER
Retirees and beneficiaries currently receiving benefits	999
Terminated participants entitled to benefits but not yet receiving them	101
Active participants	<u>1,381</u>
Total	2,481

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

SCHEDULE OF FUNDING PROGRESS*

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)
1/01/2009	\$220,035,854	\$255,973,845	\$35,937,991	86.0%	\$59,645,747	60.3%
1/01/2010	237,386,130	265,993,912	28,607,782	89.2	58,140,286	49.2
1/01/2011	240,535,112	277,993,458	37,458,346	86.5	57,061,358	65.6
1/01/2012	246,465,076	289,703,203	43,238,127	85.1	57,976,515	74.6
1/01/2013	253,442,165	287,753,658	34,311,493	88.1	56,270,053	61.0
1/01/2014	262,356,948	296,283,808	33,926,860	88.5	55,815,216	60.8

* Results prior to the January 1, 2013 valuation were provided by the Plan's prior actuary.



3. Following is the calculation of the annual pension cost and net pension obligation/(asset) for the plan year ending December 31, 2013.

Annual Pension Cost and Net Pension Obligation for Plan Year Ending December 31, 2013		
(a)	Employer annual required contribution*	\$ 7,981,000
(b)	Interest on net pension obligation/(asset)	(43,131)
(c)	Adjustment to annual required contribution	<u>(48,274)</u>
(d)	Annual pension cost (a) + (b) – (c)	7,986,143
(e)	Employer contributions made for plan year ending December 31, 2013	<u>7,781,073</u>
(f)	Increase/(decrease) in net pension obligation (d) – (e)	205,070
(g)	Net pension obligation/(asset) beginning of plan year	<u>\$ (556,527)</u>
(h)	Net pension obligation/(asset) end of plan year (f) + (g)	(351,457)

* Developed from the January 1, 2012 valuation and January 1, 2013 valuation.

TREND INFORMATION

<u>Plan Year Ending</u>	<u>Annual Pension Cost (APC)</u>	<u>Percentage of APC Contributed</u>	<u>Net Pension Obligation (NPO)</u>
December 31, 2011	\$7,215,031	93%	\$(769,674)
December 30, 2012	7,813,112	97	(556,527)
December 31, 2013	7,986,143	97	(351,457)



4. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at January 1, 2014. Additional information as of the latest actuarial valuation follows.

Valuation date	January 1, 2014
Actuarial cost method	Entry Age Normal
Amortization method	Level dollar closed
Remaining amortization period	29 years
Asset valuation method	Market value, with 10 year recognition of investment gains and losses, not less than 80% or greater than 120% of market value
Actuarial assumptions:	
Investment rate of return*	7.50%
Projected salary increases*	4.00– 5.00%
Cost-of-living adjustments	3.00%
*Includes inflation at	3.00%



SECTION VII – EXPERIENCE

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain/(loss) for the January 1, 2014 valuation is shown below:

	<u>\$ Thousands</u>
(1) UAAL as of January 1, 2013	\$ 34,311.5
(2) Total normal cost from last valuation	5,797.9
(3) Total actual contributions	8,918.5
(4) Interest accrual: $(1) \times .0775 + [(2) - (3)] \times .03875$	<u>2,538.2</u>
(5) Expected UAAL before changes: $(1) + (2) - (3) + (4)$	\$ 33,729.1
(6) Change due to plan amendments	0.0
(7) Change due to actuarial assumptions or methods	<u>(5,278.5)</u>
(8) Expected UAAL after changes: $(5) + (6) + (7)$	\$ 28,450.6
(9) Actual UAAL as of January 1, 2014	\$ 33,926.9
(10) Gain/(loss): $(8) - (9)$	\$ (5,476.3)
(11) Gain/(loss) as percent of actuarial accrued liabilities at start of year (\$287,753.7)	(1.90)%

Valuation Date January 1	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2013	0.32%
2014	(1.90)%



SCHEDULE A

**DEVELOPMENT OF THE UNFUNDED ACTUARIAL ACCRUED LIABILITY
AS OF JANUARY 1, 2014**

(1)	Present Value of Future Benefits:	
	a) Present Active Participants	\$ 163,316,493
	b) Present Retired Participants, Beneficiaries and Former Participants Entitled to Deferred Vested Benefits or Refunds of Contributions	<u>175,964,450</u>
	c) Total	\$ 339,280,943
(2)	Present Value of Future City and Participant Normal Contributions	<u>42,997,135</u>
(3)	Actuarial Accrued Liabilities [1(c) – (2)]	\$ 296,283,808
(4)	Actuarial Value of Assets	<u>262,356,948</u>
(5)	Unfunded Actuarial Accrued Liabilities (UAAL) [(3) – (4)]	\$ 33,926,860
(6)	Amortization of UAAL	\$ 2,797,666
(7)	Contribution Rate as a % of Payroll	
	(a) Normal Cost	8.91%
	(b) UAAL	<u>5.01</u>
	(c) Total	13.92%



SCHEDULE B

**VALUATION BALANCE SHEET
SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF
THE GENERAL PENSION PLAN FOR EMPLOYEES OF CITY OF CHATTANOOGA
PREPARED AS OF JANUARY 1, 2014**

ASSETS	
Present Assets of the Plan	\$ 262,356,948
Present Value of Prospective Contributions:	
City and Participants Normal Contributions	\$ 42,997,135
Unfunded Accrued Liability Contributions	<u>33,926,860</u>
Total Prospective Contributions	<u>76,923,995</u>
Total Assets	<u>\$ 339,280,943</u>
LIABILITIES	
Present Value of Benefits Payable on Account of Retired Participants, Beneficiaries and Former Participants Entitled to Deferred Vested Benefits or Refunds of Contributions	\$ 175,964,450
Present Value of Prospective Benefits payable on Account of Present Active Participants	<u>163,316,493</u>
Total Liabilities	<u>\$ 339,280,943</u>



SCHEDULE C

**DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS
AS OF JANUARY 1, 2014**

(1)	Actuarial Value Beginning of Year	\$ 253,442,165
(2)	Market Value End of Year	\$ 265,302,777
(3)	Market Value Beginning of Year	\$ 233,032,513
(4)	Cash Flow	
	a. Contributions	\$ 8,918,450
	b. Benefit Payments/Refunds	(15,621,115)
	c. Administrative Expenses	<u>(176,961)</u>
	d. Net	\$ (6,879,626)
(5)	Investment Income	
	a. Market total: [(2) – (3) – (4)d]	\$ 39,149,890
	b. Assumed Rate	7.75%
	c. Amount of Immediate Recognition [(3) x (5)b] + [(4)d x (5)b * 0.5]	\$ 17,793,434
	d. Amount for Phased-in Recognition: [(5)a – (5)c]	\$ 21,356,456
(6)	Phased-In Recognition of Investment Income	
	a. Current Year Recognized [0.10 * (5)d]	\$ 2,135,646
	b. First Prior Year Recognized	990,070
	c. Second Prior Year Recognized	(1,382,017)
	d. Third Prior Year Recognized	1,112,880
	e. Fourth Prior Year Recognized	2,110,984
	f. Fifth Prior Year Recognized	(9,330,884)
	g. Sixth Prior Year Recognized	972,228
	h. Seventh Prior Year Recognized	1,261,167
	i. Eighth Prior Year Recognized	130,901
	j. Ninth Prior Year Recognized	<u>0</u>
	k. Total Recognized Investment Gain/(Loss)	\$ (1,999,025)
(7)	Preliminary Actuarial Value End of Year [(1) + (4)d + (5)c + (6)k]	\$ 262,356,948
(8)	Corridor Lower Limit (80% of Market Value End of Year)	\$ 212,242,222
(9)	Corridor Upper Limit (120% of Market Value End of Year)	\$ 318,363,332
(10)	Final Actuarial Value End of Year [(7) not less than (8) and not greater than (9)]	\$ 262,356,948
(11)	Difference Between Market & Actuarial Values [(2) – (10)]	\$ 2,945,829



SCHEDULE D

RECONCILIATION OF MARKET VALUE OF ASSETS

	January 1, 2014	January 1, 2013
Market Value of Assets as of January 1 of Previous Year	\$ 233,032,513	\$ 212,020,058
Expenditures		
- Benefit Payments and Refunds	\$ (15,621,115)	\$ (13,651,030)
- Administrative Expenses	<u>(176,961)</u>	<u>(213,560)</u>
- Total	\$ (15,798,076)	\$ (13,864,590)
Contributions		
- Employer	\$ 7,781,073	\$ 7,599,939
- Employee	1,137,377	1,143,309
- Other	<u>0</u>	<u>0</u>
- Total	\$ 8,918,450	\$ 8,743,248
Investment Income	\$ 39,149,890	\$ 26,133,797
Market Value of Assets as of January 1 of Current Year	\$ 265,302,777	\$ 233,032,513
Investment Rate of Return	17.05%	12.48%



SCHEDULE E

OUTLINE OF ACTUARIAL ASSUMPTIONS AND METHODS

INVESTMENT RATE OF RETURN: 7.50% per annum, compounded annually, net of investment expenses.

CONTRIBUTION EARNINGS RATE: 6.00% per annum, compounded annually, from the time of termination to the time of payment, if the participant had at least 5 years of Credited Service at the time of termination.

COST OF LIVING: Cost of living as measured by the Consumer Price Index (CPI) is assumed to increase at the rate of 3.00% per year.

SALARY INCREASES: Representative values of the assumed annual rates of future salary increases are as follows and include inflation at 3.00% per annum:

Annual Rate of Salary Increase	
<u>Years of Service</u>	<u>Rate</u>
0 - 5	5.00%
6 - 10	4.50
11+	4.00

SEPARATIONS FROM ACTIVE SERVICE: Mortality rates are according to the RP-2000 Combined Mortality Table set forward four years for males and set forward two years for females and using a Scale AA projection to 2025. Representative values of the assumed annual rates of death, disability, withdrawal and service retirement are as follows:

<u>Age</u>	Annual Rate of		
	<u>Death – Male</u>	<u>Death – Female</u>	<u>Disability</u>
20	0.02%	0.01%	
25	0.04	0.02	
30	0.06	0.03	0.12%
35	0.09	0.04	0.16
40	0.11	0.06	0.23
45	0.14	0.08	0.29
50	0.20	0.14	0.38
55	0.38	0.31	0.41
60	0.77	0.59	0.50
65	1.43	1.07	
69	2.08	1.60	

<u>Age</u>	Annual Rate of Withdrawal				
	<u>0 – 1 Year</u>	<u>Service 2 – 4 Years</u>	<u>5 – 9 Years</u>	<u>10 - 14 Years</u>	<u>15+ Years</u>
Less than 30	25.0%	15.0%	10.0%	4.0%	1.5%
30 - 39	17.0%	12.0%	8.0%	4.0%	1.5%
40 and Over	13.0%	8.5%	3.0%	2.5%	1.5%



Annual Rate of Service Retirement		
<u>Age</u>	<u>Standard Rate</u>	<u>Rule of 80 Rate</u>
50 - 54	0.0%	11.0%
55 – 59	4.0	11.0
60	6.0	11.0
61	12.0	28.0
62	30.0	
63 - 74	20.0	
75+	100.0	

DEATHS AFTER RETIREMENT: According to the RP-2000 Combined Mortality Table set forward four years for males and set forward two years for females and using a Scale AA projection to 2025, for service retirements and beneficiaries of retired participants. The RP-2000 Disabled Mortality Table set forward eight years for males and set forward nine years for females and using a Scale AA projection to 2025 is used for the period after disability retirement. Representative values of the assumed annual rates of death after retirement are as follows:

<u>Age</u>	Annual Rate of Death After			
	<u>Service Retirement</u>		<u>Disability Retirement</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
40	0.11%	0.06%	1.76%	0.68%
50	0.20	0.14	2.63	1.83
60	0.77	0.59	4.00	3.12
70	2.32	1.78	7.22	5.69
80	7.96	4.72	14.31	12.15
90	22.68	14.62	30.75	22.57
100	39.20	25.45	100.00	35.15

PERCENT MARRIED: 85% of all participants are assumed to be married, with husbands four years older than their wives.

ACTUARIAL COST METHOD: Entry age normal. Gains and losses are reflected in the unfunded accrued liability.

ASSET VALUATION METHOD: Actuarial value as developed in Schedule C. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected value of assets, based on the assumed valuation rate of return. The amount recognized each year is 10% of the difference between the actual market value and the expected market value. The actuarial value is not less than 80% or greater than 120% of market value.



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 participant's expected benefit payable at retirement or death is determined, based on his age, service, sex and compensation. The calculations take into account the probability of a participant's death or termination of employment prior to becoming eligible for a benefit, as well as the probability of his terminating with a service, disability or survivor's benefit. Future salary increases are also anticipated. The present value of the expected benefits payable on account of the active participants is added to the present value of the expected future payments to retired participants and beneficiaries to obtain the present value of all expected benefits payable from the Plan on account of the present group of participants and beneficiaries.
2. The contributions required to support the benefits of the Plan 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 normal" method. Using this method, a calculation is made to determine the uniform and constant percentage rate of City contribution which, if applied to the compensation of each participant during the entire period of his anticipated covered service, would be required in addition to the contributions of the participant to meet the cost of all benefits payable on his behalf.
4. The present value of future unfunded accrued liability contributions is determined by subtracting the present value of prospective normal contributions together with the current assets held, from the present value of expected benefits to be paid from the Plan.



SCHEDULE G

SUMMARY OF MAIN PROVISIONS OF THE PLAN AS INTERPRETED FOR VALUATION PURPOSES

The following summary gives the main participation, benefit and contribution provisions of the Plan as interpreted in preparing the actuarial valuation. "Average compensation" means the average of the Participant's highest paid three full calendar years of service or, if less than three years of Credited Service have been completed, the average is calculated using the number of years and months actually completed. "Credited Service" is the length of time a person participated in the Plan or any former plan prior to the date as of which Credited Service is being determined, expressed in years and completed calendar months. Appointed and elected charter officials (Mayor, City Council and City Judge) earn Credited Service for the Plan in the amount of 1.5 years for each single year they are employed by the City.

PARTICIPATION

Employees of the City of Chattanooga, including elected officials, join the Plan on the date they become a permanent employee with the following exceptions: seasonal and temporary employees; firefighters and police officers; and persons rendering a service under contract. Each employee hired after February 1, 1979 shall be a participant of the Plan as a condition of employment. Each such employee's participation shall commence with the first payroll period.

BENEFITS

Normal Retirement

Condition for Retirement

Age 62 or upon satisfying the Rule of 80.

Amount of Benefit

Calculated using one of the following formulas:

- 1) 2% of Average Compensation multiplied by the number of full years of Credited Service (up to 20 years), plus 1% of Average Compensation multiplied by each additional full year of Credited Service beyond 20 years; or



- 2) 60% of Average Compensation, less 50% of the primary Social Security amount payable at age 62 (PIA), plus 1% of Average Compensation for each full year in excess of 25, multiplied by a fraction, the numerator of which is equal to Credited Service not in excess of 25, and the denominator of which is equal to 25.

Formula 2 only applies to employees hired prior to January 1, 1985. Participants with 10 or more years of Credited Service on December 31, 1994 will receive the larger benefit from Formula 1 or Formula 2. All other participants will have their benefits calculated using Formula 1.

Early Retirement

Condition for Retirement	Age 55 with 5 years of Credited Service
Amount of Benefit	The early retirement benefit is computed in the manner set forth above for the normal retirement benefit, and payable on the Participant's normal retirement date. Subject to written approval by the Board, an immediate benefit shall be payable, the amount of which shall be the amount of the normal retirement benefit reduced by 5/24 of 1% for each full month the early retirement date precedes the Participant's 62 nd birthday.

Disability Retirement

Condition for Retirement	Any participant who becomes disabled in the line of duty regardless of the number of years of service or not in the line of duty after five years of service
Amount of Benefit	60% of earnings minus the primary Social Security disability benefit, payable to age 65. Upon attainment of age 65, the employee becomes entitled to his regular pension as defined under normal retirement above, with full credit for the years of service during which he was disabled if totally disabled in the line of duty.

Pre-Retirement Death (Refund of Contributions)

Condition for Benefit	Any participant who dies before completing 5 years of service and before attaining age 62.
Amount of Benefit	The beneficiary shall receive a refund of the deceased participant's contributions to the Plan, without interest.



Pre-Retirement Death Benefit (Monthly Benefit)

Condition for Benefit	Any participant who dies after completing 5 years of service or after attaining age 62.
Amount of Benefit	<p>Upon the death of the participant, any option he may have elected shall be payable as though he had been entitled to have such benefit commence on his date of death. If the participant has not elected any option prior to his death, a benefit shall be payable to his surviving spouse as a ten-year certain annuity.</p> <p>If death occurs in the line of duty, the participant's benefit shall be calculated using 25 years of Credited Service if the participant had less than 25 years of Credited Service at the time of his death.</p>

Termination

Condition for Benefit	Upon termination of service for reasons other than death, before meeting the eligibility requirements for any other benefit.
Amount of Benefit	The participant will receive a refund of his contributions, without interest. However, if the participant has completed at least 5 years of Credited Service, he will receive interest on his contributions at the rate of 6.00% per annum.

Optional Benefits

The normal form of payment for retirement is a straight life annuity that pays the monthly benefit to the participant until his death. The beneficiary received no payment after the participant's death under this method. However, a participant may elect to have his retirement benefit converted to a benefit of equivalent actuarial value in accordance with one of the optional forms below.

Option A – 120 Payments and Life Certain

A reduced benefit payable for life to the retired participant, with the first 120 payments (10 years) guaranteed. Any guaranteed payments due after the death of the participant are paid to the designated surviving beneficiary.



Option B – Joint and Survivor

A reduced benefit payable for life to the retired participant. If the participant dies, a surviving beneficiary will continue to receive the identical benefit. All benefits end when both the participant and the beneficiary are deceased.

Option C – Modified Joint and Survivor

A reduced benefit payable for life to the retired participant. If the participant dies, a surviving beneficiary will continue to receive 50% of the retiree's benefit. All benefits end when both the participant and the beneficiary are deceased.

Option D – Modification of Option B (Pop-up)

A reduced benefit payable for life to the retired participant. If the participant dies before the beneficiary, a surviving beneficiary will continue to receive the identical benefit. If the beneficiary dies before the participant, the benefit will be increased to the full benefit payment as if the participant had elected the normal form.

Option E – Modification of Option C (Pop-up)

A reduced benefit payable for life to the retired participant. If the participant dies before the beneficiary, a surviving beneficiary will continue to receive 50% of the retiree's benefit. If the beneficiary dies before the participant, the benefit will be increased to the full benefit payment as if the participant had elected the normal form.

Deferred Retirement Option Provision (DROP)

The DROP offers a participant the option of receiving a portion of his total benefit as a lump-sum cash payment at the time he retires. When a participant elects the DROP, his monthly benefit payments are reduced.

The DROP payment can be paid in annual installments up to three years, depending on the participant's total Credited Service. The participant must have 26 years of Credited Service to be eligible for a one-year DROP payment, 27 years for a two-year DROP payment and at least 28 years for a three-year DROP payment.



Post Retirement Adjustments

An annual cost-of-living adjustment will be made to amounts paid to or on account of a retired participant each January 1. The adjustment shall be equal to 3%.

CONTRIBUTIONS

By Participants

Each participant contributes 2% of compensation.

By City

The City contribution rate is determined on the basis of an actuarial review and analysis of the Plan made as of December 31 of the preceding Plan year.



SCHEDULE H

TABLE 1

STATUS RECONCILIATION OF PARTICIPANTS

	Active	Vested Terminated	LTD	Disabled	Retired	Beneficiaries	Total
Participants as of December 31, 2012	1,393	93	29	39	727	139	2,420
A. Receiving Benefits	(72)	(9)	(2)	2	81		
B. LTD	(2)		2				
C. Terminated Vested	(13)	13					
D. Terminated Non-Vested	(65)						(65)
E. Deaths	(5)	(1)	(2)	(2)	(26)	(3)	(39)
F. Rehires							
G. New Participants	146					20	166
H. Refunds		(1)					(1)
I. Certain Period Expired						(4)	(4)
J. Data Corrections	(1)	6	(2)		2	(1)	4
Participants as of December 31, 2013	1,381	101	25	39	784	151	2,481



SCHEDULE H

TABLE 2

AGE – SERVICE TABLE

Distribution of Active Participants as of January 1, 2014 by Age and Service Groups

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	5	8								13
Avg Pay	30,353	26,367								27,900
25 to 29	18	24	7							49
Avg Pay	34,406	30,950	24,868							31,351
30 to 34	12	45	32	5	1					95
Avg Pay	41,292	35,637	35,544	31,771	30,869					36,066
35 to 39	14	28	34	26	10					112
Avg Pay	41,182	35,614	34,913	35,034	36,697					36,059
40 to 44	19	46	34	35	23	15				172
Avg Pay	57,183	34,806	34,993	35,699	35,743	43,949				38,419
45 to 49	7	49	42	30	32	41	12	1		214
Avg Pay	31,380	35,966	35,190	37,593	39,337	45,092	43,434	53,944		38,647
50 to 54	10	52	32	45	41	35	33	11		259
Avg Pay	44,464	33,529	35,578	36,804	36,663	40,092	45,874	48,671		38,372
55 to 59	10	27	48	38	34	40	22	27	4	250
Avg Pay	37,865	43,777	33,679	33,123	37,714	44,200	43,905	56,143	48,541	40,649
60 to 64	1	14	34	31	24	23	9	10	14	160
Avg Pay	50,000	45,675	37,380	37,319	36,197	45,953	44,851	46,967	56,424	41,914
65 to 69	1	3	9	4	7	7	3	4	3	41
Avg Pay	23,550	34,550	41,545	39,104	36,724	40,903	41,724	36,121	51,794	39,657
70 & Over	1		2	3	3	4		2	1	16
Avg Pay	42,000		18,596	47,671	35,415	69,740		52,089	70,416	48,875
Total Count	98	296	274	217	175	165	79	55	22	1,381
Avg Pay	41,715	35,766	35,049	36,028	37,121	44,251	44,681	51,337	54,995	38,709

Average Age 49.49
Average Service 12.28



TABLE 3
NUMBER OF RETIRED PARTICIPANTS
AND THEIR BENEFITS BY AGE
SERVICE RETIREMENTS

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefit
50 and Under	0	\$ 0	\$ 0
51 – 55	7	155,885	22,269
56 – 60	63	1,076,076	17,081
61 – 65	165	2,935,778	17,793
66 – 70	202	3,408,556	16,874
71 – 75	140	2,227,230	15,909
76 – 80	94	1,668,006	17,745
Over 80	113	1,741,533	15,412
Total	784	\$ 13,213,064	\$ 16,853

TABLE 4
NUMBER OF RETIRED PARTICIPANTS
AND THEIR BENEFITS BY AGE
DISABILITY RETIREMENTS

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefit
50 and Under	10	\$ 98,365	\$ 9,836
51 – 55	9	95,789	10,643
56 – 60	11	128,716	11,701
61 – 65	16	150,372	9,398
Over 65	18	164,636	9,147
Total	64	\$ 637,878	\$ 9,967



TABLE 5

**NUMBER OF RETIRED PARTICIPANTS
AND THEIR BENEFITS BY AGE**

BENEFICIARIES OF DECEASED PARTICIPANTS

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefit
50 and Under	19	\$ 183,044	\$ 9,634
51 – 55	10	134,966	13,497
56 – 60	12	134,911	11,243
61 – 65	22	335,941	15,270
66 – 70	25	311,566	12,463
71 – 75	27	410,919	15,219
76 – 80	11	87,111	7,919
Over 80	25	294,912	11,796
Total	151	\$ 1,893,370	\$ 12,539

TABLE 6

**NUMBER OF DEFERRED FORMER PARTICIPANTS
AND THEIR BENEFITS BY AGE**

Attained Age	Number of Members	Total Annual Benefits	Average Annual Benefit
50 and Under	61	\$ 415,734	\$ 6,815
51 – 55	20	185,408	9,270
56 – 60	15	113,147	7,543
61	5	45,858	9,172
Total	101	\$ 760,147	\$ 7,526



SCHEDULE I

ANALYSIS OF FINANCIAL EXPERIENCE

**Gains & Losses in Accrued Liabilities
Resulting from Difference Between
Assumed Experience & Actual Experience
(\$ Thousands)**

Type of Activity	\$ Gain (or Loss) For Year Ending 1/01/2014	\$ Gain (or Loss) For Year Ending 1/01/2013
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (495.4)	\$ (237.0)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	(172.0)	(81.8)
Death-in-Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	(226.5)	(246.5)
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	514.2	942.3
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	2,076.2	5,673.2
New Members. Additional unfunded accrued liability will produce a loss.	(1,981.8)	(670.9)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	(3,580.8)	(6,804.2)
Death After Retirement. If retirants live longer than assumed, there is a loss. If not as long, a gain.	(1,495.1)	2,595.3
Other. Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, etc.	<u>(115.1)</u>	<u>(247.6)</u>
Gain (or Loss) During Year From Experience	<u>\$ (5,476.3)</u>	<u>\$ 922.8</u>
Non-Recurring Items. Adjustments for plan amendments, assumption changes, or method changes.	<u>5,278.5</u>	<u>7,752.8</u>
Composite Gain (or Loss) During Year	<u>\$ (197.8)</u>	<u>\$ 8,675.6</u>