

March 7, 2016

The Board of Trustees  
City of Livonia Employees Retirement System  
Livonia, Michigan 48154

Dear Board Members:

*The purpose of the annual actuarial valuation* of the City of Livonia Employees Retirement System as of November 30, 2015, is to:

- Compute the present value of future benefits likely to be paid on behalf of current retired and active members of the Retirement System, and
- Compute the City's recommended contribution rate for the Fiscal Year beginning December 1, 2016.

This valuation has been conducted in accordance with generally accepted actuarial principles and practices. Data concerning active members, retirees, beneficiaries and assets was provided by the City of Livonia. This data has been reviewed for reasonableness, but no attempt has been made to audit such information. The valuation was based on the provisions of the Retirement System as amended through November 30, 2015. The actuarial assumptions used in this valuation are reasonably related to the past experience of the System and represent reasonable expectations of future experience under the System. This valuation has been prepared under the supervision of a Member of the American Academy of Actuaries who meet the qualification standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,



Denise M. Jones  
Senior Consultant



Sandra W. Rodwan  
Member, American Academy of Actuaries

***City of Livonia  
Employees Retirement System***

*Actuarial Valuation as of November 30, 2015*

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***Section One:***

***Valuation Summary***



### **Purpose of Valuation**

The purpose of the annual actuarial valuation of the City of Livonia Retirement System as of November 30, 2015 is to:

- ❖ Compute the present value of future benefits likely to be paid on behalf of current retired and active members of the Retirement System,
- ❖ Compute the City's recommended contribution rate for the Fiscal Year beginning December 1, 2016.

### **Funding Value of Assets**

A smoothed market value of assets was used for the November 30, 2015, valuation. This method, which is unchanged from prior years, spreads the difference between actual and expected investment return over five years.

### **City's Computed Contribution Rate**

The City's contribution rate for the fiscal year beginning December 1, 2016 has been computed to be 4.49% of active member payroll for the General division, 4.49% of active member payroll for the Police division, and 4.49% of active member payroll for the Fire division. These contribution rates were computed using the aggregate actuarial cost method and by applying the total contribution rate to all divisions. The aggregate actuarial cost method is appropriate for retirement systems which are closed to new hires.

The aggregate actuarial cost method produces a contribution rate for the City which, together with current assets, investment earnings and future member contributions, can be expected to accumulate to the value of the benefits payable at retirement.

The actuarial accrued liability under this method is defined to be the current actuarial value of assets.

### **Retirement System Experience**

The overall experience of the Retirement System during the year ended November 30, 2015 was more favorable than expected based upon the long-term assumptions. The primary source of the favorable experience was the recognized rate of return on the smoothed funding value of assets.

There were 7 new retirees added during the year compared with 12 last year. Seventeen retirees were removed compared with 19 last year.

The number of active members decreased to 116 from 121 last year. The active member payroll decreased to \$9,070,569 from \$9,312,278 last year.

### **Benefit Provision Changes**

There were no changes in benefit provisions for this valuation.

### **Assumption and Method Changes**

The mortality table was changed for this valuation from the 1983 Group Annuity Mortality Table to the RP 2000 Combined Healthy Annuitant Mortality Table projected to 2014, as adopted by the Retirement System Board of Trustees. In addition, the rates of retirement for General, Police, and Fire and the rates of withdrawal for Police were changed as recommended in the Experience Study Report dated August 14, 2015 covering the period December 1, 2008 through November 30, 2014.

**Participant Data**

	<u>11/30/2015</u>	<u>11/30/2014</u>
Active Members		
- General	37	40
- Police	46	47
- Fire	<u>33</u>	<u>34</u>
Total	116	121
Active Member Payroll		
- General	\$2,211,854	\$2,367,058
- Police	3,835,092	3,861,152
- Fire	<u>3,023,623</u>	<u>3,084,068</u>
Total	\$9,070,569	\$9,312,278
Retirees and Beneficiaries		
- General	293	300
- Police	166	169
- Fire	<u>103</u>	<u>103</u>
Total	562*	572**
Annual Pensions		
- General	\$6,156,189	\$6,207,690
- Police	6,250,965	6,278,116
- Fire	<u>3,549,256</u>	<u>3,491,776</u>
Total	\$15,956,410	\$15,977,582

\*Includes 18 alternate payees receiving \$240,224 under eligible domestic relations orders.

\*\*Includes 20 alternate payees receiving \$261,240 under eligible domestic relations orders.

**Financial Data**

	<u>11/30/2015</u>	<u>11/30/2014</u>
Market Value of Assets	\$216,518,517	\$226,054,863
Smoothed Valuation Assets	\$213,227,761	\$207,103,472

**Conclusion**

The Retirement System is being financed in accordance with a sound funding policy based on the aggregate actuarial cost method. The accrued funding condition of the Retirement System is good. Continuation of this condition is dependent upon future experience and receipt of contributions as required.



***Section Two:***

***Actuarial Calculations –  
Funding***



**Recommended City Contribution Rate for Fiscal Year beginning December 1, 2016**

The City's computed contribution rate for the year beginning December 1, 2016 has been computed to be 4.49% of payroll for the General division, 4.49% for the Police division and 4.49% for the Fire division.

	<u>General</u>	<u>Police</u>	<u>Fire</u>	<u>Totals</u>
1. Actuarial Present Value of all Future Benefits				
Active Members:				
Regular Retirement	\$ 13,905,260	\$ 27,028,095	\$ 19,984,706	\$ 60,918,061
Pre-Retirement death	228,674	193,662	190,694	613,030
Disability	177,982	1,107,407	907,149	2,192,538
Withdrawal	245,622	140,991	95,042	481,655
Inactive Members	1,923,545	312,792	268,150	2,504,487
Retirees and Beneficiaries	52,638,329	64,200,094	33,285,482	150,123,905
Total	69,119,412	92,983,041	54,731,223	216,833,676
2. Smoothed Valuation Assets	68,421,386	91,223,695	53,582,681	213,227,761
3. Present Value of Future Member Contributions	261,353	882,532	475,857	1,619,742
4. Unfunded Present Value of Benefits: 1. – 2. – 3.	436,673	876,814	672,685	1,986,173
5. Present Value of Future Pay	9,731,141	19,539,557	14,990,601	44,261,299
<b>6. City Contribution as a percent of Payroll: 4. / 5.</b>	<b>4.49%</b>	<b>4.49%</b>	<b>4.49%</b>	<b>4.49%</b>
<b>7. City Contribution – Dollars Based on Valuation Payroll</b>	<b>\$99,312</b>	<b>\$172,196</b>	<b>\$135,761</b>	<b>\$407,269</b>

\*Dollar amount is net of additional contribution paid by LLSA members when City's contribution rate exceeds 4.18% of Police payroll, per LLSA contract.

**Computed Normal Cost Contribution Rates as of November 30, 2015**

**Based on Entry Age Actuarial Cost Method**

**For Illustration Purposes Only**

The normal cost contribution rate based on the entry age actuarial cost method is shown for illustration purposes only and for comparison to prior years’ normal costs. Last year the computed entry age normal cost for the City was 13.16% for General members, 15.93% for Police members and 17.09% for Fire members.

The aggregate actuarial cost method used to compute the City’s recommended contribution rate shown on page 4 is the appropriate method for a plan closed to new hires.

	<u>General</u>	<u>Percent of Payroll</u>	
		<u>Police</u>	<u>Fire</u>
Normal Cost			
Regular Retirement	12.69%	20.28%	17.13%
Pre-Retirement Death	0.45	0.36	0.42
Disability	0.81	2.67	2.76
Withdrawal	<u>2.90</u>	<u>0.93</u>	<u>0.85</u>
Total Normal Cost	16.85	24.24	21.16
Member portion*	3.20	5.22	3.56
<b>City’s Entry Age Normal Cost</b>	<b>13.65%</b>	<b>19.02%</b>	<b>17.60%</b>

\*Weighted average.

## Recommended and Actual City Contributions

Valuation Date Nov. 30	Fiscal Year Ending Nov. 30	Recommended % of Payroll Contributions (Excluding Health after 1991)			Computed Dollar Contributions
		General	Police	Fire	
1990@	1992	13.32%	10.00%	23.38%	\$3,504,711
1991	1993	12.36	9.64	21.53	3,393,951
1992#	1994	11.29	8.98	19.93	3,037,008
1993	1995	10.20	9.67	18.81	3,083,273
1994	1996	10.71	8.68	18.40	3,029,447
1995#	1997	9.59	9.29	19.15	0
1995@	1997	10.78	10.56	20.73	3,505,876
1996#	1998	10.53	11.62	20.14	2,798,760
1997#	1999	1.48	10.90	22.32	0
1997@&	1999	0.00	1.71	19.06	1,919,594
1998#	2000	0.00	4.42	18.79	837,116
1999#@	2001	0.00	1.15	15.20	645,335
2000	2002	0.00	0.00	9.73	417,464
2001#	2003	0.00	0.00	9.50	392,639
2002	2004	0.00	0.00	12.70	0
2003	2005	0.00	0.00	0.00	0
2004	2006	0.00	0.00	0.00	0
2005	2007	0.00	0.00	0.00	0
2006	2008	0.00	0.00	0.00	0
2007#	2009	0.00	0.00	0.00	0
2008#	2010	0.00	0.00	0.00	0
2009@	2011	0.00	0.00	0.00	0
2010#	2012	8.98	3.55	7.49	829,363
2011	2013	28.42	12.10	19.81	2,307,296
2012	2015	45.75	23.71	50.70	4,132,710
2013	2015	20.07	17.96	33.10	2,262,146
2014	2016	0.00	4.23	22.48	856,625
<b>2015@</b>	<b>2017</b>	<b>4.49</b>	<b>4.49</b>	<b>4.49</b>	<b>407,269</b>

# After changes in benefit provisions.

@ After changes in actuarial assumptions or methods.

& After removal of contribution for post-retirement health insurance benefits.

**Note:** Results prior to 2003 are based on reports provided by previous actuarial firm.

### History of Assets and Accrued Liabilities

Valuation Date	Valuation Assets	Actuarial Accrued Liabilities*	Funded Ratio	Unfunded Actuarial Accrued Liabilities
1993	\$132,136	\$122,975	107.4%	\$ (9,161)
1994	140,037	130,496	107.3	(9,541)
1995#@	152,456	142,053	107.3	(10,403)
1996#	167,361	151,870	110.2	(15,491)
1997#@	168,884	148,806	113.5	(20,078)
1998#	177,035	151,085	117.2	(25,950)
1999#	184,782	149,052	124.0	(35,730)
2000	192,477	148,670	129.5	(43,807)
2001#	200,937	151,438	132.7	(49,499)
2002	199,627	159,272	125.3	(40,355)
2003	203,505	159,900	127.3	(43,605)
2004	199,578	164,378	121.4	(35,200)
2005	200,005	167,226	119.6	(32,779)
2006	205,101	169,506	121.0	(35,595)
2007#	215,675	173,486	124.3	(42,189)
2008#	210,519	179,096	117.5	(31,423)
2009@	207,959	190,134	109.4	(17,925)
2010#	203,934	195,105	104.5	(8,829)
2011	194,515	196,420	99.0	1,905
2012	186,245	200,224	93.0	13,979
2013	197,513	201,390	98.1	3,877
2014	207,103	202,435	102.3	(4,668)
<b>2015@</b>	<b>213,228</b>	<b>207,438</b>	<b>102.8</b>	<b>(5,790)</b>

Results shown throughout this report, for years prior to 2003, were prepared by the previous actuarial firm.

\* Based on entry age actuarial accrued liability for comparison to prior years. The entry age accrued liability has not been used to compute contribution requirements after the 1998 valuation. Under the aggregate cost method used to compute contributions beginning in 1999, the accrued liability is defined to be equal to the accrued assets.

# After changes in benefit provisions.

@ After changes in actuarial assumptions or methods

The ratio of valuation assets plus future employee contributions to the total present value of future benefits was 99.1% as of November 30, 2015. This is an increase from 98.6% in the prior year.

## Comment, Recommendation and Conclusion

**Comment 1:** The mortality table was changed for this valuation from the 1983 Group Annuity Mortality Table to the RP 2000 Combined Healthy Annuitant Mortality Table projected to 2014, as adopted by the Retirement System Board of Trustees. In addition, the rates of retirement for General, Police, and Fire, and the rates of withdrawal for Police, were changed as recommended in the Experience Study Report dated August 14, 2015 (for the period December 1, 2008 through November 30, 2014). These demographic assumption changes increased the present value of future benefits by \$5,998,830.

**Comment 2:** During the year ended November 30, 2015, retirement system experience was more favorable than expected based on the long-term assumptions. The primary source of the favorable experience was the rate of investment return on the smoothed market value of assets (10.0% vs. 8% assumed).

**Recommendation:** We recommend that the following transfers be made to the Reserve for Retired Benefit Payments from the Reserve for Employer Contributions so that it equals the retired life liabilities as of November 30, 2015.

<b>Division</b>	<b>Reported Reserve for Retired Benefit Payments</b>	<b>Computed Retiree Liabilities</b>	<b>Recommended Transfer from Reserve for Employer Contributions</b>
General	\$50,733,357	\$52,638,329	\$1,904,972
Police	60,021,447	64,200,094	\$4,178,647
Fire	30,395,195	33,285,482	\$2,890,287

**Conclusion:** The Retirement System is being financed in accordance with a sound funding policy based on the aggregate actuarial cost method. The accrued funding condition of the Retirement System is good. Continuation of this condition is dependent upon future experience and receipt of contributions as required.



***Section Three:***

***Retirement System  
Benefit Provisions***



## **Benefit Provision Summary**

### ***Membership Requirements***

Membership includes all persons in the classified and unclassified service of the City who perform services on a permanent part-time or full-time basis. New employees do not become members in this Retirement System.

### ***Voluntary Retirement Eligibility***

General Members: 30 years of service regardless of age, or age 55 with 10 years of service. Permanent part-time General members need only 10 calendar years of membership instead of 10 years of credited service.

Police Officers, Sergeants & Lieutenants: 25 years of service regardless of age, or age 52 with 10 years of service. (Age 50 with 10 years but less than 25 years of service early retirement with reduced benefit benefit reduced ½% per month below age 52).

Police Chief, Deputy Chief & Captains: 27 years of service regardless of age, or age 50 with 10 years of service. (Age 48 with 10 years but less than 27 years of service early retirement with reduced benefit - benefit reduced 1/2% per month below age 50).

Fire Members: 27 years of service regardless of age, or age 52 with 10 years of service (age 50 with 10 years of service early retirement with reduced benefit – benefit reduced ½% per month below age 52).

### ***Normal Pension Amount***

General Members: 2.5% of the member's average final compensation (AFC) times years of credited service (maximum is 75% of AFC).

Police Officers, Sergeants & Lieutenants: 2.8% of the member's average final compensation (AFC) times the first 24 years of credited service, plus 7.8% of AFC for the 25<sup>th</sup> year of credited service (maximum is 75% of AFC).

Police Chief, Deputy Chief & Captains: 2.8% of the member's average final compensation (AFC) times years of credited service (maximum is 75% of AFC).

Fire Members: 2.8% of the member's average final compensation (AFC) times years of credited service (maximum is 75% of AFC).

**Average Final Compensation**

The average of the highest annual compensations received during any 3 years of service contained within the 10 years of service immediately preceding retirement, including base salary, longevity, shift differential, paid time off, holiday pay, and payment of accumulated vacation time up to the limits established by the respective bargaining agreements. In addition, merit pay is included for Police members and Paramedic/EMT or ALS bonuses are included for firefighters.

**Deferred Pension (Vesting)**

**Eligibility:** Termination of City employment, other than by death or disability, prior to attaining voluntary retirement age but after completing at least 10 full years of credited service.

**Amount:** A monthly pension, payable beginning at voluntary retirement age (or early retirement age with a reduced benefit), computed in the same manner as a Normal Pension but based on credited service and AFC at time of termination of City employment.

**Disability Retirement**

**Eligibility:** Termination of City employment by reason of total and permanent disability after completing at least 10 full years of credited service, except that in the event of a duty disability the 10 year service requirement is waived.

**Amount:** (1) Disability incurred after age 55: A monthly pension computed in the same manner as a Normal Pension but based on credited service and AFC at the time of termination. (2) Disability incurred before age 55: A monthly pension computed in the same manner as a Normal Pension but based on AFC at time of termination and the credited service the member would have completed had employment continued until age 55, provided that in the event of a duty disability the pension payable to age 55 shall not be less than 75% of AFC. Worker’s compensation benefits are deducted. For non-duty disability cases, the following limitations apply:

<u>Actual Years of Service</u>	<u>Maximum Total Years Used to Compute Benefit</u>	<u>Maximum Benefit As a Percent of AFC</u>
10-15	20	50.0%
16-20	25	62.5
over 20	30- or actual service if greater	75.0

**Non-Duty Death**

**Eligibility:** Death after completing 10 years of credited service, but before termination of City employment. If member had not attained age 55 at the time of death, the death benefit shall commence at the time they would have attained voluntary retirement age. Member must either: (1) have elected Option A and named a beneficiary, or (2) leave a surviving spouse in the event Option A was not elected.

**Amount:** Monthly pension the beneficiary would have received had the member retired the day before death (notwithstanding that he might not have attained his voluntary retirement age) and elected the 100% joint and survivor Option A.

**Duty Death**

**Eligibility:** Death from causes arising solely and exclusively out of and in the course of a member's City employment.

**Amount:** Surviving spouse, or unmarried children under age 18 (if no surviving spouse), or dependent parents (if no surviving spouse or children) shall receive a monthly pension equal to the pension payable if the member had become duty disabled, elected the 100% survivor option and subsequently died. The option factor for children or parents is assumed to equal 80%. The benefit shall continue until: (a) death in the case of the widow, (b) death, marriage, adoption or attainment of age 18 in the case of the children. Worker's compensation benefits are deducted.

**Employee Contributions**

General - Local 1917	3.66% of compensation.
- Others	3.10% of compensation.
Police - LPOA	2.55% of compensation.
- LLSA	6.25% of compensation (eff. 8/24/2010) 7.30% of compensation when City contribution rate exceeds 4.18%
Police Chief, Deputy Chief and Captains	5.21% of compensation.
Fire	3.56% of compensation.

Upon voluntary, mandatory or disability retirement (or deferred retirement, in the case of General members), a member may withdraw his accumulated contributions with interest and receive an actuarially reduced lifetime benefit.

***Cost-of-Living Allowance***

An additional cost-of-living allowance will be paid to all retirees. The monthly amount is determined as follows:

(1) Members retired before December 1, 1979:

- (a) \$20 per month for one year period commencing one year after retirement.
- (b) \$40 per month for one year period commencing two years after retirement.
- (c) \$40 per month for one year period commencing three years after retirement.
- (d) \$60 per month for one year period commencing four years after retirement.
- (e) \$80 per month commencing five years after retirement.

(2) Members retiring on or after December 1, 1979 and before December 1, 1986:

- (a) \$20 per month for one year period commencing one year after retirement.
- (b) \$40 per month for one year period commencing two years after retirement.
- (c) \$60 per month for one year period commencing three years after retirement.
- (d) \$80 per month commencing four years after retirement.

(3) Members retiring on or after December 1, 1986:

- (a) \$20 per month for one year period commencing one year after retirement.
- (b) \$40 per month for one year period commencing two years after retirement.
- (c) \$60 per month for one year period commencing three years after retirement.
- (d) \$80 per month for one year period commencing four years after retirement.
- (e) \$100 per month for one year period commencing five years after retirement.
- (f) \$120 per month commencing six years after retirement.

(4) General members (excluding District Court) retiring on or after December 1, 2007:

- (a) \$25 per month for one year period commencing one year after retirement.
- (b) \$50 per month for one year period commencing two years after retirement.
- (c) \$75 per month for one year period commencing three years after retirement.
- (d) \$100 per month for one year period commencing four years after retirement.
- (e) \$125 per month for one year period commencing five years after retirement.
- (f) \$150 per month for one year period commencing six years after retirement.
- (g) \$175 per month for one year period commencing seven years after retirement.
- (h) \$200 per month for one year period commencing eight years after retirement.
- (i) \$225 per month for one year period commencing nine years after retirement.
- (j) \$250 per month commencing ten years after retirement.

(5) Fire and Police members (excluding dispatchers) retiring on or after December 1, 2006 (March 20, 2006 for Fire) and before December 1, 2008:

- (a) \$20 per month for one year period commencing one year after retirement.
- (b) \$40 per month for one year period commencing two years after retirement.
- (c) \$60 per month for one year period commencing three years after retirement.
- (d) \$80 per month for one year period commencing four years after retirement.
- (e) \$100 per month for one year period commencing five years after retirement.
- (f) \$120 per month for one year period commencing six years after retirement.
- (g) \$140 per month for one year period commencing seven years after retirement.
- (h) \$160 per month for one year period commencing eight years after retirement.
- (i) \$180 per month for one year period commencing nine years after retirement.
- (j) \$200 per month commencing ten years after retirement

(6) Police and Fire members retiring on or after December 1, 2008:

- (a) \$25 per month for one year period commencing one year after retirement.
- (b) \$50 per month for one year period commencing two years after retirement.
- (c) \$75 per month for one year period commencing three years after retirement.
- (d) \$100 per month for one year period commencing four years after retirement.
- (e) \$125 per month for one year period commencing five years after retirement.
- (f) \$150 per month for one year period commencing six years after retirement.
- (g) \$175 per month for one year period commencing seven years after retirement.
- (h) \$200 per month for one year period commencing eight years after retirement.
- (i) \$225 per month for one year period commencing nine years after retirement.
- (j) \$250 per month commencing ten years after retirement

For Police retirees retiring before December 1, 1991 and for Fire retirees retiring before December 1, 1993 the maximum increase is \$80 per month.

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***Section Four:***

***Actuarial Assumptions  
And Methods***



**Actuarial Assumptions**

**Economic Assumptions**

- (i) Interest Rate 8.0% (net of expenses)
  
- (ii) Salary Increases
  - Across-the-Board 4.0%
  - Merit and Longevity Age-related rates

**Sample Annual Rates of Salary Increase**

Age	Across-the-Board	Merit and Longevity	Total
20	4.0%	7.92%	11.92%
25	4.0	5.75	9.75
30	4.0	3.98	7.98
35	4.0	2.89	6.89
40	4.0	2.10	6.10
45	4.0	1.48	5.48
50	4.0	0.96	4.96
55	4.0	0.53	4.53
60	4.0	0.15	4.15
65	4.0	0.00	4.00

**Demographic Assumptions**

(i) Mortality

RP 2000 Combined Healthy  
Annuitant Mortality Table  
projected to 2014

Sample Ages	Future Life Expectancy (Years)	
	Men	Women
55	27.5	29.6
60	23.0	25.1
65	18.8	20.8
70	14.9	16.9
75	11.3	13.3
80	8.3	10.1

This mortality table was first used for the November 30, 2015 valuation.

(ii) Rates of Disability

Sample Ages	Percent Becoming Disabled Within Next Year	
	General	Police-Fire
20	0.02%	0.07%
25	0.04	0.12
30	0.07	0.24
35	0.11	0.40
40	0.16	0.55
45	0.20	0.71
50	0.25	0.87
55	0.30	1.03

(iii) Termination of Employment

Service related rates for first 5 years of employment. Age related rates after first 5 years of employment

Sample Ages	% of Active Members Separating Within Next Year		
	General	Police	Fire
25	4.00	1.62	1.62
30	3.50	1.40	1.40
35	3.25	0.83	0.83
40	2.00	0.32	0.32
45	1.25	0.18	0.18
50	1.25	0.18	0.18
55	0.75	0.18	0.18
60	0.50	0.18	0.18

The rates for Police were first used for the November 30, 2015 valuation.

(iv) Retirement Rates

**Percent of Active Members Retiring within Year  
Following Attainment of Indicated Retirement Age or Service**

Retirement Ages	Age Based			Service Based		
	General	Police	Fire	Service	Police	Fire
45	70%	-%	-%	25	75%	
46	70	-	-	26	25	
47	70	-	-	27	25	40%
48	70	-	-	28	25	40
49	70	-	-	29	25	40
50	70	-	-	30 & up	100	100
51	70	-	-			
52	70	10	35			
53	70	10	20			
54	70	10	10			
55	45	10	10			
56	30	10	10			
57	25	10	10			
58	25	10	10			
59	30	10	10			
60	25	100	100			
61	25	100	100			
62	20	100	100			
63	20	100	100			
64	20	100	100			
65	20	100	100			
66	20	100	100			
67	20	100	100			
68	20	100	100			
69 & up	100	100	100			

These rates were first used for the November 30, 2015 valuation.

## **Actuarial Method Used for the Valuation**

***Aggregate Cost Method.*** This method spreads the unfunded present value of future benefits as of the valuation date over the expected future working lifetimes of the remaining active members. Characteristics of this method are as follows:

- ❖ The aggregate annual normal costs payable from the valuation date to the group's projected dates of retirement, disability or death are expected to accumulate to the actuarial present value of the group's benefit at date of retirement, disability or death.
  
- ❖ By definition, the accrued liability is equal to the actuarial funding value of assets.



***Section Five:***  
***Valuation Data***



## Summary of Asset Information Submitted for the Valuation

### Statement of Assets

As of November 30, 2015, the market value of Retirement System assets was reported to be \$216,518,517.

### Revenues and Expenses for the Year Ended November 30, 2015

(a) Revenues	
(i) Member Contributions	\$ 386,983
(ii) Employer Contributions	2,158,914
(iii) Investment Income (Net of Expenses)	4,353,881
(iv) Other income	<u>0</u>
(v) Total Income	6,899,778
b. Expenses	
(i) Pensions	16,017,300
(ii) Refunds and annuity withdrawal	206,488
(iii) Non-Investment Expenses	<u>212,335</u>
(iv) Total Expenses	\$16,436,123

**Investment Allocation**

The reported asset allocation at market value was as follows:

a. Cash and Short Term	
(i) Cash (incl. Checking/Savings Accounts)	\$107,374
(ii) Accruals and Receivables	743,370
(iii) Money Market Funds	0
(iv) Treasury Bills	0
(v) Short Term Investments	2,835,089
b. Fixed Income	
(i) U.S. Government/Agency Bond	2,445,167
(ii) Corporate Bonds	12,543,003
(iii) Asset Backed Securities	3,057,205
(iv) Private Placements	754,671
(v) Municipal Obligations	189,286
(vi) Mortgage Backed Securities	7,083,558
(vii) TBA	340,969
(viii) Collateralized Mortgage Obligations	5,937,342
(ix) Other: Foreign Bonds & Notes	1,273,577
(x) Fixed Income mutual funds	29,113,804
c. Equities	
(i) Common Stock	90,011,600
(ii) Closely held equity	0
(iii) Open End mutual funds	36,943,959
(iii) Other: Foreign	4,827,871
American Depository Receipts	8,398,974
General Growth RTS	8,332,274
d. Real Estate:	
(i) Real estate investment funds	2,620,934
e. Other Assets:	3,835,277
f. Less accounts payable	4,876,786
g. Total Market Value of Assets as of November 30, 2015	\$216,518,517

**Funding Value of Assets**

	<b>Year Ended 11/30/2014</b>	<b>Year Ended 11/30/2015</b>
A. Funding Value Beginning of Year	\$197,512,737	\$207,103,472
B. Market Value End of Year	226,054,863	216,518,517
C. Market Value Beginning of Year	218,367,770	226,054,863
D. Non-Investment Income Net Cash Flow	(12,527,037)	(13,890,226)
E. Investment Income		
E1. Market Total B-C-D	20,214,130	4,353,880
E2. Amount for Immediate Recognition	15,299,937	16,012,669
E3. Amount for Phased-In Recognition E1 – E2	4,914,193	(11,658,789)
F. Phased-In Recognition of Investment Income		
F1. From the Current Year 0.20 x E3	982,839	(2,331,758)
F2. First Prior Year	4,606,941	982,839
F3. Second Prior Year	1,918,698	4,606,941
F4. Third Prior Year	(1,174,874)	1,918,698
F5. Fourth Prior Year	484,231	(1,174,874)
F6. Total Recognized Investment Gain	6,817,835	4,001,846
G. Gross Funding Value end of Year A + D + E2 + F6	207,103,472	213,227,761
H. Health Insurance Reserve	0	0
I. Net Funding Value	207,103,472	213,227,761
J. Difference Between Market and Funding Value	18,951,391	3,290,756
K. Market Rate of Return	8.8%	1.9%
L. Recognized Rate of Return	11.6%	10.0%

**Reported Reserve Balances**

	<b><u>11/30/2014</u></b>	<b><u>11/30/2015</u></b>
Reserve for Employees' Contributions	\$7,197,706	\$7,454,751
Reserve for Employer Contributions	72,630,636	67,913,767
Reserve for Retired Benefit Payments	146,226,521	141,149,999
Reserve for Health Insurance	<u>0</u>	<u>0</u>
Total	\$226,054,863	\$216,518,517

## Participant Summary

### Retirees and Beneficiaries Included in the Valuation

There were 562 retirees and beneficiaries included in the valuation, with annual pensions totaling \$15,956,709. There were 7 new retirees and 2 new survivor beneficiaries added during the year and 17 were removed. One new alternate payee was added and 3 alternate payees were removed.

### Pensions Being Paid

Valuation Date	No.	Annual Pensions	% of Active Payroll	Average Pension	Discounted Value of Pensions	
					Total	Average
1988	308	\$3,586,869	18.3%	\$11,646	\$37,993,837	\$123,357
1989	331	4,122,475	19.8	12,455	43,437,508	131,231
1990	344	4,426,535	19.8	12,868	43,526,995	126,532
1991	362	4,941,277	21.6	13,650	48,403,086	133,710
1992	388	5,487,251	23.0	14,142	52,852,822	136,219
1993	396	5,795,349	24.1	14,635	56,746,560	143,299
1994	416	6,466,603	25.3	15,545	63,150,428	151,804
1995	433	6,915,782	27.1	15,972	66,978,476	154,685
1996	450	7,503,958	26.8	16,675	72,267,650	160,595
1997	468	8,030,733	39.0	17,161	76,656,612	163,796
1998	483	8,444,938	40.9	17,484	80,195,707	166,037
1999	493	8,948,784	47.9	18,152	84,683,874	171,773
2000	502	9,357,146	54.6	18,640	88,078,816	175,456
2001	515	9,671,679	57.8	18,780	90,253,559	175,250
2002	519	9,961,049	57.6	19,193	92,404,782	178,044
2003	524	10,308,740	60.3	19,673	95,345,963	181,958
2004	538	10,967,097	68.2	20,385	101,737,860	189,104
2005	536	11,135,810	70.1	20,776	102,438,312	191,116
2006	542	11,462,445	71.0	21,148	104,737,223	193,242
2007	547	11,812,063	75.4	21,594	107,405,977	196,355
2008	546	11,981,932	74.6	21,945	107,771,201	197,383
2009	546	12,170,553	76.8	22,290	110,805,883	202,941
2010	562	13,369,294	96.9	23,789	122,739,076	218,397
2011	567	14,273,423	114.6	25,174	129,949,005	229,187
2012	567	14,936,507	132.4	26,343	138,322,423	243,955
2013	576	15,699,372	159.1	27,256	146,096,118	253,639
2014	572	15,977,582	171.6	27,933	148,202,133	259,095
<b>2015</b>	<b>562</b>	<b>15,956,709</b>	<b>175.9</b>	<b>28,392</b>	<b>150,123,905</b>	<b>267,124</b>

## Retirees and Beneficiaries - November 30, 2015

Attained Age	General		Police		Fire		Totals	
	No.	Annual Pensions	No.	Annual Pensions	No.	Annual Pensions	No.	Annual Pensions
45-49	-	\$ -	17	\$896,410		\$ -	17	\$ 896,410
50-54	2	105,140	35	1,742,017	4	209,377	41	2,056,534
55-59	28	923,969	18	929,846	11	618,274	57	2,472,089
60-64	35	906,400	11	268,391	15	754,587	61	1,929,378
65-69	59	1,530,176	17	504,343	14	606,410	90	2,640,929
70-74	32	646,379	25	840,163	18	562,897	75	2,049,439
75-79	34	585,626	24	637,714	13	373,504	71	1,546,844
80-84	47	680,042	9	243,613	16	297,626	72	1,221,281
85-89	34	555,794	7	159,013	7	101,416	48	816,223
90-94	18	179,381	3	29,455	5	75,165	26	284,001
95-99	4	43,581					4	43,581
<b>Totals</b>	<b>293</b>	<b>\$6,156,488</b>	<b>166</b>	<b>\$6,250,965</b>	<b>103</b>	<b>\$3,549,256</b>	<b>562</b>	<b>\$15,956,709</b>

There were 19 inactive vested members with estimated annual benefits of \$296,758 included in the valuation.

**Inactive Vested Members -  
November 30, 2015**

Attained Age	General		Police		Fire		Totals	
	No.	Estimated Annual Pensions	No.	Estimated Annual Pensions	No.	Estimated Annual Pensions	No.	Estimated Annual Pensions
45-49	4	\$ 32,909	1	\$ 35,945	1	\$ 37,974	6	\$106,828
50-54	8	149,705					8	149,705
55-59	2	24,603					2	24,603
60-64			1	5,822			1	5,822
75-79			1	7,000			1	7,000
95-99	1	2,800					1	2,800
<b>Totals</b>	<b>15</b>	<b>\$210,017</b>	<b>3</b>	<b>\$48,767</b>	<b>1</b>	<b>\$37,974</b>	<b>19</b>	<b>\$296,758</b>

**Total Active Members - November 30, 2015  
Age and Service Distribution**

<b>Attained Age</b>	<b>Service</b>				<b>No.</b>	<b>Totals Payroll</b>
	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>30-34</b>		
40-44	14	11			25	\$ 2,078,386
45-49	8	22	8		38	3,087,953
50-54	5	12	19	2	38	2,826,071
55-59		1	9		10	774,536
60-64	1	2			3	188,488
65-69		1	1		2	115,135
<b>Total</b>	<b>28</b>	<b>49</b>	<b>37</b>	<b>2</b>	<b>116</b>	<b>\$ 9,070,569</b>

**Group Averages:**

Age: 49.6 years  
 Service: 23.2 years  
 Annual Pay: \$78,195

**General Active Members - November 30, 2015  
Age and Service Distribution**

Attained Age	Service				No.	Totals
	15-19	20-24	25-29	30-34		Payroll
45-49	1	2	4		7	\$ 413,707
50-54	1	6	10	2	19	1,121,320
55-59			6		6	373,204
60-64	1	2			3	188,488
65-69		1	1		2	115,135
<b>Total</b>	<b>3</b>	<b>11</b>	<b>21</b>	<b>2</b>	<b>37</b>	<b>\$ 2,211,854</b>

**Group Averages:**

Age: 54.3 years  
 Service: 25.9 years  
 Annual Pay: \$59,780

**Police Active Members - November 30, 2015  
Age and Service Distribution**

<b>Attained Age</b>				<b>Totals</b>	
	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>No.</b>	<b>Payroll</b>
40-44	12	7		19	\$ 1,556,615
45-49	3	14	1	18	1,514,569
50-54	1	4	4	9	763,908
<b>Total</b>	<b>16</b>	<b>25</b>	<b>5</b>	<b>46</b>	<b>\$ 3,835,092</b>

**Group Averages:**

Age: 46.2 years  
Service: 21.5 years  
Annual Pay: \$83,372

**Fire Active Members - November 30, 2015  
Age and Service Distribution**

<b>Attained Age</b>				<b>Totals</b>	
	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>No.</b>	<b>Payroll</b>
40-44	2	4		6	\$ 521,767
45-49	4	6	3	13	1,159,684
50-54	3	2	5	10	940,840
55-59		1	3	4	401,332
<b>Total</b>	<b>9</b>	<b>13</b>	<b>11</b>	<b>33</b>	<b>\$ 3,023,623</b>

**Group Averages:**

Age: 49.0 years  
Service: 22.5 years  
Annual Pay: \$91,625

## Active Members – Three Year Comparison

	November 30,		
	2015	2014	2013
Active Members	116	121	131
Average Age (yrs.)	49.6	48.7	47.9
Average Service (yrs.)	23.2	22.4	21.6
Average Pay	\$78,195	\$76,961	\$75,345

## Active Members by Division – November 30, 2015

Valuation Division	No.	Annual Payroll	Average Age	Average	Average Pay
				Service	
General - Court	2	\$109,758	51.4	26.5	\$ 54,879
- Dispatchers	2	120,746	48.4	24.6	60,373
- Local 192 – FT	18	984,499	54.4	25.8	54,694
- Local 1917	6	396,086	52.2	28.0	66,015
- Other	<u>9</u>	<u>600,765</u>	63.3	23.2	66,752
Total	37	\$ 2,211,854	54.3	25.9	\$ 59,780
Police – LPOA	22	\$ 1,678,694	46.2	20.9	\$ 76,304
- Lts. & Sgts.	<u>24</u>	<u>2,156,398</u>	46.1	22.0	89,850
Total	46	\$ 3,835,092	46.2	21.5	\$ 83,372
Fire – 56 Hours	28	\$ 2,505,586	48.9	22.4	\$ 89,485
- 40 Hours	4	388,644	49.3	22.5	97,161
- Administration	<u>1</u>	<u>129,393</u>	50.7	25.6	129,393
Total	33	\$ 3,023,623	49.0	22.5	\$ 91,625
<b>Totals</b>	<b>116</b>	<b>\$ 9,070,569</b>	<b>49.6</b>	<b>23.2</b>	<b>\$ 78,195</b>