

March 5, 2020

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, 2019, 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, 2020.

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, 2019. 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, 2019*

# ***Table of Contents***

## **Section One: Valuation Summary**

Valuation Summary.....	1
------------------------	---

## **Section Two: Actuarial Calculations – Funding**

Computed Contribution Rates.....	4
----------------------------------	---

Unfunded Actuarial Accrued Liability.....	7
---	---

## **Section Three: Retirement System Benefit Provisions**

Benefit Provision Summary .....	9
---------------------------------	---

## **Section Four: Actuarial Assumptions and Methods**

Actuarial Assumptions .....	14
-----------------------------	----

Actuarial Methods .....	18
-------------------------	----

## **Section Five: Valuation Data**

Asset Summary.....	19
--------------------	----

Participant Summary .....	22
---------------------------	----





***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, 2019 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, 2020.

### **Funding Value of Assets**

A smoothed market value of assets was used for the November 30, 2019, 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**

The City's contribution for the fiscal year beginning December 1, 2020 has been computed to be \$584,766 for the General division, \$855,495 for the Police division, and \$508,220 for the Fire division, for a total of \$1,948,481. These contributions were computed using the aggregate actuarial cost method, together with 15-year level dollar amortization of the unfunded present value of future benefits. The aggregate method is appropriate for retirement systems which are closed to new hires.

### **Retirement System Experience**

There were 22 new retirees added during the year compared with 11 last year. Thirteen retirees were removed compared with 20 last year.

The number of active members decreased to 51 from 71 last year. The active member payroll decreased to \$4,579,558 from \$6,446,503 last year.

### **Benefit Provision Changes**

None

### **Assumption and Method Changes**

The assumed rate of investment return was decreased to 7.40% (from 7.50%) and the mortality tables were changed from the RP 2000 Projected to 2014 mortality tables to the Pub 2010 Mortality Tables projected using MP 2018. The actuarial cost method was changed to amortize the unfunded present value of future benefits based on the aggregate cost method as level dollar payments over a closed period of 15 years.

**Participant Data**

	<u>11/30/2019</u>	<u>11/30/2018</u>
Active Members		
- General	13	17
- Police	24	33
- Fire	<u>14</u>	<u>21</u>
Total	51	71
Active Member Payroll		
- General	\$866,312	\$1,111,883
- Police	2,240,602	3,088,936
- Fire	<u>1,472,644</u>	<u>2,245,684</u>
Total	\$4,579,558	\$6,446,503
Retirees and Beneficiaries		
- General	273	280
- Police	181	171
- Fire	<u>110</u>	<u>104</u>
Total	564*	555**
Annual Pensions		
- General	\$6,506,744	\$6,570,126
- Police	7,553,140	6,986,811
- Fire	<u>4,599,090</u>	<u>4,116,551</u>
Total	\$18,547,974	\$17,673,488

\*Includes 18 alternate payees receiving \$173,476 under eligible domestic relations orders.

\*\* Includes 19 alternate payees receiving \$254,985 under eligible domestic relations orders.

**Financial Data**

	<u>11/30/2019</u>	<u>11/30/2018</u>
Market Value of Assets	\$218,901,336	\$212,169,524
Smoothed Valuation Assets	\$215,976,582	\$220,158,032

**Conclusion**

The Retirement System is being financed in accordance with a sound funding policy based on the aggregate actuarial cost method and level dollar amortization. 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 for Fiscal Year beginning December 1, 2020**

The City's computed contribution for the year beginning December 1, 2020 has been computed to be \$584,766 of payroll for the General division, \$855,495 for the Police division and \$508,220 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	\$ 6,137,892	\$ 18,170,034	\$ 11,261,149	\$ 35,569,075
Pre-Retirement death	47,382	56,510	42,743	146,635
Disability	67,500	486,822	310,426	864,748
Withdrawal	63,739	49,773	15,798	129,310
Inactive Members	471,399	420,587	402,252	1,294,238
Retirees and Beneficiaries	62,456,249	84,687,228	49,369,534	196,513,011
Total	69,244,161	103,870,954	61,401,902	234,517,017
2. Smoothed Valuation Assets	63,769,859	95,659,129	56,547,594	215,976,582
3. Present Value of Future Member Contributions	90,400	335,337	175,163	600,900
4. Unfunded Present Value of Benefits: 1. – 2. – 3.	5,383,902	7,876,488	4,679,146	17,939,535
5. City Contributions – Level \$ Amount Over 15 Years	\$584,766	\$855,495	\$508,220	\$1,948,481

**Computed Normal Cost Contribution Rates as of November 30, 2019**

**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 14.46% for General members, 20.50% for Police members and 18.64% 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	13.60%	20.91%	19.45%
Pre-Retirement Death	0.30	0.25	0.27
Disability	0.91	2.89	2.72
Withdrawal	<u>3.05</u>	<u>0.97</u>	<u>0.90</u>
Total Normal Cost	17.86	25.02	23.34
Member portion*	3.20	4.68	4.19
<b>City's Entry Age Normal Cost</b>	<b>14.66%</b>	<b>20.34%</b>	<b>19.15%</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
2015@	2017	4.49	4.49	4.49	407,269
2016#	2018	0.00	0.00	0.00	\$0
2017@	2019	7.45	7.45	7.45	497,856
2018#	2020	22.26	22.26	22.26	1,434,991
<b>2019@</b>	<b>2021</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>1,948,481</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)
2015@	213,228	207,438	102.8	(5,790)
2016#	217,503	210,779	103.2	(6,724)
2017@	223,050	219,436	101.7	(3,614)
2018#	220,158	220,656	99.8	497
<b>2019@</b>	<b>215,977</b>	<b>230,707</b>	<b>93.6</b>	<b>14,730</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 92.4% as of November 30, 2019. This is a decrease from 97.7% in the prior year.

**Comment, Recommendation and Conclusion**

**Comment:** During the year ended November 30, 2019, retirement system experience was less favorable than expected based on the long-term assumptions. The primary source of the unfavorable experience was the rate of investment return on the smoothed market value of assets (7.1% vs. 7.4% 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, 2019.

<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	\$56,052,606	\$62,456,249	\$6,403,643
Police	77,091,731	84,687,228	\$7,595,497
Fire	44,203,173	49,369,534	\$5,166,361

**Conclusion:** The Retirement System is being financed in accordance with a sound funding policy based on the aggregate actuarial cost method with 15 year level dollar amortization. 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: 25 years of service regardless of age (effective 10/17/16), 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:

Actual Years of Service	Maximum Total Years Used to Compute Benefit	Maximum Benefit As a Percent of AFC
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	4.50% of compensation(effective 10/17/16).

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), and Police Dispatchers 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

(7) Fire members retiring on or after 10/17/16, and LPOA, LLSA & Police Command on or after 12/1/2017, in addition to (6) above:

- (k) \$275 per month for one year period commencing eleven years after retirement.
- (l) \$300 per month for one year period commencing twelve years after retirement
- (m) \$325 per month for one year period commencing thirteen years after retirement.
- (n) \$325 per month for one year period commencing fourteen years after retirement.
- (o) \$375 per month commencing fifteen 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 7.4% (net of expenses)
  
- (ii) Salary Increases
  - Across-the-Board 4.0%
  - Merit and Longevity Age-related rates

**Sample Annual Rates of Salary Increase**

<b>Age</b>	<b>Across-the-Board</b>	<b>Merit and Longevity</b>	<b>Total</b>
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

Pub-2010 with MP 2018

**Future Life Expectancy (years)**

Sample Ages	Pub 2010 Public Safety Healthy Retirees with Generational MP 2018		Pub 2010 General Healthy Retirees with Generational MP 2018	
	<u>Men</u>	<u>Women</u>	<u>Men</u>	<u>Women</u>
55	30.6	32.6	30.7	33.7
60	25.7	27.7	26.0	28.8
65	21.1	23.0	21.5	24.1
70	16.8	18.6	17.2	19.6
75	12.9	14.5	13.3	15.3
80	9.5	10.9	9.8	11.5

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%	40%
46	70	-	-	26	25	40
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			

Fire service-based rates were first used for the November 30, 2016 valuation

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

**Actuarial Method Used for the Valuation**

***Aggregate Cost Method.*** The method used amortizes the unfunded present value of future benefits as of the valuation date as level dollar payments over 15 years.



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



## Summary of Asset Information Submitted for the Valuation

### Statement of Assets

As of November 30, 2019, the market value of Retirement System assets was reported to be \$218,901,336.

Revenues and Expenses for the Year Ended November 30, 2019:

(a) Revenues	
(i) Member Contributions	\$ 273,900
(ii) Employer Contributions	432,885
(iii) Investment Income (Net of Expenses)	25,823,133
(iv) Other income	<u>20,517</u>
(v) Total Income	26,550,435
b. Expenses	
(i) Pensions	18,262,078
(ii) Refunds and annuity withdrawal	1,308,880
(iii) Other	10,708
(iv) Legal Expense	57,758
(v) Admin	<u>179,200</u>
Total Expenses	\$19,818,623

**Investment Allocation**

The reported asset allocation at market value was as follows:

a. Cash and Short Term	
(i) Cash (incl. Checking/Savings Accounts)	\$158,461
(ii) Accruals and Receivables	297,097
(iii) Contributions Receivable	102,121
(iv) Other Receivables, Pending Trades	80,213
(v) Money Market Funds	0
(vi) Treasury Bills	-
(vii) Short Term Investments	3,930,349
b. Fixed Income	
(i) U.S. Government/Agency Bond	3,144,727
(ii) Corporate Bonds	9,792,550
(iii) Asset Backed Securities	2,738,021
(iv) Private Placements	2,538,276
(v) Municipal Obligations	-
(vi) Mortgage Backed Securities	7,058,512
(vii) TBA	-
(viii) Collateralized Mortgage Obligations	4,971,137
(ix) Other: Foreign Bonds & Notes	2,096,073
(x) Fixed Income mutual funds	22,157,969
c. Equities	
(i) Common Stock	78,164,078
(ii) Closely held equity	7,953,818
(iii) Open End mutual funds	31,756,895
(iii) Other: Foreign	3,558,549
American Depository Receipts	7,509,145
General Growth RTS	5,744,000
d. Real Estate:	
(i) Real estate investment funds	2,320,289
(ii) Other	23,302,820
e. Other Assets:	226,778
f. Less accounts payable	(700,542)
g. Total Market Value of Assets as of November 30, 2019	\$218,901,336

**Funding Value of Assets**

	<b>Year Ended 11/30/2018</b>	<b>Year Ended 11/30/2019</b>
A. Funding Value Beginning of Year	\$223,049,616	\$220,158,032
B. Market Value End of Year	212,169,524	218,901,336
C. Market Value Beginning of Year	231,055,993	212,169,524
D. Non-Investment Income Net Cash Flow	(17,250,273)	(19,111,839)
E. Investment Income		
E1. Market Total B-C-D	(1,636,196)	25,843,650
E2. Amount for Immediate Recognition	16,081,836	15,584,556
E3. Amount for Phased-In Recognition E1 – E2	(17,718,032)	10,259,094
F. Phased-In Recognition of Investment Income		
F1. From the Current Year 0.20 x E3	(3,543,606)	2,051,819
F2. First Prior Year	3,642,225	(3,543,606)
F3. Second Prior Year	(472,847)	3,642,225
F4. Third Prior Year	(2,331,758)	(472,847)
F5. Fourth Prior Year	982,839	(2,331,758)
F6. Total Recognized Investment Gain	(1,723,147)	(654,167)
G. Gross Funding Value end of Year A + D + E2 + F6	220,158,032	215,976,582
H. Health Insurance Reserve	0	0
I. Net Funding Value	220,158,032	215,976,582
J. Difference Between Market and Funding Value	(7,988,508)	2,924,754
K. Market Rate of Return	(0.7)%	11.5%
L. Recognized Rate of Return	6.7%	7.1%

**Reported Reserve Balances**

	<b><u>11/30/2018</u></b>	<b><u>11/30/2019</u></b>
Reserve for Employees' Contributions	\$5,729,190	\$4,344,377
Reserve for Employer Contributions	39,826,889	37,209,448
Reserve for Retired Benefit Payments	166,763,445	177,347,510
Reserve for Health Insurance	0	0
<b>Total</b>	<b>\$212,169,524</b>	<b>\$218,901,336</b>

## Participant Summary

### Retirees and Beneficiaries Included in the Valuation

There were 564 retirees and beneficiaries included in the valuation, with annual pensions totaling \$18,658,974. There were 22 new retirees added during the year and 13 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
2015	562	15,956,709	175.9	28,392	150,123,905	267,124
2016	569	16,904,555	221.7	29,709	161,017,061	282,983
2017	560	17,459,914	261.3	31,178	172,141,780	307,396
2018	555	17,673,488	274.2	31,844	173,940,806	313,407
<b>2019</b>	<b>564</b>	<b>18,658,974</b>	<b>407.4</b>	<b>33,083</b>	<b>196,513,011</b>	<b>348,427</b>

## Retirees and Beneficiaries - November 30, 2019

Attained Age	General		Police		Fire		Totals	
	No.	Annual Pensions	No.	Annual Pensions	No.	Annual Pensions	No.	Annual Pensions
45-49			10	\$585,833	2	\$149,062	12	\$734,895
50-54	4	180,723	34	1,778,289	11	759,164	49	2,718,176
55-59	25	732,498	42	2,179,417	12	755,674	79	3,667,589
60-64	37	1,338,475	13	581,121	13	692,730	63	2,612,326
65-69	38	985,665	10	230,603	15	723,917	63	1,940,185
70-74	53	1,400,823	18	591,431	14	581,220	85	2,573,474
75-79	27	509,742	30	925,501	16	436,101	73	1,871,344
80-84	32	597,956	15	434,965	11	244,057	58	1,276,979
85-89	37	523,183	7	204,342	9	162,601	53	890,126
90-94	13	156,152	2	41,637	4	51,413	19	249,202
95-99	6	76,001			3	43,150	9	119,151
100-104	1	5,527					1	5,527
<b>Totals</b>	<b>273</b>	<b>\$6,506,744</b>	<b>181</b>	<b>\$7,553,140</b>	<b>110</b>	<b>\$4,599,090</b>	<b>564</b>	<b>\$18,658,973</b>

There were 10 inactive vested members with estimated annual benefits of \$132,246 included in the valuation.

**Inactive Vested Members  
November 30, 2019**

<b>Attained Age</b>	<b>General</b>		<b>Police</b>		<b>Fire</b>		<b>Total</b>	
	<b>No.</b>	<b>Estimated Annual Pensions</b>	<b>No.</b>	<b>Estimated Annual Pensions</b>	<b>No.</b>	<b>Estimated Annual Pensions</b>	<b>No.</b>	<b>Estimated Annual Pensions</b>
45-49	1	\$5,039					1	\$5,039
50-54	4	37,666	1	35,945	1	37,974	6	111,585
60-64			1	5,822			1	5,822
80-84			1	7,000			1	7,000
100-104	1	2,800					1	2,800
<b>Totals</b>	<b>6</b>	<b>\$45,505</b>	<b>3</b>	<b>\$48,767</b>	<b>1</b>	<b>\$37,974</b>	<b>10</b>	<b>\$132,246</b>

**Total Active Members - November 30, 2019**  
**Age and Service Distribution**

Attained Age	Service				No.	Totals
	15-19	20-24	25-29	30-34		Payroll
40-44		3			3	\$ 287,166
45-49		21	1		22	2,148,852
50-54		6	8	2	16	1,388,736
55-59		2	4		6	424,351
60-64		1		1	2	172,285
65-69			2		2	158,168
<b>Total</b>		<b>33</b>	<b>15</b>	<b>3</b>	<b>51</b>	<b>\$ 4,579,558</b>

**Group Averages:**

Age: 50.9 years  
Service: 24.9 years  
Annual Pay: \$89,795

**General Active Members - November 30, 2019  
Age and Service Distribution**

Attained Age	Service				No.	Totals
	15-19	20-24	25-29	30-34		Payroll
50-54		2	3	1	6	\$ 392,922
55-59			4		4	244,265
60-64				1	1	70,957
65-69			2		2	158,168
<b>Total</b>		<b>2</b>	<b>9</b>	<b>2</b>	<b>13</b>	<b>\$ 866,312</b>

**Group Averages:**

Age: 57.2 years  
 Service: 27.6 years  
 Annual Pay: \$66,639

**Police Active Members - November 30, 2019  
Age and Service Distribution**

<b>Attained Age</b>					<b>Totals</b>	
	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>30-34</b>	<b>No.</b>	<b>Payroll</b>
40-44		3			3	\$ 287,166
45-49		14	0		14	1,295,893
50-54		1	4		5	574,010
55-59		1		1	2	83,533
<b>Total</b>		<b>19</b>	<b>4</b>	<b>1</b>	<b>24</b>	<b>\$ 2,240,602</b>

**Group Averages:**

Age: 48.1 years  
 Service: 24.0 years  
 Annual Pay: \$93,358

**Fire Active Members - November 30, 2019  
Age and Service Distribution**

<b>Attained Age</b>					<b>Totals</b>	
	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>30-34</b>	<b>No.</b>	<b>Payroll</b>
45-49		7	1		8	\$ 852,956
50-54		3	1		4	421,807
55-59		1			1	96,553
60-64		1			1	101,328
<b>Total</b>		<b>12</b>	<b>2</b>		<b>14</b>	<b>\$ 1,472,644</b>

**Group Averages:**

Age: 50.1 years  
 Service: 23.9 years  
 Annual Pay: \$105,189

**Active Members – Three Year Comparison**

	<b>November 30,</b>		
	<b>2019</b>	<b>2018</b>	<b>2017</b>
Active Members	51	71	79
Average Age (yrs.)	50.9	50.8	49.7
Average Service (yrs.)	24.9	24.3	23.7
Average Pay	\$89,795	\$90,796	\$84,590

## Active Members by Division – November 30, 2019

Valuation Division	No.	Annual Payroll	Average Age	Average Service	Average Pay
General - Court	0	\$0	0.0	48.6	\$24
- Dispatchers	1	66,271	50.0	23.2	66,271
- Local 192 – FT	6	355,566	54.0	26.7	59,261
- Local 1917	2	142,525	57.0	30.9	71,263
- Other	<u>4</u>	<u>301,950</u>	62.3	27.6	75,488
Total	13	\$866,312	57.2	27.6	\$66,639
Police – LPOA	11	\$923,363	48.6	23.6	\$83,942
- Lts. & Sgts.	<u>13</u>	<u>1,317,239</u>	47.7	24.3	23
Total	24	\$2,240,602	48.1	24.0	\$93,358
Fire – 56 Hours	11	\$1,108,091	50.6	23.5	\$100,736
- 40 Hours	1	106,272	49.0	23.8	106,272
- Administration	<u>2</u>	<u>258,281</u>	48.0	25.6	129,140
Total	14	\$1,472,644	50.1	23.9	\$105,189
<b>Totals</b>	<b>51</b>	<b>\$4,579,558</b>	<b>50.9</b>	<b>24.9</b>	<b>\$89,795</b>