

February 28, 2018

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, 2017, 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, 2018.

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, 2017. 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, 2017

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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, 2017 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, 2018.

Funding Value of Assets

A smoothed market value of assets was used for the November 30, 2017, 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, 2018 has been computed to be 7.45% of active member payroll for the General division, 7.45% of active member payroll for the Police division, and 7.45% 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, 2017 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 17 new retirees added during the year compared with 21 last year. Twenty-two retirees were removed compared with 22 last year.

The number of active members decreased to 79 from 95 last year. The active member payroll decreased to \$6,682,629 from \$7,625,911 last year.

Benefit Provision Changes

None

Assumption and Method Changes

The assumed rate of investment return was changed from 8.0% to 7.5%, as adopted by the Board of Trustees.

Participant Data

	<u>11/30/2017</u>	<u>11/30/2016</u>
Active Members		
- General	21	29
- Police	34	37
- Fire	<u>24</u>	<u>29</u>
Total	79	95
Active Member Payroll		
- General	\$1,307,866	\$1,787,780
- Police	2,976,366	3,154,426
- Fire	<u>2,398,397</u>	<u>2,683,705</u>
Total	\$6,682,629	\$9,070,569
Retirees and Beneficiaries		
- General	283	290
- Police	172	174
- Fire	<u>105</u>	<u>105</u>
Total	560*	569**
Annual Pensions		
- General	\$6,507,208	\$6,317,025
- Police	6,971,394	6,834,136
- Fire	<u>3,981,312</u>	<u>3,753,395</u>
Total	\$17,459,914	\$16,904,556

*Includes 16 alternate payees receiving \$211,495 under eligible domestic relations orders.

**Includes 17 alternate payees receiving \$227,288 under eligible domestic relations orders.

Financial Data

	<u>11/30/2017</u>	<u>11/30/2016</u>
Market Value of Assets	\$231,055,993	\$213,725,349
Smoothed Valuation Assets	\$223,049,616	\$217,502,699

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, 2018

The City's computed contribution rate for the year beginning December 1, 2018 has been computed to be 7.45 of payroll for the General division, 7.45% for the Police division and 7.45% 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	\$ 8,729,720	\$ 22,821,434	\$ 17,315,314	\$ 48,866,528
Pre-Retirement death	143,643	145,473	135,129	424,245
Disability	101,280	804,870	600,465	1,506,615
Withdrawal	117,640	102,054	41,857	261,551
Inactive Members	1,579,062	363,482	1,164,827	3,107,371
Retirees and Beneficiaries	57,947,971	74,962,711	39,231,098	172,141,780
Total	68,619,316	99,200,024	58,488,750	226,308,090
2. Smoothed Valuation Assets	68,064,093	97,593,494	57,391,629	223,049,616
3. Present Value of Future Member Contributions	150,638	618,120	377,752	1,146,510
4. Unfunded Present Value of Benefits: 1. – 2. – 3.	404,185	988,410	719,369	2,111,964
5. Present Value of Future Pay	5,423,798	13,263,569	9,653,281	28,340,648
6. City Contribution as a percent of Payroll: 4. / 5.	7.45%	7.45%	7.45%	7.45%
7. City Contribution – Dollars Based on Valuation Payroll	\$97,436	\$221,739	\$178,681	\$497,856

Computed Normal Cost Contribution Rates as of November 30, 2017

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 13.75% for General members, 17.78% for Police members and 18.15% 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	14.57%	21.49%	20.37%
Pre-Retirement Death	0.49	0.39	0.43
Disability	0.90	2.88	2.75
Withdrawal	<u>3.08</u>	<u>0.97</u>	<u>.92</u>
Total Normal Cost	19.04	25.73	24.47
Member portion*	3.25	5.03	4.50
City's Entry Age Normal Cost	15.79%	20.70%	19.97%

*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

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)

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, 2017. This is a decrease from 100.3% in the prior year.

Comment, Recommendation and Conclusion

Comment: During the year ended November 30, 2017, 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 (11.1% vs. 8% assumed). The decrease in the funded ratio reflects the decrease in the assumed rate of investment return to 7.5% from 8.0%, as adopted by the Board of Trustees.

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, 2017.

Division	Reported Reserve for Retired Benefit Payments	Computed Retiree Liabilities	Recommended Transfer from Reserve for Employer Contributions
General	\$54,181,058	\$57,947,971	\$3,766,913
Police	69,388,131	74,962,711	\$5,574,580
Fire	36,927,431	39,231,098	\$2,303,667

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: 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 25th 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) 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, 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.



Section Four:

***Actuarial Assumptions
And Methods***



Actuarial Assumptions

Economic Assumptions

- (i) Interest Rate 7.5% (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%	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. 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, 2017, the market value of Retirement System assets was reported to be \$231,055,993.

Revenues and Expenses for the Year Ended November 30, 2017:

(a) Revenues	
(i) Member Contributions	\$ 345,164
(ii) Employer Contributions	336,320
(iii) Investment Income (Net of Expenses)	34,908,240
(iv) Other income	<u>0</u>
(v) Total Income	35,589,724
b. Expenses	
(i) Pensions	17,320,097
(ii) Refunds and annuity withdrawal	728,288
(iii) Non-Investment Expenses	<u>210,694</u>
(iv) Total Expenses	\$18,259,079

Investment Allocation

The reported asset allocation at market value was as follows:

a. Cash and Short Term	
(i) Cash (incl. Checking/Savings Accounts)	\$133,338
(ii) Accruals and Receivables	319,528
(iii) Contributions Receivable	82,968
(iv) Other Receivables, Pending Trades	62,871
(v) Money Market Funds	0
(vi) Treasury Bills	-
(vii) Short Term Investments	2,250,802
b. Fixed Income	
(i) U.S. Government/Agency Bond	5,181,097
(ii) Corporate Bonds	10,431,336
(iii) Asset Backed Securities	2,251,448
(iv) Private Placements	160,390
(v) Municipal Obligations	-
(vi) Mortgage Backed Securities	6,057,880
(vii) TBA	-
(viii) Collateralized Mortgage Obligations	4,050,315
(ix) Other: Foreign Bonds & Notes	1,313,871
(x) Fixed Income mutual funds	25,648,270
c. Equities	
(i) Common Stock	87,679,922
(ii) Closely held equity	4,560,000
(iii) Open End mutual funds	32,423,222
(iii) Other: Foreign	4,487,622
American Depository Receipts	5,518,634
General Growth RTS	9,250,145
d. Real Estate:	
(i) Real estate investment funds	1,908,510
(ii) Other	27,919,693
e. Other Assets:	3,837,626
f. Less accounts payable	(4,473,194)
g. Total Market Value of Assets as of November 30, 2017	\$231,055,993

Funding Value of Assets

	Year Ended 11/30/2016	Year Ended 11/30/2017
A. Funding Value Beginning of Year	\$213,227,761	\$217,502,699
B. Market Value End of Year	213,725,349	231,055,993
C. Market Value Beginning of Year	216,518,517	213,725,349
D. Non-Investment Income Net Cash Flow	(16,814,573)	(17,577,595)
E. Investment Income		
E1. Market Total B-C-D	14,021,405	34,908,239
E2. Amount for Immediate Recognition	16,385,638	16,697,112
E3. Amount for Phased-In Recognition E1 – E2	(2,364,233)	18,211,127
F. Phased-In Recognition of Investment Income		
F1. From the Current Year 0.20 x E3	(472,847)	3,642,225
F2. First Prior Year	(2,331,758)	(472,847)
F3. Second Prior Year	982,839	(2,331,758)
F4. Third Prior Year	4,606,941	982,839
F5. Fourth Prior Year	1,918,698	4,606,941
F6. Total Recognized Investment Gain	4,703,873	6,427,400
G. Gross Funding Value end of Year A + D + E2 + F6	217,502,699	223,049,616
H. Health Insurance Reserve	0	0
I. Net Funding Value	217,502,699	223,049,616
J. Difference Between Market and Funding Value	(3,777,350)	8,006,377
K. Market Rate of Return	6.30%	15.1%
L. Recognized Rate of Return	10.3%	11.1%

Reported Reserve Balances

	<u>11/30/2016</u>	<u>11/30/2017</u>
Reserve for Employees' Contributions	\$6,544,124	\$5,729,766
Reserve for Employer Contributions	55,996,703	64,829,607
Reserve for Retired Benefit Payments	151,184,522	160,496,620
Reserve for Health Insurance	0	0
Total	\$213,725,349	\$231,055,993

Participant Summary

Retirees and Beneficiaries Included in the Valuation

There were 560 retirees and beneficiaries included in the valuation, with annual pensions totaling \$17,459,914. There were 17 new retirees added during the year and 22 were removed. One alternate payee was 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

Retirees and Beneficiaries - November 30, 2017

Attained Age	General		Police		Fire		Totals	
	No.	Annual Pensions	No.	Annual Pensions	No.	Annual Pensions	No.	Annual Pensions
45-49		\$-	9	\$503,631		\$-	9	\$503,631
50-54	4	167,581	40	2,055,625	5	337,654	49	2,560,860
55-59	23	728,534	30	1,597,333	14	845,976	67	3,171,843
60-64	38	1,287,723	8	305,371	15	813,782	61	2,406,876
65-69	45	1,184,629	16	437,611	14	632,140	75	2,254,380
70-74	46	1,123,854	24	766,716	16	516,660	86	2,407,230
75-79	37	599,104	25	739,486	14	348,010	76	1,686,600
80-84	29	561,625	14	405,284	11	195,139	54	1,162,048
85-89	38	586,788	6	160,337	11	216,786	55	963,911
90-94	17	203,890			5	75,165	22	279,055
95-99	6	63,480					6	63,480
Totals	283	\$6,507,208	172	\$6,971,394	105	\$3,981,312	560	\$17,459,914

There were 17 inactive vested members with estimated annual benefits of \$317,231 included in the valuation.

**Inactive Vested Members
November 30 ,2017**

<u>Attained Age</u>	<u>General</u>		<u>Police</u>		<u>Fire</u>		<u>Totals</u>	
	<u>No.</u>	<u>Estimated Annual Pensions</u>	<u>No.</u>	<u>Estimated Annual Pensions</u>	<u>No.</u>	<u>Estimated Annual Pensions</u>	<u>No.</u>	<u>Estimated Annual Pensions</u>
45-49	2	\$22,198	1	\$35,944	1	\$37,974	4	\$96,116
50-54	5	98,675			1	75,579	6	174,263
55-59	4	31,231					4	31,231
60-64			1	5,822			1	5,822
75-79			1	7,000			1	7,000
100-104	1	2,799					1	2,799
Totals	12	\$154,903	3	\$48,766	2	\$113,553	17	\$317,231

**Total Active Members - November 30, 2017
Age and Service Distribution**

Attained Age	Service				Totals	
	15-19	20-24	25-29	30-34	No.	Payroll
40-44	4	8			12	\$1,104,571
45-49	1	31	1		33	2,900,939
50-54		7	12	2	21	1,748,899
55-59	1	5	2		8	602,420
60-64			1	1	2	121,190
65-69		1	2		3	204,610
Total	6	52	18	3	79	\$6,682,629

Group Averages:

Age: 49.7 years
 Service: 23.7 years
 Annual Pay: \$84,590

**General Active Members - November 30, 2017
Age and Service Distribution**

Attained Age				Totals	
	20-24	25-29	30-34	No.	Payroll
45-49	3			3	\$174,570
50-54	1	7	1	9	554,843
55-59	2	2		4	252,653
60-64		1	1	2	121,190
65-69	<u>1</u>	<u>2</u>		<u>3</u>	<u>204,610</u>
Total	7	12	2	21	\$1,307,866

Group Averages:

Age: 55.2 years
 Service: 26.5 years
 Annual Pay: \$62,279

**Police Active Members - November 30, 2017
Age and Service Distribution**

Attained Age					Totals	
	15-19	20-24	25-29	30-34	No.	Payroll
40-44	4	7			11	\$991,034
45-49		17			17	1,464,197
50-54		1	2	1	4	362,769
55-59	1	1			2	158,366
Total	5	26	2	1	34	\$ 2,976,366

Group Averages:

Age: 47.1 years
 Service: 22.5 years
 Annual Pay: \$87,540

**Fire Active Members - November 30, 2017
Age and Service Distribution**

Attained Age	Totals				Payroll
	15-19	20-24	25-29	No.	
40-44		1		1	\$113,537
45-49	1	11	1	13	1,262,172
50-54		5	3	8	831,287
55-59		2		2	191,401
Total	1	19	4	24	\$2,398,397

Group Averages:

Age: 49.7 years
 Service: 22.9 years
 Annual Pay: \$99,933

Active Members – Three Year Comparison

	November 30,		
	2017	2016	2015
Active Members	79	95	116
Average Age (yrs.)	49.7	50.1	49.6
Average Service (yrs.)	23.7	23.5	23.2
Average Pay	\$84,590	\$80,273	\$78,195

Active Members by Division – November 30, 2017

Valuation Division	No.	Annual Payroll	Average Age	Average Service	Average Pay
General - Court	0	\$0	0.0	0.0	\$-
- Dispatchers	1	62,553	48.2	21.2	62,553
- Local 192 – FT	10	556,375	54.9	26.0	55,637
- Local 1917	5	338,568	55.0	29.2	67,714
- Other	<u>5</u>	<u>350,370</u>	59.9	25.7	70,074
Total	21	\$1,307,866	55.2	26.5	\$62,279
Police – LPOA	16	\$1,269,847	47.8	22.1	\$79,366
- Lts. & Sgts.	<u>18</u>	<u>1,706,519</u>	46.6	22.9	94,806
Total	34	\$2,976,366	47.1	22.5	\$87,540
Fire – 56 Hours	19	\$1,824,530	49.9	22.5	\$96,028
- 40 Hours	3	322,304	48.5	22.9	107,435
- Administration	<u>2</u>	<u>251,563</u>	50.1	26.9	125,781
Total	24	\$2,398,397	49.7	22.9	\$99,933
Totals	79	\$6,682,629	49.7	23.7	\$84,590