

April 12, 2019

The Retirement Board  
Flint Township Firefighters'  
Retirement System  
Charter Township of Flint  
Flint, Michigan

Dear Board Members:

*The purpose of the annual actuarial valuation* of the Flint Township Firefighters' Retirement System as of December 31, 2018 is to:

- Compute the liabilities associated with benefits likely to be paid on behalf of current retired, active and inactive vested members of the Retirement System,
- Compare accrued assets with accrued liabilities to assess the funded condition of the Retirement System, and
- Compute the Township's recommended contribution rate for the Fiscal Year 2018.

This valuation has been conducted in accordance with generally accepted actuarial principles and practices. Data concerning active and inactive members, retirees, beneficiaries and assets was provided by the Township. 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 December 31, 2018. Each actuarial assumption used in this valuation is reasonably related to the past experience of the System and represents reasonable expectations of long-term future experience under the System. This report was prepared under the direction of a member of the American Academy of Actuaries who meets the qualification standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,



Denise M. Jones  
Senior Consultant



Sandra W. Rodwan  
Member, American Academy of Actuaries

# ***Flint Township Firefighters' Retirement System***

*Revised Actuarial Valuation as of December 31, 2018*

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***Section One:***  
***Valuation Summary***



### **Purpose of Valuation**

The purpose of the annual actuarial valuation of the Flint Township Firefighters' Retirement System as of December 31, 2018 is to:

- ❖ Compute the liabilities associated with benefits likely to be paid on behalf of current retired and active members of the Retirement System,
- ❖ Compare accrued assets with accrued liabilities to assess the funded condition of the Retirement System, and
- ❖ Compute the Township's recommended contribution rate for the Fiscal Year beginning January 1, 2019.

### **Liabilities and Funded Condition of Retirement System**

Accrued liabilities of the Retirement System as of December 31, 2018 were computed to be \$10,184,093. The funding value of accrued assets was \$7,120,555. The ratio of the funding value of accrued assets to accrued liabilities was 69.9%.

### **Funding Value of Assets**

A smoothed market value of assets was used for the December 31, 2018 valuation. This method, which spreads the difference between actual and expected investment return over four years, is the same as the method used last year.

### **Computed Township Contribution Rate**

The Township's normal cost contribution rate was computed to be 11.32% of member payroll (19.32% total minus 8% member contribution). Unfunded actuarial accrued liability was amortized over 11 years as a level dollar amount, producing an amortization payment of 80.39% of member payroll. The 11 year amortization period is a one year decrease from the 12 year period used for the last valuation.

The Township's total contribution for FY 2019 was therefore computed to be 91.71% of member payroll.

**Retirement System Experience**

The overall experience of the Retirement System was generally favorable during 2018. The favorable experience was due to salary increases which were lower than assumed. Offsetting the favorable experience was recognized investment return which was less than assumed.

**Benefit Provision Changes**

There were no benefit provision changes in this valuation. The Retirement System is closed to new hires pursuant to the firefighters collective bargaining agreement.

**Assumption and Method Changes**

- The investment return assumption was changed from 8.0% to 7.0%.
- The mortality table was changed from the 1971 GAM projected to 2000 to the RP 2014 Healthy Annuitant Mortality Table.
- Assumed rates of salary increases were changed from 7.5%-4.5% to 3.5%.

These assumptions were adopted by the Retirement Board at their November 8, 2018 meeting.

**Participant Data**

	<u>12/31/2018</u>	<u>12/31/2017</u>
Active Members	6	8
Active Member Payroll	\$491,178*	\$697,594*
Retirees and Beneficiaries	15	15
Annual Pensions	\$608,840	\$589,385
Inactive Vested Members	2	1
Annual Pensions	\$60,748	\$25,638

*\*Includes overtime*

**Financial Data**

	<u>12/31/2018</u>	<u>12/31/2017</u>
Funding Value of Assets	\$7,120,555	\$7,005,115
Market Value of Assets	\$6,594,201	\$7,175,295



***Section Two:***

***Actuarial Calculations –  
Funding***



**Computed Contribution Rates for Fiscal Year 2019**

The contribution rates shown below are expressed as level percents of active member payroll.

The normal cost can be viewed as the long-term on-going cost of the Retirement System.

Actuarial accrued liability as of December 31, 2018 was amortized over 11 years. The 11 year period is a one year decrease from the 12 year period used for last year’s valuation.

**Contribution Recommendation:**

	<u><b>Percents of Payroll</b></u>
Normal Cost	
Regular Retirement	14.26%
Pre-retirement Death	0.49
Disability	3.27
Withdrawal	<u>1.30</u>
Total Normal Cost	19.32%
Unfunded Actuarial Accrued Liability	80.39
<b>Total Computed Contribution</b>	<b>99.71%</b>
Member portion	8.00
<b>Township’s Computed Contribution Rate</b>	<b>91.71%</b>
Dollar Amount Based on Valuation Payroll	\$450,459

Lump sum payments at retirement were assumed to increase Average Final Compensation and related pension amounts by 8% on average. If lump sum payments were not included in the computation of AFC, the 91.71% contribution rate would be decreased to 85.06%.



**Unfunded Actuarial Accrued Liability**

	<u><b>December 31, 2018</b></u>	<u><b>December 31, 2017</b></u>
Actuarial accrued liability	\$10,184,093	\$9,073,702
Assets allocated to funding	<u>7,120,555</u>	<u>7,005,115</u>
Unfunded actuarial accrued liability	\$3,063,538	\$2,068,587

**Recommended Township Contributions**

<b>Valuation Date December 31</b>	<b>Computed Township Dollar Contributions</b>	<b>Percent of Valuation Payroll</b>
1990	\$177,404	25.62%
1995	\$200,811	33.28
2000	195,088	26.42
2001	202,155	32.68*
2002	220,326	31.21
2003	225,131	32.56
2004	272,688	29.87
2005	286,795	30.19
2006	293,981	29.37
2007	293,914	29.36
2008	309,324	31.05
2009	340,620	31.35
2010	355,973	36.90*
2011	358,930	40.18
2012	346,644	39.32
2013	313,011	38.49
2014	317,985	41.28
2015	306,157	44.93
2016	277,622	41.47
2017	334,985	48.02
<b>2018**</b>	<b>450,459</b>	<b>91.71</b>

\*The number of active members decreased to 13 from 15 in 2001 and to 12 from 14 in 2010, which decreased the payroll base over which unfunded actuarial accrued liabilities are financed.

\*\*Actuarial assumptions changed, and the number of active members decreased to 6 from 8, which decreased the payroll base over which unfunded actuarial accrued liabilities are financed.

*Note: Results prior to 2000 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
6/30/90(1)				
Fire	1,084,527	2,178,392	49.8	1,093,865
Police	988,607	822,906	120.1	(165,701)
Total	2,073,134	3,001,298	69.1	928,164
12/31/95	1,773,823	3,885,001	45.7	2,111,178
12/31/96	1,847,800	4,051,098	45.6	2,203,298
12/31/97	2,087,035	4,241,625	49.2	2,154,590
12/31/98	2,361,690	4,769,309	49.5	2,407,619
12/31/99(2)	2,685,971	4,924,923	54.5	2,238,952
12/31/00	3,032,135	5,251,943	57.7	2,219,808
12/31/01	3,146,419	5,570,222	56.5	2,423,803
12/31/02	3,117,819	5,646,173	55.2	2,528,354
12/31/03	3,123,648	5,704,006	54.8	2,580,358
12/31/04	3,209,627	6,317,924	50.8	3,108,297
12/31/05	3,366,575	6,572,273	51.2	3,205,697
12/31/06	3,721,093	6,876,518	54.1	3,155,425
12/31/07	4,037,110	7,086,243	57.0	3,049,133
12/31/08	4,076,685	7,240,933	56.3	3,164,248
12/31/09	4,291,101	7,720,283	55.6	3,429,182
12/31/10	4,347,371	8,050,201	54.0	3,702,830
12/31/11	4,355,646	7,995,528	54.5	3,639,882
12/31/12	4,704,198	8,239,231	57.1	3,535,033
12/31/13	5,104,043	8,157,183	62.6	3,053,140
12/31/14	5,532,101	8,354,705	66.2	2,822,604
12/31/15	6,126,972	8,755,147	70.0	2,626,174
12/31/16	6,602,447	8,278,971	79.7	1,676,524
12/31/17	7,005,115	9,073,702	77.2	2,068,587
<b>12/31/18(3)</b>	<b>7,120,555</b>	<b>10,184,093</b>	<b>69.9</b>	<b>3,063,538</b>

(1) Police were included starting 6/30/86, not included starting 6/30/94.

(2) Interest rate increased to 8.0% from 7.5%. Mortality tables and salary tables were adjusted. Actuarial cost method changed to entry age method from attained age method.

(3) Interest rate decreased to 7.0% from 8.0%. Mortality tables and salary tables were adjusted.

Results shown throughout this report for years prior to 2000 were prepared by the previous actuarial firm.

**Gain/Loss - Year Ended December 31, 2018**

(1) UAAL <sup>a</sup> at start of year	\$2,068,587
(2) Normal cost	126,748
(3) Actual Contributions	446,548
(4) Interest	152,941
(5) Expected UAAL before changes	1,901,728
(6) Change from amendments	None
(7) Change from assumption revision	1,419,238
(8) Expected UAAL after changes	3,320,966
(9) Actual UAAL	3,063,538
(10) Gain(Loss)	257,428
(11) Percent of AAL <sup>b</sup>	2.84%

<sup>a</sup> Unfunded Actuarial Accrued Liability.

<sup>b</sup> Actuarial Accrued Liability at beginning of year.

**Actuarial Balance Sheet December 31, 2018**  
**Actuarial Assets**

Accrued Assets		
Assets from system’s financial statements (market value)	\$6,594,201	
Funding value adjustment	526,354	
Total funding value of assets	\$7,120,555	
Actuarial present value of expected future		
For normal costs	483,871	
For unfunded actuarial accrued liabilities	3,063,538	
	3,547,409	
Total Actuarial Present Value of Present and Expected Future Resources		\$10,667,964

**Actuarial Present Values (Liability)**

To retirees and beneficiaries	\$6,551,498
To vested terminated members	638,919
To active members	
Allocated to service rendered prior to valuation date	2,993,676
Allocated to service rendered after valuation date	483,871
	\$10,667,964
Total Actuarial Present Value of Expected Future Benefit Payments	\$10,667,964

## Comments, Recommendations and Conclusion

**Comment 1:** Included in this valuation were the following assumption changes adopted by the Retirement System Board of Trustees:

- The investment return assumption was changed from 8.0% to 7.0%.
- The mortality table was changed from the 1971 GAM projected to 2000 to the RP 2014 Healthy Annuitant Mortality Table.
- Assumed rates of salary increases were changed from 7.5%-4.5% to 3.5%.

**Comment 2:** For the year ended December 31, 2018, the funding value rate of investment return was less than assumed. The funding value of assets is based on a smoothed market value which spreads the difference between actual and expected return over 4 years. This year's actual investment experience resulted in a recognized rate of return on the funding value of assets which was less than assumed (4.20% vs. 8.00%).

**Comment 3:** Lump sum payments for unused sick leave are included in the computation of Average Final Compensation and related pension amounts. To reflect the effect of these payments, normal retirement pension liabilities have been increased 8%. This increased the Township's computed contribution rate by 6.65% of payroll.

**Comment 4:** The Retirement System is closed to new hires pursuant to the current firefighters collective bargaining agreement.

**Conclusion:** The funded ratio of the Retirement System decreased during the year from 77.2% to 69.9% due to assumption changes adopted by the Retirement System Board of Trustees. In absence of the assumption changes, the funded ratio would have increased to 81.8%.



***Section Three:***

***Retirement System  
Benefit Provisions***



## **Benefit Provision Summary**

### ***Regular Retirement***

*Eligibility:*

Age 50 with 25 or more years of service or age 60 regardless of service.

*Annual Benefit:*

Straight life pension equals 2.5% of 3 year average final compensation (AFC) times first 25 years of service plus 1% of AFC times years of service in excess of 25 years. Lump sum payments for unused sick leave are included in the computation of AFC.

The Retirement System is closed to new hires pursuant to the current firefighters collective bargaining agreement.

### ***Deferred Retirement***

*Eligibility:*

10 or more years of service.

*Annual Benefit:*

Computed as service retirement but based upon service, AFC and benefit provisions in effect at termination. Benefit begins at date retirement would have occurred had member remained in employment.

### ***Duty Disability Retirement***

*Eligibility:*

Payable upon the total and permanent disability of a member in the line of duty.

*Annual Benefit:*

To age 55: 50% of AFC.

At age 55: Same as Service Retirement Pension with service credit from date of disability to age 55.

### ***Non-Duty Disability***

*Eligibility:*

Payable upon the total and permanent disability of a member with 5 or more years of service

*Annual Benefit:*

To Age 55: 1.5% of AFC times years of service.

At Age 55: 2.0% of AFC times years of service.

***Duty Death in Service Survivor's Pension***

*Eligibility:*

Payable upon the expiration of a worker's compensation to the survivors of a member who died in the line of duty.

*Annual Benefit:*

Same amount that was paid by worker's compensation.

***Non-Duty Death in Service Survivor's Pension***

*Eligibility:*

Payable to a surviving spouse, if any, upon the death of a member with 20 or more years of service.

*Annual Benefit:*

Accrued straight life pension actuarially reduced in accordance with an Option I election.

***Death After Retirement Survivor's Pension***

*Eligibility:*

Payable to an eligible surviving spouse, if any, upon the death of a retired member who was receiving a straight life pension.

*Annual Benefit:*

Spouse's pension equals 60% of the straight life pension the deceased retiree was receiving.

***Member Contributions***

7.0% of pay for payouts of unused sick time.

8.0% of pay for all other wage payments.



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*Section Four:*

***Actuarial Assumptions  
And Methods***



**Actuarial Assumptions**

**Economic Assumptions**

- (i) Interest Rate 7.0% (net of expenses)
- (ii) Salary Increases 3.5%

**Sample Annual Rates of Salary Increase**

<b>Age</b>	<b>Rates</b>
20	3.5%
25	3.5
30	3.5
35	3.5
40	3.5
45	3.5
50	3.5
55	3.5
60	3.5

**Demographic Assumptions**

(i) Mortality

RP 2014 Mortality Table

Sample Ages	Future Life Expectancy (Years)	
	Men	Women
55	28.2	30.7
60	24.1	26.3
65	20.1	22.0
70	16.2	18.0
75	12.7	14.3
80	9.5	10.9

**Rates of Disability**

Sample Ages	Percent Becoming Disabled Within Next Year
20	0.10 %
25	0.15
30	0.20
35	0.25
40	0.50
45	0.65
50	0.80

(ii) Termination of Employment

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

<b>Sample Ages</b>	<b>Years of Service</b>	<b>Percent Terminating</b>
All	0	10.00%
	1	7.00
	2	5.00
	3	4.00
	4	3.50
25	5 & Over	3.50
30		2.90
35		1.50
40		0.60
45		0.50
50		0.50
55		0.50
60		0.50

(iii) Lump sum payments

Lump sum payments at retirement were assumed to increase Average Final Compensation for regular retirements by 8%.

(iv) Retirement Rates

Age-related rates

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

<b>Retirement Ages</b>	<b>Percent Retiring</b>
50	35%
51	25
52	20
53	15
54	15
55	15
56	15
57	15
58	25
59	30
60	100

A member was assumed to be eligible for retirement upon meeting the following conditions:

- ❖ Attaining age 50 with 25 years of service, or, after attaining age 60 with 10 or more years of service.

(v) Member Contribution Interest

The interest rate currently credited on member contributions was assumed to be 2%.

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

**Normal Cost.** Normal cost and the allocation of actuarial present values between service rendered before and after the valuation date were determined using an individual entry age actuarial cost method having the following characteristics:

- ❖ The annual normal costs for each individual active member, payable from date of hire to date of retirement, are sufficient to accumulate the value of the member's benefit at the time of retirement;

**Financing of Unfunded Actuarial Accrued Liability.** Actuarial accrued liability was amortized over a 11 year period as of December 31, 2018.



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



**Asset Summary**

As of December 31, 2018, the market value of assets was reported to be \$6,594,201. The funding value of assets (smoothed market value) was computed to be \$7,120,555.

**Funding Value of Assets**

A. Funding Value Beginning of Year	\$7,005,115
B. Market Value End of Year	6,594,201
C. Market Value Beginning of Year	7,175,295
D. Non-Investment Net Cash Flow	(175,346)
E. Investment Income	
E1. Market Total B-C-D	(405,748)
E2. Amount for Immediate Recognition (8%)	553,530
E3. Amount for Phased-In Recognition E1-E2	(959,278)
F. Phased-In Recognition of Investment Income	
F1. Current Year 0.25 x E3	(239,820)
F2. First Prior Year	110,836
F3. Second Prior Year	(28,576)
F4. Third Prior Year	(105,184)
F5. Total Phased-In Amount	(262,744)
G. Funding Value End of Year A+D+E2+F5	\$7,120,555
H. Difference Between Market and Funding Value	(526,354)
I. Recognized Nominal Rate of Return on Funding Value	4.20%



## Participant Summary

### Retirees and Beneficiaries Included in the Valuation

As of December 31, 2018, there were 15 retirees and beneficiaries included in the valuation, with annual pensions totaling \$608,840. There was one new retiree and one death this year.

#### Pensions Being Paid

Valuation Date December 31	No.	Annual Pensions	Average Pension	Discounted Value of Pensions	
				Total	Average
1990	6	\$77,512	\$12,919	\$760,104	\$126,684
1995	12	263,517	21,960	2,913,828	242,819
1996	12	277,585	23,132	2,971,764	247,647
1997	12	277,585	23,132	2,932,500	244,375
1998	14	346,801	24,772	3,704,700	264,621
1999	14	346,801	24,772	3,605,892	257,564
2000	14	346,801	24,772	3,505,065	250,362
2001	15	392,707	26,181	3,961,039	264,069
2002	15	388,914	25,928	3,811,261	254,084
2003	16	424,725	26,545	4,243,296	265,206
2004	16	437,407	27,338	4,321,252	270,078
2005	16	433,590	27,099	4,245,496	265,344
2006	16	433,590	27,099	4,177,405	261,088
2007	16	438,231	27,389	4,215,804	263,488
2008	15	430,719	28,715	4,126,628	275,109
2009	15	430,719	28,715	4,053,974	270,265
2010	16	492,938	30,809	4,697,479	293,592
2011	16	492,938	30,809	4,615,224	288,452
2012	15	487,431	32,495	4,531,187	302,079
2013	14	462,070	33,005	4,267,996	304,857
2014	15	503,056	33,537	4,590,281	306,019
2015	16	574,183	35,886	5,292,672	330,792
2016	14	524,738	37,481	4,781,215	341,515
2017	15	589,385	39,292	5,347,551	356,503
<b>2018</b>	<b>15</b>	<b>608,840</b>	<b>40,589</b>	<b>6,551,498*</b>	<b>436,766</b>

\*Reflects assumption changes.

**Retired Members and Survivors-2018**

<b>Attained Age</b>	<b>No.</b>	<b>Annual Pensions</b>
57	1	\$71,127
59	2	123,004
60	1	64,646
61	1	31,082
62	1	15,549
65	1	40,986
68	2	62,915
70	1	21,577
74	1	45,906
75	1	44,128
78	1	38,350
80	1	37,655
89	1	11,915
<b>Totals</b>	15	<b>\$608,840</b>

**Active Member Summary****Active Members - December 31, 2018  
Age and Service Distribution**

<b>Attained Age</b>			<b>No.</b>	<b>Totals</b>	
	<b>15-19</b>	<b>20-24</b>		<b>Payroll</b>	
45-49	1	1	2	153,714	
50-54		2	2	170,681	
55-59		2	2	166,783	
<b>Totals</b>	<b>1</b>	<b>5</b>	<b>6</b>	<b>\$ 491,178</b>	

**Group Averages:**

Age: 51.4 years  
Service: 22.3 years  
Annual Pay: \$81,863

**Active Members – Three-Year Summary**

	<b>2018</b>	<b>2017</b>	<b>2016</b>
Active Members	6	8	9
Valuation Payroll*	\$491,178*	\$697,594*	\$669,452*
Average Compensation	\$81,863	\$87,199	\$74,384
Average Age (yrs.)	51.4	51.8	51.1
Average Service (yrs.)	22.3	21.5	21.1

\*Includes overtime

\*\*Includes 27 pay periods

**Vested Terminated Members**

There was one vested terminated member with an annual estimated benefit of \$25,638 as of December 31, 2018 included in the valuation and one vested member currently off on Worker's Compensation.