



MUNICIPAL FIRE AND POLICE RETIREMENT SYSTEM OF IOWA

Actuarial Valuation Report

July 1, 2018

September 19, 2018

PERSONAL AND CONFIDENTIAL

Board of Trustees
Municipal Fire and Police Retirement System of Iowa
7155 Lake Drive, Suite 201
West Des Moines, IA 50266

RE: July 1, 2018 Actuarial Report

Dear Board Members:

We are pleased to submit this actuarial report of the Municipal Fire and Police Retirement System of Iowa. The report presents the annual actuarial valuation, which was determined in accordance with Iowa Code Chapter 411. The costs developed and presented in this report are based on asset values as of June 30, 2018, member census data as of July 1, 2018 and current System provisions, all of which were supplied by the Municipal Fire & Police Retirement System of Iowa.

The purposes of the actuarial report are:

1. To determine the normal contribution rate that is payable by the Cities under Chapter 411 of the Code of Iowa;
2. To determine the funded status of the System; and
3. To provide information relating to the disclosure requirements of the Governmental Accounting Standards Board (GASB) Statement No. 67 – Financial Reporting for Defined Benefit Pension Plans (an amendment of GASB Statement No. 25).

All costs and liabilities were determined in accordance with generally accepted actuarial principles and procedures and are based on the actuarial assumptions and methods prescribed by the Board of Trustees in accordance with Iowa Code Section 411.5.10-11. To the best of our knowledge, the information supplied in this report is complete and accurate and in my opinion, the assumptions are reasonably related to the experience of the System and to reasonable expectations under the System. The amounts presented in the accompanying report have been determined appropriately according to the actuarial assumptions and methods stated herein, and fully and fairly disclose the actuarial position of the System. However, future measures may differ significantly from the current measurement. Due to the limited scope of our assignment, this report does not include an analysis of the potential range of such future measures. The undersigned meets the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinion contained in this report.

Sincerely,



Glen C. Gahan, FSA
Principal
Member of American Academy
of Actuaries
Enrolled Actuary No. 17-4875



Michael S. Ehmke, ASA
Principal
Member of American Academy
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Enrolled Actuary No. 17-5811

GCG/MSE/sg

Enclosure

Table of Contents

	<u>Page</u>
Report Highlights	1
Comments on the Valuation	2
Actuarial Valuation Results	6
System Demographic Experience	17
System Accounting Results	18
Summary of Actuarial Assumptions	23
Summary of Actuarial Methods	27
Summary of System Provisions	28
Summary of System Members	34

Report Highlights

This section compares results of the current and prior two actuarial valuations. Additional supporting detail is available in other sections of the report. The Table of Contents on the prior page identifies the location of the supporting detail.

	As of July 1,		
	2016	2017	2018
Cities Recommended Contribution	\$ 72,838,723	\$ 77,081,123	\$ 73,820,798
Normal Contribution Rate	25.68%	26.02%	24.41%
Plan Assets			
Market Value	2,242,546,392	2,436,896,111	2,549,627,987
Actuarial Value	2,333,944,800	2,461,161,417	2,578,863,993
Prior Year Investment Return			
Market Value	0.01%	11.75%	7.63%
Actuarial Value	6.88%	8.37%	7.75%
Actuarial Accrued Liability	2,867,807,326	3,023,371,171	3,145,031,474
Funded Ratio*	81.38%	81.40%	82.00%
Annual Participating Payroll	283,639,887	296,237,982	302,420,313
Annual Normal Cost	53,423,772	56,128,110	53,017,674
Percent of Payroll	18.84%	18.95%	17.53%
Annual Pension Benefits			
Service Retirement	82,955,208	87,272,844	91,350,744
Disabled Retirement	45,967,620	47,563,392	48,742,116
Vested Retirement	6,196,356	6,677,184	7,194,492
Beneficiaries	<u>17,580,996</u>	<u>19,008,288</u>	<u>20,299,872</u>
Total	152,700,180	160,521,708	167,587,224
Number of Members			
Active	3,926	3,968	4,003
Disabled	1,132	1,136	1,130
Retirees and Beneficiaries	2,854	2,909	2,977
Vested Terminated	<u>341</u>	<u>356</u>	<u>367</u>
Total	8,253	8,369	8,477

*Based on the ratio of the Actuarial Value of Assets to Actuarial Accrued Liability.

Comments on the Valuation

Cities Recommended Contribution

The recommended contribution to the System was determined using the Entry Age Normal actuarial cost method as adopted by the Board of Trustees for valuation years beginning July 1, 2011. The Aggregate actuarial cost method had been used for years prior to July 1, 2011 to determine the contribution for the System.

We recommend a contribution of \$73,820,798 be made for the 2018 plan year. This is equal to a contribution rate of 24.41% of payroll. This rate assumes that the State of Iowa will contribute approximately \$0 for the 2018 plan year.

The System's normal contribution rate decreased from 26.02% for 2017 to 24.41% for 2018. The System's contribution rate before any adjustment to the minimum contribution rate changed as follows:

July 1, 2017 normal contribution rate:	26.02%
• Increase in contribution rate due to lower State contribution	0.00%
• Plan experience more favorable than assumed	(0.81%)
• Investment experience more favorable than assumed	(0.17%)
• Changes in System provisions	0.00%
• Change in actuarial cost method	0.00%
• Changes in actuarial assumptions	<u>(0.63%)</u>
Preliminary normal contribution rate:	24.41%
• Increase necessary to meet minimum contribution rate	0.00%
July 1, 2018 normal contribution rate	24.41%

Changes in System Provisions

All System provisions remained unchanged from the prior year valuation.

Changes in Actuarial Assumptions

In accordance with Iowa State Code Section 411.5.10-11, the Board of Trustees prescribes the actuarial assumptions used in this report. Per the Code Section, we as the System's actuary conduct a formal investigation, or experience study, of the primary assumptions every five years. The most recent investigation was completed for the 10-year period ending June 30, 2017.

Comments on the Valuation

Based on the results of the recent 10-year experience study and adoption by the Board of Trustees, the following actuarial assumptions were changed:

- Change salary increases to be 5% lower for ages 25 to 34, 10% lower for ages 35 to 44 and set equal to 4.0% for ages 45 to 49 and to 3.75% for ages 50 and over for actives
- Change withdrawal rates to be 50% higher for ages 40 to 44 and set equal to 1.0% for ages 45 and over for actives
- Change retirement rates to 60% for age 55 and decrease ages 56 to 64 retirement rates for actives
- Decrease ordinary mortality rates by 50% and increase accidental mortality rates by 50% for actives
- Decrease ordinary disability rates by 10% and decrease accidental disability rates by 30% for actives ages 45 and over
- Lower DROP participation rates to 50% for ages 55 to 56 for actives
- Change mortality rates to the RP 2014 Blue Collar Healthy Annuitant Mortality Table with certain adjustments and generational projection of future mortality improvement with 50% of Scale BB beginning in 2017.

Change in Actuarial Methods

All actuarial cost methods remain unchanged from the prior year valuation.

Comments on the Valuation

Government Accounting Standards Board Disclosure

Measurements used to evaluate the funded status of the System are based on procedures set forth by Government Accounting Standards Board (GASB). In an effort to enhance the understandability and usefulness of the pension information that is included in the financial reports of pension plans for state and local governments, GASB has issued Statement No. 67 – Financial Reporting for Pension Plans (an amendment of GASB Statement No. 25), and Statement No. 68 – Accounting and Financial Reporting for Pensions (an amendment of GASB Statement No. 27). Statement No. 67 is effective for fiscal years beginning after June 15, 2013, while Statement No. 68 is effective for fiscal years beginning after June 15, 2014. Statement No. 67 applies to financial reporting by pension plans, while Statement No. 68 applies to accounting and financial reporting by state and local governments for pensions. This report includes information relative to reporting requirements of GASB Statement No. 67, while information relative to reporting requirements of GASB Statement No. 68 is prepared in a separate report.

In addition to two required statements regarding System assets, the statement requires four schedules and accompanying notes disclosing information relative to provisions of the System, assumptions used to measure the total pension liability, the funded status of the System and historical contribution patterns:

- The Schedule of Changes in Net Pension Liability provides changes in the total pension liability, the plan's fiduciary net position and the net pension liability.
- The Schedule of Net Pension Liability provides the net pension liability as a percentage of covered payroll.
- The Schedule of Employer Contributions provides historical information about the Actuarially Determined Contribution (ADC) and the percentage of the ADC that was actually contributed. For the System, the ADC is equal to the normal contribution rate multiplied by the covered payroll for the year. This is the total ADC before any adjustment for minimum contribution rates or state contributions.
- The Schedule of Investment Returns presents the annual money-weighted rate of return on pension plan investments. This information is prepared in a separate report.

Comments on the Valuation

Covered Members

Ages of Active Members – The average age of the active members has remained unchanged. The average age of members included in the valuation was 41.0 for the current year and 41.0 in the prior year.

Service of Active Members – The average service of the active members has remained unchanged. The average service of members included in the valuation was 13.7 for the current year and 13.7 in the prior year.

Participating Compensation and Members – Total participating compensation increased from \$296,237,982 to 302,420,313, a 2.1% increase. The number of active members increased from 3,968 in 2017 to 4,003 in 2018.

Average Annual Compensation – The average compensation of active members is more than the average compensation for the prior year. The average compensation was \$74,657 in 2017 and \$75,548 in 2018.

Ages of New Service Retirement Members – The average age of active members who elected service retirement has increased. The average age of new service retirements was 59.0 for the current year and 58.6 in the prior year.

Risk Disclosures

Recent revisions to certain actuarial standards of practice introduced new disclosure requirements, such as describing the funded status of the System on the basis of the market value of assets. In addition, the Actuarial Standards Board is expected to issue a new actuarial standard of practice on risk disclosure. Common measures of risk include the ratio of market value of assets and actuarial accrued liability to participating payroll.

	As of July 1,	
	<u>2017</u>	<u>2018</u>
Market Value Assets	\$2,436,896,111	\$2,549,627,987
Covered Payroll	296,237,982	302,420,313
Ratio	8.23	8.43
Actuarial Accrued Liability	3,023,371,171	3,145,031,474
Covered Payroll	296,237,982	302,420,313
Ratio	10.21	10.40
Market Value Assets	2,436,896,111	2,549,627,987
Actuarial Accrued Liability	3,023,371,171	3,145,031,474
Funded Ratio	80.60%	81.07%

Actuarial Valuation Results

This section of the report provides information concerning the valuation of System assets and liabilities and determination of recommended contributions. The following is a brief description of the following pages and of how the information is organized.

Assets – System assets are amounts that have accumulated and will be used to meet future benefit obligations. In the Assets exhibit, trust fund transactions reported by the System are traced from the prior valuation date to the current valuation date and a statement of market value of assets is presented. In addition, the actuarial value of assets is developed based on the adopted method.

Actuarial Accrued Liability – The actuarial accrued liability is equal to the sum of the individual accrued liabilities for all System members. Each member's accrued liability equals the actuarial present value of all future benefits less the actuarial present value of all future normal costs.

Unfunded Actuarial Accrued Liability – The unfunded actuarial accrued liability on the valuation date is equal to the excess of the System's actuarial accrued liability over the System's actuarial value of assets.

Annual Normal Cost – The annual normal cost is the portion of total System costs assigned to the current plan year by the actuarial cost method.

Annual Contributions – The recommended annual contribution is defined by the rate of contribution and covered payroll. The System's contribution rate by statute may not be less than 17% of covered payroll. As of July 1, 2011, the determination changed from the Aggregate cost method to the Entry Age Normal cost method with a 25-year level dollar amortization of unfunded actuarial accrued liability on an open basis. As of July 1, 2013, the determination changed to the Entry Age Normal Method with a 25-year level dollar amortization of unfunded actuarial accrued liability on a closed layered basis. The recommended contribution rate consists of the normal cost plus amortization of the unfunded actuarial accrued liability, less member contributions, less state contributions, divided by the covered payroll.

Unfunded Accrued Liability Payments – One of the components included to determine the recommended annual contribution is the unfunded accrued liability payment. The unfunded accrued liability payment is an annual amount that will amortize the initial unfunded accrued liability and any subsequent annual changes in the unfunded accrued liability due to System amendments, changes in actuarial assumptions and actuarial gains/losses.

Actuarial Gain/(Loss) – Actuarial gains and losses indicate the extent to which actual experience is deviating from that expected on the basis of the actuarial assumptions. Actuarial gains result from experience more favorable than assumed and reduce the unfunded actuarial accrued liability. Actuarial losses result from experience less favorable than assumed and increase the unfunded actuarial accrued liability.

Actuarial Present Value of Accrued Benefits – Another objective of preparing the actuarial valuation is to evaluate the funding status of the System. A comparison of the market value of assets with the actuarial present value of accrued benefits is displayed for the current and prior year.

Actuarial Valuation Results

Assets – Market Value

Year Ending June 30, 2018

Market Value of Assets at June 30, 2017		\$2,436,896,111
Receipts		
Member Contributions	\$ 27,493,680	
Cities Contributions	74,641,639	
State Contributions	0	
Investment Income	202,934,907	
Investment Management Expenses	(19,752,809)	
Other Income	<u>11,533</u>	
Total Receipts		\$ 285,328,950
Disbursements		
Benefit Payments to Members	\$(169,075,775)	
Termination Withdrawals	(1,588,087)	
Administrative Expenses	(1,781,886)	
Disability Expenses	(112,666)	
Other Expenses	<u>(38,660)</u>	
Total Disbursements		\$ (172,597,074)
Market Value of Assets at June 30, 2018		\$2,549,627,987

Actuarial Valuation Results
Assets – Market Value
Year Ending June 30, 2018

Assets

Cash	\$ 57,798,376
U.S. Government Obligations	79,203,825
U.S. Corporate Fixed Income	52,563,915
U.S. Equity Securities	461,079,763
Foreign Equity Securities	382,076,887
Commingled Fixed Income	62,205,236
Short-Term Investments	18,476,846
Real Estate	269,472,057
Private Equity	516,856,484
Multi-Strategy Commingled Fund	48,827,803
Fund of Funds Commingled	613,485,388
Receivables	5,650,922
Fixed/Other Assets	114,339
Pension Related Deferred Outflows	389,595
Total Assets	\$2,568,201,436

Liabilities

Benefits/Refunds Payable	\$(14,542,877)
Investment Management Expenses Payable	(2,583,622)
Administrative Expenses Payable	(402,949)
Net Pension Liability to IPERS	(819,626)
Payable to Brokers, Net	(46,123)
Pension Related Deferred Inflows	(178,252)
Total Liabilities	\$ (18,573,449)
 Market Value of Assets at June 30, 2018	 \$2,549,627,987

Actuarial Valuation Results

Assets – Actuarial Value

Year Ending June 30, 2018

1. Actuarial Value of Assets at July 1, 2017		\$2,461,161,417																																										
2. Contributions for 2017 Plan Year (Members, Cities and State)		102,135,319																																										
3. Benefit distributions and refunds for 2017 plan year		(170,663,862)																																										
4. Noninvestment Expenses																																												
a. Administrative Expenses		(1,781,886)																																										
b. Disability Expenses		(112,666)																																										
c. Other Expenses		<u>(38,660)</u>																																										
d. Total		(1,933,212)																																										
5. Expected return on Market Value of Assets for year at 7.5%		180,172,661																																										
6. Asset gains/(losses) for prior five plan years																																												
	<table style="width: 100%; border-collapse: collapse; margin-left: 40px;"> <thead> <tr> <th style="width: 10%;"></th> <th style="text-align: center;">(i) Asset gain or (loss)</th> <th style="text-align: center;">Years Recognized</th> <th style="text-align: center;">Years Remaining</th> <th style="text-align: center;">(ii) Recognition Percentage</th> <th style="text-align: center;">(i) x (ii) Recognized Amount</th> </tr> </thead> <tbody> <tr> <td>a. 2017</td> <td style="text-align: right;">\$ 3,020,970</td> <td style="text-align: center;">1</td> <td style="text-align: center;">4</td> <td style="text-align: center;">20.000%</td> <td style="text-align: right;">604,194</td> </tr> <tr> <td>b. 2016</td> <td style="text-align: right;">94,033,500</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">20.000</td> <td style="text-align: right;">18,806,700</td> </tr> <tr> <td>c. 2015</td> <td style="text-align: right;">(170,219,375)</td> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">20.000</td> <td style="text-align: right;">(34,043,875)</td> </tr> <tr> <td>d. 2014</td> <td style="text-align: right;">(99,921,132)</td> <td style="text-align: center;">4</td> <td style="text-align: center;">1</td> <td style="text-align: center;">20.000</td> <td style="text-align: right;">(19,984,226)</td> </tr> <tr> <td>e. 2013</td> <td style="text-align: right;">213,044,387</td> <td style="text-align: center;">5</td> <td style="text-align: center;">0</td> <td style="text-align: center;">20.000</td> <td style="text-align: right;"><u>42,608,877</u></td> </tr> <tr> <td>f. Total</td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: right;">7,991,670</td> </tr> </tbody> </table>		(i) Asset gain or (loss)	Years Recognized	Years Remaining	(ii) Recognition Percentage	(i) x (ii) Recognized Amount	a. 2017	\$ 3,020,970	1	4	20.000%	604,194	b. 2016	94,033,500	2	3	20.000	18,806,700	c. 2015	(170,219,375)	3	2	20.000	(34,043,875)	d. 2014	(99,921,132)	4	1	20.000	(19,984,226)	e. 2013	213,044,387	5	0	20.000	<u>42,608,877</u>	f. Total					7,991,670	
	(i) Asset gain or (loss)	Years Recognized	Years Remaining	(ii) Recognition Percentage	(i) x (ii) Recognized Amount																																							
a. 2017	\$ 3,020,970	1	4	20.000%	604,194																																							
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f. Total					7,991,670																																							
7. Asset gains/(losses) to be recognized = (6f)		7,991,670																																										
8. Actuarial Value of Assets at July 1, 2018 = (1) + (2) + (3) + (4d) + (5) + (7)		2,578,863,993																																										
9. Market Value of Assets at July 1, 2018		2,549,627,987																																										
10. Ratio of Actuarial Value to Market Value at July 1, 2018 = (8) / (9)		101.15%																																										

Actuarial Valuation Results

Unfunded Actuarial Accrued Liability

The unfunded actuarial accrued liability is the amount the actuarial accrued liability exceeds the actuarial value of plan assets determined as of the actuarial valuation date. The unfunded actuarial accrued liability is reduced during a year when System funding exceeds the annual normal cost and interest accrued on the prior year unfunded accrued liability. The unfunded actuarial accrued liability is also reduced (increased) when the investment return on System assets exceeds (is less than) the assumed investment return. The actuarial accrued liability is increased if there are amendments that revise benefits payable from the System. The actuarial accrued liability may be increased or decreased as the result of System experience or if there are changes in the actuarial assumptions used to determine annual contributions.

	As of July 1,	
	2017	2018
1. Actuarial Accrued Liability before changes		
a. Active members		
Service retirements/DROP	\$1,020,290,100	\$1,067,066,625
Ordinary disability	21,749,952	22,226,869
Accidental disability	140,341,729	143,914,112
Ordinary death	5,540,299	5,639,698
Accidental death	3,594,165	3,780,805
Withdrawal	<u>21,331,124</u>	<u>21,266,361</u>
Total Active	1,212,847,369	1,263,894,470
b. Inactive members		
Members receiving benefits	1,729,713,546	1,817,397,840
Deferred vested terminations	40,711,355	42,020,495
Refund of member contributions due	<u>347,805</u>	<u>452,477</u>
Total Inactive	1,770,772,706	1,859,870,812
c. Total Actuarial Accrued Liability	2,983,620,075	3,123,765,282
2. Actuarial Value of Plan Assets	2,461,161,417	2,578,863,993
3. Unfunded Actuarial Accrued Liability before changes =[Excess of (1) over (2)]	522,458,658	544,901,289
4. Change in Unfunded Actuarial Accrued Liability		
a. Change in System Provisions	0	0
b. Change in Actuarial Assumptions	39,751,096	21,266,192
5. Unfunded Actuarial Accrued Liability after changes	562,209,754	566,167,481

Actuarial Valuation Results

Annual Normal Cost

The annual normal cost is the portion of the total System costs assigned to the current year by the Actuarial Cost Method.

	As of July 1,	
	<u>2017</u>	<u>2018</u>
1. Annual Normal Cost		
Benefit Normal Cost	\$56,128,110	\$53,017,674
Other	0	0
Total	56,128,110	53,017,674
2. Annual Participating Payroll	296,237,982	302,420,313
3. Annual Normal Cost as a Percentage of Participating Payroll = (1) / (2)	18.95%	17.53%

Actuarial Valuation Results

Annual Contributions

Preliminary Total Contribution	As of July 1,	
	<u>2017</u>	<u>2018</u>
1. Annual Normal Cost	\$56,128,110	\$53,017,674
2. Estimated Member Contributions	27,846,370	28,427,509
3. Unfunded Actuarial Accrued Liability Amortization Payment	48,787,152	49,233,288
4. Total (Cities plus State) Contribution = (1) – (2) + (3)	77,068,892	73,823,453
Cities' Contribution		
5. Preliminary Total Contribution = (4)	77,068,892	73,823,453
6. Estimated State Contribution	0	0
7. Preliminary Cities' Contribution = (5) – (6)	77,068,892	73,823,453
8. Covered Payroll	296,237,982	302,420,313
9. Cities' Contribution as a percent of payroll = (7) / (8)	26.02%	24.41%
10. Minimum required contribution rate for Cities	17.00%	17.00%
11. Cities' Contribution = [Greater of (9) or (10)] x (8)	77,081,123	73,820,798

Actuarial Valuation Results

Unfunded Accrued Liability Payments

One of the components included to determine the recommended contribution is the Unfunded Accrued Liability Payment. The Unfunded Accrued Liability Payment is an annual amount that will amortize over 25 years on a closed, layered level dollar basis:

- The initial unfunded accrued liability established as of July 1, 2013.
- An increase in unfunded accrued liability if System benefits are improved through amendments.
- An increase or decrease in the unfunded accrued liability associated with a change in actuarial assumptions.
- An increase or decrease in the unfunded accrued liability resulting from actuarial gains or losses due to System experience more or less favorable than expected.

Amortization Base	Date Established	Source of Base
\$ 657,280,700	July 1, 2013	Initial Unfunded
(101,748,328)	July 1, 2014	Actuarial Gain
32,616,664	July 1, 2014	Assumption Change
(64,447,420)	July 1, 2015	Actuarial Gain
17,508,411	July 1, 2015	Assumption Change
21,275,521	July 1, 2016	Actuarial Loss
(10,467,574)	July 1, 2016	Assumption Change
(7,154,241)	July 1, 2017	Actuarial Gain
39,751,096	July 1, 2017	Assumption Change
(15,920,159)	July 1, 2018	Actuarial Gain
21,266,192	July 1, 2018	Assumption Change

Charge Bases

Initial Amortization Base	Initial Term-Years	Remaining Term on Valuation Date	Amortization Payment
\$ 657,280,700	25	20	\$54,851,250
32,616,664	25	21	2,721,919
17,508,411	25	22	1,461,108
21,275,521	25	23	1,775,480
39,751,096	25	24	3,317,300
21,266,192	25	25	<u>1,774,702</u>
		Total	65,901,759

Credit Bases

Initial Amortization Base	Initial Term-Years	Remaining Term on Valuation Date	Amortization Payment
\$ 101,748,328	25	21	\$ 8,491,080
64,447,420	25	22	5,378,253
10,467,521	25	23	873,538
7,154,241	25	24	597,034
15,920,159	25	25	<u>1,328,566</u>
		Total	16,668,471

Net Amortization Payment **\$49,233,288**

Actuarial Valuation Results

Actuarial Gain/(Loss)

Expected Unfunded Actuarial Accrued Liability

1. Expected Actuarial Accrued Liability

Actuarial Accrued Liability on July 1, 2017	\$3,023,371,171
Normal Cost	56,128,110
Benefit Distributions	(170,663,862)
Interest on above at 7.50% to June 30, 2018	224,678,250
Total	3,133,513,669

2. Expected Assets

Actuarial Value of Assets on July 1, 2017	2,461,161,417
Contributions	102,135,319
Benefit Distributions and Noninvestment Expenses	(172,597,074)
Interest on above at 7.50% to June 30, 2018	181,992,559
Total	2,572,692,221

3. Expected Unfunded Actuarial Accrued Liability on June 30, 2018 560,821,448

Actual Unfunded Actuarial Accrued Liability

1. Actuarial Accrued Liability Before Changes	3,123,765,282
2. Actuarial Value of Assets	2,578,863,993
3. Actual Unfunded Actuarial Accrued Liability on July 1, 2018 (1) – (2)	544,901,289

Actuarial Gain or (Loss)

1. Expected Unfunded Actuarial Accrued Liability	560,821,448
2. Actual Unfunded Actuarial Accrued Liability	544,901,289
3. Actuarial Gain or (Loss) for 2018 Fiscal Year (1) – (2)	15,920,159

Actuarial Valuation Results

Actuarial Present Value of Accrued Benefits

	As of July 1,	
	2017	2018
1. Present value of vested accrued benefits		
a. Present value of vested accrued benefits for active members	\$ 913,217,482	\$ 954,040,512
b. Present value of benefits for terminated members	41,294,293	42,214,760
c. Present value of benefits for retirees, beneficiaries and disableds	1,758,560,217	1,862,532,799
Total	\$2,713,071,992	\$2,858,788,071
2. Present value of accrued nonvested benefits	33,529,006	35,027,834
3. Present value of all accrued benefits = (1) + (2)	\$2,746,600,998	\$2,893,815,905
4. Market value of assets	\$2,436,896,111	\$2,549,627,987
5. Ratio of market value of assets to the present value of all accrued benefits = (4) ÷ (3)	88.72%	88.11%
6. Ratio of market value of assets to the present value of vested accrued benefits = (4) ÷ (1)	89.82%	89.19%

Actuarial Valuation Results

Change in Actuarial Present Value of Accrued Benefits

The change in actuarial present value of accrued benefits due to various factors including benefits accumulated, the passage of time, benefits paid, changes in assumptions and changes in System provisions is displayed below.

Actuarial present value of accrued benefits on July 1, 2017	\$2,746,600,998
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Change in present value of accrued benefits from July 1, 2017 to July 1, 2018 due to:

• Additional benefits accumulated	\$ 76,096,014
• Interest due to passage of time	199,710,879
• Benefits paid	(170,663,862)
• Change in assumptions	42,071,876
• Changes in System provisions	<u>0</u>

Actuarial present value of accrued benefits on July 1, 2018	\$2,893,815,905
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System Demographic Experience

During the plan year July 1, 2017 to June 30, 2018, actual demographic experience differed from that expected by the actuarial assumptions, as summarized below.

Decrement Type	Expected	Actual
Actives		
Service Retirement	58	29
Accidental Disability	36	24
Ordinary Disability	7	5
Accidental Death	1	0
Ordinary Death	3	4
Withdrawal	74	105
DROP Participation	57	56
DROP Premature Withdrawal	6	11
DROP Retirement	27	27
DROP Death	0	1
Inactives		
Beneficiary Death	51	43
Disabled Death	33	35
Retirement Death	56	51
Vested Termination Death	1	0

System Accounting Results

Overview of GASB Statement No. 67

This section of the report provides information concerning the reporting of System assets and liabilities under GASB Statement No. 67, "Financial Reporting for Pension Plans (an Amendment of GASB Statement No. 25)," which is effective for fiscal years beginning after June 15, 2013. GASB Statement No. 67 supersedes several previously issued statements.

GASB Statement No. 67 establishes financial reporting standards for state and local government defined benefit pension plans. The statement requires financial statements and accompanying notes to disclose information relative to the funded status of the System and historical contribution patterns.

- The schedule of net pension liability presents System assets, liabilities and funded percentages as of the end of the reporting period. Also included are the actuarial assumptions used in determining the total pension liability and sensitivity of the net pension liability to changes in the discount rate.
- The schedule of changes in net pension liability provides changes in the total pension liability, the System's fiduciary net position and the net pension liability.
- The schedule of contributions provides historical information about the actuarially determined contribution, the contributions actually contributed and the contributions as a percentage of covered payroll.
- Notes to the financial statements should also include description of benefits provided, System investment information and significant assumptions used to calculate total pension liability.

System Accounting Results

Net Pension Liability

The components of the net pension liability of the System at June 30, 2018 were as follows:

Total Pension Liability	\$3,145,031,474
Plan Fiduciary Net Position	<u>(2,549,627,987)</u>
Net Pension Liability	595,403,487

Plan Fiduciary Net Position as a percentage of the Total Pension Liability 81.07%

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability, calculated using the current discount rate of 7.50%, as well as the net pension liability calculated using a discount rate that is 1-percentage point lower (6.50%) or 1-percentage point higher (8.50%) than the current rate:

	1% Decrease 6.50%	Current Discount Rate 7.50%	1% Increase 8.50%
Total Pension Liability	\$3,543,038,383	\$3,145,031,474	\$2,815,495,131
Plan Fiduciary Net Position	<u>2,549,627,987</u>	<u>2,549,627,987</u>	<u>2,549,627,987</u>
Net Pension Liability	993,410,396	595,403,487	265,867,144

System Accounting Results

Schedule of Changes in Net Pension Liability

	Fiscal Year Ending June 30		
	2018	2017	2016
Total Pension Liability			
Service Cost	56,128,110	53,423,772	51,366,130
Interest	224,678,250	213,069,288	205,836,959
Changes of Benefit Terms	0	0	0
Difference between Expected and Actual Experience	(9,748,387)	12,891,275	7,643,609
Changes of Assumptions	21,266,192	39,751,096	(10,467,574)
Benefit Payments, including refunds	(170,663,862)	(163,571,586)	(156,566,482)
Net Change in Total Pension Liability	121,660,303	155,563,845	97,812,642
Total Pension Liability – Beginning of Year	3,023,371,171	2,867,807,326	2,769,994,684
Total Pension Liability – End of Year	3,145,031,474	3,023,371,171	2,867,807,326
Plan Fiduciary Net Position			
Contributions – Employer and State	74,641,639	73,411,163	75,254,727
Contributions – Member	27,493,680	26,625,022	25,455,597
Net Investment Income	183,182,098	259,812,040	160,671
Benefit Payments, including refunds	(170,663,862)	(163,571,586)	(156,566,482)
Administrative Expenses	(1,781,886)	(1,767,657)	(1,728,951)
Other	(139,793)	(159,263)	(209,525)
Net Change in Plan Fiduciary Net Position	112,731,876	194,349,719	(57,633,963)
Plan Fiduciary Net Position – Beginning of Year	2,436,896,111	2,242,546,392	2,300,180,355
Plan Fiduciary Net Position – End of Year	2,549,627,987	2,436,896,111	2,242,546,392
Net Pension Liability – End of Year	595,403,487	586,475,060	625,260,934
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	81.07%	80.60%	78.20%
Covered-Employee Payroll*	290,660,576	283,222,057	270,986,891
Net Pension Liability as a Percentage of the Covered-Employee Payroll	204.84%	207.07%	230.73%

*Actual for noted period as provided by the System.

System Accounting Results

Schedule of Contributions

	Fiscal Year Ending June 30		
	2018	2017	2016
Actuarially Determined Contribution	\$74,641,639	\$73,411,163	\$75,254,727
Contributions in Relation to the Actuarially Determined Contribution	74,641,639	73,411,163	75,254,727
Contribution Deficiency/ (Excess)	0	0	0
Covered-Employee Payroll*	290,660,576	283,222,057	270,986,891
Contributions as a Percentage of Covered-Employee Payroll	25.68%	25.92%	27.77%

*Actual for noted period as provided by the System.

Methods and Assumptions for Actuarially Determined Contribution

Actuarially determined contribution rates are calculated as of July 1, two years prior to the end of the fiscal year in which contributions are reported.

Valuation Date	July 1, 2018
Actuarial Cost Method	Entry Age Normal
Asset Valuation Method	5-Year Smoothed Market
Amortization Method	Level Dollar, Closed, Layered
Amortization Period	25 Years
Salary Increases	3.75% to 15.11%
Investment Rate of Return	7.50%
Mortality Table	RP 2014 Blue Collar Healthy Annuitant table with males set-forward zero years, females set-forward two years and disabled set-forward three years (male only rates), with generational projection of future mortality improvement with 50% of Scale BB beginning in 2017.

System Accounting Results

Actuarial Assumptions

The actuarial assumptions used in the valuation were adopted by the Board of Trustees in accordance with Iowa Code Section 411.5.10-11, which results in the assumptions being considered prescribed assumptions by another party under applicable actuarial standards of practice. The Board of Trustees adopts the actuarial assumptions based on the actuarial investigation completed every five years. The most recently completed investigation was for the 10-year period ending June 30, 2017.

The total pension liability was determined by the following actuarial assumptions:

Investment Rate of Return	7.50%
Discount Rate	7.50%
Inflation Rate	3.00%
Salary Increases	3.75% to 15.11%
Mortality Table	RP 2014 Blue Collar Healthy Annuitant table with males set-forward zero years, females set-forward two years and disabled set-forward three years (male only rates), with generational projection of future mortality improvement with 50% of Scale BB beginning in 2017.
Actuarial Cost Method	Entry Age Normal

Discount Rate

The discount rate used to measure the total pension liability as of June 30, 2018 was 7.50%. The projection of cash flows used to determine the discount rate assumed that member contributions will be made at 9.40% of covered payroll and the City contributions will be made at rates equal to the difference between actuarially determined rates and the member rate. Based on those assumptions, the System's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on System investments was applied to all periods of projected benefit payments to determine the total pension liability.

Summary of Actuarial Assumptions

The actuarial assumptions used in the valuation were adopted by the Board of Trustees in accordance with Iowa Code Section 411.5.10-11, which results in the assumptions being considered prescribed assumptions by another party under applicable actuarial standards of practice. The Board of Trustees adopts the actuarial assumptions based on the actuarial investigation completed every five years. The most recently completed investigation was for the 10-year period ending June 30, 2017.

Interest Rate 7.5%, net of investment and administrative expenses.

Salary Increase Rates Rates varying based on age. Annual rates at sample ages are displayed below:

<u>Age</u>	<u>Rate</u>
20	15.11%
25	9.88
30	6.79
35	4.82
40	4.46
45	4.00
50 or Over	3.75

Mortality Rates

Pre-retirement Mortality

- Ordinary

Rates varying by age – Sample rates:

<u>Age</u>	<u>Rate</u>
20	0.01%
25	0.01
30	0.01
35	0.02
40	0.03
45	0.03
50	0.05
55	0.06
60	0.09
65	0.13

- Accidental

Rates varying by age – Sample rates:

<u>Age</u>	<u>Rate</u>
20	0.03%
25	0.02
30	0.02
35	0.02
40	0.02
45	0.03
50	0.07
55	0.14
60	0.23
65	0.41

Summary of Actuarial Assumptions (continued)

Post-retirement Mortality

- Ordinary

RP 2014 Blue Collar Healthy Annuitant Mortality Table with males set-forward zero years and females set-forward two years with generational projection of future mortality improvement with 50% of Scale BB beginning in 2017.

- Disabled

RP 2014 Blue Collar Healthy Annuitant Mortality Table – Male, set-forward three years with generational projection of future mortality improvement with 50% of Scale BB beginning in 2017.

Disability Rates

- Ordinary

Rates varying by age – Sample rates:

<u>Age</u>	<u>Rate</u>
20	0.07%
25	0.07
30	0.07
35	0.09
40	0.13
45	0.16
50	0.22
55	0.31
60	0.64
65	1.31

- Accidental

Rates varying by age – Sample rates:

<u>Age</u>	<u>Rate</u>
20	0.10%
25	0.10
30	0.10
35	0.10
40	0.27
45	0.43
50	0.83
55	1.88
60	3.86
65	4.49

Summary of Actuarial Assumptions (continued)

Turnover Rates

Rates varying by age – Sample rates:

<u>Age</u>	<u>Rate</u>
20	7.11%
25	5.81
30	4.51
35	2.71
40	1.62
45	1.00
50	1.00
55	0.00
60	0.00
65	0.00

Retirement Age

Rates varying by age for those not eligible for DROP – Sample rates:

<u>Age</u>	<u>Rate</u>
55	60%
56	15
57-60	10
61	15
62	20
63	30
64	35
65	100

DROP

- Participation

Rates varying by age if eligible for DROP – Sample rates:

<u>Age</u>	<u>Rate</u>
55-56	50%
57-62	100
63 or over	0

- Period of Participation 3 years.
- Investment Return on Accounts 1.0%.
- Benefit Distribution Lump Sum.
- Retirement Age

All members initially eligible for DROP at age 62 or younger enter DROP according to above rates. No change in retirement age for members who initially become eligible for DROP after age 62.

- Voluntary Premature Withdrawal 5% per year while participating in DROP.

Summary of Actuarial Assumptions (continued)

Administrative Expenses	None explicitly assumed.
Active Members Percentage Married	85%.
Spouses' Age	Wives are three years younger than husbands, including inactive members whose beneficiary age is unavailable.
Number of Children	2.5 per couple.
Participating Payroll	Actual annualized earnable compensation reported for prior plan year increased to the current plan year based on the System's assumed salary increase rate.
Inactive Members Percentage Married (50% J & S Annuity Form Only)	80%.
Timing of Decrements	Middle of fiscal year.

Summary of Actuarial Methods

The actuarial methods used in the valuation were adopted by the Board of Trustees in accordance with Iowa Code Section 411.5.10-11, which results in the methods being considered prescribed methods by another party under applicable actuarial standards of practice.

Actuarial Cost Method

The Entry Age Normal Actuarial Cost Method was used to determine recommended contributions. Using this method, the annual contribution consists of a normal cost and an unfunded accrued liability payment.

The normal cost is determined as the sum of the individual normal costs for each active System member. A normal cost accrual rate is determined for each member. The accrual rate is equal to the actuarial present value of future benefits determined as of the member's entry age, divided by the actuarial present value of the assumed salaries paid to the member from entry age to retirement age. The normal cost accrual rate is multiplied by current salary to provide the member's individual normal cost.

The actuarial accrued liability is the sum of the individual actuarial accrued liabilities for all System members. Each member's actuarial accrued liability equals the actuarial present value of future benefits, less the actuarial present value of the member's normal costs payable in the future. These present values are calculated at the member's attained age. The unfunded actuarial accrued liability equals the total actuarial accrued liability less the actuarial value of plan assets. The unfunded actuarial accrued liability payment is the amount payable toward the amortization of the unfunded actuarial accrued liability. The unfunded actuarial accrued liability is amortized over 25 years on a level dollar, closed layered basis.

At the end of each year, a determination of actuarial gains and losses is made. Actuarial gains and losses indicate the extent to which actual experience is deviating from that expected on the basis of the actuarial assumptions. Actuarial gains result from experience more favorable than assumed and reduce the unfunded actuarial accrued liability. Actuarial losses result from experience less favorable than assumed and increase the unfunded actuarial accrued liability.

Actuarial Asset Valuation Method

The preliminary actuarial value is equal to the prior year's actuarial value (starting with the market value as of July 1, 1992) adjusted for contributions, disbursements and expected return on investments. The preliminary value is then adjusted by 20% of any investment gains or losses during the five prior plan years.

Summary of System Provisions

The System was established, effective January 1, 1992, by Chapter 411 of the Code of Iowa by combining each city's fire retirement system and police retirement system into a single statewide retirement system for fire fighters and police officers. Plan amendments through July 1, 2018 are reflected in this summary.

Participation	Each person who becomes a permanent full-time police officer or fire fighter in a participating city.														
Membership Service	From date of employment to date of separation from employment.														
Earnable Compensation	The annual compensation which a member receives for services rendered as a police officer or fire fighter in the course of employment with a participating City, except for amounts received for overtime, meal or travel expenses, uniform allowances, fringe benefits, severance pay, mandatory deferred compensation, and accumulated sick leave or vacation pay.														
Contributions															
Members	The following percentages of Earnable Compensation: <table><thead><tr><th><u>Effective Date</u></th><th><u>Percentage</u></th></tr></thead><tbody><tr><td>October 16, 1992</td><td>6.10%</td></tr><tr><td>July 1, 1993</td><td>7.10</td></tr><tr><td>July 1, 1994</td><td>8.10</td></tr><tr><td>January 1, 1995</td><td>8.35</td></tr><tr><td>July 1, 1995</td><td>9.35</td></tr><tr><td>July 1, 2009</td><td>9.40</td></tr></tbody></table>	<u>Effective Date</u>	<u>Percentage</u>	October 16, 1992	6.10%	July 1, 1993	7.10	July 1, 1994	8.10	January 1, 1995	8.35	July 1, 1995	9.35	July 1, 2009	9.40
<u>Effective Date</u>	<u>Percentage</u>														
October 16, 1992	6.10%														
July 1, 1993	7.10														
July 1, 1994	8.10														
January 1, 1995	8.35														
July 1, 1995	9.35														
July 1, 2009	9.40														
Cities	The amount actuarially determined necessary to fund the benefits in accordance with accepted actuarial principles but not less than 17% of the Earnable Compensation of the active members.														
State	The annual appropriation expected from the State of Iowa to fund benefits is \$0.														

Summary of System Provisions (continued)

Average Final Compensation	The average Earnable Compensation of the member during the three years of service the member earned their highest salary as a police officer or fire fighter.
Service Retirement Benefit	
Eligibility	After age 55 and completion of 22 years of service.
Benefit	Monthly annuity equal to 66.0% of Average Final Compensation plus 2.0% of Average Final Compensation for each year of service in excess of 22 years (up to 8 additional years). The maximum benefit is 82.0% of Average Final Compensation.
DROP Benefit	
Eligibility	After age 55 and completion of 22 years of service.
Participation Date	First day of the month following the month in which a member applies for participation.
Participation Period	A three, four or five year participation period except during the 24 months immediately following April 1, 2007, members between ages 62 and 64 with at least 22 years of service may enroll for a one or two year participation period.
Chapter 411 Benefit	Monthly benefit determined based on the period of service and Average Final Compensation through the quarter of membership service immediately preceding the DROP participation date elected.
DROP Account	An account established for each member enrolled which will have a portion of the Chapter 411 Benefit credited to it for the duration of the selected participation period. The portion shall be equal to the sum of: (a) A "minimum percentage" of 52% multiplied by the Chapter 411 Benefit, plus (b) An "adjustment percentage" of 2% for each month up to 24 months between the date the member elects to participate in DROP and the date the member was initially eligible to participate, multiplied by the Chapter 411 Benefit.

Summary of System Provisions (continued)

DROP Benefit (continued)

Member Contributions	Member's contributions will be contributed to the general System assets during the member's participation period.
City Contributions	Cities' contributions equal to the normal contribution rate determined annually but never less than 17% of Earnable Compensation will be contributed to the general System assets during the member's participation period.
Investment Return	Earnings and capital gains or losses on the investments shall be credited to the general System assets and not to the individual member DROP Accounts.
Benefit Escalation	The applicable escalator provisions apply from the member's actual date of retirement at the end of the DROP participation period. No escalation will occur during the DROP participation period.
Benefit Distributions	At the actual date of retirement, the member's DROP Account will be payable, upon application by the member, in the form of a lump sum distribution or rollover to an eligible plan. The regular Chapter 411 Benefit will commence on the member's actual date of retirement.
Premature Withdrawal and Accrual of Benefit	An amount equal to 75% of the member's DROP benefit shall accrue to the benefit of the member for each month of DROP participation. An amount equal to 25% of the member's accumulated DROP benefit shall accrue to the benefit of the member upon either: (1) completion of the selected participation period, or (2) termination of participation due to becoming eligible for a disability benefit, or (3) death prior to completion of the selected participation period.

Termination Benefit

Eligibility	At least 4 years of service upon termination of membership before age 55, but less than 22 years of service upon termination of membership after age 55.
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Summary of System Provisions (continued)

Termination Benefit (continued)

Benefit	<p>Monthly annuity payable at age 55 or current age, if later, equal to 66.0% of Average Final Compensation plus 2.0% of Average Final Compensation for each year of service in excess of 22 years (up to 8 additional years), if any, times a ratio equal to service at termination divided by 22 (ratio not to exceed 1.0).</p> <p>Effective July 1, 1990, members who terminate service, other than by death or disability, can elect to withdraw their accumulated contributions with interest in lieu of any benefits to which the member may be entitled to from the System.</p>
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Ordinary Disability Benefit

Eligibility	A member in good standing at any age and any length of service.
Benefit	<p>Monthly annuity payable upon disability equal to either (a) or (b) below, but no less than (c):</p> <ul style="list-style-type: none">(a) If service at disability is greater than or equal to 5, 50% of Average Final Compensation; or(b) If service at disability is less than 5 years, 25% of Average Final Compensation;(c) The benefit determined using the Service Retirement formula based on service and Average Final Compensation at the date of disability.

Accidental Disability Benefit

Eligibility	A member in good standing at any age and any length of service.
Benefit	A monthly annuity equal to 60% of Average Final Compensation but no less than the benefit determined using the Service Retirement formula based on service and Average Final Compensation at the date of disability.

Summary of System Provisions (continued)

Ordinary Death Benefit

Eligibility

For members in service: any age and any length of service.

For member not in service: 4 years of service.

Benefit

Upon death of the member, either (a) or (b) below:

- (a) A lump sum equal to 50% of Earnable Compensation during the last year of employment; or
- (b) A monthly annuity equal to 40% of average final compensation but not less than 20% of the average Earnable Compensation of an active member of the System, as reported by the actuary. For a member not in service, the monthly annuity is payable on the date the member would have reached age 55, except if there is a dependent child, it is paid immediately upon death of the member.

For each dependent child, an additional benefit equal to 6% of the average Earnable Compensation of an active member of the System, as reported by the actuary. This benefit is payable until the child reaches age 18 or 22 (if a full-time student) or payable for life if the child is disabled.

Accidental Death Benefit

Eligibility

Death from causes sustained in the line of duty.

Benefit

A monthly annuity equal to 50% of Average Final Compensation payable to surviving spouse, dependent child or dependent parents. In addition, a lump sum of \$100,000 is payable to the surviving spouse, adult child, dependent child or dependent parents if death is due to a traumatic personal injury incurred in the line of duty.

For each dependent child, an additional benefit equal to 6% of the average Earnable Compensation of an active member of the System, as reported by the actuary.

Summary of System Provisions (continued)

Death After Retirement

Eligibility	Death of member while receiving a service (basic benefit only), ordinary, accidental or vested (basic benefit only) retirement.
Benefit	To surviving spouse, 50% of the gross monthly benefit of the retired member but not less than 20% of the average Earnable Compensation of an active member of the System, as reported by the actuary. For each dependent child, an additional benefit equal to 6% of the average Earnable Compensation of an active member of the System, as reported by the actuary.

Annual Escalator Benefit

Eligibility	All retired members, except for vested retirements, and for beneficiaries, except for beneficiaries of vested retirements.
Benefit	The monthly pension benefit is increased each July 1 by the sum of (a) plus (b) below: <ul style="list-style-type: none"> (a) The previous monthly benefit multiplied by 1.5%, and (b) An additional dollar amount from the table below based on the number of years the member has been retired.

<u>Amount</u>	<u>Years of Retirement</u>
\$15	Less than 5
20	5-9
25	10-14
30	15-19
35	20 or More

Normal Form of Benefit

Married	Joint and 50% Survivor Annuity.
Single	Life Only Annuity.

Summary of System Members

	July 1,		
	<u>2016</u>	<u>2017</u>	<u>2018</u>
Active Members			
Number	3,926	3,968	4,003
Average Attained Age	41.2	41.0	41.0
Average Past Service	13.8	13.7	13.7
Total Annual Compensation	\$283,639,887	\$296,237,982	\$302,420,313
Average Annual Compensation	72,247	74,657	75,548
Non-Active Members in Pay Status			
Number	3,986	4,045	4,107
Average Age (excluding children)	69.5	69.7	69.9
Total Annual Benefits	\$152,700,180	\$160,521,708	\$167,587,224
Average Annual Benefit	38,309	39,684	40,805
Non-Active Members with Deferred Benefits			
Number*	341	356	367
Average Age	43.9	43.9	43.6
Total Annual Benefits	\$ 5,827,692	\$ 6,175,008	\$ 6,516,420
Average Annual Benefit	17,090	17,346	17,756

* Excludes 42, 42 and 56 terminated nonvested members who had not yet received a refund of contributions as of 2016, 2017 or 2018 respectively.

Summary of System Members

Reconciliation of Participant Counts

	Active	Terminated Vested	In Pay Status			Total
			Beneficiaries	Disabled	Retirees	
Number as of July 1, 2017	3,968	356	908	1,136	2,001	8,369
Change due to:						
New hires and rehires	252	(4)	0	0	0	248
Terminations	(96)*	65	0	0	0	(31)
Retirement	(67)	(25)	0	0	92	0
Disability	(29)	0	0	29	0	0
Death without Beneficiary	(1)	0	(43)	(6)	(18)	(68)
Death with Beneficiary	(4)	0	78	(29)	(33)	12
Refund Paid Out	(20)**	(25)	0	0	0	(45)
Benefit Aged Out	0	0	(8)	0	0	(8)
Other	0	0	0	0	0	0
Number as of July 1, 2018	4,003***	367	935	1,130	2,042	8,477

* Seven of the Terminations are from new hires during the period July 1, 2017 to June 30, 2018.

** Four of the Refunds Paid Out are from new hires during the period July 1, 2017 to June 30, 2018.

*** One hundred thirty-one (131) of the Actives have elected to participate in DROP as of July 1, 2018.

Summary of System Members
Active Members—As of July 1, 2018

Age	Years of Service							Total	Average Annual Salary	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34			35+
Under 25	183	0	0	0	0	0	0	0	183	\$55,423
25-29	374	88	0	0	0	0	0	0	462	\$61,637
30-34	244	276	106	0	0	0	0	0	626	\$68,515
35-39	89	160	281	90	0	0	0	0	620	\$73,679
40-44	31	75	157	267	55	0	0	0	585	\$77,998
45-49	17	22	89	221	265	70	1	0	685	\$82,365
50-54	3	9	38	77	143	204	57	0	531	\$85,644
55-59	2	2	5	34	51	74	60	22	250	\$89,187
60+	3	3	1	5	6	16	15	12	61	\$88,645
Total	946	635	677	694	520	364	133	34	4,003	
Average Annual Salary	\$60,420	\$71,152	\$76,194	\$79,669	\$85,821	\$90,226	\$94,161	\$94,569		\$75,548

Summary of System Members
Inactive Members—As of July 1, 2018

Service Retirements

Age	Number	Total Annual Benefit	Average Annual Benefit
55-59	126	\$ 8,211,504	\$ 65,171
60-64	317	20,168,064	63,622
65-69	397	23,426,820	59,010
70-74	327	18,344,928	56,101
75-79	235	11,438,448	48,674
80-84	132	5,304,708	40,187
Over 84	<u>123</u>	<u>4,456,272</u>	<u>36,230</u>
Total	1,657	\$91,350,744	\$ 55,130

Vested Retirements

Age	Number	Total Annual Benefit	Average Annual Benefit
55-59	96	\$ 2,143,704	\$ 22,330
60-64	93	1,893,504	20,360
65-69	86	1,684,932	19,592
70-74	58	874,164	15,072
75-79	25	367,620	14,705
80-84	19	182,880	9,625
Over 84	<u>8</u>	<u>47,688</u>	<u>5,961</u>
Total	385	\$ 7,194,492	\$ 18,687

Summary of System Members

Inactive Members—As of July 1, 2018

Accidental Disability Retirements

Age	Number	Total Annual Benefit	Average Annual Benefit
Under 40	14	\$ 567,528	40,538
40-44	24	988,824	41,201
45-49	43	1,738,476	40,430
50-54	61	2,666,712	43,717
55-59	96	4,563,540	47,537
60-64	143	6,969,924	48,741
65-69	179	8,435,304	47,125
70-74	162	7,260,876	44,820
75-79	105	4,153,236	39,555
80-84	63	2,494,524	39,596
Over 84	<u>45</u>	<u>1,663,164</u>	<u>36,959</u>
Total	935	\$41,502,108	44,387

Ordinary Disability Retirements

Age	Number	Total Annual Benefit	Average Annual Benefit
Under 40	12	\$ 325,176	\$ 27,098
40-44	11	370,152	33,650
45-49	15	502,044	33,470
50-54	17	596,148	35,068
55-59	20	706,044	35,302
60-64	26	1,146,912	44,112
65-69	38	1,561,092	41,081
70-74	27	1,032,720	38,249
75-79	16	590,376	36,899
80-84	10	332,160	33,216
Over 84	<u>3</u>	<u>77,184</u>	<u>25,728</u>
Total	195	\$7,240,008	\$ 37,128

Summary of System Members
Inactive Members—As of July 1, 2018

Beneficiaries (Spouse)

Age	Number	Total Annual Benefit	Average Annual Benefit
Under 40	7	\$ 205,680	\$ 29,383
40-44	7	239,340	34,191
45-49	11	294,888	26,808
50-54	16	400,692	25,043
55-59	27	623,172	23,080
60-64	61	1,596,888	26,178
65-69	101	2,648,892	26,227
70-74	120	2,795,172	23,293
75-79	161	3,606,192	22,399
80-84	139	2,925,012	21,043
Over 84	<u>232</u>	<u>4,633,860</u>	<u>19,974</u>
Total	882	\$19,969,788	\$ 22,641

Beneficiaries (Children)

Age	Number	Total Annual Benefit	Average Annual Benefit
Under 3	1	\$ 4,572	\$ 4,572
3-5	2	9,528	4,764
6-8	3	14,484	4,828
9-11	4	19,920	4,980
12-14	7	40,212	5,745
15-17	10	54,084	5,408
18-20	12	78,912	6,576
Over 20	<u>14</u>	<u>108,372</u>	<u>7,741</u>
Total	53	\$ 330,084	\$ 6,228

Summary of System Members

Inactive Members—As of July 1, 2018

Terminated Vested

Age	Number	Total Annual Benefit	Average Annual Benefit
Under 40	129	\$1,616,304	\$12,529
40-44	60	1,081,272	18,021
45-49	76	1,541,628	20,285
50-54	100	2,249,664	22,497
Over 54	<u>2</u>	<u>27,552</u>	<u>13,776</u>
Total	367	\$6,516,420	\$17,756



MUNICIPAL FIRE AND POLICE RETIREMENT SYSTEM OF IOWA

**Analysis of System Experience
July 1, 2017 through June 30, 2018**

Wisdom at Work.
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Table of Contents

	Page
Summary of Changes in Normal Contribution Rate	1
Description of Changes in Normal Contribution Rate	2
Comparison of Actual and Expected Rates	5
Actual Investment Return on Actuarial Value of Assets	11

Summary of Changes in Normal Contribution Rate

The Retirement System's total contribution rate decreased from 26.02% for 2017 to 24.41% for 2018. The Retirement System's contribution rate before any adjustment to the minimum required rate changed as follows:

July 1, 2017 Normal Contribution Rate*	26.02%
• Effect of different State contribution	0.00%
• Effect of Cities' contribution different than actuarially determined	0.03%
• System experience more favorable than assumed	
– Salary increases less than assumed	(0.28%)
– Investment experience more favorable than assumed	(0.17%)
– Effect of new members	(0.53%)
– Effect of DROP experience	0.01%
– Other population changes	(0.04%)
	(1.01%)
• Changes in System provisions	0.00%
• Changes in actuarial assumptions	(0.63%)
• Change in actuarial methods	0.00%
Preliminary Normal Contribution Rate	24.41%
• Increase to meet minimum required contribution rate of 17.00%	0.00%
July 1, 2018 Normal Contribution Rate	24.41%

* Before adjustment for minimum contribution rate, if applicable.

Description of Changes in Normal Contribution Rate

A brief description of each event leading to a change in the normal contribution rate is discussed below:

Effect of Different State Contribution 0.00%

The state's contribution remained unchanged at \$0 for 2017 and \$0 for 2018.

Effect of Cities' Contribution Different than Actuarially Determined 0.03%

The Cities' actual contribution rate as a percent of covered payroll was 25.68% for the period ended June 30, 2018. The actuarially determined rate for the same period was 26.02% of covered payroll. This had the effect of producing smaller contributions than expected and increased the Cities' contribution rate by 0.03%.

Salary Increases Less than Assumed (0.28%)

The actual weighted average salary increase for active members included in the valuation was 3.79% compared to an expected weighted average increase of 5.41%. Actual salaries paid in the prior plan year ended June 30, 2018 were reported for the July 1, 2018 valuation. This had the effect of decreasing the Cities' contribution rate by 0.28%.

Investment Experience More Favorable than Assumed (0.17%)

The actuarial value of assets realized a return of 7.75% compared to the assumed investment return of 7.50%. This had the effect of decreasing the Cities' contribution rate by 0.17%. The development of the actual investment return on the actuarial value of assets is shown on page 11.

Effect of New Members (0.53%)

New members are generally younger and lower-paid than the ongoing members. Thus, these new members require a lower contribution rate from the Cities due to the longer period of time over which to fund their benefits. This had the effect of decreasing the Cities' contribution rate by 0.53%.

Description of Changes in Normal Contribution Rate (continued)

Effect of DROP Experience 0.01%

The expected number of active members who choose to participate, the age at which the members chose to participate, the duration of the DROP period selected and the number of members who prematurely withdraw from DROP do not exactly match the actual incidences. In addition, the investment earnings on the DROP accounts differ from that assumed. These variances in participation rates, age at participation, duration of participation, premature withdrawals and investment earnings caused an actuarial loss, but no material change, in the Cities' contribution rate.

However, the cumulative effect since inception of the DROP on the Cities' contribution rate reveals an overall decrease in the Cities' contribution rate as follows:

Initial Decrease in Rate at July 1, 2007	(0.53%)
Increase in Rate for 2007	0.04%
Increase in Rate for 2008	0.01%
Increase in Rate for 2009	0.02%
Increase in Rate for 2010	0.03%
Increase in Rate for 2011	0.02%
Increase in Rate for 2012	0.03%
Increase in Rate for 2013	0.01%
Increase in Rate for 2014	0.04%
Increase in Rate for 2015	0.03%
Increase in Rate for 2016	0.00%
Increase in Rate for 2017	0.01%
Cumulative Increase/(Decrease) in Rate to July 1, 2018	(0.29%)

Other Population Changes (0.04%)

The expected rates of disability, death, retirement and withdrawal do not exactly match the actual incidences. These variances will cause a gain or loss each year. For example, there were the same number of active members' deaths (4) as assumed (4) during the period ended June 30, 2018. In addition, there were fewer service retirements (29) than assumed (58) and more withdrawals (105) than assumed (74) during the period ended June 30, 2018. Finally, there were fewer disability retirements (29) than assumed (43) and fewer inactive member deaths (129) than assumed (140) during the period ended June 30, 2018. These variances in active member deaths, service retirements, disability retirements and inactive member deaths caused an actuarial gain which decreased the Cities' contribution rate by 0.04%.

The detailed results of the experience study on ordinary disability, accidental disability, accidental death, ordinary death, service retirements, DROP, withdrawals and inactive member deaths are shown in the following pages.

Description of Changes in Normal Contribution Rate (continued)

Changes in System Provisions 0.00%

There were no changes in System benefit provisions from the prior year valuation

Changes in Actuarial Assumptions (0.63%)

The following actuarial assumptions were changed from the prior year valuation:

- Change salary increases to be 5% lower for ages 25 to 34, 10% lower for ages 35 to 44 and set equal to 4.0% for ages 45 to 49 and to 3.75% for ages 50 and over for actives
- Change withdrawal rates to be 50% higher for ages 40 to 44 and set equal to 1.0% for ages 45 and over for actives
- Change retirement rates to 60% for age 55 and decrease ages 56 to 64 retirement rates for actives
- Decrease ordinary mortality rates by 50% and increase accidental mortality rates by 50% for actives
- Decrease ordinary disability rates by 10% and decrease accidental disability rates by 30% for actives ages 45 and over
- Lower DROP participation rates to 50% for ages 55 to 56 for actives
- Change mortality rates to the RP 2014 Blue Collar Healthy Annuitant Mortality Table with certain adjustments and generational projection of future mortality improvement with 50% of Scale BB beginning in 2017.

These changes in actuarial assumptions had the effect of decreasing the Cities' contribution rate by 0.63%. In accordance with Iowa State Code Section 411.5.10-11, the Board of Trustees prescribes the actuarial assumptions used in the actuarial valuation. Per the Code Section, we as the System's actuary conduct a formal investigation, or experience study, of the primary assumptions every five years. The most recent investigation was completed in the spring of 2018 for the 10-year period ending June 30, 2017. Next scheduled investigation will be for the period ending June 30, 2022.

Changes in Actuarial Methods 0.00%

There were no changes in actuarial methods from the prior year valuation.

Comparison of Actual and Expected Rates

For July 1, 2017 to June 30, 2018

Active Ordinary Disability Retirements

<u>Ages</u>	<u>Number of Ordinary Disability Retirements</u>	<u>Actual Rate</u>	<u>Expected Rate</u>	<u>Ratio of Actual to Expected</u>
20-24	0	.0000	.0008	.00
25-29	1	.0023	.0008	2.88
30-34	0	.0000	.0008	.00
35-39	2	.0032	.0011	2.91
40-44	0	.0000	.0015	.00
45-49	1	.0014	.0020	.70
50-54	1	.0019	.0026	.73
55-59	0	.0000	.0048	.00
60-64	0	.0000	.0099	.00
65+	<u>0</u>	.0000	.0145	.00
	5			

Total number expected: 7

Active Accidental Disability Retirements

<u>Ages</u>	<u>Number of Accidental Disability Retirements</u>	<u>Actual Rate</u>	<u>Expected Rate</u>	<u>Ratio of Actual to Expected</u>
20-24	0	.0000	.0010	.00
25-29	0	.0000	.0010	.00
30-34	0	.0000	.0010	.00
35-39	3	.0048	.0017	2.82
40-44	3	.0050	.0041	1.22
45-49	3	.0043	.0080	.54
50-54	7	.0136	.0224	.61
55-59	4	.0149	.0344	.43
60-64	4	.0471	.0621	.76
65+	<u>0</u>	.0000	.0641	.00
	24			

Total number expected: 36

**Comparison of Actual and Expected Rates
(continued)**

For July 1, 2017 to June 30, 2018

Active Salary Increases

<u>Ages</u>	<u>Actual Salary Increases</u>	<u>Expected Salary Increases</u>	<u>Ratio of Actual to Expected</u>
20-24	12.29%	12.35%	.99
25-29	7.37	8.82	.84
30-34	5.15	6.21	.83
35-39	3.60	5.22	.69
40-44	2.62	4.76	.55
45-49	2.82	4.50	.63
50-54	2.46	4.50	.55
55-59	3.20	4.50	.71
60-64	3.54	4.50	.79

The actual weighted average salary increase for active members was 3.79% compared to an expected weighted average salary increase of 5.41% for the year.

Active Accidental Deaths

<u>Ages</u>	<u>Number of Accidental Deaths</u>	<u>Actual Rate</u>	<u>Expected Rate</u>	<u>Ratio of Actual to Expected</u>
20-24	0	.0000	.0002	.00
25-29	0	.0000	.0001	.00
30-34	0	.0000	.0001	.00
35-39	0	.0000	.0001	.00
40-44	0	.0000	.0001	.00
45-49	0	.0000	.0003	.00
50-54	0	.0000	.0007	.00
55-59	0	.0000	.0011	.00
60-64	0	.0000	.0019	.00
65+	<u>0</u>	.0000	.0029	.00
	0			

Total number expected: 1

**Comparison of Actual and Expected Rates
(continued)**

For July 1, 2017 to June 30, 2018

Active Ordinary Deaths

<u>Ages</u>	<u>Number of Ordinary Deaths</u>	<u>Actual Rate</u>	<u>Expected Rate</u>	<u>Ratio of Actual to Expected</u>
20-24	0	.0000	.0002	.00
25-29	1	.0023	.0003	7.67
30-34	1	.0016	.0003	5.33
35-39	1	.0016	.0004	4.00
40-44	0	.0000	.0006	.00
45-49	1	.0014	.0008	1.75
50-54	0	.0000	.0011	.00
55-59	0	.0000	.0015	.00
60-64	0	.0000	.0022	.00
65+	<u>0</u>	.0000	.0025	.00
	4			

Total number expected: 3

Active Service Retirements

<u>Age</u>	<u>Number of Service Retirements</u>	<u>Actual Rate</u>	<u>Expected Rate</u>	<u>Ratio of Actual to Expected</u>
55	14	.636	.500	1.27
56	5	.100	.250	.40
57	0	.000	.200	.00
58	5	.086	.200	.43
59	0	.000	.200	.00
60	0	.000	.200	.00
61	0	.000	.250	.00
62	3	.125	.300	.42
63	0	.000	.350	.00
64	1	.333	.400	.83
65+	<u>1</u>	.333	1.000	.33
	29			

Total number expected: 58

**Comparison of Actual and Expected Rates
(continued)**

For July 1, 2017 to June 30, 2018

Active DROP Participants

<u>Age</u>	<u>Number of Actives Elected DROP</u>	<u>Actual Rate</u>	<u>Expected Rate</u>	<u>Ratio of Actual to Expected</u>
55	10	.323	1.000	.32
56	8	1.600	1.000	1.60
57	22	2.444	1.000	2.44
58	8	.267	1.000	.27
59	2	.095	1.000	.10
60	3	.158	1.000	.16
61	1	.063	1.000	.06
62	0	.000	1.000	.00
63	2	1.000	1.000	1.00
64	0	.000	1.000	.00
65+	<u>0</u>	.000	1.000	.00
	56			

Total number expected: 57

Active DROP Premature Withdrawals

<u>Age</u>	<u>Number DROP Premature Withdrawals</u>	<u>Actual Rate</u>	<u>Expected Rate</u>	<u>Ratio of Actual to Expected</u>
55	3	.600	.050	12.00
56	2	.500	.050	10.00
57	1	.059	.050	1.18
58	3	.103	.050	2.06
59	0	.000	.050	.00
60	0	.000	.050	.00
61	1	.059	.050	1.18
62	0	.000	.050	.00
63	1	.333	.050	6.66
64	0	.000	.050	.00
65+	<u>0</u>	.000	.050	.00
	11			

Total number expected: 6

**Comparison of Actual and Expected Rates
(continued)**

For July 1, 2017 to June 30, 2018

Active Withdrawals

<u>Ages</u>	<u>Number of Withdrawals</u>	<u>Actual Rate</u>	<u>Expected Rate</u>	<u>Ratio of Actual to Expected</u>
20-24	15	.1181	.0659	1.79
25-29	27	.0632	.0529	1.19
30-34	18	.0291	.0379	.77
35-39	18	.0288	.0205	1.40
40-44	9	.0150	.0087	1.72
45-49	11	.0158	.0020	7.90
50-54	4	.0078	.0020	3.90
55-59	2	.0074	.0000	99.99
60-64	1	.0118	.0000	99.99
65+	<u>0</u>	.0000	.0000	.00
	105			

Total number expected: 74

Inactive Deaths for Service Retirements

<u>Ages</u>	<u>Number of Deaths</u>	<u>Actual Rate</u>	<u>Expected Rate</u>	<u>Ratio of Actual to Expected</u>
55-59	1	.0046	.0043	1.07
60-64	5	.0114	.0081	1.41
65-69	3	.0064	.0148	.43
70-74	5	.0141	.0248	.57
75-79	7	.0286	.0404	.71
80-84	11	.0688	.0662	1.04
85-89	6	.0883	.1077	.77
90-94	8	.2000	.1720	1.16
95-99+	<u>5</u>	.5555	.2551	2.18
	51			

Total number expected: 56

**Comparison of Actual and Expected Rates
(continued)**

For July 1, 2017 to June 30, 2018

Inactive Deaths for Beneficiaries

<u>Ages</u>	<u>Number of Deaths</u>	<u>Actual Rate</u>	<u>Expected Rate</u>	<u>Ratio of Actual to Expected</u>
<40	0	.0000	.0004	.00
40-44	0	.0000	.0012	.00
45-49	0	.0000	.0017	.00
50-54	0	.0000	.0024	.00
55-59	0	.0000	.0038	.00
60-64	0	.0000	.0076	.00
65-69	0	.0000	.0139	.00
70-74	2	.0185	.0238	.78
75-79	5	.0318	.0379	.84
80-84	8	.0580	.0629	.92
85-89	15	.1229	.1068	1.15
90-94	8	.1026	.1646	.62
95-99+	5	.1852	.2185	.85
	<u>43</u>			

Total number expected: 51

Inactive Deaths for Disability Retirements

<u>Ages</u>	<u>Number of Deaths</u>	<u>Actual Rate</u>	<u>Expected Rate</u>	<u>Ratio of Actual to Expected</u>
<40	0	.0000	.0007	.00
40-44	0	.0000	.0016	.00
45-49	0	.0000	.0021	.00
50-54	1	.0132	.0033	4.00
55-59	3	.0252	.0063	4.00
60-64	3	.0151	.0118	1.28
65-69	5	.0240	.0204	1.18
70-74	7	.0376	.0332	1.13
75-79	6	.0496	.0544	.91
80-84	7	.1045	.0889	1.18
85-89	0	.0000	.1434	.00
90-94	2	.2000	.2188	.91
95-99+	1	.3333	.3089	1.08
	<u>35</u>			

Total number expected: 33

Development of Actual Investment Return On Actuarial Value of Assets

1.	Market Value (MVA) July 1, 2017	\$2,436,896,111																																										
2.	Actuarial Value (AVA) July 1, 2017	2,461,161,417																																										
3.	Contributions for 2017 Plan Year (Members, Cities, and State)	102,135,319																																										
4.	Benefit Distributions and Refunds	(170,663,862)																																										
5.	Administrative, Disability and Other Expenses	(1,933,212)																																										
6.	Expected Return on Assets at 7.5%																																											
	a. On Market Value, BOY	\$182,767,208																																										
	b. On Contributions (1/2 Year)	3,760,834																																										
	c. On Benefits Paid (1/2 Year)	(6,284,196)																																										
	d. On Expenses (1/2 Year)	(71,185)																																										
	e. Total	180,172,661																																										
7.	Actual Return on Assets	183,193,631																																										
8.	Current Year Asset Gain/(Loss) = (7) – (6)	3,020,970																																										
9.	Asset Gains/(Losses) for current and prior four years:																																											
	<table style="width: 100%; border-collapse: collapse; margin-left: 40px;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 20%; text-align: center;">(i) Asset gain or (loss)</th> <th style="width: 10%; text-align: center;">Years Recognized</th> <th style="width: 10%; text-align: center;">Years Remaining</th> <th style="width: 15%; text-align: center;">(ii) Recognition Percentage</th> <th style="width: 25%; text-align: center;">(i) x (ii) Recognized Amount</th> </tr> </thead> <tbody> <tr> <td>a. 2017</td> <td style="text-align: right;">\$ 3,020,970</td> <td style="text-align: center;">1</td> <td style="text-align: center;">4</td> <td style="text-align: center;">20.000%</td> <td style="text-align: right;">604,194</td> </tr> <tr> <td>b. 2016</td> <td style="text-align: right;">94,033,500</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">20.000</td> <td style="text-align: right;">18,806,700</td> </tr> <tr> <td>c. 2015</td> <td style="text-align: right;">(170,219,375)</td> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">20.000</td> <td style="text-align: right;">(34,043,875)</td> </tr> <tr> <td>d. 2014</td> <td style="text-align: right;">(99,921,132)</td> <td style="text-align: center;">4</td> <td style="text-align: center;">1</td> <td style="text-align: center;">20.000</td> <td style="text-align: right;">(19,984,226)</td> </tr> <tr> <td>e. 2013</td> <td style="text-align: right;">213,044,387</td> <td style="text-align: center;">5</td> <td style="text-align: center;">0</td> <td style="text-align: center;">20.000</td> <td style="text-align: right;"><u>42,608,877</u></td> </tr> <tr> <td>f. Total</td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: right;"><u>7,991,670</u></td> </tr> </tbody> </table>		(i) Asset gain or (loss)	Years Recognized	Years Remaining	(ii) Recognition Percentage	(i) x (ii) Recognized Amount	a. 2017	\$ 3,020,970	1	4	20.000%	604,194	b. 2016	94,033,500	2	3	20.000	18,806,700	c. 2015	(170,219,375)	3	2	20.000	(34,043,875)	d. 2014	(99,921,132)	4	1	20.000	(19,984,226)	e. 2013	213,044,387	5	0	20.000	<u>42,608,877</u>	f. Total					<u>7,991,670</u>	
	(i) Asset gain or (loss)	Years Recognized	Years Remaining	(ii) Recognition Percentage	(i) x (ii) Recognized Amount																																							
a. 2017	\$ 3,020,970	1	4	20.000%	604,194																																							
b. 2016	94,033,500	2	3	20.000	18,806,700																																							
c. 2015	(170,219,375)	3	2	20.000	(34,043,875)																																							
d. 2014	(99,921,132)	4	1	20.000	(19,984,226)																																							
e. 2013	213,044,387	5	0	20.000	<u>42,608,877</u>																																							
f. Total					<u>7,991,670</u>																																							
10.	Expected Return on AVA = 7.5% x (2) + 6(b) + 6(c) + 6(d)	181,992,559																																										
11.	Actual Actuarial Value as of July 1, 2018 = (2) + (3) + (4) + (5) + (6e) + (9f)	2,578,863,993																																										
12.	Expected Actuarial Value as of July 1, 2018 = (2) + (3) + (4) + (5) + (10)	2,572,692,221																																										
13.	Gain/(Loss) on AVA = (11) – (12)	6,171,772																																										
14.	Actual Rate of Return = [(6e) + (9f)] ÷ (10) x 7.50%	7.75%																																										
15.	Expected Rate of Return	7.50%																																										