

**CITY OF SIOUX FALLS FIREFIGHTERS' PENSION FUND  
SIXTY-FIRST ANNUAL ACTUARIAL VALUATION REPORT  
DECEMBER 31, 2016**

# OUTLINE OF CONTENTS

<b>Page</b>	<b>Items</b>
	<b>Cover Letter</b>
<b>A</b>	<b>Valuation Results</b>
1	Financial Objective
2	Computed City-State Contributions
3	Active and Retired Pension Fund Members
4	Computed City-State Pension Contributions – Comparative Statement
5	Actuarial Balance Sheet
6	Derivation of Actuarial Gain (Loss)
7-8	Comments
9	Contribution Summary
<b>B</b>	<b>Summary of Benefit Provisions and Valuation Data</b>
1-3	Summary of Benefit Provisions
4-5	Reported Asset Information
6-8	Retired Life Data
9	Inactive Member Data
10-13	Active Member Data
<b>C</b>	<b>Actuarial Methods and Assumptions and Definitions of Technical Terms</b>
1	Actuarial Methods Used for the Valuation
2-4	Actuarial Assumptions Used for the Valuation
5	Miscellaneous and Technical Assumptions
6-7	Definitions of Technical Terms
<b>D</b>	<b>Additional Disclosures</b>
1	Schedule of Funding Progress and Employer Contributions
<b>Appendix</b>	<b>Retiree Health Valuation Results</b>

March 13, 2017

The Retirement Board  
City of Sioux Falls Firefighters' Pension Fund  
Sioux Falls, South Dakota

Ladies and Gentlemen:

The results of the December 31, 2016 actuarial valuation of the City of Sioux Falls Firefighters' Pension Fund are presented in this report. Both this report and the forthcoming Power Point Presentation to the Board comprise the valuation results. The purpose of the valuation was to measure the Fund's funding progress, provide actuarial information in connection with applicable Governmental Accounting Standards Board Statements and to determine the employer contribution for the fiscal year beginning January 1, 2018. This report should not be relied upon for any other purpose. This report may be distributed to parties other than the Retirement Board only in its entirety and only with the permission of the Board. Gabriel, Roeder, Smith & Company is not responsible for unauthorized use of this report.

The valuation was based upon the assumptions and methods adopted by the Board, information furnished by the Fund concerning Pension Fund benefits, financial transactions, individual members, terminated members, retirees and beneficiaries. Data was checked for internal and year to year consistency, but was not audited by us. As a result, we are unable to assume responsibility for the accuracy or completeness of the data provided.

Future actuarial measurements may differ significantly from those presented in this report due to such factors as experience differing from that anticipated by actuarial assumptions, changes in plan provisions, actuarial assumptions/methods or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements.

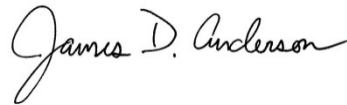
This valuation was based on the assumption that the plan sponsor will continue to make the contributions necessary to fund this plan in the future. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

To the best of our knowledge, this report is complete and accurate and was made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards Board and in compliance with the applicable state statutes. Louise M. Gates and James D. Anderson are independent of the plan sponsor and are Members of the American Academy of Actuaries (MAAA) who meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. It is our opinion that the actuarial assumptions used for the valuation produce results which are reasonable.

Respectfully submitted,



Louise M. Gates, ASA, MAAA



James D. Anderson, FSA, EA, MAAA

LMG/JDA:sc

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**SECTION A**  
**VALUATION RESULTS**

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## **FINANCIAL OBJECTIVE**

The financial objective of the Pension Fund is to establish and receive contributions that will accumulate reserves during members' working lifetimes which will be sufficient to pay promised benefits throughout retirement.

## **CONTRIBUTIONS**

The Pension Fund is supported by member contributions, City contributions, State contributions (insurance premium taxes) and investment income from Pension Fund assets.

Contributions which satisfy the financial objective are determined by an annual actuarial valuation and are sufficient to:

- (1) cover the actuarial present value of benefits assigned to the current year by the actuarial cost methods described in Section C (the normal cost); and
- (2) amortize over a period of future years the actuarial present value of benefits not covered by valuation assets and anticipated future normal costs (unfunded actuarial accrued liability).

Pension contribution requirements for the year beginning January 1, 2018 are shown on page A-2.

**CONTRIBUTIONS COMPUTED TO MEET THE  
FINANCIAL OBJECTIVE OF THE PENSION FUND  
FOR THE FISCAL YEAR BEGINNING JANUARY 1, 2018  
(INCLUDING STATE CONTRIBUTIONS)**

<b>Contributions for</b>	<b>Contribution Requirements</b>
Total Normal Cost	\$3,285,003
Employee Portion	1,169,040
City-State Portion	2,115,963
 Unfunded Actuarial Accrued	
Liabilities (UAAL) Contribution	\$2,154,319
 Total Computed City-State Contribution	 \$4,270,282

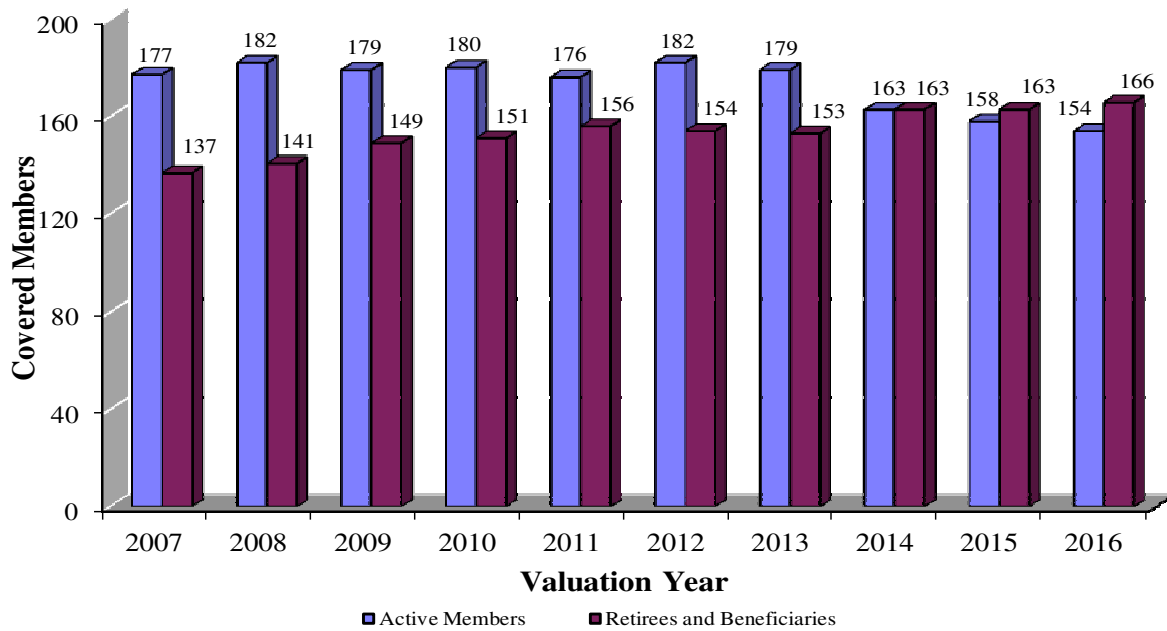
City Firefighter employees hired on or after July 1, 2013 will become members of the South Dakota Retirement System (SDRS) instead of joining the Pension Fund. Contributions are expressed in terms of dollars in this report instead of as percents of payroll. This is due to the use of the level dollar amortization method (appropriate for systems closed to new hires) to finance the Pension Fund's unfunded actuarial accrued liabilities (UAAL).

The Pension Fund's UAAL was amortized as a level dollar amount over a period of 21 years.

The employee contribution to the Pension Fund shown above was based on an employee contribution rate of 10.0% and plan member payroll projected to 2018.

The employer contribution shown above includes contributions for the stipend benefit which became effective January 1, 2014.

## ACTIVE AND RETIRED PENSION FUND MEMBERS



The chart above shows current and future pension benefit recipients on each valuation date during the last 10 years.

**COMPUTED CITY-STATE PENSION CONTRIBUTIONS  
COMPARATIVE STATEMENT**

<b>Fiscal Year</b>	<b>Valuation Date December 31</b>	<b>% of Payroll Contributions</b>	<b>Dollar Contributions</b>
2004	2002 **	9.31 %	
2005	2003	11.12	
2006	2004 @	16.21	
2007	2005	17.14	
2008	2006	15.99	
2009	2007 @	16.36	
2010	2008	19.97	
2011	2009	24.55	
2012	2010	25.21	
2013	2011 @	24.31	
2014	2012 @#		\$4,484,256
2015	2013 @		4,424,656
2016	2014 @		4,407,249
2017	2015 @		4,663,613
2018	2016		4,270,282

@ After changes in actuarial assumptions or methods.

# After changes in benefit provisions.

\*\* Reflects amortization credit.



# ACTUARIAL BALANCE SHEET - DECEMBER 31, 2016

## Present Pension Resources and Expected Future Resources

A.	Valuation assets	\$139,133,443
B.	Actuarial present value of expected future employer contributions	
	1. For normal costs	18,588,041
	2. For unfunded actuarial accrued liabilities	24,101,143
	3. Total	<u>42,689,184</u>
C.	Actuarial present value of expected future member contributions	<u>10,393,873</u>
D.	Total actuarial present value of present and expected future resources	<u><u>\$192,216,500</u></u>

## Actuarial Present Value of Expected Future Pension Benefit Payments and Reserves

A.	To retirees and beneficiaries	\$ 103,629,811
B.	To vested terminated members	1,513,111
C.	To present active members	
	1. Allocated to service rendered prior to valuation date	58,091,664
	2. Allocated to service likely to be rendered after valuation date	28,981,914
	3. Total	<u>87,073,578</u>
D.	Total actuarial present value of expected future benefit payments and reserves	<u><u>\$192,216,500</u></u>

## DERIVATION OF ACTUARIAL GAIN (LOSS) YEAR ENDED DECEMBER 31, 2016

The actuarial gains or losses realized in the operation of the Pension Fund provide an experience test. Gains and losses are expected to cancel each other over a period of years but sizable year to year fluctuations are common. Detail on the derivation of the actuarial gain (loss) is shown below, along with a year by year comparative schedule.

(1) UAAL at the start of the year	\$28,452,984
(2) Normal cost	3,223,439
(3) Contributions	5,576,715
(4) Interest accrual	2,045,726
(5) Expected UAAL before changes	28,145,434
(6) Change from benefit changes	0
(7) Change from revised actuarial methods/assumptions	0
(8) Expected UAAL after changes	28,145,434
(9) Actual UAAL at end of year	24,101,143
(10) Gain (loss) (8) - (9)	4,044,291
(11) Gain (loss) as percent of actuarial accrued liabilities at start of year	2.6%

<b>Valuation Date December 31</b>	<b>Actuarial Gain (Loss) as % of Beginning Accrued Liabilities</b>
2007	3.1 %
2008	(4.6)
2009	(5.7)
2010	0.7
2011	(3.9)
2012	(0.4)
2013	3.2
2014	1.8
2015	0.9
2016	2.6

## COMMENTS

**Comment A:** Pension Fund experience was overall favorable during the 2016 plan year. During the year, the return on assets was somewhat greater than long term expectations. The market smoothing techniques used in this valuation of the Pension Fund recognize both past and present investment experience. As a result, the recognized rate of return on pension assets was 9.12%. Details of this asset smoothing method are shown on page B-4. In addition, actual post-retirement cost of living increases were lower than assumed, which contributed to the favorable experience.

**Comment B:** The Appendix of this report includes the results of the December 31, 2016 actuarial valuation of the retiree health program. The City's policy is to make 100% of the contributions recommended by the actuary. The Appendix of this report includes additional information about this valuation.

**Comment C:** During the 2016 plan year, the return on retiree health plan assets was greater than long term expectations. In addition, claims costs increased by less than anticipated by actuarial assumptions. This valuation of the retiree health plan reflects a change in the investment return assumption and a change in the health inflation assumptions. The net effect of these changes and plan experience was an increased level of funding surplus from the prior year. The health plan continues to have a large funding surplus as of the valuation date and as a result, no City contribution is recommended for the retiree health plan for the 2018 fiscal year.

**Comment D:** The computed contribution dollar shown on page A-2 may be considered as a minimum contribution that complies with the Board's funding policy. Users of this report should be aware that contributions made at that level do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered. The contribution dollars shown in this report are determined using the actuarial assumptions and methods disclosed in Section C of this report.

This report includes risk metrics on page D-1 but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment. We encourage a review and assessment of investment and other significant risks that may have a material effect on the plan's financial condition.

## COMMENTS

**Comment E:** The Pension Fund's funding percent based on the actuarial value of assets is 85.7% as of the valuation date. If the market value of pension assets were used to determine the funding percent, the result would be 84.4% as of the valuation date.

Unless otherwise indicated, the pension funding status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets (including assets held in the unallocated income reserve). With regard to the funding status measurement presented in this report, it is important to note the following:

- The measurement is inappropriate for assessing the sufficiency of pension plan assets to cover the estimated cost of settling the plan's benefit obligations
- The measurement is inappropriate for assessing the need for or the amount of future employer contributions
- The measurement will produce a different result if the market value of assets is used instead of the actuarial value of assets, unless the actuarial value of assets equals the market value of assets.

**Comment F:** Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.50% on the actuarial value of assets), then the following outcomes are expected:

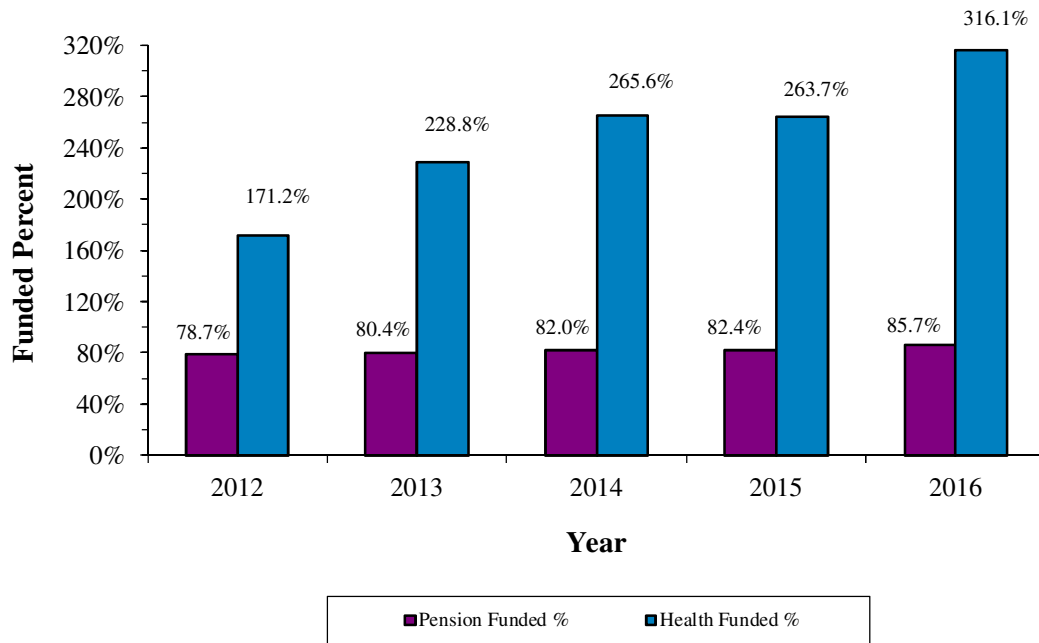
1. The employer normal cost is expected to decrease over time due to the closure of the plan to new hires.
2. The unfunded liability is expected to be paid off in approximately 21 years, which is the number of years remaining in the amortization period.
3. The funded status of the plan is expected to reach a 100% funded ratio in approximately 21 years.

## CONTRIBUTION SUMMARY FOR THE FISCAL YEAR BEGINNING JANUARY 1, 2018

Contributions for	Computed Employer Contributions		
	Pension	Health	Total
Total Computed City-State Contribution	\$4,270,282	\$0	\$4,270,282

The pension contribution shown above was based on a 21-year amortization of the UAAL. The Retiree Health Plan surplus resulted in a \$0 contribution for the 2018 fiscal year.

### Pension and Retiree Health Funded Ratio History



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**SECTION B**  
**SUMMARY OF BENEFIT PROVISIONS**  
**AND VALUATION DATA**

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**BENEFIT PROVISIONS EVALUATED  
AND/OR CONSIDERED  
(DECEMBER 31, 2016)**

**Pension Fund Eligibility:**

New City Firefighter employees hired on or before June 30, 2013 will become members of the Firefighters Pension Fund. Individuals hired after June 30, 2013 will become members of the South Dakota Retirement System.

**Regular Retirement:**

*Eligibility* - Age 55 with 20 or more years of service; or the sum of a member's age and years of service equals eighty (80) with a minimum retirement age of 50.

*Annual Amount* - Final average compensation times the sum of a) 2.5% times the first 25 years of service, plus b) 1.5% times service in excess of 25 years.

*Type of Final Average Compensation* - Average of last 3 years before retirement. Some lump sums are included.

**Early Reduced Retirement:**

*Eligibility* - 20 or more years of service.

*Annual Amount* - Same as regular retirement except that the benefit is actuarially reduced.

**Deferred Retirement (vested benefit):**

*Eligibility* - 15 years of service; benefit payable at deferred retirement age.

*Annual Amount*- Computed as a regular retirement benefit but based on service and final average compensation at termination.

**Duty Disability Retirement:**

*Eligibility* - No age or service requirements. Must be in receipt of Workers' Compensation.

*Annual Amount* - Computed as a regular retirement benefit, based on a minimum of 10 years of service. Minimum benefit is 50% of a first-class firefighter's salary. Workers' compensation payments are offset.

**BENEFIT PROVISIONS EVALUATED  
AND/OR CONSIDERED  
(DECEMBER 31, 2016)**

**Non-Duty Disability Retirement:**

*Eligibility* - 10 years of service.

*Annual Amount* - Computed as a regular retirement benefit. Minimum benefit is 20% of a first-class firefighter's salary.

**Duty Death Before Retirement:**

*Eligibility* - No age or service requirement. Also payable in case of death of duty-disability retiree within 5 years of retirement. Workers' Compensation must be payable.

*Annual Amount* - Refund of accumulated contributions. Spouse receives a pension of 1/3 of first-class firefighter's salary until death. Unmarried children under age 18 or an eligible handicapped child will receive equal share of 1/4 of a first-class firefighter's salary (if no spouse, each child receives 1/4 to a maximum of 1/2). The minimum monthly benefit for each eligible child is \$200. If there are no spouse or eligible children, dependent parents each receive 1/6 of a first-class firefighter's salary. Workers' Compensation payments are offset.

**Non-Duty Death Before Retirement:**

*Eligibility* - 10 years of service.

*Annual Amount* - Surviving spouse receives a monthly benefit for life computed as a regular retirement benefit but actuarially reduced in accordance with a 100% joint and survivor election. In addition each eligible or handicapped child is paid a minimum monthly benefit of \$200.

**Post-Retirement Cost-of-Living Adjustments:**

An annual increase equal to 100% of the June CPI change each year (with a cap of 3%) applied to the member's current benefit. The first increase is granted after 36 months of retirement.

**Member Contributions:**

8% of compensation until January 1, 2014.

9% of compensation effective January 6, 2014.

10% of compensation on and after January 5, 2015.



**BENEFIT PROVISIONS EVALUATED  
AND/OR CONSIDERED  
(DECEMBER 31, 2016)**

**Stipend Benefit:**

*Eligibility* - Members who retire from City employment (regular, early reduced or disability retirement) after December 31, 2013 are eligible to receive a monthly stipend benefit payable from the Pension Fund until age 65 (or Medicare eligibility) in lieu of retiree health plan benefits.

*Annual Amount* - \$40 per month times years of service at retirement. Benefit is payable to the member only until he/she becomes eligible for Medicare or dies (if earlier). No benefit is payable to a surviving spouse or child of a deceased Pension Fund Member. This benefit increases by 3% each year beginning in January 2015.

**Retiree Health Plan Benefit:**

*Eligibility* – Eligible Pension Fund members (and their eligible spouses) who retire from City employment on or before December 31, 2013 are eligible to join the City Sponsored Retiree Health Plan at retirement.

*Annual Amount* – Medical, prescription drug and dental benefits are provided to eligible retirees and spouses until attainment of Medicare eligibility. The benefit recipient pays for 50% of the monthly premium amount.

## DERIVATION OF VALUATION ASSETS

	<u>Pension</u>	<u>Health</u>	<u>Sub-Total</u>	<u>Unallocated Income</u>	<u>Total</u>
A. Funding Value, 12/31/15	\$128,984,476	\$6,946,503	\$135,930,979	\$804,298	\$136,735,277
B. Market Value, Beginning of Year			134,922,497	804,298	135,726,795
C. Non-Investment Net Cash Flow	(1,546,372)	(266,873)			
D. Net Investment Income	10,588,652				
E. Market Value, End of Year			144,255,201	804,298	145,059,499
F. Phase-in Factor	20%				
G. Expected Income**	9,615,847	557,297			
H. Market Value Gain (Loss): [(D) – (G)]	972,805				
I. Method Change					
J. Recognition of Gain (Loss)					
J1. Year One	194,561				
J2. Year Two	(1,849,535)				
J3. Year Three	35,404				
J4. Year Four	2,584,384				
J5. Year Five	1,114,678				
J6. Total (J1...J5)	<u>2,079,492</u>				
K. Funding Value, 12/31/16 [(A) + (C) + (G) + (J6)]	139,133,443	7,236,927	146,370,370	804,298	147,174,668
L. Funding Value Rate of Return	9.12%	8.18%			
M. Market Value Rate of Return	8.32%	8.18%			

\*\* Actual investment income shown for health assets.

**ASSET INFORMATION REPORTED FOR VALUATION  
COMPARATIVE STATEMENT - MARKET VALUE**

Year Ended Dec. 31	Assets Beginning of Year	Revenues			Expenses			Assets Year-End
		Member Contrib.	Employer Contrib.	Investment Income	Retirement Benefits	Contrib. Refunds	Other Net Expenses*	
2002	\$ 62,874,827	\$612,637	\$837,636	(\$6,425,470)	\$2,454,162	\$11,921	\$336,984	\$ 55,096,563
2003	55,096,563	694,919	964,605	14,505,737	2,646,885	12,667	401,224	68,201,048
2004	68,201,048	729,784	1,269,502	9,856,321	3,130,455	27,170	366,281	76,532,749
2005	76,532,749	733,442	1,448,282	6,666,149	3,460,068	1,038	467,077	81,452,439
2006	81,452,439	804,140	2,096,083	12,813,932	3,755,563	133,085	539,948	92,737,998
2007	92,737,998	832,892	2,716,461	7,602,334	4,173,282	42,932	611,256	99,062,215
2008	99,062,215	856,843	2,685,905	(26,092,662)	4,440,801	22,529	633,148	71,415,823
2009	71,415,823	926,257	2,852,790	16,900,840	4,930,354	43,069	583,877	86,538,410
2010	86,538,410	887,101	3,171,070	12,255,865	5,211,418	34,640	464,318	97,142,070
2011	97,142,070	916,965	3,718,003	1,987,241	5,558,803	3,589	541,016	97,660,871
2012	97,660,871	911,291	3,970,160	13,981,467	5,848,569	0	478,398	110,196,822
2013	110,196,822	926,949	4,016,011 **	21,915,937	5,937,848	16,103	461,128	130,640,640
2014	130,640,640	1,056,622	4,089,313 ***	8,885,483	6,470,814	70,653	412,698	137,717,893
2015	137,717,893	1,150,548	4,424,656	(250,585)	6,881,461	32,636	401,620	135,726,795
2016	135,726,795	1,169,466	4,407,249	11,314,306	7,092,026	31,061	435,230	145,059,499

\* Includes retiree health benefits.

\*\* Employer contributions in 2013 include contributions to the unallocated income reserve.

\*\*\* Before reserve transfer.

**ADDITIONS TO AND REMOVALS FROM RETIRED/SURVIVOR MEMBERSHIP  
COMPARATIVE STATEMENT**

Year Ended Dec. 31	Additions		Removals		End of Year Totals		Average	Present	Expected Removals
	No.	Annual Benefits*	No.	Annual Benefits	No.	Annual Benefits	Annual Benefits	Value of Benefits	
2002	7	\$ 256,583	5	\$ 60,380	102	\$ 2,512,236	\$24,630	\$33,161,976	3.0
2003	17	266,239	7	21,520	112	2,756,955	24,616	36,127,984	2.9
2004	13	538,951	3	39,371	122	3,256,535	26,693	42,695,611	3.1
2005	8	339,439	2	35,965	128	3,560,009	27,813	46,338,790	3.3
2006	9	484,345	4	76,783	133	3,967,571	29,831	52,332,720	3.6
2007	7	371,127	3	31,735	137	4,306,963	31,438	57,295,812	3.7
2008	9	527,492	5	160,035	141	4,674,420	33,152	64,060,877	3.8
2009	14	567,145	6	83,800	149	5,157,765	34,616	70,864,899	3.9
2010	7	299,458	5	108,324	151	5,348,899	35,423	73,447,548	3.9
2011	11	567,883	6	159,270	156	5,757,512	36,907	79,914,932	4.0
2012	2	190,469	4	124,027	154	5,823,954	37,818	82,278,462	4.2
2013	3	219,347	4	125,800	153	5,917,501	38,676	84,573,093	3.7
2014	16	871,488	6	176,262	163	6,612,727	40,569	97,235,026	3.7
2015	6	430,488	6	209,943	163	6,833,272	41,922	102,197,293	3.4
2016	5	212,268	2	67,529	166	6,978,011	42,036	103,629,811	3.4

\* Includes post-retirement cost-of-living adjustments.

**RETIREES AND BENEFICIARIES DECEMBER 31, 2016  
TABULATED BY TYPE OF BENEFITS BEING PAID**

<u>Type of Benefits Being Paid</u>	<u>No.</u>	<u>Annual Pension Benefit</u>	<u>No.</u>	<u>Annual Stipend</u>
Age and Service Benefits	124	\$5,804,004	18	\$251,692
Disability Retirement Benefits*	9	222,832	3	23,340
Survivor Benefits	33	951,175	0	0
<b>Total</b>	<b>166</b>	<b>\$6,978,011</b>	<b>21</b>	<b>\$275,032</b>

\* *Includes survivors of disabled retirees.*

**RETIREES AND BENEFICIARIES BY AGE  
AS OF DECEMBER 31, 2016**

<u>Age</u>	<u>No.</u>	<u>Annual Pensions</u>	<u>No.</u>	<u>Annual Stipend</u>
Under 40	2	\$ 32,636	1	\$ 4,244
45 - 49	2	62,190	1	10,354
50 - 54	7	372,184	6	86,360
55 - 59	26	1,302,204	9	122,980
60 - 64	45	2,172,891	4	51,094
65 - 69	34	1,281,830	0	0
70 - 74	14	639,061	0	0
75 - 79	13	513,102	0	0
80 - 84	10	348,525	0	0
85 +	13	253,388	0	0
<b>Total</b>	<b>166</b>	<b>\$ 6,978,011</b>	<b>21</b>	<b>\$ 275,032</b>

**VESTED DEFERRED RETIREMENTS  
AS OF DECEMBER 31, 2016**

<u>Age</u>	<u>No.</u>	<u>Estimated Pensions</u>
40-44	1	\$ 31,778
45-49	2	92,674
50-54	1	55,623
<b>Totals</b>	<b>4</b>	<b>\$180,075</b>

Estimated pensions shown above are annual pension benefits.

## ACTIVE MEMBERS INCLUDED IN VALUATION

Valn. Date Dec. 31	Active Members			Vested Term.	Valuation	Average			%
	Chiefs	Other	Total	Members	Payroll	Age	Service	Pay	Incr.
2002	13	149	162	3	\$7,634,337	41	13.7	\$47,126	3.7%
2003	13	151	164	4	8,354,041	41	13.2	50,939	8.1
2004	12	151	163	4	8,624,759	41	12.5	52,913	3.9
2005	12	154	166	4	8,917,110	41	12.3	53,718	1.5
2006	12	166	178	5	9,493,382	40	10.7	53,334	(0.7)
2007	11	166	177	4	9,991,111	40	10.9	56,447	5.8
2008	12	170	182	4	10,461,858	40	10.5	57,483	1.8
2009	13	166	179	3	11,189,155	40	10.4	62,509	8.7
2010	12	168	180	3	10,913,504	40	10.6	60,631	(3.0)
2011	11	165	176	4	10,827,592	40	10.5	61,520	1.5
2012	13	169	182	5	11,525,947	41	11.2	63,329	2.9
2013	11	168	179	5	11,573,294	42	12.2	64,655	2.1
2014	8	155	163	5	10,910,044	42	12.2	66,933	3.5
2015	8	150	158	5	11,230,191	43	12.8	71,077	6.2
2016	8	146	154	4	11,479,484	44	13.6	74,542	4.9



**ADDITIONS TO AND REMOVALS FROM ACTIVE MEMBERSHIP  
ACTUAL AND EXPECTED NUMBERS**

Year Ended Dec. 31	Number Added During Year		Retirement		Disability Retirement		Died-In- Service		Other Terminations		Members End of Year
	A	E	A	E	A	E	A	E	A	E	
2007	7	8	5	2.9	0	0.1	0	0.2	3	3.9	177
2008	13	8	6	1.5	1	0.2	0	0.2	1	3.4	182
2009	8	11	8	2.0	0	0.2	1	0.2	2	3.6	179
2010	8	7	5	2.4	0	0.2	0	0.2	2	3.3	180
2011	8	12	7	2.1	0	0.2	0	0.2	5	3.1	176
2012	7	1	0	1.6	0	0.2	0	0.2	1	2.9	182
2013	0	0	0	4.5	1	0.3	0	0.2	2	1.9	179
2014	0	0	11	7.4	2	0.3	0	0.2	3	1.6	163
2015	0	0	4	3.3	1	0.3	0	0.2	0	1.4	158
2016	0	0	3	2.1	0	0.3	0	0.2	1	1.3	154
<b>5-Year Totals</b>	<b>7</b>	<b>1</b>	<b>18</b>	<b>18.9</b>	<b>4</b>	<b>1.4</b>	<b>0</b>	<b>1.0</b>	<b>7</b>	<b>9.1</b>	

A - Represents actual number.

E - Represents the expected number based on assumptions outlined in Section C of the 2014 valuation report.

**ACTIVE FIREFIGHTER MEMBERS  
DECEMBER 31, 2016  
BY AGE AND YEARS OF SERVICE**

Age	Years of Service on Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Payroll
25-29	2	2						4	\$ 254,384
30-34	1	13	3					17	1,108,641
35-39	2	8	20					30	2,147,164
40-44		9	18	5				32	2,287,600
45-49		4	11	5	3			23	1,719,761
50-54		2	8	5	10	2		27	2,091,097
55-59			2	4	3	2		11	866,016
60			1					1	73,317
62			1					1	70,618
<b>Totals</b>	<b>5</b>	<b>38</b>	<b>64</b>	<b>19</b>	<b>16</b>	<b>4</b>		<b>146</b>	<b>\$10,618,598</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 43.5 years

Service: 13.1 years

Annual Pay: \$72,730

**ACTIVE MEMBER BATTALION CHIEFS  
DECEMBER 31, 2016  
BY AGE AND YEARS OF SERVICE**

Age	Years of Service on Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Payroll
40-44				3				3	\$295,793
45-49			1	1	1			3	313,994
50-54						1		1	103,714
55-59							1	1	147,385
<b>Totals</b>			<b>1</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>8</b>	<b>\$860,886</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 46.5 years

Service: 21.5 years

Annual Pay: \$107,611

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**SECTION C**

**ACTUARIAL METHODS AND ASSUMPTIONS  
AND DEFINITIONS OF TECHNICAL TERMS**

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# ACTUARIAL METHODS USED FOR THE VALUATION

## Actuarial Cost Method

The 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:

- (i) the annual normal costs for each individual active member, payable from the member's actual date of employment to projected date of retirement, are sufficient to accumulate the actuarial present value of the member's benefit at the time of retirement;
- (ii) each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

## Amortization of Unfunded Actuarial Accrued Liabilities

The Pension Plan unfunded actuarial accrued liability (UAAL) was determined using the funding value of assets and actuarial accrued pension liability calculated as of the valuation date. The UAAL amortization payment (one component of the contribution requirement), was developed using a level dollar amortization method that fully amortizes the UAAL over a 21-year period. This UAAL payment reflects payments expected to be made between the valuation date and the date contributions determined by this report are scheduled to begin.

The Retiree Health Plan UAAL (or surplus) was amortized over a 11-year period using a level dollar amortization method.

## Asset Valuation Method

The funding value of assets used in the Pension Plan valuation recognizes assumed investment income fully each year. Differences between actual and assumed investment income are phased-in over a 5-year period. During periods when investment performance exceeds the assumed rate, the funding value of assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, the funding value of assets will tend to be greater than market value. This is the result of phasing-in differences between actual investment income (market value basis) and expected investment income (funding value basis).

The Retiree Health Plan valuation uses a market value of assets to develop the UAAL.

## ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

### **Investment Return** (net of expenses)

7.50% per year, compounded annually for the pension plan. This rate consists of a net real rate of return of 3.25% per year plus a long-term rate of wage inflation of 4.25% per year. An investment return assumption of 2.25% per year compounded annually was used for the retiree health plan.

This assumption is used to equate the value of payments due at different points in time and was first used for the December 31, 2015 valuation.

**Pay Projections:** These assumptions are used to project current pays to those upon which benefits will be based. The base economic assumptions were first used for the December 31, 2007 valuation. The merit and longevity assumptions shown below were first used for the December 31, 2012 valuation.

<b>Service (Years)</b>	<b><u>Annual Rate of Pay Increase for Sample Ages</u></b>		
	<b>Base (Economic)</b>	<b>Merit and Longevity</b>	<b>Total</b>
1-4	4.25 %	4.50 %	8.75 %
5-12	4.25	2.00	6.25
13	4.25	1.00	5.25
14+	4.25	0.00	4.25

The assumed rate of price inflation used in the pension valuation is 2.75% per year.

**Mortality Table:** The RP-2000 Combined Healthy Annuitant Mortality Table projected to 2020 using Projection Scale BB, with 100% of the table rates used for both men and women. Sample values follow:

<b>Sample Ages</b>	<b><u>Future Life Expectancy (Years)</u></b>	
	<b>Men</b>	<b>Women</b>
55	28.37	30.90
60	23.94	26.34
65	19.74	21.98
70	15.83	17.93
75	12.26	14.25
80	9.13	10.95

## ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

**Rates of separation from active membership:** The rates do not apply to members eligible to retire and do not include separation on account of death or disability. This assumption measures the probabilities of members remaining in employment.

Sample Ages	Years of Service	Percent Separating within Next Year
ALL	0	6.00 %
	1	2.00
	2	1.50
	3	1.25
	4	1.25
25	5 & Over	2.50
30		2.00
35		1.50
40		1.00
45		0.50
50		0.00
55		0.00
60		0.00

The service based rates were first used in the December 31, 2012 valuation. The age based rates were first used in the December 31, 2004 valuation.

**Rates of Disability:** These assumptions represent the probabilities of active members becoming disabled.

Sample Ages	Percent Becoming Disabled within Next Year
20	0.08 %
25	0.08
30	0.08
35	0.08
40	0.20
45	0.27
50	0.49
55	0.89

## ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

**Rates of Retirement:** These rates are used to measure the probabilities of an eligible member retiring under the Regular and Early reduced retirement provisions during the next year.

### Percents of Active Members Retiring within the Next Year

<u>Retirement Ages</u>	<u>Regular Retirement Rates</u>	<u>Service (Yrs)</u>	<u>Early Retirement Rates</u>
50	50 %	20	2 %
51	50	21	2
52	50	22	2
53	50	23	2
54	60	24	2
55	60	25	2
56	60	26	2
57	70	27	2
58	70	28	2
59	70	29	2
60 & Over	100	30 & Over	2

A member was assumed to be eligible for regular retirement after attaining age 55 and completing 20 or more years of service, or if the sum of age and service equals eighty (80). A member was assumed to be eligible for early reduced retirement after completing 20 years of service.

The early retirement rates were first used for the December 31, 2004 valuation. The regular retirement rates were first used for the December 31, 2012 valuation.



## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

<b>Marriage Assumption:</b>	80% of participants are assumed to be married for purposes of death-in-service benefits. In each case males were assumed to be 3 years older than females.
<b>Pay Increase Timing:</b>	Beginning of year.
<b>Decrement Timing:</b>	Decrements of all types are assumed to occur mid-year.
<b>Eligibility Testing:</b>	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
<b>Benefit Service:</b>	Exact fractional service is used to determine the amount of benefit payable.
<b>Other:</b>	Disability and turnover decrements do not operate during retirement eligibility.
<b>Miscellaneous Loading Factors:</b>	The calculated retirement benefits were increased by 13% to account for the inclusion of unused sick leave and vacation time in the calculation of Final Average Compensation (FAC) and by 1% to account for the impact of subsidized optional forms of payment.
<b>Death/Disability Assumption:</b>	Fifty percent of disabilities and deaths were assumed to be duty related. Fifty percent were assumed to be unrelated to duty. The recovery rate from disability was assumed to be 0 (i.e., no disabled individual was assumed to recover and return to work).
<b>Forfeiture Assumption:</b>	All vested terminated members were assumed to elect a deferred retirement benefit.

## DEFINITIONS OF TECHNICAL TERMS

***Accrued Service*** - Service credited under the system which was rendered before the date of the actuarial valuation.

***Actuarial Accrued Liability*** - The difference between the actuarial present value of system benefits and the actuarial present value of future normal costs. Also referred to as “past service liability.”

***Actuarial Assumptions*** - Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

***Actuarial Cost Method*** - A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future benefits” between future normal costs and actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

***Actuarial Equivalent*** - One series of payments is said to be actuarially equivalent to another series of payments if the two series have the same actuarial present value.

***Actuarial Gain (Loss)*** - The difference between actual unfunded actuarial accrued liabilities and anticipated unfunded actuarial accrued liabilities -- during the period between two valuation dates. It is a measurement of the difference between actual and expected experience.

***Actuarial Present Value*** - The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest, and by probabilities of payment.

## DEFINITIONS OF TECHNICAL TERMS

***Amortization*** - Paying off an interest-discounted amount with periodic payments of interest and (generally) principal -- as opposed to paying it off with a lump sum payment.

***Normal Cost*** - The portion of the actuarial present value of future benefits that is assigned to the current year by the actuarial cost method. Sometimes referred to as “current service cost.”

***Unfunded Actuarial Accrued Liabilities*** - The difference between actuarial accrued liabilities and valuation assets. Sometimes referred to as “unfunded past service liability” or “unfunded supplemental present value.”

Most retirement systems have unfunded actuarial accrued liabilities. They arise each time new benefits are added and each time an actuarial loss occurs. The existence of unfunded actuarial accrued liabilities is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial accrued liabilities do not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liabilities and the trend in their amount (after due allowance for devaluation of the dollar).

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**SECTION D**  
**ADDITIONAL DISCLOSURES**

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## SUPPLEMENTARY INFORMATION

### Schedule of Pension Funding Progress

Actuarial Valuation Year	Actuarial Value of Assets*	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b)-(a)	Funded Ratio (a)/(b)	Covered Payroll (c)	UAAL as a % of Covered Payroll (b-a)/c
2007	\$ 91,114,339	\$ 95,560,890	\$ 4,446,551	95.3	\$ 9,991,111	44.5%
2008	92,122,034	100,976,694	8,854,660	91.2	10,461,858	84.6
2009	93,760,099	108,557,299	14,797,200	86.4	11,189,155	132.2
2010	96,339,891	110,709,933	14,370,042	87.0	10,913,504	131.7
2011	96,992,162	115,353,137	18,360,975	84.1	10,827,592	169.6
2012	102,540,544	130,254,837	27,714,293	78.7	11,525,947	240.5
2013	111,829,762	139,068,860	27,239,098	80.4	11,573,294	235.4
2014	121,333,559	148,032,067	26,698,508	82.0	10,910,044	244.7
2015	129,788,774	157,437,460	27,648,686	82.4	11,230,191	246.2
2016	139,937,741	163,234,586	23,296,845	85.7	11,479,484	202.9

\* Includes assets (if any) held in the Unallocated Income Reserve.

### Schedule of Employer Pension Contributions

Valuation Year Ended December 31	Fiscal Year Ended December 31	Contribution Rates as % of Valuation Payroll	Computed Dollar Contributions	Actual Contributions	% Contributed
2007 ^	2009	16.36 %	\$1,776,435	\$1,877,096	106%
2008	2010	19.97	2,270,592	2,233,372	98
2009	2011	24.55	2,985,389	2,773,506	93
2010	2012	25.21	2,990,124	2,871,209	96
2011	2013	24.31	2,860,678	2,816,770	98
2012 ^	2014	24.31	4,484,256	4,484,256	100
2013 ^	2015		4,424,656	4,424,656	100
2014 ^	2016		4,407,249	4,407,249	100
2015 ^	2017		4,663,613		
2016	2018		4,270,282		

^ New methods or assumptions adopted.

Computed dollar contributions before the 2012 valuation year are based on contribution rates and projected valuation payroll. Actual contributions were reported by the City. Deviations may be attributable to differences between projected and actual payroll.

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## **APPENDIX**

### **RETIREE HEALTH VALUATION RESULTS**

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# RETIREE HEALTH PREMIUM RATES

## Background

Health care premiums are an important part of a retiree health valuation. Eligible City retirees (and their spouses) may elect to receive benefits from health plans offered by Sanford and Avera. All benefits provided by the City sponsored retiree health program (plan) are self-insured. This means that the City pays claims and takes the risk associated with the health care program. The City buys stop loss insurance to help manage this risk. Dental insurance benefits are also self-insured.

Retiree health benefit recipients pay for a portion of their benefits based on premium rates established by the City (illustrative premiums). These premiums were used in the actuarial valuation of the retiree health program. A summary of these premiums is shown in this section of the report.

Retirees who participate in the retiree health program pay 50% of the reported illustrative premiums. The City pays the remaining portion of the retiree health care cost. Since the retirees are responsible for a significant portion of the costs, there may be anti-selection in this plan (healthy retirees may decline coverage which increases the average cost for the remaining retirees). Health insurance coverage terminates upon attainment of age 65. At this time, each retiree must make his or her own arrangements for health care coverage.

The current actuarial standard covering the valuation of retiree medical liability includes the development of facsimile premiums based on the actual claims experience and the use of age grading. The combination of these two techniques produces “premiums” at each age during the retiree’s lifetime based on the group’s actual, historical claims experience.

We believe that using illustrative premium rates alone to determine retiree medical liability would likely understate the value of retiree health benefits and will fail to comply with both current actuarial standards of practice and governmental accounting standards. A summary of the facsimile health care “premium” rates used in the December 31, 2016 valuation of the retiree health program are shown on Appendix page 3. The actuarial assumptions and methods used in the retiree health program valuation are shown in this section and section C of this report.

## **PREMIUM RATE DEVELOPMENT METHOD MONTHLY PER PERSON HEALTH CARE RATES**

Initial premiums were developed for pre-65 retirees only. These premiums were developed using retiree claims experience from the following periods: January 2014 – December 2014, January 2015 – December 2015, and January 2016 – December 2016 in conjunction with exposure data for the retired members of the health care program. These claims were projected on a paid claim basis, adjusted for plan design changes, large claims and loaded for administrative expenses.

Age graded and sex distinct premiums are utilized by this valuation. The premium developed by the preceding process is appropriate for the unique age and sex distribution currently existing. Over the future years covered by this valuation, the age and sex distribution will most likely change. Therefore, our process “distributes” the average premium over all age/sex combinations and assigns a unique premium to each combination. This process more accurately reflects health care costs in the retired population over the projection period. The tables in this section of the report show the combined medical and prescription drug one-person monthly premiums at selected ages effective January 1, 2016 to December 31, 2016.

James E. Pranschke is a Member of the American Academy of Actuaries (MAAA) and meets the Qualification Standards of the American Academy of Actuaries to certify the per capita retiree health care rates shown in this report.

  
James E. Pranschke, FSA, MAAA



**PREMIUM RATE DEVELOPMENT METHOD  
MONTHLY PER PERSON HEALTH CARE RATES**

**Facsimile Health Care Premiums Used in the 2016 Valuation**

<b>Age</b>	<b>Monthly Pre-65 Rates at Sample Ages</b>	
	<b>Male</b>	<b>Female</b>
50	\$ 865.39	\$ 1,066.07
55	1,138.75	1,243.35
60	1,470.76	1,448.20

The rates above reflect the total medical and prescription drug retiree cost without considering any applicable retiree contributions.

**Monthly Dental Premiums Used in the 2016 Valuation**

<b>Coverage for</b>	<b>Monthly Rate</b>
Retiree Only	\$44.24
Retiree & Spouse	84.50

The dental premium rates used in the valuation were not “age graded” since dental claims do not vary significantly by age.

The chart below shows the retiree paid premiums (50% of the illustrative premiums) reported to the actuary in connection with this valuation of the program.

**Illustrative Monthly Premiums Used in the 2016 Valuation**

<b>Coverage for</b>	<b>Monthly Rate</b>
Health Care Premiums (Retiree Only)	\$512.33
Health Care Premiums (Retiree & Spouse)	1,086.49
Dental Premiums (Retiree Only)	22.12
Dental Premiums (Retiree & Spouse)	42.25

# HEALTH COST TREND ASSUMPTION

## Background

Retiree health care valuations require an assumption about how the health costs that the plan is absorbing will change over the years. This assumption includes more than just “health inflation.” It includes the impact of:

- The introduction of new procedures and medications and how they are priced.
- The utilization of services and products by covered retirees and their dependents and how that utilization changes over the years.

Retiree health valuations use a health cost trend assumption that changes over the years. The near term rates reflect the fact that currently employers are seeing sharp increases in the cost of health goods and services. However, they do not anticipate that health costs will increase at these rates indefinitely. To do so would be to ignore the real world implications of this sort of projection. For example, if health costs represent 20% of disposable income initially and grow at 12% per year for the next 10 years while disposable income increases at 4% would imply that after 10 years health would absorb 40% of our disposable income. Over a 20-year period, these rates of increase would imply that at the end of the 20-year period, health costs would absorb almost 80% of our disposable income.

The valuations attempt to deal with the future by recognizing that it is more reasonable to assume that current trends will have to change in the future before we reach the absurd situation of having little or no money to spend on things that are not related to health (including food, shelter, clothes, etc.). Health costs are assumed to increase at rates greater than general inflation for a temporary “cooling off” period. At the end of the cooling off period, health costs are assumed to increase in line with general inflation. As years elapse, there are fewer remaining years in the cooling off period. A summary of the rates of medical inflation used in this valuation of the program are shown on the next page. Retirees pay the premium rates shown at the bottom of the prior page. These premiums were assumed to increase with medical inflation. The assumed rate of increase is shown on the following page.

# HEALTH COST TREND AND RELATED ASSUMPTIONS

## Rates of Inflation for Retiree Health Benefits

Future Health Cost Increases	
Year Beginning December 31,	Medical & Rx
2017	8.00%
2018	7.50
2019	7.00
2020	6.50
2021	6.00
2022	5.50
2023	5.00
2024	4.75
2025	4.50
2026 & After	4.25

Retiree paid premiums were assumed to increase at the rates shown above.

## Cumulative Aging Factors at Select Ages

Age	Male	Female
45	0.475	0.655
50	0.618	0.762
55	0.813	0.888
59	1.000	1.000
60	1.051	1.035

**COMPUTED RETIREE HEALTH CONTRIBUTION  
FOR THE FISCAL YEAR BEGINNING JANUARY 1, 2018**

Total Actuarial Accrued Liability	\$ 2,289,531
Asset Value	<u>7,236,927</u>
Unfunded Actuarial Accrued Liability	(4,947,396)
First Year \$ Contribution	\$ 0

The negative UAAL shown above indicates a funding surplus of \$4,947,396 as of the valuation date. Since plan assets exceed plan liabilities as of the valuation date, no City contributions are recommended for fiscal year 2018.

Eligible Firefighter members of the Pension Fund who retired on or before December 31, 2013 could choose to join the Retiree Health Plan. Pension Fund members who retire after December 31, 2013 are not eligible to participate in the Retiree Health Plan. As a result, the Plan is considered to be closed as of January 1, 2014.

## SCHEDULE OF FUNDING PROGRESS FOR THE RETIREE HEALTH PLAN

Actuarial Valuation Date Dec. 31	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b)-(a)	Funded Ratio (a)/(b)	Covered Payroll (c)	UAAL as a % of Covered Payroll ((b-a)/c)
2007	\$ 2,542,036	\$ 10,835,013	\$ 8,292,977	23.5	\$ 9,991,111	83.0 %
2008	3,296,432	10,706,694	7,410,262	30.8	10,461,858	70.8
2009	4,095,878	11,596,630	7,500,752	35.3	11,189,155	67.0
2010	4,911,528	13,027,364	8,115,836	37.7	10,913,504	74.4
2011	5,709,105	4,890,730	(\$818,375)	116.7	10,827,592	-
2012	6,977,862	4,075,513	(2,902,349)	171.2	11,525,947	-
2013	7,649,507	3,343,854	(4,305,653)	228.8	11,573,294	-
2014	7,520,309	2,831,132	(4,689,177)	265.6	10,910,044	-
2015	6,946,503	2,634,329	(4,312,174)	263.7	11,230,191	-
2016	7,236,927	2,289,531	(4,947,396)	316.1	11,479,484	-

## SCHEDULE OF EMPLOYER HEALTH CONTRIBUTIONS

Valuation Year Ended Dec. 31	Fiscal Year Ended Dec. 31	Contribution Rate as a % of Valuation Payroll	Actuarially Computed Contribution	Actual Contributions	Percentage Contributed
2007 <sup>^</sup>	2009	8.72%	\$ 946,853	\$ 975,694	103.0 %
2008	2010	8.33%	947,122	937,698	99.0
2009	2011	8.35%	1,015,397	944,497	93.0
2010	2012	9.65%	1,144,573	1,098,951	96.0
2011 <sup>^</sup>	2013	0.00%	0	0	100.0
2012 <sup>^</sup>	2014	0.00%	0	0	100.0
2013 <sup>^</sup>	2015	0.00%	0	0	100.0
2014 <sup>^</sup>	2016	0.00%	0	0	100.0
2015 <sup>^</sup>	2017		0		
2016 <sup>^</sup>	2018		0		

<sup>^</sup> New methods/assumptions or plan provisions adopted.

Computed dollar contributions before the 2014 valuation year are based on contribution rates and projected valuation payroll. Deviations between actual and computed contributions may be attributable to differences between projected and actual payroll. This information is presented in draft form for review by the City's auditor. Please let us know if there are any items that the auditor changes so that we can maintain consistency with the City's financial statements.

## REQUIRED SUPPLEMENTARY INFORMATION FOR THE RETIREE HEALTH PLAN

The following assumptions and methods were used in the December 31, 2016 actuarial valuation for the Retiree Health Plan:

Valuation Date	December 31, 2016
Actuarial Cost Method	Entry-Age
Amortization Method	Level dollar, closed
Remaining Amortization Period	11 years
Asset Valuation Method	Market value of assets
Premium Rate Development Method	Please refer to Appendix A

### **Actuarial Assumptions**

Annual Rate of Return (discount rate)	2.25% per year
Rates of Inflation for Medical Benefits	8.0% grading down to 4.25% in the year beginning December 31, 2026

Membership of the Retiree Health Plan is shown below at December 31, 2016, the date of the latest actuarial valuation.

Retirees receiving medical benefits	31
Active Plan members	<u>0</u>
Total number of current and former City employees who are members of the Retiree Health Plan	31

March 13, 2017

Ms. Angie Uthe  
City of Sioux Falls Firefighters' Pension Fund  
City Hall - 224 West 9th Street  
Sioux Falls, South Dakota 57104-6407

Dear Angie:

Enclosed are four copies of the sixty-first annual actuarial valuation report of the liabilities and contribution requirements associated with the City of Sioux Falls Firefighters' Pension Fund.

Sincerely,



Louise M. Gates, ASA, MAAA

LMG:sc