

OKLAHOMA CITY EMPLOYEE RETIREMENT SYSTEM
ANNUAL ACTUARIAL VALUATION
DECEMBER 31, 2015

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July 18, 2016

The Board of Trustees
Oklahoma City Employee Retirement System
Oklahoma City, Oklahoma

Dear Board Members:

The results of the December 31, 2015 annual actuarial valuation of the Oklahoma City Employee Retirement System are presented in this report. The purpose of the valuation was to measure the System's funding progress and to determine the employer contribution for the fiscal year beginning July 1, 2017. 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.

The valuation was based upon the actuarial assumptions and methods adopted by the Board, information, furnished by the Retirement System Manager, concerning Retirement System benefits, financial transactions, and 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.

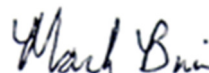
The fiscal 2018 contribution rate shown in this report was determined using the actuarial assumptions and methods shown in Section C of this report. This report includes risk metrics on page A-4 but does not include additional risk metrics such as those that assess the risk of future experience not meeting actuarial assumptions. These additional risk assessments were beyond the scope of this assignment. We encourage a review and assessment of investment and other significant risks that may have a material impact on the plan's financial condition.

To the best of our knowledge, this report is complete and accurate and the valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the applicable state statutes. Louise M. Gates and Mark H. Buis 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 are reasonable.

Respectfully submitted,



Louise M. Gates ASA, MAAA



Mark H Buis, FSA, EA, MAAA

SECTION A
VALUATION RESULTS

Funding Objective

The funding objective of the Retirement System is to establish and receive contributions, expressed as percents of active member payroll, which will remain approximately level from year-to-year and will not have to be increased for future generations of citizens.

Contribution Rates

The Retirement System is supported by member contributions, City contributions and investment income from Retirement System assets.

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

- (1) Cover the actuarial present value of benefits allocated to the current year by the actuarial cost method described in Section C (the normal cost); and
- (2) Finance 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).

Computed contribution rates for the fiscal year beginning July 1, 2017 are shown on page A-2.

**COMPUTED CONTRIBUTIONS
EXPRESSED AS PERCENTAGES OF ACTIVE MEMBER PAYROLL**

The December 31, 2015 valuation results (contribution rates) will be used by the City for the fiscal year beginning July 1, 2017. The total computed contribution rates determined in the current and prior year's valuation are also shown below.

Development of the Employer Contribution Rate

Contributions for	2015
Normal Cost	
Service pensions	10.40%
Disability pensions	0.53%
Survivor pensions	
- Death before retirement	0.41%
Termination benefits	
- Deferred service pensions	0.30%
- Refunds of current member contributions	0.97%
Total normal cost	12.61%
Unfunded Actuarial Accrued Liability (UAAL)	
UAAL credit ¹	(1.33%)
Total Computed Contribution Rate	11.28%
Member contribution rate	6.00%
City's computed rate	5.28%

Contributions for	Expressed as % 's of Member Payroll	
	2015	2014
Total Normal Cost	12.61%	12.27%
Member Portion	6.00%	6.00%
City Portion	6.61%	6.27%
UAAL Credit ¹	(1.33%)	(0.94%)
City Contribution	5.28%	5.33%

¹ The unfunded actuarial accrued liability (the UAAL) was amortized as a level percent of active member payroll over a period of 26 years in 2015 and 27 years in 2014.

Funding Progress Indicators

There is no single all-encompassing indicator to measure a retirement system's funding progress. A traditional measure has been the relationship of valuation assets to actuarial accrued liability - a measure that is influenced by the choice of actuarial cost method. Numeric information using this traditional measure is shown on the following page.

Additional understanding of funding progress can be achieved using the following tests, which compare the System's assets with:

- (1) members' contributions on deposit in the System;
- (2) present value of future benefits to present retired lives; and
- (3) present value of benefits based on service already rendered by active and inactive members.

In a system that has been following the discipline of level percent-of-payroll financing, member contributions on deposit (item 1) and the present value of future benefits to present retired lives (item 2) will be fully covered by present assets (except in rare circumstances). In addition, the present value of benefits based on service already rendered by members (item 3) will be partially covered by the remainder of present assets. The larger the funded portion of item 3, the stronger the condition of the system. Generally, if the system has been using level-percent financing, the funded portion of item 3 will increase over time. An historical comparison of funding progress tests is shown on the following page.

Limitations of the Funding Progress (funded status) Measurements

Unless otherwise indicated, a funded status measurement presented in this report is based on the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to the funded status measurements shown in this report we note the following:

The measurement is inappropriate for assessing the sufficiency of 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 would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is used in the measurement.

FUNDING PROGRESS TEST
(DOLLAR AMOUNTS IN THOUSANDS)

Accrued Liabilities (AL)									
Valuation Date	(1) Member Contribs.	(2) Retirants and Beneficiaries	(3) Active & Inactive Members (Employer Financed Portion)	Total AL	Assets⁽¹⁾	Portion of Liabilities Covered by Assets			
						(1)	(2)	(3)	Overall
12/31/96	\$33,507	\$ 72,225	\$ 75,504	\$ 181,236	\$ 185,368	100 %	100 %	105 %	102 %
12/31/97	35,654	76,275	107,169	219,098	219,602	100	100	100	100
12/31/98	37,900	82,258	118,498	238,656	260,877	100	100	119	109
12/31/99	39,866	85,724	120,316	245,906	307,872	100	100	152	125
12/31/00	41,550	100,936	180,814	323,300	350,398	100	100	115	108
12/31/01	42,226	116,552	185,819	344,597	372,737	100	100	115	108
12/31/02	44,368	128,120	200,072	372,560	375,382	100	100	101	101
12/31/03	46,654	136,873	207,496	391,023	374,192	100	100	92	96
12/31/04	48,487	150,664	216,013	415,164	381,495	100	100	84	92
12/31/05	54,239	169,752	212,913	436,904	424,182	100	100	94	97
12/31/06	55,557	187,693	214,297	457,547	476,913	100	100	109	104
12/31/07	60,118	204,470	224,239	488,827	529,876	100	100	118	108
12/31/08	62,128	221,456	235,650	519,234	528,664	100	100	104	102
12/31/09	65,106	237,302	254,019	556,427	529,137	100	100	89	95
12/31/10	64,922	267,120	234,792	566,834	524,731	100	100	82	93
12/31/11	67,324	252,166	214,229	533,719	514,499	100	100	91	96
12/31/12	69,987	257,057	226,544	553,588	547,686	100	100	97	99
12/31/13	72,209	281,206	228,451	581,866	589,527	100	100	103	101
12/31/14	74,142	297,061	236,092	607,295	628,686	100	100	109	104
12/31/15	74,832	320,443	238,710	633,985	665,077	100	100	113	105

(1) Beginning with 12/31/97, funding value of assets is shown.

COMMENTS

Comment A: As of the valuation date, the Retirement System has a funding surplus. The surplus was amortized and used as a credit against City normal cost contributions, resulting in a City pension contribution rate of 5.28% of plan member payroll for the City's 2017-2018 fiscal year. The established maximum City contribution rate is 10% of payroll. It is important to note that once the funding surplus is depleted, City contributions will increase to the level of normal cost contributions plus any necessary UAAL payments.

Comment B: There were no benefit changes reported to the actuary in connection with this valuation of the System. This valuation of the System reflects a change to the investment return assumption. Specifically, the investment return assumption was reduced from 7.50% to 7.40%. This change was made to better reflect anticipated future System experience. This change increased the actuary's assessment of plan liabilities.

Comment C: During the year ended December 31, 2015, the return on System assets was lower than long term expectations. The market value smoothing techniques used in this valuation of the System recognize both past and present investment experience. As a result, the recognized rate of return on valuation assets was 8.12% during calendar year 2015. In addition, during the 2015 plan year, actual post retirement cost of living adjustments and pay increases among City employees were lower than anticipated by actuarial assumptions.

Although there was a change in actuarial assumptions during the year, the favorable plan experience increased the System's funding surplus during 2015. Additional information on the investment experience is provided on page B-4 of this report.

Comment D: The actuarial value of assets is based on a 4-year smoothed market value of assets and was used to determine both the funded status and the recommended employer contribution shown in this report. Use of the actuarial value of assets reduces the volatility of valuation results. As of the valuation date, the System's funded ratio was 105%. Last year the ratio was 104%. If the market value of assets was used as the basis for the funded ratio the result would be 101% as of December 31, 2015.

UNFUNDED ACTUARIAL ACCRUED LIABILITY
(AMOUNTS IN THOUSANDS OF DOLLARS)

	December 31	
	2015	2014
A. Actuarial present value of future benefits	\$777,405	\$740,850
B. Actuarial present value of future normal costs	143,420	133,555
C. Actuarial accrued liability	633,985	607,295
D. Assets allocated to funding	665,077	628,686
E. Unfunded actuarial accrued liability	(31,092)	(21,391)
F. Ratio of assets to actuarial accrued liability	105%	104%

HISTORICAL SCHEDULE OF CITY CONTRIBUTION RATES
AND THE ASSOCIATED AMORTIZATION PERIODS

Valuation Date	Established City Contribution Rate	Years to
December 31	as a % of	Amortize UAL
	Active Member Payroll	
2001	7.00 %	0.0
2002	7.00	3.8
2003	7.00	40.0
2004 #	8.25	40.0
2005	7.94	30.0
2006	6.16	29.0
2007	5.04	28.0
2008	6.77	27.0
2009	8.56	26.0
2010	9.49	25.0
2011 *	7.15	30.0
2012	6.44	29.0
2013 ^	5.88	28.0
2014	5.33	27.0
2015 ^	5.28	26.0

* Retirement System amended.

The average established City contribution for the indicated fiscal year.

^ Change in Actuarial Assumptions.

SECTION B

**SUMMARY OF BENEFIT PROVISIONS, ASSETS
AND VALUATION DATA**

SUMMARY OF BENEFIT PROVISIONS EVALUATED OR CONSIDERED (DECEMBER 31, 2015)

Regular Retirement (no reduction factor for age)

Eligibility - Pre 3-1-67 hires: Age 60 with 20 years of service; or, any age with 30 years of service.

Post 3-1-67 hires: Age 65 with 5 years of service; or, any age with 25 years of service.

Annual Amount - Normal retirement benefit: 2% of average final compensation for all years and complete months of service, to a maximum of 100% of AFC.

Average Final Compensation (AFC) - Average earned compensation (excluding compensation for unused vacation and sick leave) during highest 36 months of service out of the last 60 consecutive months of service.

Early Retirement (reduction factor for age)

Eligibility - Age 55 with 5 years of service.

Annual Amount - Same as regular retirement amount but reduced 4% for each full year or portion of a year that payments commence prior to age 65 (age 60 if hired prior to 3-1-67).

Deferred Retirement (vested benefit)

Eligibility - 5 years of service. Benefit begins at age 65 (age 60 if hired prior to 3-1-67) or at age 55 on a reduced basis.

Annual Amount - Same as regular retirement based on service and average final compensation at time of termination.

Duty Disability Retirement

Eligibility - No age or service requirements.

Annual Amount - 40% of average final compensation, reduced if degree of disability is less than total disability.

Non-Duty Disability Retirement

Eligibility - Any age with 15 years of service.

Annual Amount - 2% of average final compensation for each full year of service, plus 1/12 of 2% for each full month of service due to a partial year of service to a maximum of 40% of AFC. Amount is reduced if degree of disability is less than total disability.

SUMMARY OF BENEFIT PROVISIONS EVALUATED OR CONSIDERED

(DECEMBER 31, 2015)

Duty Death Before Retirement

Eligibility - No age or service requirements.

Annual Amount - 20% of average final compensation to an eligible spouse. Payments cease upon death. If there is no eligible spouse, accumulated employee contributions are paid to designated beneficiary. For members eligible under age and service conditions, the benefit is the amount the spouse would have received as a joint annuitant under normal or early retirement conditions.

Non-Duty Death Before Retirement

Eligibility - Any age with 15 years of service.

Annual Amount - Same as duty death.

Post-Retirement Adjustments

Pensions may be adjusted annually (in January) for changes in the Consumer Price Index. The maximum adjustment is 2% per year compounded. The first adjustment is made one year following retirement for those age 65 (60 for pre 3-1-67 hires) or those awarded disability allowances. For all others, the first adjustment is made no earlier than 4 years following retirement.

Post-Retirement Death Benefit

Eligibility – Retiree currently collecting pension benefits from the System.

Amount – A one-time payment of \$5,000 payable upon the death of the retiree. This benefit is payable only upon the death of the retiree, and is payable to the designated beneficiary.

Member Contributions

6% of annual pay.

Employer Contributions

7% of annual payroll effective March 2, 2001 – December 31, 2005.

The actuarially determined contribution rate (up to a maximum of 10% of pay) effective January 1, 2006.

Partial Lump Sum Payment Option

Members who are eligible for Regular Retirement may elect this optional form of payment, which allows for cash at retirement of up to \$30,000. Any remaining monthly retirement benefit is reduced actuarially to reflect the payment of cash at retirement.

ASSET INFORMATION SUBMITTED FOR VALUATION

The net market value of Retirement System assets was reported to be \$638,918,197 as of December 31, 2015. The derivation of the funding value of assets used for the actuarial valuation is shown on the following page.

Revenues and Expenditures – Market Value Basis

	Year Ended December 31,	
	2015	2014
Revenues:		
a. Member contributions	\$ 7,814,431	\$ 7,557,179
b. City contributions	7,997,221	8,050,846
c. Investment income		
1. Interest and dividends	9,947,521	5,509,206
2. Realized & unrealized gain/(loss)	(11,786,288)	39,541,650
3. Securities lending income	117,084	0
d. Other	17,468	139,272
e. Total revenues	\$14,107,437	\$ 60,798,153
Expenditures:		
a. Refunds of member contributions	\$ 1,038,147	\$ 1,219,379
b. Benefits paid	28,868,251	26,985,076
c. Administrative expenses	436,224	433,317
d. Investment expenses	1,706,463	1,417,272
e. Other expenses	0	0
f. Total expenditures	\$ 32,049,085	\$ 30,055,044
Reserve Increase (Decrease):		
Total revenues minus total expenditures	\$ (17,941,648)	\$ 30,743,109

Reported Market Value of Assets

	December 31, 2015
Cash & Other	\$ 30,678,612
Fixed Income	131,610,289
Equities	433,031,288
Real Estate	47,789,840
Total Assets	643,110,029
Less Accounts Payable/Other	4,191,832
Net Assets	\$638,918,197

DEVELOPMENT OF VALUATION ASSETS

<u>Year Ended December 31:</u>	<u>2014</u>	<u>2015</u>
A. Funding Value Beginning of Year	\$589,526,647	\$628,685,577
B. Market Value End of Year	656,859,845	638,918,197
C. Market Value Beginning of Year	626,116,736	656,859,845
D. Non-Investment Net Cash Flow	(12,457,158)	(14,077,278)
E. Investment Income		
E1. Market Total: B - C - D	43,200,267	(3,864,370)
E2. Amount for Immediate Recognition (7.5%)	43,747,355	46,623,520
E3. Amount for Phased-In Recognition: E1-E2	(547,088)	(50,487,890)
F. Phased-In Recognition of Investment Income		
F1. Current Year: 0.25 x E3	\$ (136,772)	\$ (12,621,973)
F2. First Prior Year	11,981,032	(136,772)
F3. Second Prior Year	4,622,519	11,981,032
F4. Third Prior Year	(8,598,046)	4,622,519
F5. Total	<u>7,868,733</u>	<u>3,844,806</u>
G. Funding Value End of Year: A + D + E2 + F5	628,685,577	665,076,625
H. Difference between Market & Funding Value	28,174,268	(26,158,428)
I. Net Recognized Rate of Return - Funding Value Basis	8.85%	8.12%
J. Net Recognized Rate of Return - Market Value Basis	6.97%	(0.59%)
K. Ratio of Funding Value to Market Value	0.957	1.041

RETIRANT AND BENEFICIARY DATA

Valuation Date Dec. 31	No. of Pension Recipients				Total Annual Pensions ⁽²⁾	% of Payroll	Average Annual Pension	% Incr. in Total Pensions
	Service	Disability	Survivor	Total				
1996	634	55	195	884	\$ 6,507,720	9.2 %	\$ 7,362	6.1 %
1997	634	54	200	888	6,818,103	9.1	7,678	4.8
1998	633	56	202	891	7,134,692	9.0	8,008	4.6
1999	643	56	202	901	7,470,215	9.2	8,291	4.7
2000 ⁽¹⁾	646	61	203	910	9,188,323	11.4	10,097	23.0
2001	694	63	205	962	10,386,513	12.4	10,797	13.0
2002	725	65	210	1,000	11,261,772	13.0	11,262	8.4
2003	731	68	207	1,006	11,972,938	14.0	11,902	6.3
2004	773	66	207	1,046	13,038,432	14.7	12,465	8.9
2005	796	67	213	1,076	14,355,655	15.7	13,342	10.1
2006	823	69	221	1,113	15,766,306	16.5	14,166	9.8
2007	854	66	233	1,153	17,117,037	17.2	14,846	8.6
2008	894	59	225	1,178	18,459,873	17.5	15,671	7.8
2009	936	56	226	1,218	19,673,159	17.8	16,152	6.6
2010	995	59	229	1,283	21,945,667	21.3	17,105	11.6
2011	1,018	56	225	1,299	22,946,844	21.0	17,665	4.6
2012	1,030	55	239	1,324	23,757,916	20.7	17,944	3.5
2013	1,062	54	229	1,345	25,047,506	21.0	18,623	5.4
2014	1,101	55	224	1,380	26,599,897	21.4	19,275	6.2
2015	1,144	55	223	1,422	28,481,665	22.2	20,029	7.1

(1) Reflects a one-time increase resulting from purchasing power study.

(2) Annual pension amounts shown above are reported to the actuary by the City and reflect annualized pension payments as of the indicated valuation date.

PENSIONS BEING PAID DECEMBER 31, 2015
TABULATED BY AGE OF RECIPIENT

Age	Service Pensions		Disability Pensions		Survivor Pensions		Totals	
	No.	Annual Pensions	No.	Annual Pensions	No.	Annual Pensions	No.	Annual Pensions
Under 45	1	\$ 28,872			1	\$ 11,796	2	\$ 40,668
45 - 49	6	165,324	1	\$ 17,076	5	72,336	12	254,736
50 - 54	49	1,393,728	3	41,280	7	121,860	59	1,556,868
55 - 59	137	3,569,448	12	166,368	17	257,892	166	3,993,708
60 - 64	215	5,268,900	18	204,443	15	225,732	248	5,699,075
65 - 69	255	5,761,329	9	74,292	30	417,888	294	6,253,509
70 - 74	188	3,802,560	5	65,568	29	380,940	222	4,249,068
75 - 79	140	2,588,148	2	17,664	39	592,133	181	3,197,945
80 - 84	93	1,634,796	4	38,880	31	293,736	128	1,967,412
85 - 89	41	542,040			28	281,892	69	823,932
90+	19	275,088	1	10,824	21	158,832	41	444,744
Totals	1,144	\$25,030,233	55	\$636,395	223	\$2,815,037	1,422	\$28,481,665

PENSIONS BEING PAID DECEMBER 31, 2015
TABULATED BY YEAR OF RETIREMENT

Year of Retirement	No. #	Annual Pensions	
		Total	Average
1970 - 1974	1	\$ 10,828	\$ 10,828
1975 - 1979	5	55,221	11,044
1980 - 1984	19	172,862	9,098
1985	5	75,400	15,080
1986	9	123,029	13,670
1987*	40	723,900	18,098
1988	6	61,359	10,227
1989	7	125,529	17,933
1990	6	106,390	17,732
1991	14	203,377	14,527
1992	13	115,622	8,894
1993	11	84,296	7,663
1994	17	297,514	17,501
1995	26	381,030	14,655
1996	30	463,572	15,452
1997	26	373,289	14,357
1998	25	315,419	12,617
1999	29	399,618	13,780
2000	34	493,549	14,516
2001	62	1,299,050	20,952
2002	53	919,846	17,356
2003	48	964,828	20,101
2004	68	1,278,868	18,807
2005	59	1,213,791	20,573
2006	67	1,476,511	22,037
2007	74	1,479,636	19,995
2008	72	1,482,689	20,593
2009	77	1,762,671	22,892
2010	114	2,616,422	22,951
2011	65	1,428,477	21,977
2012	65	1,347,024	20,723
2013	84	1,888,352	22,480
2014	88	2,026,722	23,031
2015	103	2,714,974	26,359
Totals	1,422	\$28,481,665	\$20,029

* Reflects early retirement incentive program.

Includes surviving spouses of deceased retirees.

**SYSTEM MEMBERS INCLUDED IN VALUATION
COMPARATIVE SCHEDULE**

Valuation Date Dec. 31	Number of		Annual Payroll ⁽¹⁾	Active Member Averages			Ratio of Active to Retired Members	% Increase/ (Decrease) in Avg Pay
	Active Members	Inactive Members		Age	Service	Pay		
1995	2,428	16	\$69,754	42.2 yrs.	10.5 yrs.	\$28,729	2.8	2.1 %
1996	2,401	17	70,972	42.8	10.9	29,559	2.7	2.9
1997	2,418	19	74,752	43.3	11.1	30,908	2.7	4.6
1998	2,404	25	79,195	43.7	11.6	32,929	2.7	6.5
1999	2,453	36	80,897	43.8	11.6	32,979	2.7	0.2
2000	2,454	41	80,503	44.0	11.6	32,805	2.7	(0.5)
2001	2,454	49	83,862	44.0	11.4	34,174	2.6	4.2
2002	2,374	55	86,428	44.5	11.7	36,406	2.4	6.5
2003	2,290	61	85,666	45.2	12.3	37,409	2.3	2.8
2004	2,302	54	88,866	45.2	12.3	38,604	2.2	3.2
2005	2,312	58	91,641	45.5	12.3	39,637	2.1	2.7
2006	2,353	62	95,504	45.5	12.1	40,588	2.1	2.4
2007	2,380	66	99,574	45.5	12.0	41,838	2.1	3.1
2008	2,422	71	105,566	45.8	11.9	43,586	2.1	4.2
2009	2,380	73	110,408	46.3	12.3	46,390	2	6.4
2010	2,304	81	102,915	46.4	12.3	44,668	1.8	(3.7)
2011	2,398	75	109,293	46.3	12.1	45,577	1.8	2.0
2012	2,459	83	114,933	46.4	12.0	46,740	1.9	2.6
2013	2,487	82	119,457	46.4	11.9	48,032	1.8	2.8
2014	2,500	82	124,142	46.5	11.9	49,657	1.8	3.4
2015	2,586	89	128,499	46.5	11.3	49,690	1.8	0.1

⁽¹⁾ In thousands of dollars.

INACTIVE MEMBERS - DECEMBER 31, 2015
ELIGIBLE FOR DEFERRED PENSIONS
TABULATED BY AGE

Age	No.	Estimated Annual Allowances
Under 40	14	\$ 92,953
41	6	52,001
42	2	22,019
43	3	18,852
44	4	34,888
45	5	39,945
46	4	55,305
47	1	3,366
49	1	26,324
50	3	31,851
51	6	66,395
52	5	68,093
53	7	79,213
54	4	61,974
55	2	45,342
56	4	29,910
57	2	56,009
58	3	60,940
59	3	19,315
60 & Over	10	97,422
Totals	89	\$962,117

ACTIVE MEMBERS AS OF DECEMBER 31, 2015
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.	Valuation Payroll
Under 20	1							1	\$ 24,223
20-24	53							53	1,571,600
25-29	161	22						183	6,524,552
30-34	156	67	22					245	9,655,589
35-39	157	75	49	17				298	13,187,309
40-44	129	60	62	53	11			315	15,738,409
45-49	98	65	46	48	47	23		327	16,805,538
50-54	90	64	52	66	64	61	34	431	23,112,882
55-59	77	68	43	55	57	42	50	392	21,714,149
60	11	12	9	9	5	6	17	69	3,938,841
61	10	6	7	7	5	11	12	58	3,436,000
62	5	10	4	8	6	14	7	54	3,283,949
63	4	7	4	7	9	4	10	45	2,734,635
64	1	2	7	5	1		7	23	1,285,255
65	6	2	5	4	3	4	3	27	1,609,263
66	4	1	3	1	3	7	4	23	1,370,966
67	2	1	2	1	2	3	1	12	794,268
68		2	2	3		1		8	476,986
69		1			1	1		3	177,627
70		1					2	3	201,188
71	2		1	1		1		5	219,304
72		1	1		1	1		4	300,820
76		1	1				1	3	175,577
79+	1	1		1	1			4	159,595
Totals	968	469	320	286	216	179	148	2,586	\$128,498,525

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

Group Averages:

Age: 46.5 years
Service: 11.3 years
Annual Pay: \$49,690

**SCHEDULE OF
RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
COMPARATIVE STATEMENT**

Year Ended Dec. 31	Added to Rols ⁽²⁾		Removed from Rols		Rolls End of Year			% Incr. in Benefits
	No.	Annual Benefits ⁽¹⁾	No.	Annual Benefits	No.	Annual Benefits	Avg. Annual Benefits	
2007	95	\$1,989,651	55	\$638,920	1,153	\$ 17,117,037	\$ 14,846	8.6 %
2008	85	2,109,746	60	766,910	1,178	18,459,873	15,671	7.8
2009	86	1,905,592	46	692,306	1,218	19,673,159	16,152	6.6
2010	120	3,059,254	55	786,746	1,283	21,945,667	17,105	11.6
2011	70	1,778,917	54	777,740	1,299	22,946,844	17,665	4.6
2012	74	1,467,021	49	655,949	1,324	23,757,916	17,944	3.5
2013	86	2,215,300	65	925,710	1,345	25,047,506	18,623	5.4
2014	95	2,483,415	60	931,024	1,380	26,599,897	19,275	6.2
2015	102	2,868,873	60	987,105	1,422	28,481,665	20,029	7.1

(1) Includes post retirement cost-of-living adjustments.

(2) Includes reported data corrections.

SECTION C

**ACTUARIAL METHODS,
ACTUARIAL ASSUMPTIONS AND
DEFINITION OF TECHNICAL TERMS**

THE ACTUARIAL VALUATION PROCESS

The *actuarial valuation* is the mathematical process by which actuarial present values and contribution rates are determined. The flow of activity constituting the valuation may be summarized as follows:

- A. ***Census data***, furnished by plan administrator, including:
 - Retired lives now receiving benefits
 - Former employees with vested benefits not yet payable
 - Active employees

- B. + ***Benefit provisions***, furnished by plan administrator

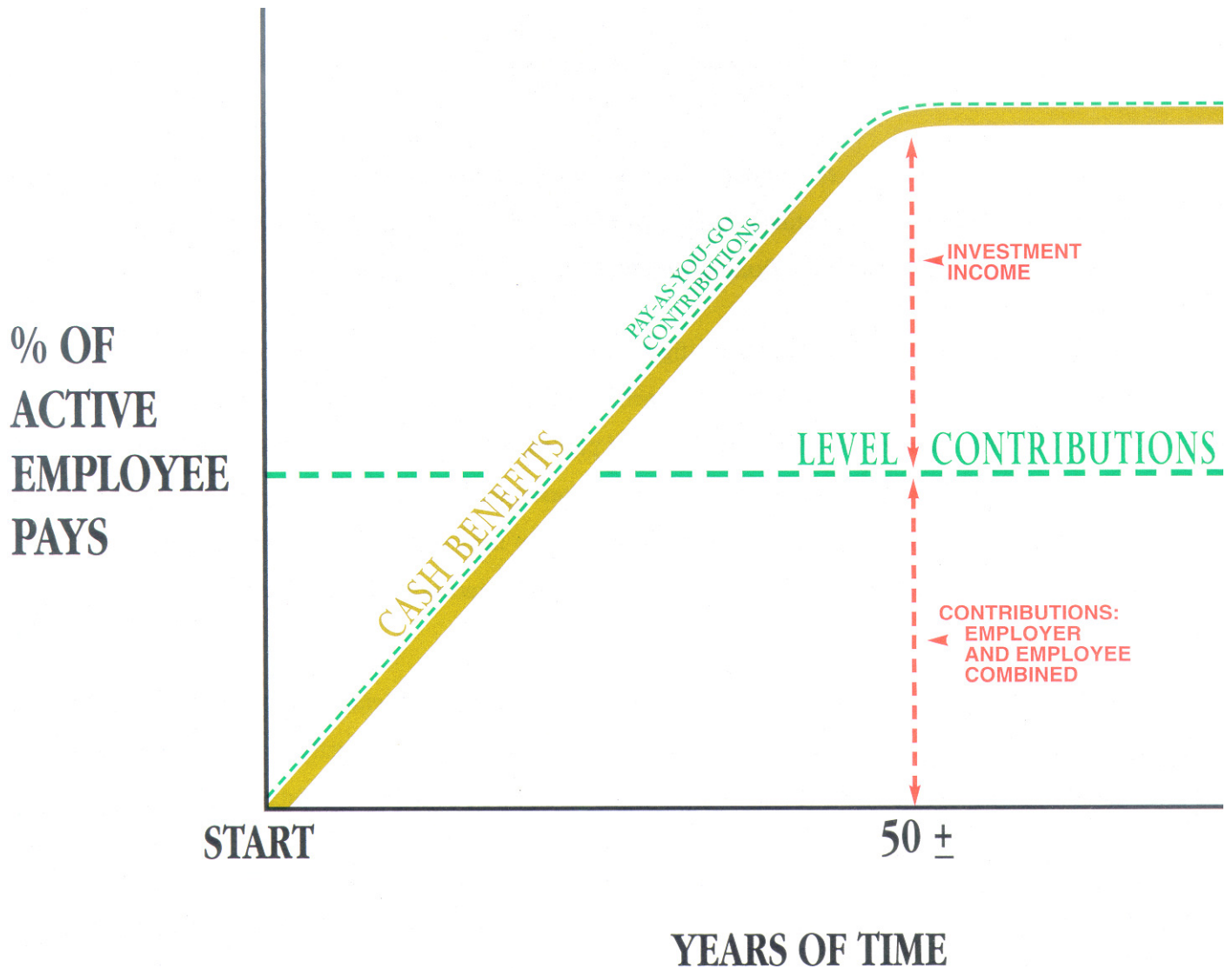
- C. + ***Asset data*** (cash & investments), furnished by plan administrator

- D. + ***Assumptions concerning future experience*** in various risk areas

- E. + The ***funding method*** for employer contributions (the long-term, planned pattern for employer contributions)

- F. + ***Mathematically combining the assumptions, the funding method and the data***

- G. = Determination of:
 - Plan Financial Position and/or
 - New Employer Contribution Rate



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

Economic Risk Areas

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability

ACTUARIAL METHODS

Actuarial Cost Method

The actuarial cost method is a procedure for allocating the actuarial present value of pension plan benefits and expenses to time periods. The method used for the valuation is known as the individual entry-age actuarial cost method and has the following characteristics.

- (i) The annual normal costs for each individual active member, payable from the date of employment to the date of retirement, are sufficient to accumulate the value of the member's pension at time of retirement.
- (ii) Each annual normal cost is a constant percentage of the member's year by year projected compensation.

The entry-age actuarial cost method allocates the actuarial present value of each member's projected benefits on a level basis over the member's compensation between the entry age of the member and the assumed exit ages.

The portion of the actuarial present value allocated to the valuation year is called the normal cost. The portion of the actuarial present value not provided for by the actuarial present value of future normal costs is called the actuarial accrued liability. Deducting System assets from the actuarial accrued liability determines the unfunded actuarial accrued liability.

Actuarial Value of Assets

The funding value of assets recognizes assumed investment income fully each year. Differences between actual and assumed investment income are phased-in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, funding value of assets will tend to be lower than market value. During periods when investment performance is less than the assumed rate, funding value of assets will tend to be greater than market value. The funding value of assets is unbiased with respect to market value. At any time it may be either greater or less than market value. If assumed rates are exactly realized for 4 consecutive years, it will become equal to market value.

ACTUARIAL ASSUMPTIONS

Funding objective contribution requirements and actuarial present values are calculated by applying actuarial assumptions to the benefit provisions and people information of the System, using the actuarial cost method described on page C-3.

The principal areas of risk which require actuarial assumptions about future experiences are:

- (i) long-term rates of investment return to be generated by the assets of the System
- (ii) patterns of pay increases to members
- (iii) rates of mortality among members and retired lives
- (iv) rates of withdrawal of active members
- (v) rates of disability among active members
- (vi) the age patterns of actual retirements

In a valuation, the monetary effect of each assumption projected is for as long as a present covered person or potential beneficiary survives, a period of time which can be as long as a century. The actual experience of the System will not coincide exactly with assumed experience. From time-to-time one or more of the assumptions are modified to reflect experience trends (but not random or temporary year to year fluctuations).

The actuarial assumptions were based upon the results of an experience study for this Retirement System covering the period January 1, 2008 through December 31, 2012. A report dated December 4, 2013 presented the results of the experience study. The actuarial assumptions represent estimates of future experience. For the purpose of analyzing rates of post retirement mortality we used the results of the 2011 actuarial experience study conducted for the Oklahoma Public Employees Retirement System (OPERS) which is the largest, comparable public employee retirement system in the state of Oklahoma.

ACTUARIAL ASSUMPTIONS

Investment Return (net of expenses)

The rate of investment return assumed in the valuation was 7.40% per year, compounded annually net of investment and administrative expenses. The assumed real rate of return over wage inflation is 3.65% per year.

Wage Inflation

The wage inflation rate assumed in this valuation was 3.75% per year. The wage inflation rate is defined to be the portion of total pay increases for an individual that are due to macroeconomic forces including productivity, price inflation, and labor market conditions. The wage inflation rate does not include pay changes rated to individual merit and seniority effects.

Salary Increase Rates

These assumptions are used to project current pays to those which will determine average final compensation.

<u>Sample Years of Service</u>	<u>Annual Rate of Merit and Longevity</u>
1	3.50 %
2	3.50
3	3.50
4	3.50
5	3.50
6	3.50
7	3.50
8	3.50
9	3.50
10	3.50
11	3.50
12	3.50
13	3.50
14	3.00
15+	0.00

The active member population is assumed to remain constant. For purposes of financing the unfunded liabilities, total payroll is assumed to grow at a rate of 3.75% per year.

Price Inflation

The assumed rate of price inflation used in this valuation was 3.00% per year.

Mortality rates are used to measure the probabilities of a member dying before retirement and the probability of each benefit payment being made. The RP 2000 mortality table projected to 2010 was used in this valuation of the System. With regard to margins for future mortality improvement, the mortality rates assume 22% fewer deaths for men and 16% fewer deaths for women than observed during the 2008-2010 study period. Sample statistics are shown below. This table was first used in the December, 31, 2013 valuation.

Sample Ages	Value at Retirement of		Future Life	
	\$1 Monthly for Life		Expectancy (Years)	
	Men	Women	Men	Women
50	\$145.07	\$147.77	31.81	34.12
55	137.01	140.54	27.13	29.40
60	126.76	131.37	22.62	24.85
65	114.46	120.37	18.40	20.57
70	100.44	107.75	14.56	16.65
75	84.54	93.62	11.08	13.11
80	67.75	78.15	8.09	9.96

Rates of retirement are used to measure the probabilities of an eligible member retiring during the next year, and are summarized below. These rates were first used for the December 31, 2013 valuation.

Age of Member	Percent of Eligible Members Retiring During Next Year	Years of Service	Percent Retiring
55	6%	25	15%
56	6	26	10
57	6	27	10
58	6	28	10
59	6	29	10
60	6	30	10
61	6	31	10
62	6	32	10
63	6	33	10
64	6	34	10
65	40	35	10
66	25	36	10
67	25	37	10
68	30	38	10
69	40	39	10
70	100	40	20
		41	10
		42	20
		43	10
		44	10
		45	100

The service based retirement rates were applied to those members first eligible to retire under "25 and out.". The age based retirement rates were applied to members retiring under '65/5' or the Plan's early retirement condition. The probability of retiring at age 70 was assumed to be 100% regardless of service.

Rates of Separation from Active Membership

This assumption measures the probabilities of a member terminating employment. The rates do not apply to members who are eligible to retire.

Sample Ages	Years of Service	% of Active Members Separating within Next Year
ALL	0	25.00%
	1	17.00
	2	12.00
	3	8.00
	4	6.00
25	5 & Over	7.00
30		6.00
35		4.75
40		3.50
45		2.40
50		1.50
55		1.00
60		1.00

Rates of Disability

This assumption measures the probabilities of a member becoming disabled.

Age of Member	% of Active Members During Next Year	
	Males	Females
25	0.08%	0.06%
30	0.09	0.07
35	0.11	0.09
40	0.14	0.13
45	0.21	0.19
50	0.62	0.57
55	0.97	0.86
60	1.10	0.96

Disabled life mortality is measured by the RP 2000 mortality table projected to 2010 at time of disability.

DEFINITIONS OF TECHNICAL TERMS

Actuarial Accrued Liability. The difference between the actuarial present value of System benefits and the actuarial value of future normal costs. Also referred to as "accrued liability" or "actuarial 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.

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

Actuarial Equivalent. A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of Retirement System benefits between future normal cost and actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Gain (Loss). The difference between actual experience and actuarial assumption anticipated experience during the period between two actuarial valuation dates.

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.

Amortization. Paying off an interest-discounted amount with periodic payments of interest and principal -- as opposed to paying off with lump sum payment.

DEFINITIONS OF TECHNICAL TERMS

Normal Cost. The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.

Unfunded Actuarial Accrued Liability. The difference between actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded actuarial liability" or "unfunded accrued liability."

The existence of an unfunded actuarial accrued liability is not in itself bad, any more than a mortgage on a house is bad. The unfunded actuarial accrued liability does not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liability and the trend in its amount (after due allowance for devaluation of the dollar).

SUMMARY OF ASSUMPTIONS USED
DECEMBER 31, 2015
MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Marriage Assumption:	80% of the population is assumed to be married for purposes of death-in-service benefits.
Pay Increase Timing:	Beginning of year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing:	All decrements were assumed to occur mid-year.
Eligibility Testing:	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.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Normal Form of Benefit:	The assumed normal form of benefit is the straight life form.
Expenses:	Assumed investment return is net of administrative and investment expenses.
Non-forfeiture Assumption:	All vested terminated members who terminate close to retirement were assumed to elect a deferred retirement while those terminating with less service were assumed to elect a refund of their contributions in lieu of deferred retirement benefits.

SECTION D

SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION
SCHEDULE OF FUNDING PROGRESS

(DOLLAR AMOUNTS IN THOUSANDS)

Actuarial Valuation Date December 31,	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b)-(a)	Funded Ratio (a)/(b)	Active Member Covered Payroll (c)	UAAL as a Percentage of Active Member Covered Payroll ((b-a)/c)
2005 #	\$424,182	\$436,904	\$ 12,722	97.1 %	\$ 91,641	13.9 %
2006	476,913	457,547	(19,366)	104.2	95,504	(20.3)
2007	529,876	488,827	(41,049)	108.4	99,574	(41.2)
2008	528,664	519,234	(9,430)	101.8	105,566	(8.9)
2009	529,137	556,427	27,290	95.1	110,408	24.7
2010	524,731	566,834	42,103	92.6	102,915	40.9
2011 **	514,499	533,719	19,220	96.4	109,293	17.6
2012	547,686	553,588	5,902	98.9	114,933	5.1
2013 #	589,527	581,866	(7,661)	101.3	119,457	(6.4)
2014	628,686	607,295	(21,391)	103.5	124,142	(17.2)
2015 #	665,077	633,985	(31,092)	104.9	128,499	(24.2)

Changes in methods and assumptions.

* Plan provision changes.

Analysis of the dollar amounts of the actuarial value of assets, actuarial accrued liability, or actuarial accrued liability in isolation can be misleading. Expressing the actuarial value of assets as a percentage of the actuarial accrued liability provides one indication of the System's funded status on a going-concern basis. Analysis of this percentage over time indicates whether the System is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the plan. The unfunded actuarial accrued liability and annual covered payroll are both affected by inflation. Expressing the unfunded actuarial accrued liability as a percentage of covered payroll approximately adjusts for the effects of inflation and aids analysis of the progress being made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the plan.

SUPPLEMENTARY INFORMATION

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

Valuation Date	December 31, 2015
Actuarial Cost Method	Individual Entry Age
Amortization Method	Level Percent of payroll
Amortization Period	26 years closed
Asset Valuation Method	4-year smoothed market
Actuarial Assumptions:	
Investment Rate of Return*	7.40%
Projected Salary Increases*	3.75% - 7.25%
*Includes Wage Inflation	3.75%
Cost-of-Living Adjustments	Up to 2.0% per year

SECTION E

**RETIREMENT SYSTEM EXPERIENCE
ACTUAL VS EXPECTED**

**DERIVATION OF EXPERIENCE GAIN (LOSS)
CALENDAR YEARS 2011 - 2015**

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is hoped that gains and losses will cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the derivation of the experience gain (loss) is shown below, along with a year by year historic comparison.

	Amounts Shown are Expressed in Thousands of Dollars				
	2015	2014	2013	2012	2011
(1) UAAL* at start of year	\$ (21,391)	\$ (7,661)	\$ 5,902	\$ 79,423	\$ 42,103
(2) Normal cost	15,767	15,170	14,550	15,252	14,470
(3) Actual member and employer contributions	15,812	15,608	17,827	17,292	14,953
(4) Interest accrual on (1), (2) and (3)	(1,606)	(591)	320	6,272	3,349
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	(23,042)	(8,690)	2,945	83,655	44,969
(6) Increase due to benefit/assumption changes	7,149	0	3,568	(65,947)	0
(7) Increase due to revised actuarial methods	0	0	0	0	0
(8) Expected UAAL after changes: (5) + (6) + (7)	(15,893)	(8,690)	6,513	17,708	44,969
(9) Actual UAAL at end of year	(31,092)	(21,391)	(7,661)	5,902	79,423
(10) Gain (loss): (8) - (9)	15,199	12,701	\$ 14,174	\$ 11,806	(34,454)

* *Unfunded actuarial accrued liability (UAAL).*

Note: Benefit changes reflected in the 2012 gain/loss but adopted retroactively for the 2011 valuation.

SERVICE RETIREMENTS DURING THE INDICATED PLAN YEARS

Age Group	Number Retiring in the Indicated Year		
	2015*	2014	2013
40-44	1		
45-49	1	5	3
50-54	11	2	8
55-59	17	14	9
60	1	5	3
61	3	5	4
62	9	10	11
63	9	7	5
64	10	4	4
65	5	7	2
66	6	2	3
67	3	5	5
68		3	
69	1		4
70 & Over	2	5	5
Total	79	74	66
Expected	99.6	97.9	130.0

* Excludes members who retired and became deceased in the same year.

The chart above shows actual versus expected retirements from City employment and does not include retirements from deferred status, death-in-service, or disability retirements.

**NON-VESTED WITHDRAWALS
FROM ACTIVE MEMBERSHIP
DURING THE INDICATED PLAN YEARS**

Age Groups	Years of Service	Number Terminating during the Indicated Year		
		2015	2014	2013
	0	43	41	42
	1	23	19	19
	2	11	17	8
	3	17	7	5
	4	4	3	5
	Sub-Total	98	87	79
Under 30	5 & Over	2	2	3
30-34		4	2	5
35-39		4	8	3
40-44		8	2	6
45-49		6	3	5
50-54		3	6	5
55-59		2	5	3
60 & Over		3	3	2
Sub-Total		32	31	32
Total		130	118	111
Expected No.		128.2	126.4	145.1

NUMBER ADDED TO AND REMOVED FROM ACTIVE MEMBERSHIP
ACTUAL & EXPECTED

Valuation Date December 31	Number Added During Year		Terminations During Year								Active Members End of Year
			Retirement		Disabled		Died-In Service		Other Withdrawal		
	A	E	A	E	A	E	A	E	A	E	
2001	331	331	82	74.6	4	3.6	5	3.7	240	162.7	2,454
2002	135	215	54	89.1	5	3.1	9	3.7	147	172.2	2,374
2003	120	213	42	87.6	2	3.2	7	3.7	153	146.7	2,290
2004	207	201	62	98.7	1	3.0	3	3.9	129	119.9	2,302
2005	200	190	57	100.2	3	3.1	6	4.1	124	129.6	2,312
2006	238	197	63	88.8	3	3.1	2	3.8	129	131.4	2,353
2007	206	179	64	93.4	1	3.0	5	3.9	109	148.9	2,380
2008	220	178	68	94.7	0	2.8	0	4.0	110	149.5	2,422
2009	138	180	67	106.8	1	2.6	2	4.0	110	159.2	2,380
2010	137	213	91	106.7	4	2.5	4	4.1	114	132.6	2,304
2011	257	163	48	111.6	1	2.4	3	4.2	111	124.0	2,398
2012	242	181	45	116.1	1	2.5	3	4.4	132	146.0	2,459
2013	221	193	66	130.0	2	2.4	4	4.6	121	154.9	2,487
2014	223	210	74	97.9	3	2.4	2	3.2	131	136.0	2,500
2015	312	226	79	99.6	2	2.4	2	3.3	143	137.6	2,586
2011-2015	1,255	973	312	555.2	9	12.1	14	19.7	638	698.5	

A: Actual experience

E: Expected experience based on actuarial assumptions

