

City of Joliet Firefighters' Pension Fund Annual Actuarial Valuation

For the Year Beginning January 1, 2017



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January 5, 2018

The Pension Board
 City of Joliet Firefighters' Pension Fund
 Joliet, Illinois

Dear Board Members:

We are pleased to provide our formal annual Actuarial Valuation Report as of January 1, 2017, covering the City of Joliet Firefighters' Pension Fund. This report provides, among other things, the minimum annual contribution requirements of the Plan for the Plan Year commencing January 1, 2017, and ending on December 31, 2017 (which directly affects the City's tax levy in the 2018 fiscal year that is collected and deposited into the Pension Trust in fiscal year 2018). This valuation was based on the plan provisions as outlined in Section C of this report, the Plan participant data as provided by the City of Joliet (i.e., Plan Sponsor) and on the actuarial cost method and the set of actuarial assumptions as described in Section D of the report.

Beginning with the January 1, 2015, actuarial valuation, the Board approved a modified funding policy that shortened the amortization period used to finance the unfunded actuarial accrued liability from 31 years as of January 1, 2015, to 29 years. The modified funding policy is equal to the sum of: (a) annual normal cost plus (b) amortization of unfunded liability as a level percent of pay between January 1, 2015, and January 1, 2044, plus (c) interest on (a) and (b) to date of payment, that is projected to produce a funded ratio of 100 percent by January 1, 2044. The contribution under this modified funding policy satisfies the statutory minimum funding requirements found in Public Act 96-1495.

The actuarial assumptions and methods used in this actuarial valuation are based on an experience review performed using census data from the period January 1, 2010, to January 1, 2015, and are implemented with the current actuarial valuation. As part of this study, we reviewed all economic and demographic assumptions, including the investment and mortality assumptions, and provided recommended assumption changes. Please see pages D-2 and D-3 for additional comments on the assumption changes.

The changes in actuarial assumptions increased the Actuarial Accrued Liability as of January 1, 2017, by \$19,076,540. The plan year 2017 City contribution increased by \$1,178,285. This increase in the City's plan year 2017 contribution will be phased-in over a three-year period for budgetary purposes. Under a three-year smoothing period, the increase in the City's contribution will be phased-in according to the following schedule:

Plan Year	Portion Recognized	Portion to Subtract	Amount to Subtract from City Contribution
2017	33%	67%	\$789,451
2018	67%	33%	\$388,834
2019	100%	0%	\$0

Chapter 40, Act 5, Article 4 of the Illinois Compiled Statutes requires an actuarial balance sheet (i.e., actuarial valuation) be prepared by a qualified actuary in order to determine the annual tax levy to meet the annual actuarial requirements of the Pension Fund. Alex Rivera and Lance J. Weiss of Gabriel, Roeder, Smith & Company have the following qualifications:

Alex Rivera is a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries and an Enrolled Actuary with over 25 years of responsible experience in the actuarial and pension consulting field.

Lance J. Weiss is a Fellow of the Conference of Consulting Actuaries, a Member of the American Academy of Actuaries and an Enrolled Actuary with over 30 years of responsible experience in the actuarial and pension consulting field.

It is our understanding, in accordance with the Illinois Compiled Statutes, that the undersigned more than satisfy the minimum requirements as set forth in the referenced Pension Code as recently amended.

In addition, it is also our understanding that the Pension Code requires that a Member of the American Academy of Actuaries perform the required annual actuarial valuation and does not mandate that the Illinois Department of Insurance's annual actuarial valuation of the Pension Fund be controlling or that the Department of Insurance accept or approve another actuarial valuation of the Pension Fund.

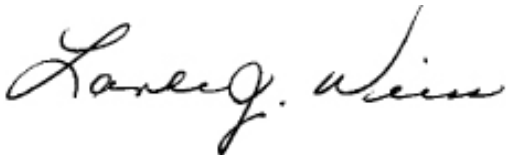
Alex Rivera and Lance J. Weiss are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

We will be pleased to review this report with you at your convenience.

Sincerely,



Alex Rivera, F.S.A., E.A., M.A.A.A., F.C.A.
Senior Consultant



Lance J. Weiss, E.A., M.A.A.A., F.C.A.
Senior Consultant

AR/LW:rg



Additional Disclosures Required by Actuarial Standards of Practice

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

This report should not be relied on for any purpose other than the purpose stated.

The signing actuaries are independent of the plan sponsor.



SECTION A

VALUATION RESULTS

Summary of Actuarial Valuation Results

Valuation Date as of	January 1, 2016	January 1, 2017	
		Before Changes in Assumptions	After Changes in Assumptions
Employee Number of Active Firefighters	209	202	202
Data Number of Service Retirees	69	75	75
Number of Disabled Lives	31	34	34
Number of Widow Beneficiaries	37	37	37
Number of Children Beneficiaries	9	9	9
Number of Separated Deferred Firefighters	2	3	3
Number of Handicapped Beneficiaries	0	0	0
TOTAL	357	360	360
 Total Annual Salaries of Firefighters	 \$ 22,882,363	 \$ 22,332,739	 \$ 22,332,739
Plan Gross Actuarial Accrued Liability:			
Liabilities Active Firefighters	\$ 130,474,332	\$ 129,307,561	\$ 136,019,049
Retirees, Beneficiaries & Disabled	123,793,686	136,237,979	148,603,031
TOTAL	\$ 254,268,018	\$ 265,545,540	\$ 284,622,080
 Actuarial Value of Assets at Valuation Date	 \$ 136,648,213	 \$ 147,910,924	 \$ 147,910,924
Unfunded/(Overfunded) Actuarial Accrued Liability	\$ 117,619,805	\$ 117,634,616	\$ 136,711,156
 Funded Position of Plan's Gross Actuarial Accrued Liability ^a	 53.7 %	 55.7 %	 52.0 %
	For the 2016 Plan Year	For the 2017 Plan Year	For the 2017 Plan Year
Normal Gross Annual Normal Cost	\$ 7,525,565	\$ 7,268,937	\$ 7,210,017
Cost Less Expected Member Contributions (for Applicable Plan Year)	2,163,527	2,111,560	2,111,560
Net Annual Normal Cost (Municipality Paid)	\$ 5,362,038	\$ 5,157,377	\$ 5,098,457
Net Annual Normal Cost (As a percentage of pay) ^b	23.4 %	23.1 %	22.8 %

^a Equals the ratio of the actuarial value of assets to the total gross actuarial accrued liability.

^b Percents shown represent net annual normal cost expressed as percentages of covered Firefighters' salaries.

Summary of Actuarial Valuation Results (Continued)

Annual Contribution Requirements	Plan Year End December 31, 2016 ^a	Plan Year End December 31, 2017 ^b		
		Before Assumption Changes	After Assumption Changes	Phase-in Assumption Changes
Net Annual Normal Cost (Municipality Paid)	\$ 5,362,038	\$ 5,157,377	\$ 5,098,457	\$ 5,098,457
Annual Amortization Payments for Funding Unfunded Actuarial Accrued Liability as a level percentage of payroll	5,844,251	5,992,152	7,162,430	7,162,430
Adjustment Due to Three-year Phase-in of Contribution Increase Resulting from Change in Actuarial Assumptions	-	-	-	(789,451)
Interest Adjustment to Expected Date of Payment into the Fund (Optional)	1,153,574	1,147,731	1,214,657	1,136,448
Total Minimum Annual Contribution Requirement for the Current Plan Year	\$ 12,359,863	\$ 12,297,259	\$ 13,475,544	\$ 12,607,884
Minimum Annual Contribution (As a percentage of pay as of the valuation date)	54.0%	55.1%	60.3%	56.5%
PA 96-1495 Minimum Annual Contribution Requirement for the Current Plan Year	\$ 10,995,929	\$ 12,114,189	\$ 13,609,117	\$ 12,607,515
PA 96-1495 Minimum Annual Contribution (As a percentage of projected pay)	44.7%	50.4%	56.9%	52.7%

^a Unfunded Actuarial Accrued Liability is amortized over a 28-year closed period.

^b Unfunded Actuarial Accrued Liability is amortized over a 27-year closed period.

Derivation of Experience Gain/(Loss) Year Ended January 1, 2017

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is expected that gains and losses will cancel each other over time, but year-to-year fluctuations are not uncommon. Detail on the derivation of the experience gain/(loss) is shown below, along with a year-by-year comparative schedule.

1. Unfunded Actuarial Accrued Liability at 01/01/2016	\$ 117,619,805
2. Normal Cost Due at 01/01/2016	7,525,565
3. Interest on (1) and (2) to 12/31/2016 (at 6.75% per annum)	8,447,312
4. Contributions (Employer and Employee) applicable to the 2016 Plan Year, with interest to 12/31/2016	14,983,922
5. Expected Unfunded Actuarial Accrued Liability at 01/01/2017 [(1) + (2) + (3) - (4)]	\$ 118,608,760
6. Effect of Assumption Changes on Unfunded Actuarial Accrued Liability at 01/01/2017 ¹	\$ 19,076,540
7. Expected Unfunded Actuarial Accrued Liability at 01/01/2017 [(5) + (6)]	\$ 137,685,300
8. Actual Unfunded Actuarial Accrued Liability at 01/01/2017	\$ 136,711,156
9. Gain/(Loss) for the 2016 Plan Year [(7) - (8)]	\$ 974,144

Valuation Date January 01	Experience Gain/(Loss) As % of Accrued Liability at the Prior Valuation Date ^b
2008	(2.66) %
2009	(4.45)
2010	(9.18)
2011	(1.58)
2012	(2.73)
2013	0.23
2014	1.87
2015	2.38
2016	0.63
2017	0.38

^aPlease see pages D-2 and D-3 for a summary of the assumption changes.

^bExcluding Plan and assumption changes.

Comments and Analysis

The valuation results pertaining to the current Plan Year are analyzed and discussed below.

Plan History

The following table provides a summary of the Plan's rate of return on assets and salary increase experience over the last 20 actuarial valuations performed by Gabriel, Roeder, Smith & Company:

Plan Year Ending	Rate of Return On Plan Assets	Salary Scale Increase
12/31/1997	11.3	5.5
12/31/1998	9.7	11.1
12/31/1999	7.9	15.5
12/31/2000	(1.2)	4.5
12/31/2001	(1.0)	7.3
12/31/2002	(1.4)	6.4
12/31/2003	9.4	7.2
12/31/2004	6.8	10.9
12/31/2005	4.4	7.8
12/31/2006	7.8	6.9
12/31/2007	5.7	10.0
12/31/2008	(13.3)	5.8
12/31/2009	8.2	14.2
12/31/2010	10.3	4.0
12/31/2011	1.3	7.4
12/31/2012	8.0	1.6
12/31/2013	13.3	1.6
12/31/2014	4.2	0.8
12/31/2015	(0.9)	3.4
12/31/2016	7.3	2.1

The Salary Scale increase has averaged 6.6% over the last 20 years. The current long-term assumption of 4.00% was reviewed as part of the experience review performed for the period January 1, 2010, to January 1, 2015, and updated from 5.25%. As part of each annual valuation, we will review salary scale increases and determine whether the current assumption continues to be appropriate.

Over the same 20-year period, the Plan's assets have averaged an annual rate of investment return of 4.7%. We have reviewed the investment return assumption as part of the experience review performed for the period January 1, 2010, to January 1, 2015, and updated the assumption to 6.50%. We recommend that the City continue to monitor this assumption for continuing reasonableness at each future valuation.

Comments and Analysis (Continued)

Analysis of the Experience Gain/ (Loss)	The experience gain/(loss) reported on page A-3, is the net result of the following:	
	(a) From plan asset performance	\$ (2,444,525)
	(b) Other sources ("net effect" of salary increases, terminations, new entrants, retirements, etc.)	<u>3,418,669</u>
	Total Gain/(Loss): [(a) + (b)]	\$ 974,144

Changes in the Annual Contribution Magnitude The dollar amount of the plan's annual minimum required contribution of \$12,607,884 is approximately 2.0% higher than the level for the prior plan year of \$12,359,863. As a percentage of payroll, the contribution requirement is higher than last year (i.e., increasing from 54.0% to 56.5%). The important factors producing this change are summarized as follows:

1. Minimum Annual Contribution Requirement for prior plan year without amendatory Act of the 93rd General Assembly ^a	\$ 11,928,393
2. Actual Asset Performance (based on actuarial value of assets)	137,339
3. Increase in Normal Cost and Amortization Amount due to anticipated pay increases	494,395
4. Changes in Assumptions Resulting from an Experience Review for the Period from January 1, 2010, to January 1, 2015	1,178,285
5. Changes in Plan Provisions due to the amendatory Act of the 93rd General Assembly ^a	397,585
6. Adjustment Due to Three-year Phase-in of Contribution Increase Resulting from Change in Actuarial Assumptions	(789,451)
7. Other Sources (demographic and salary (gains)/losses)	(738,662)
8. Minimum Annual Contribution Requirement for current plan year (sum of items 1 through 7)	<u>\$ 12,607,884</u>

^a(P.A. 93-0689, effective 7-1-04.)

Comments and Analysis (Continued)

**Comments on
Actuarial Value of
Assets**

The Pension Fund uses market-related value of assets for funding purposes. This market-related value of assets will recognize gains and losses due to return on plan assets over a four-year period. Hence, only a portion of this year's investment loss (see Section B for details) is included in the current year actuarial value of assets. The remainder of the gain or loss will be incorporated into Pension Fund assets over the next three years. The purpose of this technique is to minimize contribution volatility due to fluctuations in the market value of assets. Finally, receivables for plan years prior to the current plan year which are not in Plan assets by December 31, 2016, are included in assets for funding purposes.

**GASB Statements Nos.
67 and 68**

Effective with Fiscal Year Ending December 31, 2014, GASB No. 67 is replaced GASB No. 25 for pension plan financial reporting requirements. GASB No. 68 replaced GASB No. 27 for employer financial reporting effective with fiscal year ending December 31, 2015.

The measurements required under GASB Statements Nos. 67 and 68 are provided in a separate report.

**City Contribution
Phase-in Schedule**

The actuarial assumption changes outlined in Section D increased the Actuarial Accrued Liability as of January 1, 2017, by \$19,076,540. The plan year 2017 City contribution increased by \$1,178,285. This increase in the City's plan year 2017 contribution will be phased-in over a three-year period for budgetary purposes. Under a three-year smoothing period, the increase in the City's contribution will be phased-in according to the following schedule:

Plan Year	Portion Recognized	Portion to Subtract	Amount to Subtract from City Contribution
2017	33%	67%	\$789,451
2018	67%	33%	\$388,834
2019	100%	0%	\$0

SECTION B

PROJECTIONS

City of Joliet Firefighters' Pension Fund
Actuarial Valuation Projection Results Based on P.A. 96-1495 as of January 1, 2017 (Based on Projected Unit Credit Cost Method)
Includes Changes in Actuarial Assumptions Resulting from the 2016 Experience Review with Impact of Assumption Changes on City Contributions Phased-in Over a Three-year Period
(\$ in Thousands)

Jan. 1,	Actuarial Accrued Liability	Market Value of Assets	Actuarial Value of Assets	Unfunded Liability	Actuarial Value Funded Ratio	Uncapped Payroll	Capped Payroll	Employer Normal Cost	Statutory Minimum Contribution ^a	Statutory Contribution % of Projected Pay	Employee Contributions	Benefit Payments
2017	\$276,127	\$131,310	\$135,948	\$140,179	49.2%	\$22,333	\$22,333	\$5,510	\$12,608	52.73%	\$2,112	\$10,927
2018	290,829	143,416	145,301	145,527	50.0%	23,157	22,920	5,608	13,545	54.92%	2,167	11,605
2019	305,947	155,920	155,744	150,203	50.9%	23,911	23,528	5,695	14,584	57.37%	2,225	12,259
2020	321,524	169,586	169,586	151,938	52.7%	24,665	24,201	5,770	15,023	57.37%	2,288	13,066
2021	337,426	184,442	184,442	152,984	54.7%	25,419	24,891	5,833	15,407	57.37%	2,353	13,905
2022	353,630	199,916	199,916	153,713	56.5%	26,184	25,556	5,873	15,806	57.37%	2,416	14,781
2023	370,090	215,952	215,952	154,138	58.4%	26,854	26,171	5,903	16,180	57.37%	2,474	15,728
2024	386,735	232,522	232,522	154,213	60.1%	27,550	26,785	5,917	16,580	57.37%	2,533	16,782
2025	403,448	249,525	249,525	153,923	61.8%	28,201	27,357	5,926	16,843	57.37%	2,587	17,820
2026	420,242	267,028	267,028	153,214	63.5%	28,898	27,915	5,880	17,075	57.37%	2,639	18,959
2027	436,957	284,818	284,818	152,139	65.2%	29,356	28,342	5,800	17,305	57.37%	2,680	20,149
2028	453,487	302,816	302,816	150,671	66.8%	29,762	28,740	5,695	17,501	57.37%	2,717	21,399
2029	469,728	320,968	320,968	148,760	68.3%	30,161	29,106	5,562	17,713	57.37%	2,752	22,737
2030	485,537	339,155	339,155	146,382	69.9%	30,502	29,419	5,409	17,932	57.37%	2,782	24,138
2031	500,797	357,327	357,327	143,470	71.4%	30,872	29,702	5,239	18,240	57.37%	2,808	25,549
2032	515,439	375,478	375,478	139,961	72.8%	31,254	29,938	5,072	18,587	57.37%	2,831	27,018
2033	529,362	393,632	393,632	135,729	74.4%	31,792	30,181	4,906	18,941	57.37%	2,854	28,454
2034	542,554	411,866	411,866	130,689	75.9%	32,396	30,389	4,729	19,415	57.37%	2,873	29,903
2035	554,940	430,174	430,174	124,766	77.5%	33,014	30,536	4,561	19,995	57.37%	2,887	31,361
2036	566,462	448,671	448,671	117,791	79.2%	33,839	30,703	4,412	20,645	57.37%	2,903	32,788
2037	577,118	467,511	467,511	109,607	81.0%	34,851	30,877	4,278	21,470	57.37%	2,919	34,185
2038	586,899	486,821	486,821	100,078	82.9%	35,983	31,035	4,184	22,448	57.37%	2,934	35,519
2039	595,854	506,876	506,876	88,978	85.1%	37,422	31,248	4,129	23,594	57.37%	2,955	36,752
2040	604,080	527,991	527,991	76,090	87.4%	39,125	31,490	4,114	7,543	17.35%	2,977	37,900
2041	611,665	550,499	550,499	61,167	90.0%	41,122	31,781	4,148	7,691	16.72%	3,005	38,933
2042	618,740	556,866	556,866	61,874	90.0%	43,463	32,140	4,212	7,862	16.11%	3,039	39,847
2043	625,435	562,891	562,891	62,543	90.0%	46,005	32,512	4,309	8,044	15.55%	3,074	40,679
2044	631,844	568,660	568,660	63,184	90.0%	48,806	32,935	4,426	8,232	15.05%	3,114	41,441
2045	638,050	574,245	574,245	63,805	90.0%	51,717	33,372	4,555	8,417	14.61%	3,155	42,149
2046	644,109	579,698	579,698	64,411	90.0%	54,699	33,817	4,684	8,599	14.22%	3,197	42,828
2047	650,041	585,037	585,037	65,004	90.0%	57,621	34,255	4,810	8,774	13.87%	3,239	43,500
2048	655,842	590,258	590,258	65,584	90.0%	60,479	34,691	4,929	8,939	13.58%	3,280	44,179
2049	661,488	595,339	595,339	66,149	90.0%	63,249	35,125	5,034	9,096	13.31%	3,321	44,872
2050	666,939	600,245	600,245	66,694	90.0%	65,842	35,551	5,130	9,242	13.07%	3,361	45,579

^a Statutory minimum contribution deposited in the following fiscal year. Increase in contributions due to assumption changes are phased-in over a three-year period.

City of Joliet Firefighters' Pension Fund
Actuarial Valuation Projection Results Based on 27 Years Closed Amortization as of January 1, 2017 (Based on Entry Age Normal Cost Method)
Includes Changes in Actuarial Assumptions Resulting from the 2016 Experience Review with Impact of Assumption Changes on City Contributions Phased-in Over a Three-year Period
(\$ in Thousands)

Jan. 1,	Actuarial Accrued Liability	Market Value of Assets	Actuarial Value of Assets	Unfunded Liability	Actuarial Value Funded Ratio ^b	Uncapped Payroll	Capped Payroll	Employer Normal Cost	City Contribution ^a	City Contribution % of Pay	Employee Contributions	Benefit Payments
2017	\$284,622	\$131,310	\$147,911	\$136,711	52.0%	\$22,333	\$22,333	\$5,098	\$12,608	56.45%	\$2,112	\$10,927
2018	299,524	143,416	157,518	142,006	52.6%	23,157	22,920	5,147	13,615	58.80%	2,167	11,605
2019	314,806	155,920	168,938	145,868	53.7%	23,911	23,528	5,287	14,657	61.30%	2,225	12,259
2020	330,524	169,659	183,862	146,662	55.6%	24,665	24,201	5,335	15,013	60.87%	2,288	13,066
2021	346,547	184,595	199,143	147,405	57.5%	25,419	24,891	5,368	15,374	60.48%	2,353	13,905
2022	362,850	200,070	214,967	147,882	59.2%	26,184	25,556	5,384	15,728	60.07%	2,416	14,781
2023	379,389	216,081	231,321	148,067	61.0%	26,854	26,171	5,393	16,086	59.90%	2,474	15,728
2024	396,094	232,579	248,167	147,928	62.7%	27,550	26,785	5,386	16,441	59.68%	2,533	16,782
2025	412,851	249,489	265,420	147,431	64.3%	28,201	27,357	5,373	16,800	59.57%	2,587	17,820
2026	429,667	266,846	283,126	146,541	65.9%	28,898	27,915	5,314	17,124	59.26%	2,639	18,959
2027	446,392	284,580	301,173	145,219	67.5%	29,356	28,342	5,237	17,441	59.41%	2,680	20,149
2028	462,936	302,613	319,513	143,423	69.0%	29,762	28,740	5,146	17,757	59.66%	2,717	21,399
2029	479,207	320,892	338,099	141,109	70.6%	30,161	29,106	5,035	18,066	59.90%	2,752	22,737
2030	495,072	339,339	356,845	138,226	72.1%	30,502	29,419	4,914	18,381	60.26%	2,782	24,138
2031	510,424	357,888	375,699	134,725	73.6%	30,872	29,702	4,785	18,702	60.58%	2,808	25,549
2032	525,208	376,538	394,661	130,547	75.1%	31,254	29,938	4,661	19,047	60.94%	2,831	27,018
2033	539,329	395,239	413,695	125,633	76.7%	31,792	30,181	4,538	19,409	61.05%	2,854	28,454
2034	552,777	414,051	432,859	119,918	78.3%	32,396	30,389	4,408	19,782	61.06%	2,873	29,903
2035	565,486	432,984	452,153	113,332	80.0%	33,014	30,536	4,289	20,187	61.15%	2,887	31,361
2036	577,403	452,042	471,604	105,800	81.7%	33,839	30,703	4,181	20,625	60.95%	2,903	32,788
2037	588,524	471,300	491,285	97,239	83.5%	34,851	30,877	4,078	21,089	60.51%	2,919	34,185
2038	598,834	490,836	511,271	87,563	85.4%	35,983	31,035	3,998	21,601	60.03%	2,934	35,519
2039	608,367	510,758	531,689	76,677	87.4%	37,422	31,248	3,936	22,157	59.21%	2,955	36,752
2040	617,201	531,251	552,721	64,479	89.6%	39,125	31,490	3,894	22,763	58.18%	2,977	37,900
2041	625,403	552,488	574,545	50,858	91.9%	41,122	31,781	3,877	23,428	56.97%	3,005	38,933
2042	633,083	574,692	597,394	35,689	94.4%	43,463	32,140	3,874	24,150	55.57%	3,039	39,847
2043	640,350	598,116	621,517	18,833	97.1%	46,005	32,512	3,888	25,076	54.51%	3,074	40,679
2044	647,281	622,983	647,281	-	100.0%	48,806	32,935	3,913	4,406	9.03%	3,114	41,441
2045	653,945	649,675	653,945	-	100.0%	51,717	33,372	3,946	4,443	8.59%	3,155	42,149
2046	660,388	656,082	660,388	-	100.0%	54,699	33,817	3,980	4,483	8.20%	3,197	42,828
2047	666,629	662,285	666,629	-	100.0%	57,621	34,255	4,019	4,527	7.86%	3,239	43,500
2048	672,666	668,279	672,666	-	100.0%	60,479	34,691	4,059	4,572	7.56%	3,280	44,179
2049	678,479	674,049	678,479	-	100.0%	63,249	35,125	4,098	4,616	7.30%	3,321	44,872
2050	684,038	679,565	684,038	-	100.0%	65,842	35,551	4,141	4,665	7.09%	3,361	45,579

^a City contribution deposited in the following fiscal year. Increase in contributions due to assumption changes are phased-in over a three-year period.

^b The Funded Ratio under the Modified Funding Policy is greater than the Funded Ratio produced under the Statutory Funding Policy in each plan year.

SECTION C

BENEFIT PROVISIONS AND ACTUARIAL VALUATION DATA

Brief Summary of Plan Provisions (January 1, 2017)

Plan Firefighters’ Pension Fund as Incorporated in Chapter 40, Act 5, Article 4 of the Illinois Compiled Statutes.

Effective Date Enacted: March 18, 1963

Last Amended Effective: July 9, 2015

Eligibility to Participate Generally, any person who is in the Firefighters’ Department of a city, village or incorporated town (whose population is 500,000 or less) which has adopted the provisions of Chapter 40, Act 5, Article 4 of the Illinois Compiled Statutes concerning Firefighters’ pensions, is eligible to participate, subject to the following:

- (a) The person has attained age 18 but not age 35 at the time of the first appointment; and
- (b) Within three months after receiving his/her first appointment (or within three months after any re-appointment), the person makes written application to the Board to be covered under the provisions of the Article.

NOTE:

If the person had been regularly enrolled as a volunteer Firefighter for five years immediately preceding the time that the municipality began employing him/her full time, the age limitation in (a) above does not apply.

Brief Summary of Plan Provisions (Continued)

Employee Contributions (Mandatory)

In order to participate in the plan, each Firefighter must contribute 9.455% of his/her regular salary. "Salary" in this instance excludes overtime pay, holiday pay, bonus pay, merit pay or any other cash benefit over and above the salary established by the appropriation ordinance. Prior to July 1, 2004, each Firefighter had to contribute 8.455% of his/her regular salary.

Creditable Service

"Creditable Service" is the time period during which a person serves as a Firefighter of a municipality. Furloughs and Leaves of Absence without pay exceeding 30 days in any one year are not counted unless such periods are attributable to illness or accident. Time attributable to disability absence for which the Firefighter does not receive disability pension benefits will be counted as "Creditable Service."

Furloughs and Leaves of Absence less than 30 days in any one year may be included in Creditable Service if the Firefighter makes the regular employee contributions to the Fund he/she would have made if he/she had not been on the furlough or leave of absence. Such contributions must be made not more than 90 days following the end of the furlough or leave of absence.

In addition, all periods of service in the Military, Naval or Air Forces of the United States of America, entered into when the person was an active Firefighter and up to eight Years of Service as an officer in a statewide firefighters' association while on leave of absence from a municipality's payroll, shall be counted as Creditable Service, provided that the Firefighter contributes to the Fund the amount he/she would have paid had he/she been a regular contributor during such military service; in general, not more than five years may be counted under this provision. Creditable Service shall not include time spent as a volunteer Firefighter whether or not compensation was received.

Eligibility For and Amount of Regular Retirement Benefits

I. Eligibility — Age 50 (or More) and 20 or More Years of Creditable Service

Benefit: A Firefighter who is age 50 (or more) and has 20 years or more of Creditable Service and is no longer a Firefighter is entitled to 1/2 of the monthly Salary attached to the rank held by him/her at the date of actual retirement.

For Creditable Service over 20 years, the monthly pension is increased as follows:

- 2.5% of the Firefighter's monthly salary for each additional year over 20 to the limitation that the monthly pension does not exceed 75% of his/her monthly Salary.

Brief Summary of Plan Provisions (Continued)

Notwithstanding the above, as of January 1, 1999, no Pension in effect or granted with 20 or more Years of Service after May 1, 1993, is to be less than \$600.00 per month. This minimum is increased to \$800.00 per month on January 1, 2000, \$1,000.00 per month on January 1, 2001, \$1,030.00 per month on July 1, 2004, \$1,060.90 per month on July 1, 2005, \$1,092.73 per month on July 1, 2006, \$1,125.51 per month on July 1, 2007, \$1,159.27 per month on July 1, 2008.

**II. Eligibility—
Age 60 (or
More) and 10
(but Less than
20) Years of
Creditable
Service**

A Firefighter who is age 60 or more and has at least 10 Years (but less than 20) of Creditable Service and who is no longer a Firefighter, is entitled to a monthly pension payable for life based on the monthly Salary attached to the rank held by him/her at the date of retirement or separation from service according to the following schedule:

For 10 Years of Creditable Service —	15.0% of Salary;
For 11 Years of Creditable Service —	17.6% of Salary;
For 12 Years of Creditable Service —	20.4% of Salary;
For 13 Years of Creditable Service —	23.4% of Salary;
For 14 Years of Creditable Service —	26.6% of Salary;
For 14 Years of Creditable Service —	30.0% of Salary;
For 16 Years of Creditable Service —	33.6% of Salary;
For 17 Years of Creditable Service —	37.4% of Salary;
For 18 Years of Creditable Service —	41.4% of Salary;
For 19 Years of Creditable Service —	45.6% of Salary;

Notwithstanding the foregoing, a Firefighter affected by the above shall not be entitled to a pension benefit if the option for a refund of employee contributions was exercised when the Firefighter last separated from service or if he/she is entitled to a disability pension benefit.

Brief Summary of Plan Provisions (Continued)

III. Pension Allowance Increases

- A Firefighter who retired from service with 20 or more years of Creditable Service on or before May 1, 1971, is entitled to an increase of 2% of his/her original monthly pension for each year the Firefighter was in receipt of pension payments; such increase takes effect in the January of the year following the year in which he/she attains age 65, or January of 1972, if then age 65. Each subsequent January, the monthly pension is increased by 2% of the original monthly pension amount. Beginning January 1976, the rate of such increases was raised to 3% of the original monthly pension.
- A Firefighter who retired from service after May 1, 1971, and prior to January 1, 1986, is entitled to an increase of 2% of his/her original monthly pension either upon: (a) the first of the month following the first anniversary of his/her date of retirement if he/she was age 60 or more on that date, or (b) the first of the month following the Firefighter's attainment of age 60 (if such occurs after the first anniversary of his/her retirement date). Each subsequent January, the monthly pension is increased by 2% of the original monthly pension amount. Beginning January 1976, the rate of such increase was raised to 3% of the original monthly pension. In July 2009, a Firefighter who retired before July 1, 1977, had his/her benefit recalculated and increased to reflect the amount that he/she would have received in July 2009 had he/she been receiving a 3% compounded increase for each year he/she received pension payments after January 1, 1986, plus any January 1, 1986. In each January thereafter, he or she shall receive increases in pension received for each year prior to an additional increase of 3% of the amount of the pension then being paid.
- A Firefighter who retired from service on or after January 1, 1986, is entitled to an increase of 3% of his/her original monthly pension for each full year that has elapsed since the pension began. This occurs either upon: (a) the first of the month following the anniversary of his/her date of retirement if he/she was age 55 or older on that date, or (b) the first of the month following the Firefighter's attainment of age 55 (if such occurs after the first anniversary of his/her retirement date). Each subsequent January, the monthly pension is increased by 3% of the immediately preceding year's pension amount.

Brief Summary of Plan Provisions (Continued)

- Notwithstanding the provisions of the second paragraph listed above, a Firefighter who retired from service after January 1, 1977, and prior to January 1, 1986, and did not receive a pension increase before May 1, 1987, is entitled to a 3% increase of his/her original monthly pension for each full year that has elapsed since the pension began. This occurs on the first day of the month following either: (a) the first anniversary of the date of retirement, or (b) the attainment of age 55, or (c) May 1, 1987. Each subsequent January, the monthly pension is increased by 3% of the immediately preceding year's pension amount.

Eligibility for and Amount of Disability Benefits

I. Disability Incurred in the Line of Duty

- a) If a Firefighter is injured or suffers an accident or sickness as the result of carrying out his/her duties as a Firefighter (even if those duties take him/her to a place away from the municipality in which he/she serves as a Firefighter, and assuming such duties are related to the fire protection service of such municipality), then such a disabled Firefighter is entitled to a disability retirement pension equal to the greater of: (i) the Firefighter's accrued pension benefit at the date of disability or (ii) 65% of the monthly salary attached to the rank held by him/her in the Fire Department at the date he/she is removed from the municipality's Fire Department payroll.
- b) A Firefighter who is entitled to disability payments, as discussed in (a) above, also has the right to receive a benefit of \$20 per month for every unmarried child less than 18 years of age.

The total amount of the benefits described in both (a) and (b) above shall not exceed 75% of the amount of salary the Firefighter was receiving at the time of the grant of the disability benefit.

II. Disability on Account of Occupational Hazards

- a) If a Firefighter who has completed five or more Years of Service is unable to perform his/her duties in the Fire Department by reason of heart disease, tuberculosis, disabling cancer, or any disease of the lungs or respiratory tract, resulting solely from his/her service as a Firefighter, then he/she is entitled to an occupational disease disability pension equal to the greater of: (i) the Firefighter's accrued pension benefit at the date of disability or (ii) 65% of his/her Salary at the time of his/her removal from the Fire Department payroll.

Brief Summary of Plan Provisions (Continued)

- a) A Firefighter who is entitled to a disability payments as described in (a) above also has the right to receive a benefit of \$20.00 per month for every unmarried child less than 18 years of age and who is dependent upon the Firefighter for financial support.

The total amount of the benefits described in both (a) and (b) above are not to exceed 75% of the amount of Salary the Firefighter was receiving at the time of the grant of the disability benefit.

III. Disability Due to Occurrences Unrelated to Duties If a Firefighter, who has seven years of Creditable Service, becomes mentally or physically disabled as the result of any cause other than the performance of an act or acts of duty, he/she is entitled to a disability pension equal to 50% of the monthly Salary attached to the rank held by him/her in the Fire Department at the date he/she is removed from the municipality's Fire Department payroll.

IV. Special Disability Pension Option A Firefighter who is receiving any form of disability pension and whose Creditable Service plus years of disability equals 20 or more and who is age 50 or older may elect to retire from the Fire Department by submitting a written application to the Board. His/her lifetime retirement pension will be equal to the same amount he/she was entitled to as a disabled Firefighter as of the date he/she was removed from Municipality's payroll for disability. A Firefighter who exercises this option is entitled to the automatic 3% per annum increase in benefits.

If a Firefighter who is on any form of disability pension accumulates enough Creditable Service to be eligible for a pension (at least 10 years at age 60 or at least 20 years at age 50 or more), he/she may elect to permanently retire from the Fire Department by submitting a written application to the Board. The Firefighter would be entitled to a lifetime pension based on the Salary attached to the rank he/she held in the Fire Department as of the date of his/her election to retire. A Firefighter who exercises this option is entitled to the automatic 3% per annum increase in benefits.

V. Disability Pension Allowance Increase A Firefighter who is receiving a disability pension is entitled to receive an automatic increase effective January 1, 1974, and upon the attainment of age 60. At this date, the monthly pension is increased by 2% of the original monthly pension for each year the Firefighter was in receipt of monthly pension payments. Each subsequent January, the monthly pension is again increased by 2% of the original monthly pension amount. Effective January 1976, the rate of such increase was raised to 3% of the original monthly pension.

Brief Summary of Plan Provisions (Continued)

Death Benefits to Surviving Spouse or Dependents

I. Surviving Spouse's Benefit

If an active Firefighter dies while in the line of duty as a result of any injuries or if a Firefighter sustains injuries from which he/she thereafter dies, then the surviving spouse is entitled to a monthly pension equal to 100% of the monthly Salary attached to the rank the Firefighter held on his/her last day of service with the Fire Department. The benefit is payable to the surviving spouse for life.

If an active Firefighter dies as a result of any illness or accident unrelated to duty or if a Firefighter dies from any cause while receiving disability pension benefits, or if a Firefighter dies during his/her retirement (after 20 years of service), then his/her surviving spouse is entitled to a monthly pension equal to 100% of the monthly retirement pension earned by the deceased firefighter at the time of death. This benefit is payable to the surviving spouse for life. Previously, the surviving spouse was entitled to a monthly pension equal to 54% of the monthly salary attached to the rank the Firefighter held on his/her last day of service with the Fire Department.

Beginning January 1, 1999, the minimum amount payable under this provision is \$600.00 per month for both current and future surviving spouses. This minimum is increased to \$800.00 per month on January 1, 2000, \$1,000.00 per month on January 1, 2001, \$1,030.00 per month on July 1, 2004, \$1,060.90 per month on July 1, 2005, \$1,092.73 per month on July 1, 2006, \$1,125.51 per month on July 1, 2007, \$1,159.27 per month on July 1, 2008.

II. Dependent's Benefit

The dependent's benefit is applicable in the event of the death of the Firefighter under the conditions enumerated above for the surviving spouse's benefit. The guardian (spouse or otherwise) of any minor child (or children), including a child who had been conceived but not yet born, is entitled to a monthly benefit equal to 12% of the monthly Salary attached to the rank the Firefighter held on his/her last day of service with the Fire Department prior to his/her death. Such benefit is payable for each such child until the child attains age 18 or marries, if earlier.

If the deceased Firefighter leaves no surviving spouse or unmarried minor children under age 18, but leaves a dependent father or mother, each one is entitled to a monthly benefit equal to 18% of the monthly Salary attached to the rank the Firefighter held on his/her last day of service with the Fire Department.

Brief Summary of Plan Provisions (Continued)

Notes: (a) The aggregate above monthly death benefits are not to exceed 75% of the monthly salary of the deceased Firefighter.

(b) Adopted children are entitled to the same benefits as provided for natural children, if adopted before the Firefighter attained age 50.

(c) If the Firefighter leaves no surviving spouse, unmarried children under the age of 18 or dependent father or mother, the Board will refund to his/her estate the amount of his/her accumulated contributions, less any amount of pension payments made to the deceased Firefighter while he/she was living.

Termination of Employment Benefits.

I. Refund of Employee Contributions

A Firefighter who has less than 20 Years of Service and who resigns or is discharged (and has not received any disability payments), is entitled to a refund of his/her total amount contributed to the fund during his/her period of service. If the Firefighter should be subsequently re-employed, he/she must repay to the fund the amount of refund which he/she received before commencing service. When repayment is made, the Firefighter will receive credit for the previous Years of Service for which he/she received his/her refund.

II. Re-entry Into Service

- If a retired Firefighter (who is receiving pension benefits) re-enters active service, his/her pension benefits will cease while in active service. If he/she again retires, his/her monthly payments will resume in the same amount as he/she had received as a pensioner.
- If a "deferred" pensioner reenters service and remains in service for less than three years, and then again retires or is discharged, his/her pension will be based on the salary attached to the rank he/she held in the Fire Department at the date of his/her earlier retirement. Conversely, if the pensioner re-enters service and remains in service for three or more years, and again retires or is discharged, his/her pension will be based on the salary attached to the rank he/she held in the Fire Department at the date of his/her last retirement.

Brief Summary of Plan Provisions (Continued)

Notwithstanding the foregoing, if a pensioner or deferred pensioner returns to active service and is subsequently injured (and the injury is not relate to an injury for which the member was previously receiving benefits), the 3-year requirement does not apply in order for the member to receive his/her pension based on his/her rate of pay at the time of his/her new injury.

Financing of Pension Benefits

Pension benefits are to be funded by "employee" deductions from wages and salaries of Firefighters and by a property tax levied by the Municipality. The amount derived from these two sources should equal the sum sufficient to meet the annual actuarial requirements of the pension fund as stated below:

- (1) Provide actuarial reserves for the pensions and benefits earned by the Firefighters during the year (the reserve requirement is to be computed at a rate of not less than 17.5% of the salaries and wages earned by the Firefighters during the year),

And

- (1) In a municipality that has a reserve less than the actuarial requirements of the fund, the Board of the Pension Fund shall designate the proportionate amount needed annually to insure the accumulation of such actuarial reserve over a period of 35 years subsequent to January 1, 2011, in the case of pension funds in operation on that date.

The minimum funding requirements under P.A. 96-1495 are disclosed on the following page.

Administration

The Firefighters' Pension Fund is administered by a Board of Trustees located in each municipality maintaining a Pension Fund for its Firefighters. Its duties are: to control and manage the pension fund, to enforce the collection of the contributions, to hear and determine applications for pensions, to authorize payment of pension, to establish rules, to pay expenses, to invest funds and to keep records.

Brief Summary of Plan Provisions (Continued)

Benefits Under P.A. 96-1495

Under P.A. 96-1495, members of the City of Joliet Firefighters' Pension Fund hired after December 31, 2010, are eligible for the following tier-two benefits:

- Minimum retirement eligibility at age 55 with 10 years of service with annuity based on accrual rate of 2.5 percent, subject to a maximum of 75 percent.
- Minimum retirement eligibility at age 50 with 10 years of service with annuity based on accrual rate of 2.5 percent, reduced by ½ of a percent per month for retirement prior to age 55, subject to a maximum of 75 percent.
- Final average salary based on 96 consecutive months within last 120 months.
- Annual salary capped at \$106,800, indexed annually at lesser of 3.0 percent and 50 percent of CPI-U. For the January 1, 2015, valuation, annual salary is capped at \$111,571.63.
- COLA equal to lesser of 3.0 percent and 50 percent of CPI-U, commencing at age 60, with no cap, applied to originally granted retirement annuity.
- Widow benefits at 66-2/3 percent of retiree's benefit.
- Widow COLAs equal to the lesser of 3.0 percent and 50 percent of CPI-U, commencing when the survivor reaches age 60 and applied to originally granted retirement annuity.

Minimum Funding Requirements under P.A. 96-1495

P.A. 96-1495 includes the following changes to the statutory funding requirements:

- Employer contribution (combined with members contributions and other fund revenue) produces 90 percent funding by the end of fiscal year 2040.
- Contributions based on open group projection and level percent of pay financing.
- Actuarial liabilities based on projected unit credit cost method.
- Assets marked to market at March 30, 2011. For fiscal years after March 30, 2011, actuarial value of assets based on 5-year smoothing.

If the City does not make the statutorily required contributions, then the State, starting in FY 2016, could withhold State grants to the City, and directly deposit the withheld funds into the City of Joliet Firefighters' Pension Fund. The withheld funds are limited to 33 percent of total State grants to the City in FY 2016, 67 percent in FY 2017 and 100 percent on and after FY 2018.

The contribution determined in accordance with P.A. 96-1495 serves as a minimum contribution requirement. The funding policy adopted for this valuation exceeds the minimum contribution established under this Public Act.

Active Members as of January 1, 2017 By Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date									Totals		
	0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 35	Totals	Valuation	Payroll
Under 20										0	\$	0
20-24		1								1		83,016
25-29	3	4								7		549,228
30-34		11	8	6						25		2,463,845
35-39		5	4	31	9					49		5,136,035
40-44			4	25	12	6				47		5,186,469
45-49				7	17	14	1			39		4,589,827
50-54					6	10	8			24		3,003,046
55-59					1		6	3		10		1,321,273
60-64										0		0
65-69										0		0
Over 70										0		0
Total	3	21	16	69	45	30	15	3	0	202		\$22,332,739

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

Age: 42.4 years
Service: 14.7 years
Annual Pay: \$110,558

Development of Actuarial (Market-Related) Value of Assets

Year Ending December 31,	2016	2017	2018	2019
Beginning of Year:				
(1) Market Value of Assets	\$ 118,213,078			
(2) Actuarial Value of Assets Including Contribution Receivable	136,648,213			
(3) Actuarial Value of Assets Excluding Contribution Receivable	124,864,863			
End of Year:				
(4) Market Value of Assets	131,309,627			
(5) Contributions and Disbursements				
(5a) City Contributions	12,332,156			
(5b) Member Contributions	2,170,300			
(5c) Miscellaneous Receipts	13,623			
(5d) Benefit Payouts & Refunds	(10,163,038)			
(5e) Administrative Expenses	<u>(82,021)</u>			
(5f) Net of Contributions and Disbursements	4,271,020			
(6) Total Investment Income				
=(4)-(1)-(5f)	8,825,529			
(7) Projected Rate of Return	6.75%			
(8) Projected Investment Income				
=(1)x(7)+([1+(7)] ^{.5} -1)x(5f)	8,121,176			
(9) Investment Income in Excess of Projected Income	704,353			
(10) Excess Investment Income Recognized				
This Year (4-year recognition)				
(10a) From This Year	\$ 176,088			
(10b) From One Year Ago	(2,237,443)	\$ 176,088		
(10c) From Two Years Ago	(691,963)	(2,237,443)	\$ 176,088	
(10d) From Three Years Ago	1,444,469	(691,961)	(2,237,444)	\$ 176,089
(10e) Total Recognized Investment Gain/(Loss)	<u>(1,308,849)</u>	<u>(2,753,316)</u>	<u>(2,061,356)</u>	<u>176,089</u>
(11) Change in Actuarial Value of Assets				
=(5f)+(8)+(10e)	11,083,347			
End of Year:				
(4) Market Value of Assets	\$ 131,309,627			
(12) Actuarial Value of Assets Excluding Contribution Receivable = (3)+(11)	\$ 135,948,210			
(13) 2017 Tax Year Levy (i.e., the 2016 Plan Year Contributions)	\$ 12,359,863			
(14) Interest Adjustment on item (13) to 01/01/2017	\$ (397,149)			
(15) Actuarial Value of Plan Assets at 01/01/2017 = (12)+(13)+(14)	\$ 147,910,924			

The actuarial value of assets is determined by adjusting the market value of assets to reflect the investment gains and losses (the difference between the actual investment return and the expected investment return) during each of the last four years at the rate of 25 percent per year. The contribution receivable for 2017 tax year levy is assumed to be collected and deposited in the Pension Fund on July 1, 2017.

SECTION D

ACTUARIAL VALUATION PROCEDURES

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date was determined using the **individual entry-age actuarial cost method** having the following characteristics:

- 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 benefit at the time of retirement; and
- Each annual normal cost is a constant percentage of the member's year-by-year projected covered pay.

Financing of Unfunded Actuarial Accrued Liabilities. Unfunded actuarial accrued liabilities were amortized by level (principal and interest combined) percent of payroll contributions over 27 future years.

Actuarial Value of Pension Plan Assets. The current market value of assets (including discounted contributions due for prior Plan Years and not received as of the valuation date) is reduced (increased) for the current year and each of two succeeding years, by a portion of the gain/(loss) in market value during the prior year. Such gain/(loss) is determined as the excess/(deficit) of the current market value of assets over the market value of assets as of the prior year, increased to reflect interest at the actuarial rate and adjusted to reflect contributions and benefit payments during the prior year. The portion of such gain/(loss) by which the current market value of assets is reduced (increased) shall be 75% in the current year; 50% in the first succeeding year and 25% in the second succeeding year.

Actuarial Assumptions in the Actuarial Valuation Process

The contribution and benefit values of the Fund are calculated by applying actuarial assumptions to the benefit provisions and census information furnished, using the actuarial cost method described on the previous page.

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

- Long-term rates of investment return to be generated by the assets of the Fund;
- Patterns of pay increases to members;
- Rates of mortality among members, retirees and beneficiaries;
- Rates of withdrawal of active members;
- Rates of disability among members; and
- The age patterns of actual retirement.

In a valuation, the monetary effect of each assumption is calculated for as long as a present covered person survives; a period of time which can be as long as a century.

Actual experience of the Fund will not coincide exactly with assumed experience. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations).

The actuarial assumptions and methods used in this actuarial valuation were recommended by GRS, in the report *2016 Experience Review for the Years January 1, 2010, to January 1, 2015*, and adopted for use beginning with the January 1, 2017, actuarial valuation. The change in actuarial assumptions increased actuarial liabilities by \$19,076,540. The changes made to the actuarial assumptions are summarized below, and the actuarial assumptions are fully disclosed thereafter.

- **Price inflation:** The rate of price inflation was reduced from 3.00 percent to 2.75 percent.
- **Investment return:** The investment return assumption, net of investment expenses, compounded annually, was reduced from 6.75 percent to 6.50 percent. We recommend annually monitoring the assumption for continued reasonableness in the future.
- **General wage increase and payroll growth assumption:** The general payroll growth assumption was reduced from 4.00 percent to 3.50 percent, which reflects an underlying general price inflation assumption of 2.75 percent.
- **Salary increase:** The salary increase assumption was lowered from its current level to better reflect recent experience.
- **Retirement rates:** To better reflect observed experience the 100 percent assumed retirement age was decreased from 65 to 62 and overall retirement rates were decreased.
- **Turnover rates:** Modified overall rates to better reflect observed experience.
- **Disability rates:** Increased overall rates to better reflect observed experience

Actuarial Assumptions in the Actuarial Valuation Process (Continued)

- **Mortality rates:** Mortality rates were changed from the 1994 Group Annuity Mortality table, sex distinct, to the RP-2014 Blue Collar Healthy Annuitant Mortality table, sex distinct, with projected generational mortality improvements using the MP-2015 two-dimensional mortality improvement scale, for the post-retirement mortality assumption. No adjustment is made for post-disablement mortality. The RP-2014 Blue Collar Employee Mortality table, sex distinct, was used for the pre-retirement mortality assumption. This new mortality table is a move from a single dimensional age-based table to a two-dimensional table, where the year a person was born also influence their mortality rate.

Actuarial Valuation Assumptions

The assumed rate of investment return used was 6.50 percent per year, net of expenses, compounded annually.

The assumed rate of inflation used was 2.75 percent per year, compounded annually.

This assumption serves as the basis for the determination of Tier Two pay cap growth and annual increases that are equal to the lesser of 3.0 percent or 50 percent of the annual change in the consumer price index-u during the 12 months ending with September preceding November 1 of each year.

The marriage assumption for active and retired participants was 80.0 percent; i.e., 80.0 percent are assumed to be married.

The spouse's age assumption for female spouses is three years younger than the male spouse.

The mortality table used to measure post-retirement mortality is the RP-2014 Blue Collar Healthy Annuitant Mortality table, sex distinct, with generational mortality improvements using the MP-2015 two-dimensional mortality improvement scales recently released by the SOA. This assumption provides a margin for mortality improvements. No adjustment was made for post-disablement mortality.

The mortality table used to measure pre-retirement mortality is the RP-2014 Blue Collar Employee Mortality table, sex distinct, with generational mortality improvements using the MP-2015 two-dimensional mortality improvement scales recently released by the SOA to reflect that experience shows active members having lower mortality rates than retirees of the same age.

Rates of separation from active membership are represented by the following table (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 terminating employment.

Years of Service	Sample Employee Withdrawal	
	Rate Per 1,000 Employees	
	Males	Females
0	14.0	14.0
5	9.0	9.0
10	6.0	6.0
15	3.0	3.0
20	2.0	2.0
25	1.0	1.0
30 and Over	0.0	0.0

The rates of salary increase used for individual members are in accordance with the following table, which includes a wage inflation assumption of 4.00 percent. This assumption is used to project a member's current salary to the salaries at the time upon which benefit amounts will be based.

Salary Increase Assumptions For an Individual Member	
Years of Service	Increase
1	35.00%
2	17.00%
3	13.00%
4	4.50%
5	4.50%
6	4.50%
7	4.50%
8	4.50%
9	4.50%
10	4.50%
11	4.50%
12	4.50%
>=13	4.00%

The underlying salary increase assumption is based on a wage inflation assumption of 3.50 percent, comprised of 2.75 percent for general inflation plus 0.75 percent for general merit and productivity increases.

Sample rates of disability are as follows:

Employee Disablement Rate Per 1,000 Employees		
Age	Male	Female
25	1.0	1.0
30	1.0	1.0
35	3.2	3.2
40	5.5	5.5
45	8.1	8.1
50	15.8	15.8
55	23.6	23.6
60	35.0	35.0
62	39.6	39.6

Actuarial Valuation Assumptions (Continued)

Probabilities of retirement for members eligible to retire during the next year were as follows:

Rates of Retirement			
Age	Rate	Age	Rate
50	5.0 %	60	50.0 %
51	5.0	61	50.0
52	5.0	62	100.0
53	7.0		
54	15.0		
55	15.0		
56	20.0		
57	30.0		
58	30.0		
59	50.0		

Administrative expenses. For projection purposes, administrative expenses are based on current administrative expenses and are expected to increase in relation to the projected capped payroll.

Decrement timing. All decrements are assumed to occur mid-year.

Decrement relativity. Decrement rates are used directly from the experience review, without adjustment for multiple decrement table effects.

Decrement operation. Turnover decrements do not operate after member reaches retirement eligibility.

Eligibility testing. Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.