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## **Wichita Employees' Retirement System**

**Actuarial Valuation as of December 31, 2015**





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April 11, 2016

The Board of Trustees  
Wichita Employees' Retirement System  
City Hall, 12<sup>th</sup> Floor  
455 N. Main Street  
Wichita, KS 67202

Dear Members of the Board:

In accordance with your request, we have completed an actuarial valuation of the Wichita Employees' Retirement System as of December 31, 2015. The major findings of the valuation are contained in this report, including the employer contribution rate for fiscal year 2017. The plan provisions and the actuarial assumptions and methods are the same as the prior valuation.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the System's staff. This information includes, but is not limited to, plan provisions, member data, and financial information. We found this information to be reasonably consistent and comparable with information for the last valuation. The valuation results depend on the integrity of the data provided. If any of this information is inaccurate or incomplete, our valuation results may be different and our calculations may need to be revised.

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; 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 System's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

Actuarial computations presented in this report are for purposes of determining the actuarial contribution rates for funding the System. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes. For example, actuarial computations for purposes of fulfilling financial accounting requirements for the System under Governmental Accounting Standard No. 67 are provided in a separate report.

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The consultants who worked on this assignment are pension actuaries. CMC's advice is not intended to be a substitute for qualified legal or accounting counsel.

This is to certify that the independent consulting actuaries are members of the American Academy of Actuaries and have experience in performing valuations for public retirement plans, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement plan and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System. The Board of Trustees has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix C.

We respectfully submit the following report and look forward to discussing it with you.

Sincerely,

A handwritten signature in blue ink that reads 'Patrice Beckham'.

Patrice A. Beckham, FSA, EA, FCA, MAAA  
Principal and Consulting Actuary

A handwritten signature in blue ink that reads 'Brent A. Banister'.

Brent A. Banister, PhD, FSA, EA, FCA, MAAA  
Chief Pension Actuary



## SECTION I: EXECUTIVE SUMMARY

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This report presents the results of the December 31, 2015 actuarial valuation of the Wichita Employees' Retirement System. The primary purposes of performing a valuation are to:

- estimate the liabilities for the benefits provided by the System;
- determine the employer contribution rates required to fund the System on an actuarial basis;
- disclose certain asset and liability measures as of the valuation date;
- monitor any deviation between actual plan experience and experience projected by the actuarial assumptions, so that recommendations for assumption changes can be made when appropriate; and
- analyze and report on any significant trends in contributions, assets and liabilities over the past several years.

There were no changes to the actuarial assumptions and methods or the benefit provisions from the last valuation.

The System had an unfunded actuarial liability of \$30.1 million in the December 31, 2014 valuation, which has increased to \$37.4 million in the December 31, 2015 valuation. A detailed analysis of the change in the unfunded actuarial liability from December 31, 2014 to December 31, 2015 is shown on page 3. The actuarial valuation results provide a “snapshot” view of the System’s financial condition on December 31, 2015. The valuation results reflect net unfavorable experience for the past plan year as demonstrated by an unfunded actuarial liability that was higher than expected based on the actuarial assumptions used in the December 31, 2014 actuarial valuation. Unfavorable experience on the actuarial value of assets resulted in an actuarial loss of \$9.1 million and experience on liabilities resulted in a gain of \$0.7 million for a net actuarial loss of \$8.4 million.

The System uses an asset smoothing method in the valuation process. As a result, the System’s funded status and the actuarial contribution rate are based on the actuarial (smoothed) value of assets – not the market value. The investment return on the market value of assets during 2015 was -0.1%, which is significantly less than the 7.75% assumption. As a result of the deferred (unrecognized) asset gains, the rate of return on the actuarial value of assets was 6.1%. The actuarial (smoothed) value of assets is greater than the market value by \$27.3 million as of December 31, 2015. Actual returns over the next few years will determine if, and how, the \$27.3 million of deferred investment loss will be recognized. For example, a return of around 13% on the market value of assets in 2016 would eliminate the deferred investment loss and result in no gain or loss on investment experience for the year.

In the following pages, changes in the assets, liabilities, and contributions of the System over the last year are discussed in more detail.

### ASSETS

As of December 31, 2015, the System had total assets of \$541.2 million when measured on a market value basis. This was a decrease of \$25.6 million from the December 31, 2014 figure of \$566.8 million. The market value of assets is not used directly in the calculation of the City’s contribution rate. An asset valuation method, which smoothes the effect of market fluctuations, is used to determine the value of assets used in the valuation, called the “actuarial value of assets”. The actuarial value of assets is equal to the expected value (calculated using the actuarial assumed rate of 7.75%) plus 25% of the difference between the actual market value and expected value. See Table 3 for a detailed development of the actuarial value of assets. The rate of return on the actuarial value of assets was 6.1%. Due to deferred investment experience, the actuarial value of assets exceeds the market value by \$27.3 million.

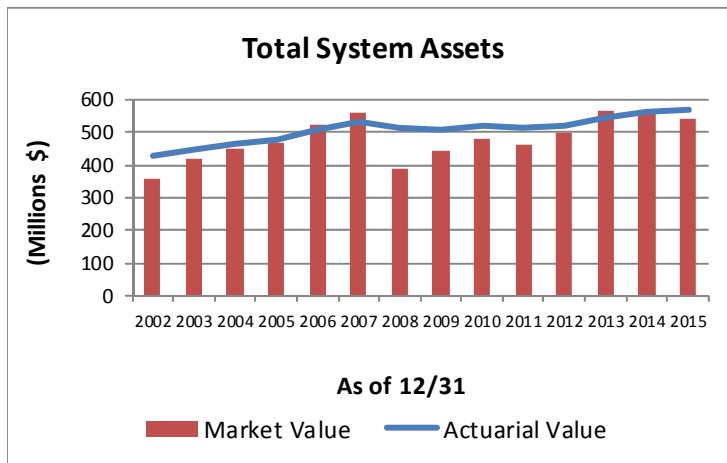


**SECTION I: EXECUTIVE SUMMARY**

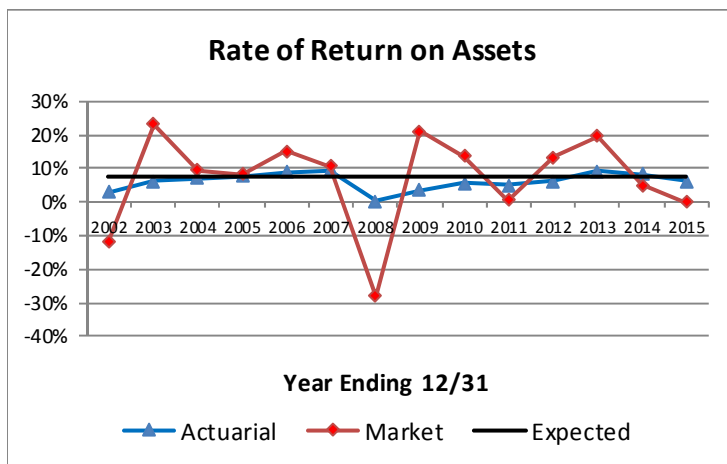
The components of the change in the market and actuarial value of assets for the System (in millions) are set forth below:

	Market Value (\$M)	Actuarial Value (\$M)
Assets, December 31, 2014	\$566.8	\$560.0
- City and Member Contributions	12.6	12.6
- Benefit Payments and Refunds	(37.1)	(37.1)
- Transfers	(0.5)	(0.5)
- Investment Income (net of expenses)	(0.6)	33.5
Assets, December 31, 2015	\$541.2	\$568.5

The unrecognized investment loss represents about 5% of the market value of assets. Unless offset by future investment gains or other favorable experience, the recognition of the \$27.3 million deferred loss is expected to have a negative impact on the future funded ratio and actuarial contribution requirement. If the deferred loss was recognized immediately in the actuarial value of assets, the funded percentage would decrease from 94% to 89% and the actuarially determined contribution rate for the City would increase from 12.3% to 14.8% of payroll.



*The actuarial value of assets has both been greater than and less than the market value of assets during this period, which is expected when using a smoothing method.*



*The rate of return on the actuarial value of assets has been less volatile than the market value return, which is the main reason for using an asset smoothing method.*



**SECTION I: EXECUTIVE SUMMARY**

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**LIABILITIES**

The actuarial liability is that portion of the present value of future benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and asset values at the same date is referred to as the unfunded actuarial liability (UAL), or (surplus) if the asset value exceeds the actuarial liability. The unfunded actuarial liability will be reduced if the employer’s contributions exceed the employer’s normal cost for the year, after allowing for interest earned on the previous balance of the unfunded actuarial liability. Benefit improvements, experience gains and losses, and changes in actuarial assumptions and procedures will also impact the total actuarial liability and the unfunded portion thereof.

The Actuarial Liability and Unfunded Actuarial Liability for the System as of December 31, 2015 are:

Actuarial Liability	\$605,854,694
Actuarial Value of Assets	<u>568,464,178</u>
Unfunded Actuarial Liability/(Surplus)	\$ 37,390,516

Between December 31, 2014 and December 31, 2015, the change in the unfunded actuarial liability for the System was as follows (in millions):

<b>Change in Unfunded Actuarial Liability</b>	<b>(\$M)</b>
UAL, December 31, 2014	\$30.1
• Expected change in UAL	0.1
• Contributions more than the actuarial rate	0.0
• Investment experience	9.1
• Liability experience	(0.7)
• Other experience	(1.2)
• Change in actuarial assumptions	0.0
UAL, December 31, 2015	\$37.4

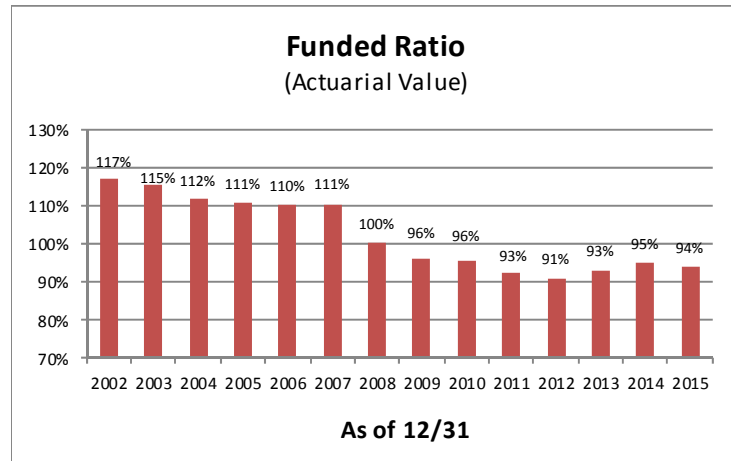
The experience loss for the 2015 plan year of \$8.4 million reflects the combined impact of an actuarial loss of \$9.1 million on System assets (actuarial value) and an actuarial gain of \$0.7 million on System liabilities.

Analysis of the unfunded actuarial liability strictly as a dollar amount can be misleading. Another way to evaluate the unfunded actuarial liability and the progress made in its funding is to track the funded status, the ratio of the actuarial value of assets to the actuarial liability. This information for recent years is shown below (in millions). Longer term historical information is shown in the graph following the chart.



## SECTION I: EXECUTIVE SUMMARY

	12/31/2011	12/31/2012	12/31/2013	12/31/2014	12/31/2015
Actuarial Liability (\$M)	\$555.2	\$571.8	\$582.4	\$590.1	\$605.9
Actuarial Value of Assets (\$M)	\$513.3	\$520.3	\$542.2	\$560.0	\$568.5
Funded Ratio (Actuarial Value)	92.5%	91.0%	93.1%	94.9%	93.8%
Funded Ratio (Market Value)	82.6%	86.5%	96.9%	96.1%	89.3%



*The funded ratio has generally declined over this period due to various reasons including assumption changes and more significantly, investment experience. Absent investment returns above the 7.75% assumption in future years, the deferred loss will be recognized and the funded ratio will decrease moving toward the market value percentage shown in the table above.*

As mentioned earlier in this report, due to the asset smoothing method there is currently a \$27.3 million difference between the actuarial value and the market value of assets. To the extent there is not favorable investment experience to offset the deferred loss, it will be recognized in future years and the System's funded status will decrease. The System's funded status will continue to be heavily dependent on future investment experience.

### CONTRIBUTION RATES

Generally, contributions to the System consist of:

- A "normal cost" for the portion of projected liabilities allocated to service of members during the year following the valuation date by the actuarial cost method, and
- An "unfunded actuarial liability or (surplus) contribution" for the excess of the portion of projected liabilities allocated to service to date over the actuarial value of assets.

Contribution rates are computed with the objective of developing costs that are level as a percentage of covered payroll. The contribution rate for fiscal year 2017 is based on the December 31, 2015 actuarial valuation results.

As of December 31, 2015, the actuarial liability exceeds the actuarial value of assets so an unfunded actuarial liability (UAL) exists. When amortized over a rolling 20-year period, in accordance with the funding policy, the resulting contribution is 3.4% of pay. The City's contribution rate is the sum of employer normal cost rate and the UAL amortization contribution. This valuation indicates the City's contribution should be 12.3% of pay (8.9% employer normal cost rate plus 3.4% UAL contribution).

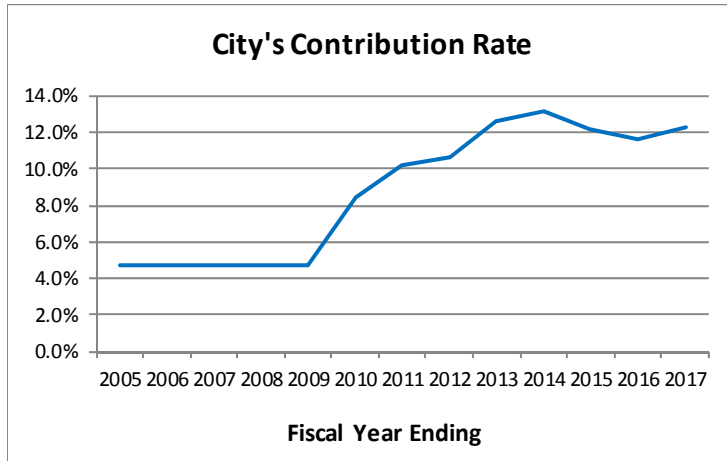




## SECTION I: EXECUTIVE SUMMARY

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A summary of the City's historical contribution rate for the System is shown below:



*After increasing from 2010 through 2014, the City's contribution rate has stabilized in the last few years. The City's contribution rate is 11.6% and 12.3 % for the fiscal years ending 12/31/2016 and 12/31/2017, respectively.*

### COMMENTS

The System does not use the actual market value of assets in developing the actuarial contribution rate, but utilizes an asset valuation method to smooth out the peaks and valleys in investment returns from year to year. Under the asset valuation method, the actuarial value of assets is determined as 75% of the expected value (using the actuarial assumed rate of return) and 25% of the actual market value. The net return on the market value of assets for 2015 was -0.1%. However, due to deferred assets gains the return on the actuarial value of assets was 6.1%. Because the return on the actuarial value of assets is less than 7.75% assumed rate, the System experienced an actuarial loss on assets of \$9.1 million. This loss and the actuarial gain on liabilities of \$0.7 million resulted in a net actuarial loss of \$8.4 million.

The deferred investment loss (market value less actuarial value of assets) is \$27.3 million as of December 31, 2015. Absent investment gains in future years, the deferred investment loss of \$27.3 million will eventually be reflected in the actuarial value of assets in future years. While the use of an asset smoothing method is a common procedure for public retirement systems, it is important to identify the potential impact of the deferred investment experience. This is accomplished by comparing the key valuation results from the December 31, 2015 actuarial valuation using both the actuarial and market value of assets (see table on next page).



## SECTION I: EXECUTIVE SUMMARY

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	Using Actuarial Value of Assets	Using Market Value of Assets
Actuarial Liability	\$605,854,694	\$605,854,694
Asset Value	568,464,178	541,247,503
Unfunded Actuarial Liability	37,390,516	64,607,191
Funded Ratio	93.8%	89.3%
Normal Cost Rate	13.6%	13.6%
UAL Contribution Rate	<u>3.4%</u>	<u>5.9%</u>
Total Contribution Rate	17.0%	19.5%
Employee Contribution Rate	<u>(4.7%)</u>	<u>(4.7%)</u>
Employer Contribution Rate	12.3%	14.8%

The actuarial loss resulting primarily from investment experience in 2015 was the main driver in increasing the City's contribution rate from 11.6% in the December 31, 2014 valuation to 12.3% in this valuation. The actuarial contribution rate to be paid by the City has been, and will continue to be, heavily impacted by investment returns from year to year. Despite the use of an asset smoothing method, actual returns that are significantly different from the 7.75% assumption tend to create some level of volatility in the City's contribution rate.

**SECTION I: EXECUTIVE SUMMARY****SUMMARY OF PRINCIPAL RESULTS**

<b>1. PARTICIPANT DATA</b>	<u>12/31/2015</u> <u>Valuation</u>	<u>12/31/2014</u> <u>Valuation</u>	<u>%</u> <u>Change</u>
Number of:			
Active Members			
Plan 2	935	943	(0.8)%
Plan 3 (excluding Plan 3b)	539	520	3.7%
Total	<u>1,474</u>	<u>1,463</u>	0.8%
DROP Members			
Plan 1	5	8	(37.5)%
Plan 2	53	46	15.2%
Total	<u>58</u>	<u>54</u>	7.4%
Retired Members and Beneficiaries	1,380	1,341	2.9%
Inactive Vested Members	<u>142</u>	<u>147</u>	(3.4)%
Total Members	3,054	3,005	1.6%
Annual Projected Payroll (Including DROP)			
Plan 1	\$ 298,768	\$ 373,381	(20.0)%
Plan 2	54,188,621	53,011,068	2.2%
Plan 3	23,292,285	21,639,627	7.6%
Total	<u>\$ 77,779,674</u>	<u>\$ 75,024,076</u>	3.7%
Annual Retirement Payments for Retired Members and Beneficiaries	\$ 37,700,484	\$ 36,079,608	4.5%
<b>2. ASSETS AND LIABILITIES</b>			
Total Actuarial Liability	\$ 605,854,694	\$ 590,115,082	2.7%
Market Value of Assets	541,247,503	566,807,293	(4.5)%
Actuarial Value of Assets	568,464,178	560,031,764	1.5%
Unfunded Actuarial Liability (UAL)	\$ 37,390,516	\$ 30,083,318	24.3%
Funded Ratio	93.8%	94.9%	(1.2)%
<b>3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL</b>			
Normal Cost	13.6%	13.4%	1.5%
Member Financed	(4.7)%	(4.7)%	0.0%
Employer Normal Cost	<u>8.9%</u>	<u>8.7%</u>	2.3%
Amortization of Unfunded Actuarial Liability or (Surplus)	<u>3.4%</u>	<u>2.9%</u>	17.2%
Employer Contribution Rate	12.3%	11.6%	6.0%



## SECTION II: SCOPE OF THE REPORT

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This report presents the actuarial valuation of the Wichita Employees' Retirement System as of December 31, 2015. This valuation was prepared at the request of the System's Board of Trustees. The report is based on plan provisions, actuarial assumptions and actuarial methods that are unchanged from last year.

Please pay particular attention to our cover letter, where the guidelines employed in the preparation of this report are outlined. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings resulting from this valuation is presented in the previous section. Section III describes the assets and investment experience of the System. Sections IV and V describe how the obligations of the System are to be met under the actuarial cost method in use. Section VI includes additional information regarding the System's funding history.

This report includes several appendices:

- Appendix A Schedules of valuation data classified by various categories of members.
- Appendix B A summary of the current benefit structure, as determined by the provisions of governing law on the valuation date.
- Appendix C A summary of the actuarial methods and assumptions used to estimate liabilities and determine contribution rates.
- Appendix D A glossary of actuarial terms.



## **SECTION III: ASSETS**

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In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is December 31, 2015. On that date, the assets available for the payment of benefits are appraised. The assets are compared with the liabilities of the System. The actuarial process then leads to a method of determining the contributions needed by members and the employer in the future to balance the System assets and liabilities.

### **MARKET VALUE OF ASSETS**

The current market value represents the “snapshot” or “cash-out” value of System assets as of the valuation date. In addition, the market value of assets provides a basis for measuring investment performance from time to time. On December 31, 2015, the market value of assets for the System was \$541 million. Table 1 is a comparison, at market values, of System assets as of December 31, 2015, and December 31, 2014, in total and by investment category. Table 2 summarizes the change in the market value of assets from December 31, 2014 to December 31, 2015.

### **ACTUARIAL VALUE OF ASSETS**

Neither the market value of assets, representing a “cash-out” value of System assets, nor the book values of assets, representing the cost of investments, may be the best measure of the System’s ongoing ability to meet its obligations.

To arrive at a suitable value for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens swings in the market value while still indirectly recognizing market values. This methodology, first adopted for the December 31, 2002 valuation, smoothes market experience by recognizing 25% of the difference between the expected value (based on the actuarial assumption) and the actual market value. Table 3 shows the development of the actuarial value of assets (AVA) as of December 31, 2015.

**SECTION III: ASSETS**

**TABLE 1**  
**Analysis of Net Assets at Market Value**

	As of December 31, 2015		As of December 31, 2014	
	<u>Amount</u> <u>(\$ Millions)</u>	<u>% of</u> <u>Total</u>	<u>Amount</u> <u>(\$ Millions)</u>	<u>% of</u> <u>Total</u>
Cash and Equivalents	\$ 0.2	0.0 %	\$ 0.3	0.1 %
Government Securities	29.7	5.6	37.5	6.8
Corporate Debt	44.3	8.4	43.1	7.8
Mortgage Backed Securities	31.6	6.0	36.5	6.6
Global Fixed Income	22.5	4.3	0.0	0.0
Pooled Funds	142.0	26.9	148.1	26.8
Domestic Equity	161.8	30.6	204.2	37.0
International Equity	48.4	9.2	47.4	8.6
Real Estate	31.1	5.9	30.2	5.5
Timber	18.8	3.6	11.1	2.0
Securities Lending Collateral Pool	41.7	7.9	34.5	6.2
Other	0.0	0.0	0.0	0.0
Receivables	21.7	4.1	7.3	1.3
Liabilities	(65.6)	(12.5)	(48.0)	(8.7)
<b>Total Plans 1 and 2</b>	<u>\$ 528.2</u>	<u>100.0 %</u>	<u>\$ 552.2</u>	<u>100.0 %</u>
 <b><u>Plan 3 Assets</u></b>				
Members Electing to Stay in Plan 3 (3b)	\$ 6.6		\$ 6.6	
Other Plan 3 Members	13.0		14.6	
<b>Total Plan 3 Assets</b>	<u>19.6</u>		<u>21.2</u>	
 <b>Net Assets (Plans 1, 2, 3, and 3b)</b>	 \$ 547.8		 \$ 573.4	

**SECTION III: ASSETS****TABLE 2****Summary of Changes in Net Assets  
During Year Ended December 31, 2015**

(Market Value)

	<u>Plans 1 &amp; 2</u>	<u>Plan 3*</u>	<u>Total</u>
1. Market Value of Assets as of December 31, 2014	\$ 552,229,197	\$ 14,578,096	\$ 566,807,293
2. Adjustment to Tie to Audited Financial Statements	\$ 3,627	\$ 2,958	\$ 6,585
3. Contributions:			
a. Employee	\$ 2,557,105	\$ 1,016,921	\$ 3,574,026
b. Employer	8,014,542	1,016,921	9,031,463
c. Transfers	2,653,949	(3,119,120)	(465,171)
d. Total	\$ 13,225,596	\$ (1,085,278)	\$ 12,140,318
4. Investment Income:			
a. Interest and Dividends	\$ 11,933,346	\$ 303,696	\$ 12,237,042
b. Net Appreciation (Depreciation) in Fair Value	(9,272,971)	(240,170)	(9,513,141)
c. Commission Recapture	11,748	297	12,045
d. Net Securities Lending Income	141,812	3,604	145,416
e. Investment Expenses	(2,864,209)	(80,599)	(2,944,808)
f. Net Investment Income (Loss)	\$ (50,274)	\$ (13,172)	\$ (63,446)
5. Expenditures:			
a. Refunds of Member Contributions	\$ 472,535	\$ 394,339	\$ 866,874
b. Benefits Paid:			
(1) Pension and Death Benefits	35,337,344	0	35,337,344
(2) DROP Payments	885,185	0	885,185
c. Administrative Expenses	486,330	67,514	553,844
d. Total	\$ 37,181,394	\$ 461,853	\$ 37,643,247
6. Net Change [3(d) + 4(f) - 5(d)]	\$ (24,006,072)	\$ (1,560,303)	\$ (25,566,375)
7. Market Value of Assets as of December 31, 2015 (1) + (2) + (6)	\$ 528,226,752	\$ 13,020,751	\$ 541,247,503

\* Excludes assets for Plan 3b members. The December 31, 2015 market value of the assets for this group was \$6,608,761.



**SECTION III: ASSETS**

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**TABLE 3**

**Development of Actuarial Value of Assets  
as of December 31, 2015**

	<u>Plans 1 &amp; 2</u>	<u>Plan 3*</u>	<u>Total</u>
1. Actuarial Value of Assets as of December 31, 2014	\$ 545,529,937	\$ 14,501,827	\$ 560,031,764
2. Actual Contributions/Disbursements			
a. Contributions	\$ 10,571,647	\$ 2,033,842	\$ 12,605,489
b. Transfers	2,653,949	(3,119,120)	(465,171)
c. Benefit Payments and Refunds	(36,695,064)	(394,339)	(37,089,403)
d. Net	\$ (23,469,468)	\$ (1,479,617)	\$ (24,949,085)
3. Expected Value of Assets as of December 31, 2015 [(1) * 1.0775] + [2(d) * (1.0775) <sup>-5</sup> ]	\$ 563,446,566	\$ 14,089,836	\$ 577,536,402
4. Market Value of Assets as of December 31, 2015	\$ 528,226,752	\$ 13,020,751	\$ 541,247,503
5. Difference Between Actual and Expected Values	\$ (35,219,814)	\$ (1,069,085)	\$ (36,288,899)
6. Initial Actuarial Value of Assets (3) + [(5) * 0.25]	\$ 554,641,613	\$ 13,822,565	\$ 568,464,178
7. Corridor for Actuarial Value of Assets			
a. 80% of Market Value of Assets	\$ 422,581,402	\$ 10,416,601	\$ 432,998,002
b. 120% of Market Value of Assets	633,872,102	15,624,901	649,497,004
8. Actuarial Value of Assets as of December 31, 2015	\$ 554,641,613	\$ 13,822,565	\$ 568,464,178
9. Actuarial Value of Assets Divided by Market Value of Assets	105.0%	106.2%	105.0%
10. Market Value of Assets Less Actuarial Value of Assets	\$ (26,414,861)	\$ (801,814)	\$ (27,216,675)

\* Excludes Plan 3b





## **SECTION IV: SYSTEM LIABILITIES**

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In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of assets of the System as of the valuation date, December 31, 2015. In this section, the discussion will focus on the commitments of the System, which are referred to as its liabilities.

Table 4 contains an analysis of the actuarial present value of all future benefits (PVFB) for contributing members, inactive members, retirees and their beneficiaries.

The liabilities summarized in Table 4 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes the measurement of both benefits already earned and future benefits to be earned. For all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and for the lives of the surviving beneficiaries.

All liabilities reflect the benefit provisions in place as of December 31, 2015.

### **ACTUARIAL LIABILITY**

A fundamental principle in financing the liabilities of a prefunded retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. An actuarial cost method is a mathematical technique that allocates the present value of future benefits into annual costs. In order to do this allocation, it is necessary for the funding method to “breakdown” the present value of future benefits into two components:

1. That which is attributable to the past and
2. That which is attributable to the future.

Actuarial terminology calls the part attributable to the past the “past service liability” or the “actuarial liability”. The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the “normal cost”. Table 5 contains the calculation of actuarial liability to the System. The Entry Age Normal actuarial cost method is used to develop the actuarial liability.



SECTION IV: SYSTEM LIABILITIES

TABLE 4

Present Value of Future Benefits (PVFB)
as of December 31, 2015

Table with 5 columns: Category, Plan 1, Plan 2, Plan 3, Total. Rows include Active Employees, DROP Members, Inactive Vested Members, Inactive Nonvested Members, In Pay Members, and Total Present Value of Future Benefits.

**SECTION IV: SYSTEM LIABILITIES****TABLE 5****Actuarial Liability  
as of December 31, 2015**

	<u>Plan 1</u>	<u>Plan 2</u>	<u>Plan 3</u>	<u>Total</u>
1. Active Employees				
a. Present Value of Future Benefits	\$ 0	\$ 236,278,390	\$ 39,281,282	\$ 275,559,672
b. Present Value of Future Normal Costs	0	45,334,606	30,403,775	75,738,381
c. Actuarial Liability 1(a) - 1(b)	\$ 0	\$ 190,943,784	\$ 8,877,507	\$ 199,821,291
2. DROP Members	\$ 3,800,105	\$ 23,245,357	\$ 0	\$ 27,045,462
3. Inactive Vested Members	\$ 0	\$ 25,974,795	\$ 0	\$ 25,974,795
4. Inactive Nonvested Members	\$ 0	\$ 0	\$ 76,614	\$ 76,614
5. In Pay Members				
a. Retirees	\$ 208,471,887	\$ 112,814,952	\$ 0	\$ 321,286,839
b. Disabled Members	1,145,352	1,705,944	0	2,851,296
c. Beneficiaries	19,400,707	8,595,876	0	27,996,583
d. Total	\$ 229,017,946	\$ 123,116,772	\$ 0	\$ 352,134,718
6. Reserve for Plan 3 Members	\$ 0	\$ 0	\$ 801,814	\$ 801,814
7. Total Actuarial Liability 1(c) + 2 + 3 + 4 + 5(d) + 6	\$ 232,818,051	\$ 363,280,708	\$ 9,755,935	\$ 605,854,694



## **SECTION V: EMPLOYER CONTRIBUTIONS**

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The previous two sections were devoted to a discussion of the assets and liabilities of the System. A comparison of Tables 3 and 4 indicates that current assets fall short of meeting the present value of future benefits (total liability). This is expected in all but a completely closed plan, where no further contributions are anticipated. In an active system, there will almost always be a difference between the actuarial value of assets and total liabilities. This deficiency has to be made up by future contributions and investment returns. An actuarial valuation sets out a schedule of future contributions that will deal with this deficiency in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. Under an actuarial cost method, the contributions required to meet the difference between current assets and current liabilities are allocated each year between two elements: (1) the normal cost rate and (2) the unfunded actuarial liability contribution rate.

The term “fully funded” is often applied to a system in which contributions at the normal cost rate are sufficient to pay for the benefits of existing employees as well as for those of new employees. More often than not, systems are not fully funded, either because of past benefit improvements that have not been completely funded or because of actuarial deficiencies that have occurred because experience has not been as favorable as anticipated. Under these circumstances, an unfunded actuarial liability (UAL) exists. Likewise, when the actuarial value of assets is greater than the actuarial liability, a surplus exists.

### **DESCRIPTION OF CONTRIBUTION RATE COMPONENTS**

The Entry Age Normal (EAN) actuarial cost method is used for the valuation. Under this method, the normal cost for each year from entry age to assumed exit age is a constant percentage of the member’s year by year projected compensation. The portion of the present value of future benefits not provided by the present value of future normal costs is the actuarial liability. The unfunded actuarial liability/(surplus) represents the difference between the actuarial liability and the actuarial value of assets as of the valuation date. The unfunded actuarial liability is calculated each year and reflects experience gains/(losses).

In general, contributions are computed in accordance with a level percent-of-payroll funding objective. The contribution rates based on this December 31, 2015 actuarial valuation will be used to determine employer contribution rates to the Wichita Employees’ Retirement System for fiscal year 2017. In this context, the term “contribution rate” means the percentage, which is applied to a particular active member payroll to determine the actual employer contribution amount (i.e., in dollars) for the group.

As of December 31, 2015, the valuation assets were less than the actuarial liability so an unfunded actuarial liability exists. The City’s funding policy is to amortize the UAL over a rolling 20-year period. The amortization of the UAL results in an employer contribution that is more than the employer normal cost rate.

### **CONTRIBUTION RATE SUMMARY**

In Table 7, the amortization payment related to the unfunded actuarial liability/(surplus), as of December 31, 2015, is developed. Table 8 develops the normal cost rate for the System. The derivation of the total contribution rate for the City is shown in Table 9. Table 10 shows the historical summary of the City’s contribution rates. Table 11 develops the experience gain/(loss) for the year ended December 31, 2015.

The rates shown in this report are based on the actuarial assumptions and cost methods described in Appendix C.



**SECTION V: EMPLOYER CONTRIBUTIONS**

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**TABLE 6**

**Derivation of Unfunded Actuarial Liability Contribution Rate**

1. Actuarial Accrued Liability	\$	605,854,694
2. Actuarial Value of Assets	\$	568,464,178
3. Unfunded Actuarial Liability (UAL)	\$	37,390,516
4. Payment (Adjusted to Mid-Year) to Amortize Unfunded Actuarial Liability/(Surplus) Over 20 Years*	\$	2,661,127
5. Total Projected Payroll for the Year	\$	77,779,674
6. Amortization Payment as a Percent of Payroll		3.4%

\* *The UAL is amortized as a level percent of payroll over a rolling 20-year period.*



**SECTION V: EMPLOYER CONTRIBUTIONS**

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**TABLE 7**

**Derivation of Normal Cost Rate**

Normal Cost for Year End December 31, 2015	
Service Pensions	\$ 7,512,015
Survivor Pensions	241,232
Termination Benefits	1,525,897
Total Normal Cost	\$ <u>9,279,144</u>
Expected Payroll in 2016 for Current Actives	\$ 68,417,761
Total Normal Cost Rate for Year	13.6%



**SECTION V: EMPLOYER CONTRIBUTIONS**

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**TABLE 8**

**Employer Contribution Rates  
for Fiscal Year Commencing in 2017**

	<b>Contribution Requirement as a % of Payroll</b>
Normal Cost	
Service pensions	11.0%
Survivor pensions	0.4%
Termination pensions	2.2%
Total Normal Cost	<u>13.6%</u>
Unfunded Actuarial Liability	
Retired members and beneficiaries <sup>(1)</sup>	0.0%
Active and former members <sup>(2)</sup>	3.4%
Total UAL Contribution	<u>3.4%</u>
Total Contribution Requirement	
Member Financed Portion <sup>(3)</sup>	4.7%
City Financed Portion	<u>12.3%</u>
Total	<u>17.0%</u>

<sup>(1)</sup> Actuarial liability for retired members and beneficiaries was fully funded as of December 31, 2015.

<sup>(2)</sup> The excess of the actuarial liability over actuarial value of assets is amortized as a level percent of active member payroll over a rolling 20-year period.

<sup>(3)</sup> The weighted average of member contribution rates: 6.4% for Plan 1 and 4.7% for Plans 2 & 3.



**SECTION V: EMPLOYER CONTRIBUTIONS**

**TABLE 9**

**Historical Summary of City Contribution Rates**

Contribution rates are computed in accordance with a level percent of payroll funding objective. As of December 31, 2015, the actuarial value of assets is less than actuarial liabilities resulting in an unfunded actuarial liability (UAL). The UAL is amortized over a rolling 20-year period.

<b>Valuation Date</b>	<b>Fiscal Year</b>	<b>City Contributions as Percents of Active Member Pensionable Payroll</b>	
		<b>Funding Objective</b>	<b>Amortization (Credit)/Payment</b>
11/30/1992	1994	9.5%	0.0%
11/30/1993	1995	9.5	0.0
11/30/1994	1996	9.4	0.0
12/31/1995	1997	9.0	0.0
12/31/1996	1998	6.9 - 8.4	(1.5)
12/31/1997	1999	4.6 - 8.5	(3.9)
12/31/1998	2000	0.8 - 8.3	(7.5)
12/31/1999	2001	2.5 - 9.8	(7.3)
12/31/2000	2002	0.5 - 9.7	(9.2)
12/31/2001	2003	1.9 - 9.4	(7.5)
12/31/2002	2004	2.7 - 8.8	(6.1)
12/31/2003	2005	3.1 - 8.9	(5.8)
12/31/2004	2006	3.5 - 8.2	(4.7)
12/31/2005	2007	3.9 - 8.2	(4.3)
12/31/2006	2008	4.2 - 8.3	(4.1)
12/31/2007	2009	4.2 - 8.4	(4.2)
12/31/2008	2010	8.4	0.0
12/31/2009	2011	10.2	1.7
12/31/2010	2012	10.6	2.1
12/31/2011	2013	12.6	4.1
12/31/2012	2014	13.2	5.0
12/31/2013	2015	12.2	3.9
12/31/2014	2016	11.6	2.9
12/31/2015	2017	12.3	3.4





## SECTION V: EMPLOYER CONTRIBUTIONS

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TABLE 10

Derivation of System Experience Gain/(Loss)

**Liabilities**

1. Actuarial liability as of December 31, 2014	\$	590,115,082
2. Normal cost as of December 31, 2014		8,950,771
3. Plan 3 members transferring to Plan 3b during 2015		(465,171)
4. Interest at 7.75% on (1), (2) and (3) to December 31, 2015		46,409,915
5. Benefit payments during 2015		(37,089,403)
6. Interest on benefit payments		(1,410,398)
7. Expected actuarial liability as of December 31, 2015 (1) + (2) + (3) + (4) + (5) + (6)	\$	<u>606,510,796</u>
8. Actuarial liability as of December 31, 2015	\$	605,854,694

**Assets**

9. Actuarial value of assets as of December 31, 2014	\$	560,031,764
10. Contributions during 2015		12,605,489
11. Benefit payments during 2015		(37,089,403)
12. Plan 3 members transferring to Plan 3b during 2015		(465,171)
13. Interest on items (9), (10), (11) and (12)		42,453,723
14. Expected actuarial value of assets as of December 31, 2015 (9) + (10) + (11) + (12) + (13)	\$	<u>577,536,402</u>
15. Actual actuarial value of assets as of December 31, 2015	\$	568,464,178

**Gain / (Loss)**

16. Expected unfunded actuarial liability (7) – (14)	\$	28,974,394
17. Actual unfunded actuarial liability (8) – (15)	\$	37,390,516
18. Actuarial Gain / (Loss) (16) – (17)	\$	(8,416,122)
19. Actuarial Gain / (Loss) on Actuarial Assets (15) – (14)	\$	(9,072,224)
20. Actuarial Gain / (Loss) on Actuarial Liability (7) – (8)	\$	656,102



**SECTION VI: OTHER INFORMATION**

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The actuarial liability is a measure intended to help the reader assess (i) a retirement system’s funded status on an on-going concern basis, and (ii) progress being made toward accumulating the assets needed to pay benefits as due. Allocation of the actuarial present value of projected benefits between past and future service was based on service using the Entry Age Normal actuarial cost method. Assumptions, including projected pay increases, were the same as used to determine the System’s level percent of payroll annual required contribution between entry age and assumed exit age. Entry age was established by subtracting credited service from current age on the valuation date.

The Entry Age Normal actuarial liability was determined as part of an actuarial valuation of the System as of December 31, 2015. Significant actuarial assumptions used in determining the actuarial liability include:

- (a) A rate of return on the investment of present and future assets of 7.75% per year compounded annually,
- (b) Projected salary increases of 4.00% per year compounded annually, (3.25% attributable to inflation, and 0.75% attributable to productivity),
- (c) Additional projected salary increases of 0.25% to 3.20% per year attributable to seniority/merit, and
- (d) The assumption that benefits will increase 3.00% per year of retirement, non-compounded, for Plan 1 members and 2.00% per year of retirement, non-compounded, for Plan 2 members.

Actuarial Liability:

Active members	\$ 200,623,105
DROP members	27,045,462
Retired members and beneficiaries currently receiving benefits	352,134,718
Nonvested terminated members due a refund	76,614
Vested terminated members not yet receiving benefits	<u>25,974,795</u>
Total Actuarial Liability	\$ 605,854,694
Actuarial Value of Assets (market value was \$541,247,503)	\$ 568,464,178
Unfunded Actuarial Liability	\$ 37,390,516

During the year ended December 31, 2015, the System experienced a net increase of \$16 million in the actuarial liability.



**SECTION VI: OTHER INFORMATION**

**TABLE 11**

**Schedule of Funding Progress**

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets** (a)</b>	<b>Actuarial Liability (AL) (b)</b>	<b>Unfunded AL (UAL) (b)-(a)</b>	<b>Funded Ratio (a)/(b)</b>	<b>Active Member Covered Payroll (c)</b>	<b>UAL as a Percentage of Active Member Covered Payroll [(b)-(a)]/(c)</b>
11/30/1992	\$182,186	\$204,730	\$22,544	89.0 %	\$49,552	45.5 %
11/30/1993	200,853	218,603	17,750	91.9	52,093	34.1
11/30/1994	215,385	230,217	14,832	93.6	52,169	28.4
12/31/1995	238,441	242,354	3,913	98.4	54,039	7.2
12/31/1996	266,404	252,968	(13,436)	105.3	53,534	(25.1)
12/31/1997	296,705	263,573	(33,132)	112.6	54,346	(61.0)
12/31/1998	340,417	276,980	(63,437)	122.9	56,093	(113.1)
12/31/1999 *	383,338	319,289	(64,049)	120.1	57,562	(111.3)
12/31/2000	414,643	329,390	(85,253)	125.9	61,112	(139.5)
12/31/2001	428,204	353,158	(75,046)	121.2	65,347	(114.8)
12/31/2002	433,366	370,399	(62,967)	117.0	68,117	(92.4)
12/31/2003	446,794	387,037	(59,757)	115.4	69,161	(86.4)
12/31/2004 *	462,994	413,159	(49,835)	112.1	72,154	(69.1)
12/31/2005 *	479,275	433,297	(45,978)	110.6	72,367	(63.5)
12/31/2006 *	505,756	459,062	(46,694)	110.2	75,881	(61.5)
12/31/2007 *	533,911	483,387	(50,524)	110.5	78,736	(64.2)
12/31/2008 *	512,853	512,374	(479)	100.1	81,580	(0.6)
12/31/2009 *	509,494	529,271	19,777	96.3	82,704	23.9
12/31/2010 *	516,308	540,436	24,128	95.5	79,636	30.3
12/31/2011 *	513,298	555,174	41,876	92.5	75,444	55.5
12/31/2012	520,320	571,805	51,485	91.0	70,783	72.7
12/31/2013	542,157	582,386	40,228	93.1	70,953	56.7
12/31/2014 *	560,032	590,115	30,083	94.9	71,391	42.1
12/31/2015	568,464	605,855	37,391	93.8	74,028	50.5

*Rounded dollar amounts are in thousands.*

*Note: Years prior to 12/31/2012 were provided by prior Actuary.*

*\* After changes in benefits and/or actuarial assumptions and/or actuarial cost methods.*

*\*\* From 2002 forward, includes all members except Plan 3b.*

Analysis of the dollar amounts of actuarial value of assets, actuarial liability, or unfunded actuarial liability in isolation can be misleading. Expressing the actuarial value of assets as a percentage of the actuarial liability provides one indication of the System's funded status on an on-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 System's funding. The unfunded actuarial liability and annual covered payroll are both affected by inflation. Expressing the unfunded actuarial 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 System's funding.



SECTION VI: OTHER INFORMATION

TABLE 12

Schedule of Employer Contributions

Fiscal Year	Actuarial Valuation Date	Annual Required Contribution*	Percent Contributed
1997	12/31/1995	\$4,459,654	100 %
1998	12/31/1996	4,140,163	100
1999	12/31/1997	4,134,826	100
2000	12/31/1998	2,751,084	100
2001	12/31/1999	1,843,213	100
2002	12/31/2000	3,137,912	100
2003	12/31/2001	3,189,513	100
2004	12/31/2002	3,266,706	100
2005	12/31/2003	3,589,063	100
2006	12/31/2004	3,566,429	100
2007	12/31/2005	3,700,590	100
2008	12/31/2006	3,834,270	100
2009	12/31/2007	3,887,085	100
2010	12/31/2008	6,689,450	100
2011	12/31/2009	7,695,317	100
2012	12/31/2010	7,503,003	100
2013	12/31/2011	8,940,135	100
2014	12/31/2012	9,423,640	100
2015	12/31/2013	9,031,463	100

\* From 2002 forward, excludes contributions for Plan 3b members.

Note: Years prior to 2012 were provided by prior Actuary.

Summary of Actuarial Methods and Assumptions

Valuation Date	December 31, 2015
Actuarial Cost Method	Entry Age Normal
Amortization Method	Level percent of payroll, open
Remaining Amortization Period	20 years
Asset Valuation Method	Expected + 25% of (Market – Expected Values)
Actuarial Assumptions:	
Investment Rate of Return*	7.75%
Projected Salary Increases*	4.25% - 7.20%
Cost-of-Living Adjustment Provisions	3.00% Non-compounded (Plan 1) 2.00% Non-compounded (Plan 2)

\*Includes inflation at 3.25%



**SECTION VI: OTHER INFORMATION**

**TABLE 13**  
**Solvency Test**

Valuation Date	Aggregate Actuarial Liability For				Portion of Actuarial Liabilities Covered by Reported Assets					
	(1)	(2)	(3)	Reported Valuation Assets	(1)		(2)		(3)	
	Active Member Contributions	Retirants and Beneficiaries*	Active Members (Employer Financed Portion)		(1)	%	(2)	%	(3)	
12/31/1995	\$28,549,082	\$123,759,638	\$90,046,029	\$238,441,351	100.0	%	100.0	%	95.7	%
12/31/1996	28,996,944	133,093,326	90,877,809	266,403,759	100.0		100.0		114.8	
12/31/1997	29,881,922	141,922,445	91,768,436	296,704,769	100.0		100.0		136.1	
12/31/1998	29,694,389	156,764,183	90,521,375	340,417,265	100.0		100.0		170.1	
12/31/1999	32,017,194	169,602,958	117,669,351	383,337,991	100.0		100.0		154.4	
12/31/2000	34,189,528	177,095,907	118,104,491	414,642,694	100.0		100.0		172.2	
12/31/2001	33,516,616	179,374,487	140,266,410	428,204,828	100.0		100.0		153.5	
12/31/2002	38,291,472	192,615,216	139,492,410	433,365,890	100.0		100.0		145.1	
12/31/2003	39,847,119	205,799,341	141,390,445	446,794,052	100.0		100.0		142.3	
12/31/2004	41,852,724	218,518,676	152,632,267	462,994,047	100.0		100.0		132.8	
12/31/2005	43,397,403	228,408,201	161,491,272	479,274,508	100.0		100.0		128.5	
12/31/2006	45,475,389	237,860,848	175,725,905	505,755,995	100.0		100.0		126.6	
12/31/2007	46,189,489	256,374,002	180,823,537	533,911,465	100.0		100.0		127.9	
12/31/2008	46,541,280	272,176,420	193,655,822	512,853,345	100.0		100.0		100.2	
12/31/2009	49,152,328	279,396,973	200,722,170	509,493,888	100.0		100.0		90.1	
12/31/2010	50,473,365	293,227,477	196,734,871	516,307,845	100.0		100.0		87.7	
12/31/2011	45,440,569	349,202,490	160,530,664	513,298,382	100.0		100.0		73.9	
12/31/2012	49,519,050	347,350,296	174,936,109	520,320,051	100.0		100.0		70.6	
12/31/2013	50,337,976	362,224,034	169,823,819	542,157,342	100.0		100.0		76.3	
12/31/2014	51,408,059	369,926,908	168,780,115	560,031,764	100.0		100.0		82.2	
12/31/2015	51,609,961	378,186,127	176,058,606	568,464,178	100.0		100.0		78.8	

\* Includes vested and nonvested terminated members.

Note: Years prior to 12/31/2012 were provided by prior Actuary

During the twelve months ended December 31, 2015, the Wichita Employees' Retirement System generated a net actuarial loss of \$8.4 million. This amount is 1.4% of the actuarial liability at the beginning of the year.



**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**MEMBER DATA RECONCILIATION**

December 31, 2014 to December 31, 2015

The number of members included in the valuation, as summarized in the table below, is in accordance with the data submitted by the System for members of the valuation date.

	Active Participants			DROP Participants		Retirees And Beneficiaries		Inactive Vested		Total
	Plan 1	Plan 2	Plan 3	Plan 1	Plan 2	Plan 1	Plan 2	Plan 1	Plan 2	
Members as of 12/31/2014	0	943	520	8	46	768	573	0	147	3,005
New Members	0	0	+168	0	0	+14	+18	0	0	+200
Transfers	0	+71	-84	0	0	0	0	0	0	-13
Rehires	0	+1	0	0	0	0	0	0	-1	0
Terminations										
Refunded	0	-9	-46	0	0	0	0	0	-5	-60
Refund Due	0	-5	-19	0	0	0	0	0	+5	-19
Deferred Vested	0	-9	0	0	0	0	0	0	+9	0
Retirements										
Service	0	-25	0	-2	-18	+2	+56	0	-13	0
Disability	0	0	0	0	0	0	0	0	0	0
DROP	0	-24	0	0	+24	0	0	0	0	0
Payment Ended	0	0	0	0	0	0	-2	0	0	-2
Deaths										
Cashed Out	0	0	0	0	0	0	0	0	0	0
With Beneficiary	0	-6	0	-1	0	-12	-8	0	0	-27
Without Beneficiary	0	-2	0	0	0	-22	-6	0	0	-30
Data Adjustments	0	0	0	0	+1	0	-1	0	0	0
<b>Members as of 12/31/2015</b>	<b>0</b>	<b>935</b>	<b>539</b>	<b>5</b>	<b>53</b>	<b>750</b>	<b>630</b>	<b>0</b>	<b>142</b>	<b>3,054</b>



**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

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**HISTORICAL ACTIVE DATA**  
**(Including DROP Members)**  
**as of December 31, 2015**

Valuation Date	Number of Members				Annual Covered Payroll (\$000's)	Average Annual Pay	% Increase In Average Annual Pay
	Plan 1	Plan 2	Plan 3 <sup>1</sup>	Total			
12/31/2005	151	900	822	1,873	\$72,367	\$38,637	(1.0) %
12/31/2006	134	922	837	1,893	75,881	40,085	3.7
12/31/2007	113	947	838	1,898	78,736	41,484	3.5
12/31/2008	92	958	852	1,902	81,580	42,892	3.4
12/31/2009	80	998	740	1,818	82,704	45,492	6.1
12/31/2010	61	993	661	1,715	79,636	46,435	2.1
12/31/2011	31	916	611	1,558	75,444	48,424	4.3
12/31/2012	26	950	527	1,503	70,783	47,094	(2.7)
12/31/2013	15	957	517	1,489	70,952	49,068	4.2
12/31/2014	8	989	520	1,517	71,391	47,061	(4.1)
12/31/2015	5	988	539	1,532	74,028	48,321	2.7

<sup>1</sup> Does not include vested Plan 3 members



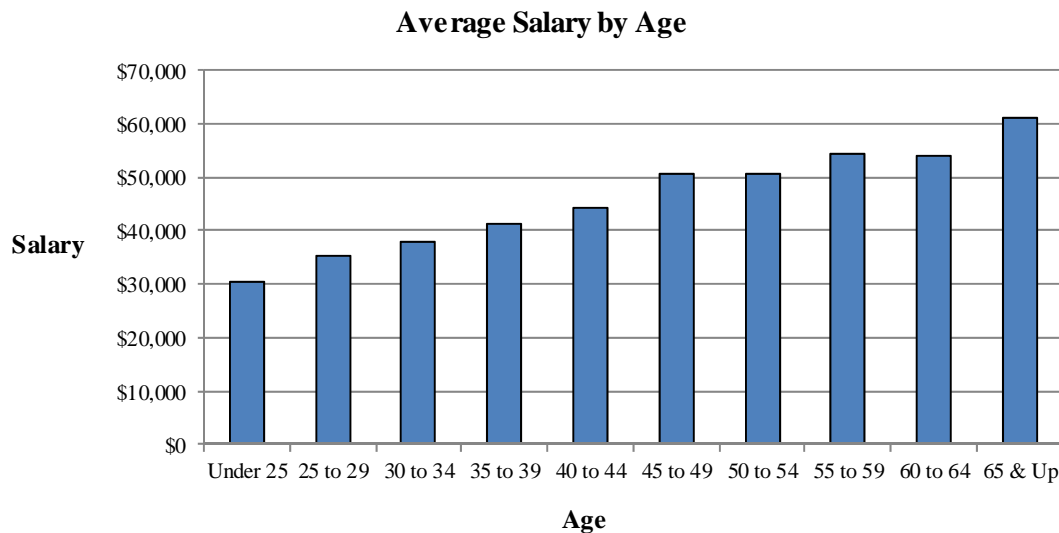
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS  
(Excluding DROP Members)  
as of December 31, 2015**

All Plans

Age	Number			Valuation Salaries*		
	Male	Female	Total	Male	Female	Total
Under 25	31	7	38	\$ 928,144	\$ 225,114	\$ 1,153,258
25 to 29	55	31	86	1,906,345	1,140,731	3,047,076
30 to 34	84	46	130	3,304,128	1,636,411	4,940,539
35 to 39	78	54	132	3,090,749	2,339,987	5,430,736
40 to 44	88	75	163	3,854,016	3,365,515	7,219,531
45 to 49	122	78	200	6,175,779	3,914,306	10,090,085
50 to 54	154	85	239	7,823,437	4,235,652	12,059,089
55 to 59	165	117	282	9,159,713	6,125,116	15,284,829
60 to 64	108	66	174	5,934,758	3,474,167	9,408,925
65 & Up	18	12	30	1,249,553	583,440	1,832,993
<b>Total</b>	<b>903</b>	<b>571</b>	<b>1,474</b>	<b>\$43,426,622</b>	<b>\$27,040,439</b>	<b>\$70,467,061</b>

\* Actual salary as reported by System for year ending 12/31/2015.







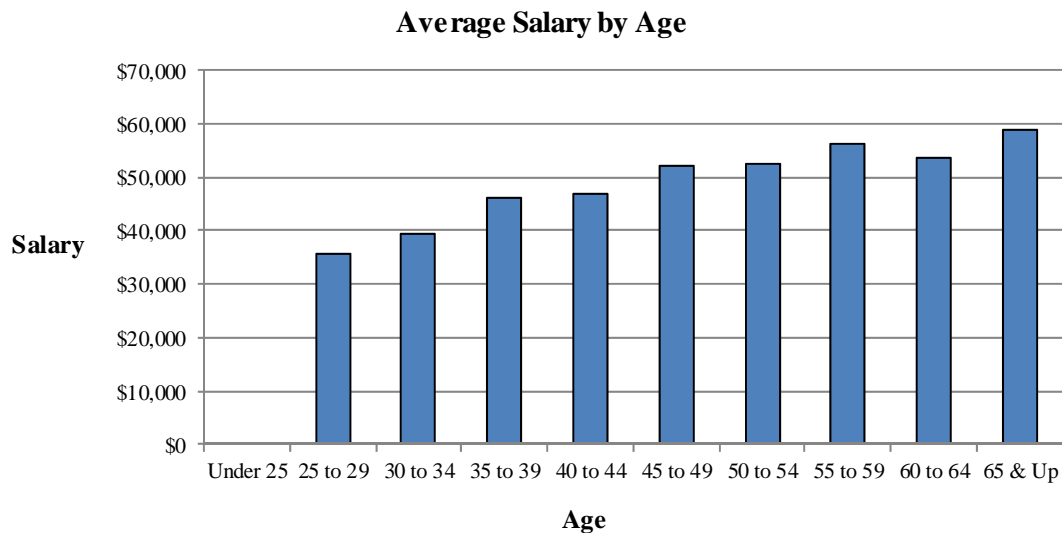
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS  
(Excluding DROP Members)  
as of December 31, 2015**

Plan 2

Age	Number			Valuation Salaries*		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	\$ 0	\$ 0	\$ 0
25 to 29	4	0	4	142,635	0	142,635
30 to 34	31	7	38	1,246,150	246,613	1,492,763
35 to 39	34	20	54	1,468,388	1,020,028	2,488,416
40 to 44	49	40	89	2,247,188	1,921,251	4,168,439
45 to 49	93	53	146	4,876,532	2,735,357	7,611,889
50 to 54	124	68	192	6,530,608	3,516,249	10,046,857
55 to 59	138	96	234	7,790,419	5,328,221	13,118,640
60 to 64	99	56	155	5,342,997	2,946,825	8,289,822
65 & Up	11	12	23	767,986	583,440	1,351,426
<b>Total</b>	<b>583</b>	<b>352</b>	<b>935</b>	<b>\$30,412,903</b>	<b>\$18,297,984</b>	<b>\$48,710,887</b>

\* Actual salary as reported by System for year ending 12/31/2015.





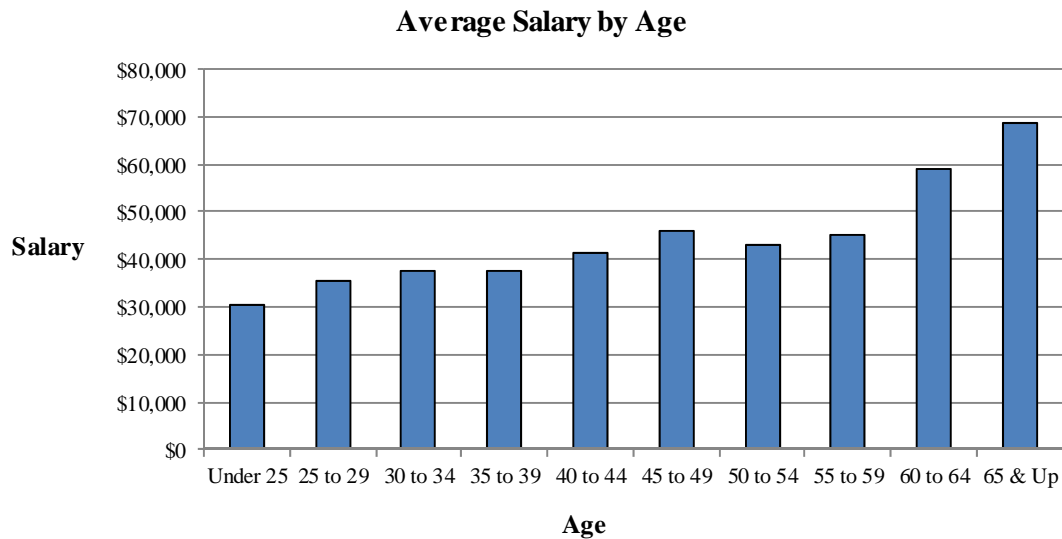
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of December 31, 2015

Plan 3

Age	Number			Valuation Salaries*		
	Male	Female	Total	Male	Female	Total
Under 25	31	7	38	\$ 928,144	\$ 225,114	\$ 1,153,258
25 to 29	51	31	82	1,763,710	1,140,731	2,904,441
30 to 34	53	39	92	2,057,978	1,389,798	3,447,776
35 to 39	44	34	78	1,622,361	1,319,959	2,942,320
40 to 44	39	35	74	1,606,828	1,444,264	3,051,092
45 to 49	29	25	54	1,299,247	1,178,949	2,478,196
50 to 54	30	17	47	1,292,829	719,403	2,012,232
55 to 59	27	21	48	1,369,294	796,895	2,166,189
60 to 64	9	10	19	591,761	527,342	1,119,103
65 & Up	7	0	7	481,567	0	481,567
<b>Total</b>	<b>320</b>	<b>219</b>	<b>539</b>	<b>\$13,013,719</b>	<b>\$8,742,455</b>	<b>\$21,756,174</b>

\* Actual salary as reported by System for year ending 12/31/2015.





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

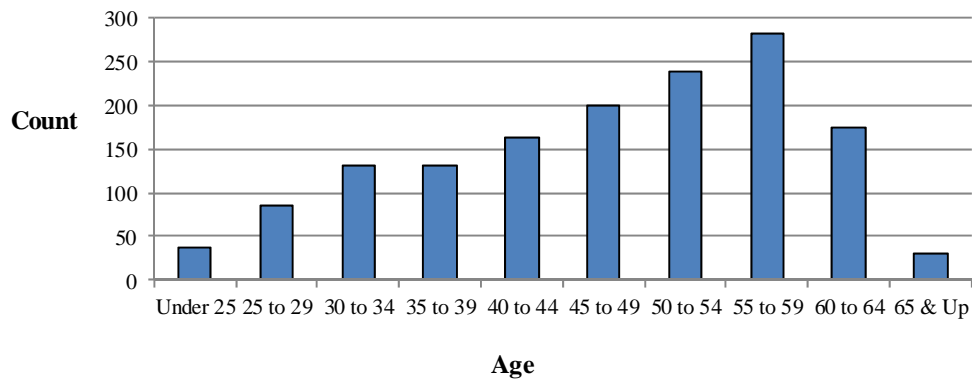
**DISTRIBUTION OF ACTIVE MEMBERS  
(Excluding DROP Members)  
as of December 31, 2015**

All Plans

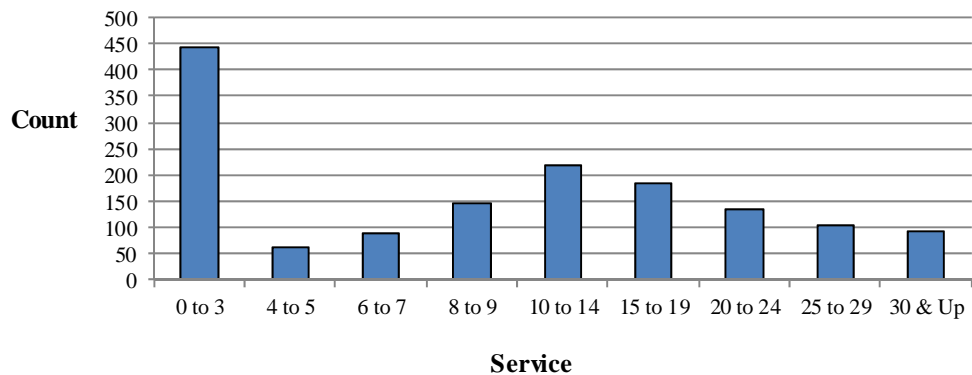
**Years of Service**

Age	0 to 3	4 to 5	6 to 7	8 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total
Under 25	38	0	0	0	0	0	0	0	0	38
25 to 29	75	6	1	4	0	0	0	0	0	86
30 to 34	74	13	10	14	19	0	0	0	0	130
35 to 39	67	8	9	20	21	7	0	0	0	132
40 to 44	57	9	18	19	30	24	6	0	0	163
45 to 49	43	6	14	20	36	39	28	14	0	200
50 to 54	34	9	6	26	40	33	34	33	24	239
55 to 59	39	6	13	23	37	45	38	40	41	282
60 to 64	11	5	14	14	28	31	25	17	29	174
65 & Up	5	0	3	7	6	5	2	2	0	30
<b>Total</b>	<b>443</b>	<b>62</b>	<b>88</b>	<b>147</b>	<b>217</b>	<b>184</b>	<b>133</b>	<b>106</b>	<b>94</b>	<b>1,474</b>

**Age Distribution**



**Service Distribution**





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

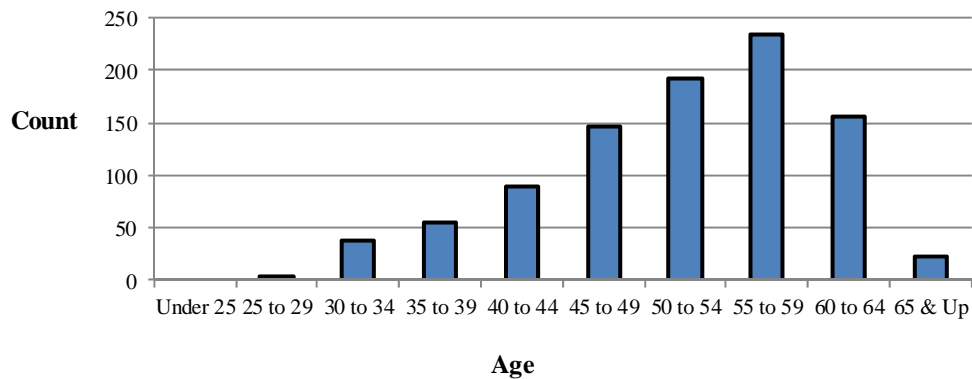
**DISTRIBUTION OF ACTIVE MEMBERS  
(Excluding DROP Members)  
as of December 31, 2015**

Plan 2

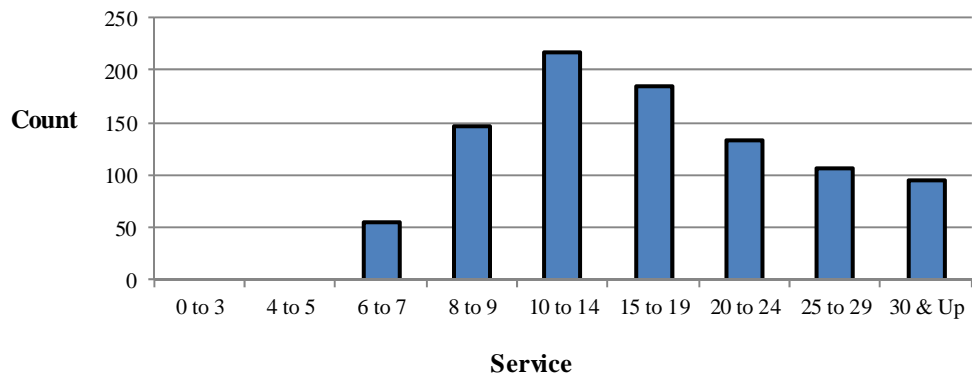
**Years of Service**

Age	0 to 3	4 to 5	6 to 7	8 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	4	0	0	0	0	0	4
30 to 34	0	0	5	14	19	0	0	0	0	38
35 to 39	0	0	6	20	21	7	0	0	0	54
40 to 44	0	0	10	19	30	24	6	0	0	89
45 to 49	0	0	9	20	36	39	28	14	0	146
50 to 54	0	0	2	26	40	33	34	33	24	192
55 to 59	0	0	10	23	37	45	38	40	41	234
60 to 64	0	0	11	14	28	31	25	17	29	155
65 & Up	0	0	1	7	6	5	2	2	0	23
<b>Total</b>	<b>0</b>	<b>0</b>	<b>54</b>	<b>147</b>	<b>217</b>	<b>184</b>	<b>133</b>	<b>106</b>	<b>94</b>	<b>935</b>

**Age Distribution**



**Service Distribution**





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

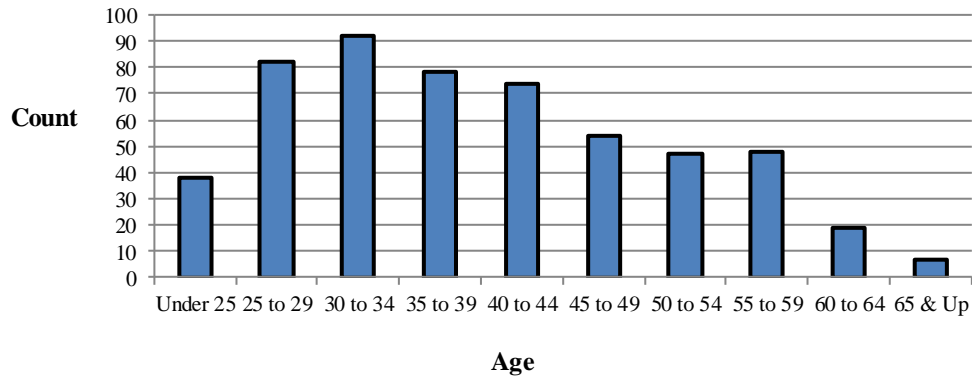
**DISTRIBUTION OF ACTIVE MEMBERS**  
as of December 31, 2015

Plan 3

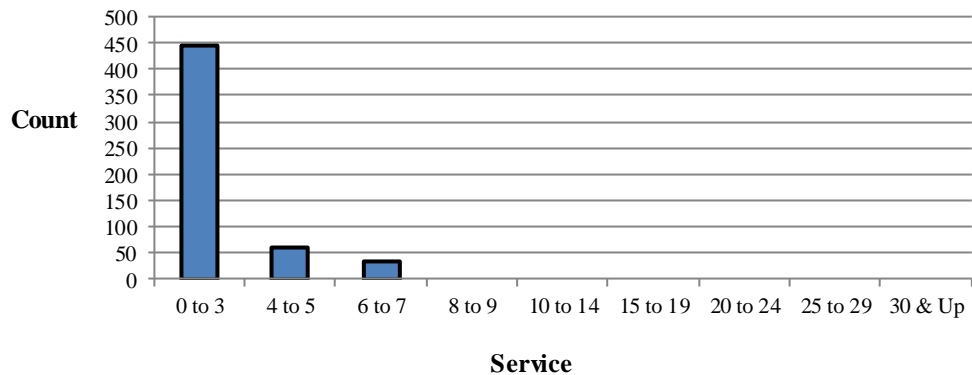
**Years of Service**

Age	0 to 3	4 to 5	6 to 7	8 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total
Under 25	38	0	0	0	0	0	0	0	0	38
25 to 29	75	6	1	0	0	0	0	0	0	82
30 to 34	74	13	5	0	0	0	0	0	0	92
35 to 39	67	8	3	0	0	0	0	0	0	78
40 to 44	57	9	8	0	0	0	0	0	0	74
45 to 49	43	6	5	0	0	0	0	0	0	54
50 to 54	34	9	4	0	0	0	0	0	0	47
55 to 59	39	6	3	0	0	0	0	0	0	48
60 to 64	11	5	3	0	0	0	0	0	0	19
65 & Up	5	0	2	0	0	0	0	0	0	7
<b>Total</b>	<b>443</b>	<b>62</b>	<b>34</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>539</b>

**Age Distribution**



**Service Distribution**





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF DROP MEMBERS**  
as of December 31, 2015

Plan 1

Age	Service					Total
	Under 20	20 to 24	25 to 29	30 to 34	35 & Up	
Under 50	0	0	0	0	0	0
50-54	0	0	0	0	0	0
55-59	0	0	0	0	0	0
60-64	0	0	0	3	1	4
65 & Up	0	0	0	1	0	1
Total	0	0	0	4	1	5

Age	DROP Duration Elected (months)					Total
	1 to 12	13 to 24	25 to 36	37 to 48	49 to 60	
Under 50	0	0	0	0	0	0
50-54	0	0	0	0	0	0
55-59	0	0	0	0	0	0
60-64	0	0	0	0	4	4
65 & Up	0	0	0	0	1	1
Total	0	0	0	0	5	5

Age	Monthly Benefits	Current Balance
Under 50	\$ 0	\$ 0
50-54	0	0
55-59	0	0
60-64	14,090	766,571
65 & Up	4,757	252,080
Total	\$ 18,847	\$ 1,018,651

Covered Payroll \$286,588



**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF DROP MEMBERS**  
as of December 31, 2015

Plan 2

Age	Service					Total
	Under 20	20 to 24	25 to 29	30 to 34	35 & Up	
Under 50	0	0	0	0	0	0
50-54	0	0	0	0	0	0
55-59	0	0	0	0	0	0
60-64	8	5	9	14	2	38
65 & Up	4	4	3	2	2	15
Total	12	9	12	16	4	53

Age	DROP Duration Elected (months)					Total
	1 to 12	13 to 24	25 to 36	37 to 48	49 to 60	
Under 50	0	0	0	0	0	0
50-54	0	0	0	0	0	0
55-59	0	0	0	0	0	0
60-64	2	6	6	14	10	38
65 & Up	0	1	2	3	9	15
Total	2	7	8	17	19	53

Age	Monthly Benefits	Current Balance
Under 50	\$ 0	\$ 0
50-54	0	0
55-59	0	0
60-64	106,314	1,071,500
65 & Up	39,372	1,446,480
Total	\$ 145,686	\$ 2,517,980

Covered Payroll \$2,906,880



**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF INACTIVE VESTED MEMBERS**  
as of December 31, 2015

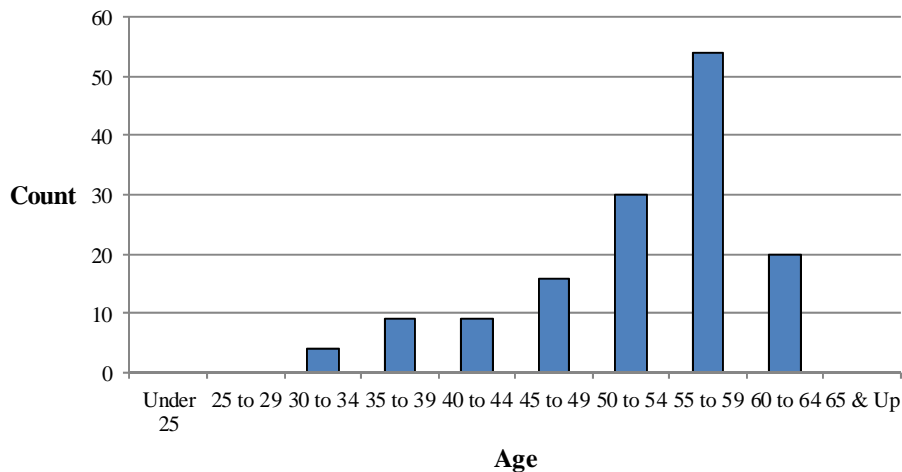
All Plans\*

Age	Number**			Current Monthly Benefit at Retirement		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	\$ 0	\$ 0	\$ 0
25 to 29	0	0	0	0	0	0
30 to 34	2	2	4	998	956	1,954
35 to 39	7	2	9	4,254	2,085	6,339
40 to 44	4	5	9	4,656	6,154	10,810
45 to 49	9	7	16	7,098	12,861	19,959
50 to 54	13	17	30	17,408	27,840	45,248
55 to 59	30	24	54	52,750	43,752	96,502
60 to 64	8	12	20	18,903	22,368	41,271
65 & Up	0	0	0	0	0	0
<b>Total</b>	<b>73</b>	<b>69</b>	<b>142</b>	<b>\$ 106,067</b>	<b>\$ 116,016</b>	<b>\$ 222,083</b>

\* All Inactive Vested Members are Plan 2 Members.

\*\* Includes 5 Inactive Vested Members who have elected to receive a refund of contributions, but have not been paid yet.

**Age Distribution**







**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**DISTRIBUTION OF IN-PAY MEMBERS**

as of December 31, 2015

Amount of Monthly Benefit	Active in DROP	Non-Service Disability	QDRO <sup>1</sup>	Service	Service Disability	Survivor	Total
\$ 0-500	0	2	1	59	0	75	137
500-1000	2	8	4	151	1	72	238
1000-1500	6	4	3	141	0	66	220
1500-2000	8	1	0	152	3	36	200
2000-2500	9	2	1	111	0	14	137
2500-3000	10	0	1	96	0	5	112
3000-3500	8	0	0	114	0	3	125
3500-4000	4	0	0	77	0	0	81
4000-4500	5	0	0	68	0	0	73
4500-5000	3	0	0	42	0	0	45
>5000	3	0	0	66	0	1	70
<b>Total</b>	<b>58</b>	<b>17</b>	<b>10</b>	<b>1,077</b>	<b>4</b>	<b>272</b>	<b>1,438</b>

<sup>1</sup> Qualified Domestic Relations Order



**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**RETIRANTS AND BENEFICIARIES  
ADDED TO AND REMOVED FROM ROLLS**

Valuation Date	Added to Rolls		Removed from Rolls		End of Year Rolls		Annual Pensions	
	No.	Annual Pensions <sup>1</sup>	No.	Annual Pensions <sup>1</sup>	No.	Annual Pensions <sup>1</sup>	Average Pension	Percentage Increase (Decrease)
12/31/2005	58	\$1,256,205	40	\$403,572	1,080	\$22,803,853	\$21,115	5.3 %
12/31/2006	63	1,205,241	41	580,114	1,102	24,146,982	21,912	3.8
12/31/2007	77	1,763,901	47	665,077	1,132	25,757,557	22,754	3.8
12/31/2008	79	1,879,045	44	693,343	1,167	27,520,308	23,582	3.6
12/31/2009	66	1,338,875	52	708,830	1,181	28,730,505	24,327	3.2
12/31/2010	71	1,847,020	59	949,872	1,193	29,855,835	25,026	2.9
12/31/2011	164	4,305,336	47	824,103	1,310	32,885,454	25,103	0.3
12/31/2012	50	1,010,373	58	1,036,870	1,302	31,730,663	24,371	(2.9)
12/31/2013	72	1,676,296	47	744,036	1,327	33,294,857	25,090	3.0
12/31/2014	68	1,549,070	54	927,726	1,341	34,427,388	25,673	2.3
12/31/2015	90	1,830,381	51	1,132,754	1,380	35,726,088	25,888	0.8

<sup>1</sup> Values are estimated based on annualized pension amounts.  
Note: Counts exclude DROP participants



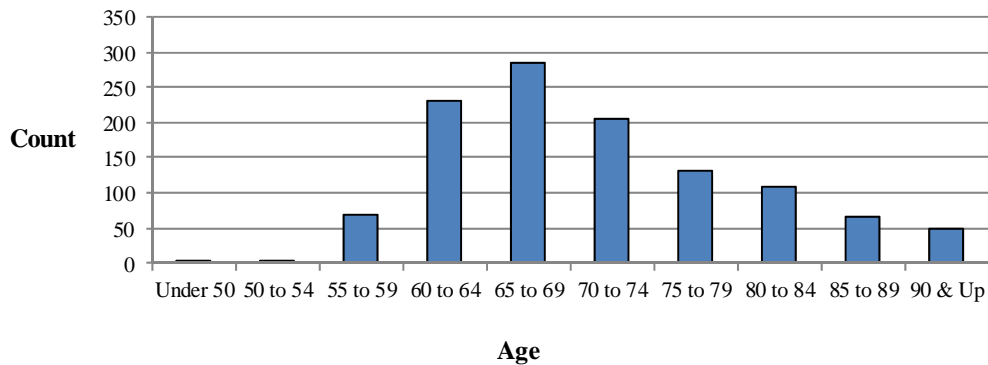
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF RETIRED MEMBERS\***  
as of December 31, 2015

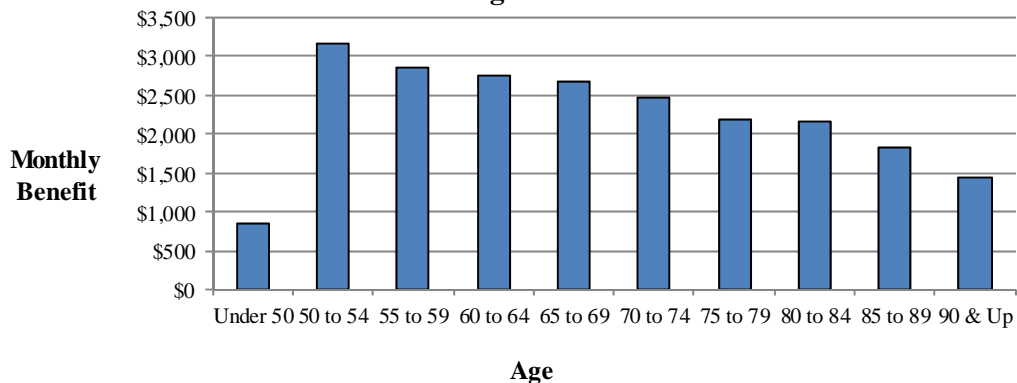
All Plans

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	1	0	1	\$ 863	\$ 0	\$ 863
50 to 54	3	1	4	11,798	863	12,661
55 to 59	44	26	70	129,476	70,910	200,386
60 to 64	145	86	231	427,852	210,766	638,618
65 to 69	188	98	286	557,521	207,214	764,735
70 to 74	120	86	206	334,820	176,406	511,226
75 to 79	69	62	131	174,660	111,895	286,555
80 to 84	57	53	110	139,923	99,206	239,129
85 to 89	38	29	67	85,082	38,186	123,268
90 & Up	20	30	50	41,750	30,794	72,544
<b>Total</b>	<b>685</b>	<b>471</b>	<b>1,156</b>	<b>\$ 1,903,745</b>	<b>\$ 946,240</b>	<b>\$ 2,849,985</b>

**Age Distribution**



**Average Benefit**



\*Includes DROP members



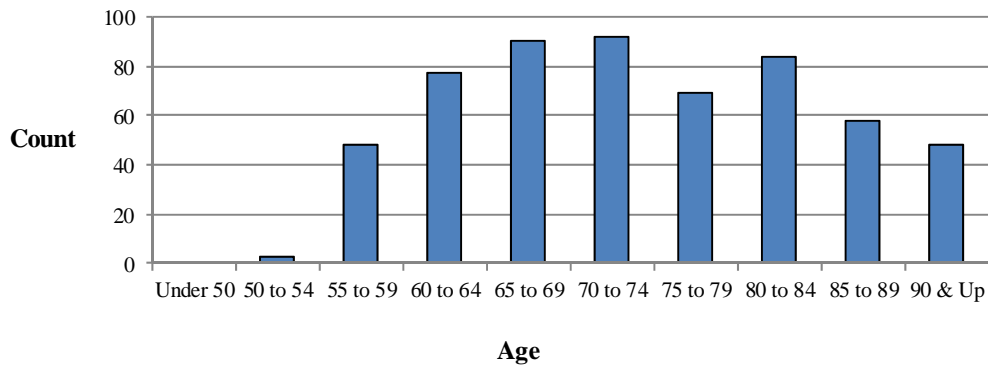
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF RETIRED MEMBERS\***  
as of December 31, 2015

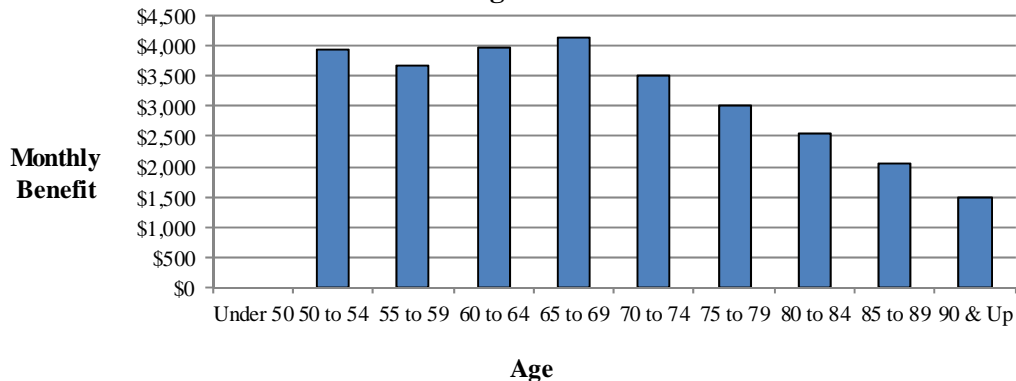
Plan 1

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	0	0	0	\$ 0	\$ 0	\$ 0
50 to 54	3	0	3	11,798	0	11,798
55 to 59	31	17	48	117,350	59,288	176,638
60 to 64	52	25	77	222,439	83,039	305,478
65 to 69	68	22	90	295,997	75,861	371,858
70 to 74	59	33	92	234,858	88,018	322,876
75 to 79	42	27	69	139,023	69,023	208,046
80 to 84	44	40	84	126,127	87,820	213,947
85 to 89	34	24	58	82,672	35,672	118,344
90 & Up	19	29	48	40,929	30,445	71,374
<b>Total</b>	<b>352</b>	<b>217</b>	<b>569</b>	<b>\$ 1,271,193</b>	<b>\$ 529,166</b>	<b>\$ 1,800,359</b>

**Age Distribution**



**Average Benefit**



\*Includes DROP members



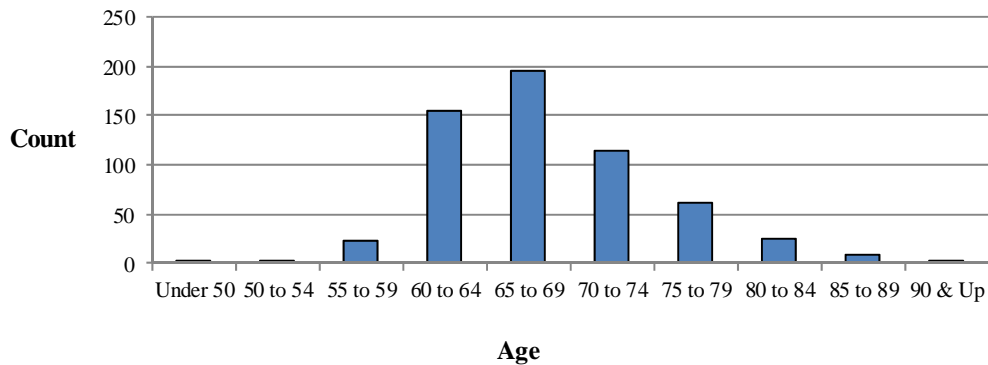
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF RETIRED MEMBERS\***  
as of December 31, 2015

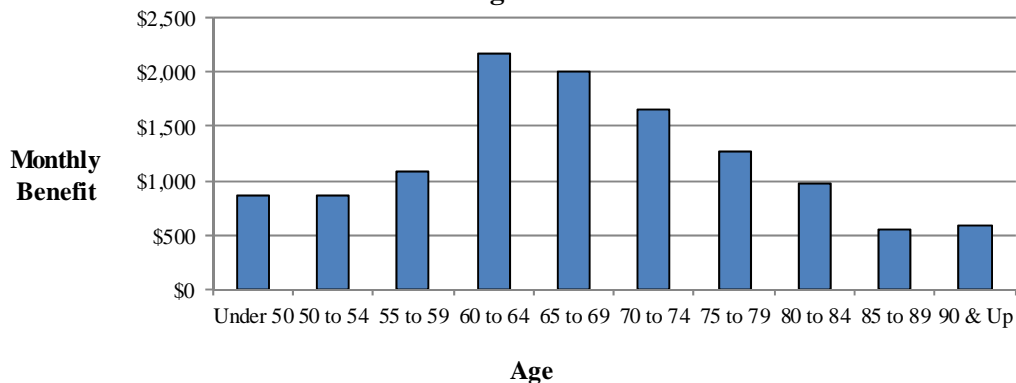
Plan 2

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	1	0	1	\$ 863	\$ 0	\$ 863
50 to 54	0	1	1	0	863	863
55 to 59	13	9	22	12,126	11,622	23,748
60 to 64	93	61	154	205,413	127,727	333,140
65 to 69	120	76	196	261,524	131,353	392,877
70 to 74	61	53	114	99,962	88,388	188,350
75 to 79	27	35	62	35,637	42,872	78,509
80 to 84	13	13	26	13,796	11,386	25,182
85 to 89	4	5	9	2,410	2,514	4,924
90 & Up	1	1	2	821	349	1,170
<b>Total</b>	<b>333</b>	<b>254</b>	<b>587</b>	<b>\$ 632,552</b>	<b>\$ 417,074</b>	<b>\$ 1,049,626</b>

**Age Distribution**



**Average Benefit**



\*Includes DROP members



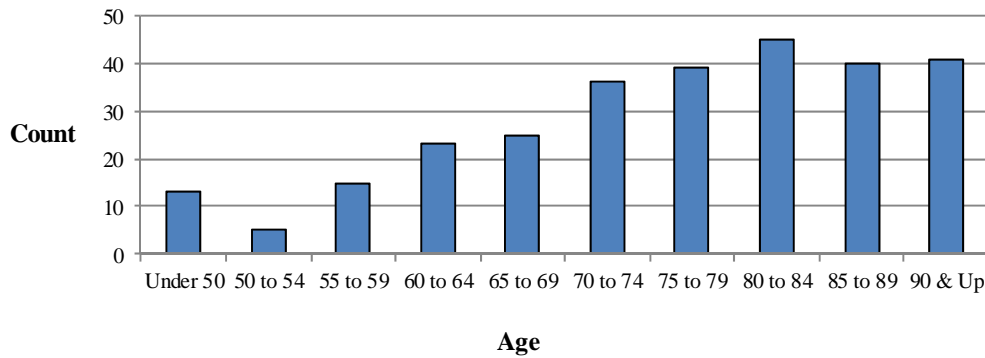
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF BENEFICIARIES**  
as of December 31, 2015

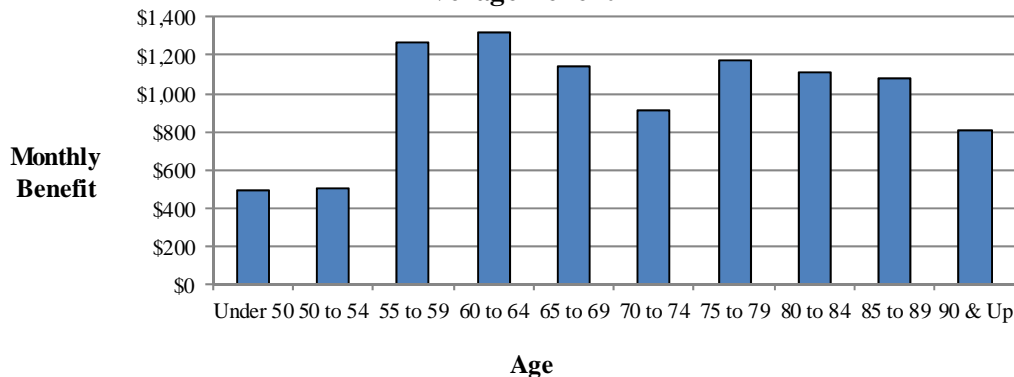
All Plans

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	1	12	13	\$ 575	\$ 5,836	\$ 6,411
50 to 54	1	4	5	359	2,132	2,491
55 to 59	4	11	15	4,737	14,296	19,033
60 to 64	2	21	23	2,475	27,848	30,323
65 to 69	4	21	25	3,720	24,936	28,656
70 to 74	6	30	36	3,624	29,344	32,968
75 to 79	4	35	39	3,949	41,657	45,606
80 to 84	5	40	45	4,121	45,996	50,117
85 to 89	7	33	40	4,098	38,845	42,943
90 & Up	5	36	41	2,555	30,619	33,174
<b>Total</b>	<b>39</b>	<b>243</b>	<b>282</b>	<b>\$ 30,213</b>	<b>\$ 261,509</b>	<b>\$ 291,722</b>

**Age Distribution**



**Average Benefit**





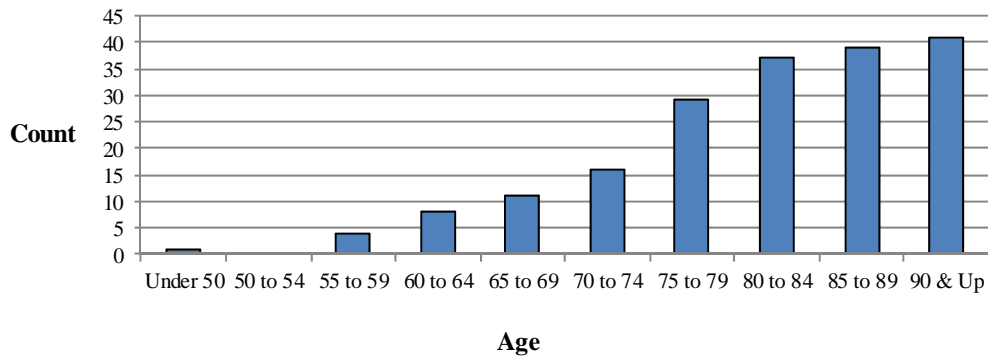
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF BENEFICIARIES**  
as of December 31, 2015

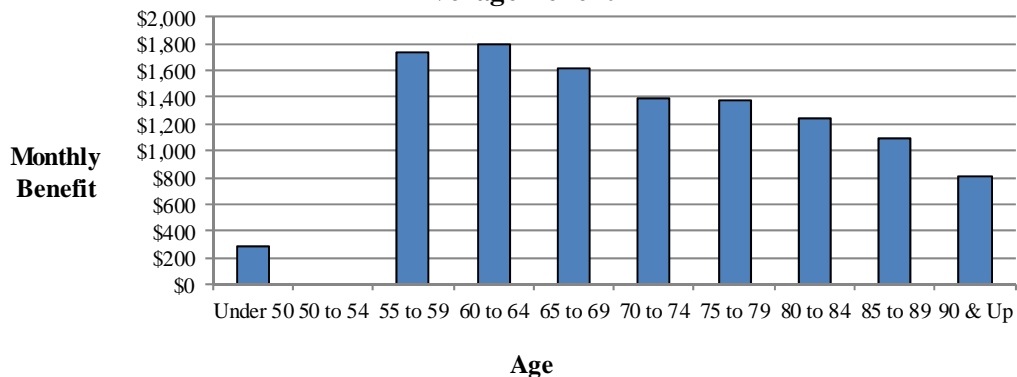
Plan 1

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	0	1	1	\$ 0	\$ 279	\$ 279
50 to 54	0	0	0	0	0	0
55 to 59	0	4	4	0	6,948	6,948
60 to 64	1	7	8	1,969	12,364	14,333
65 to 69	2	9	11	2,076	15,750	17,826
70 to 74	2	14	16	1,533	20,773	22,306
75 to 79	4	25	29	3,949	35,984	39,933
80 to 84	4	33	37	3,767	42,278	46,045
85 to 89	7	32	39	4,098	38,781	42,879
90 & Up	5	36	41	2,555	30,619	33,174
<b>Total</b>	<b>25</b>	<b>161</b>	<b>186</b>	<b>\$ 19,947</b>	<b>\$ 203,776</b>	<b>\$ 223,723</b>

**Age Distribution**



**Average Benefit**





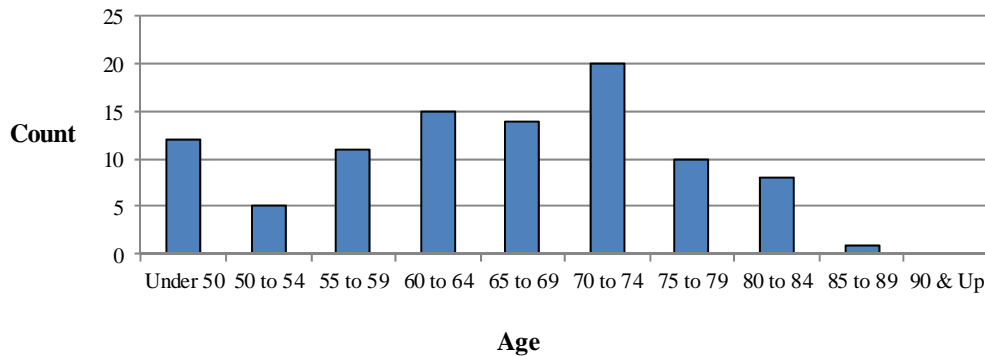
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF BENEFICIARIES**  
as of December 31, 2015

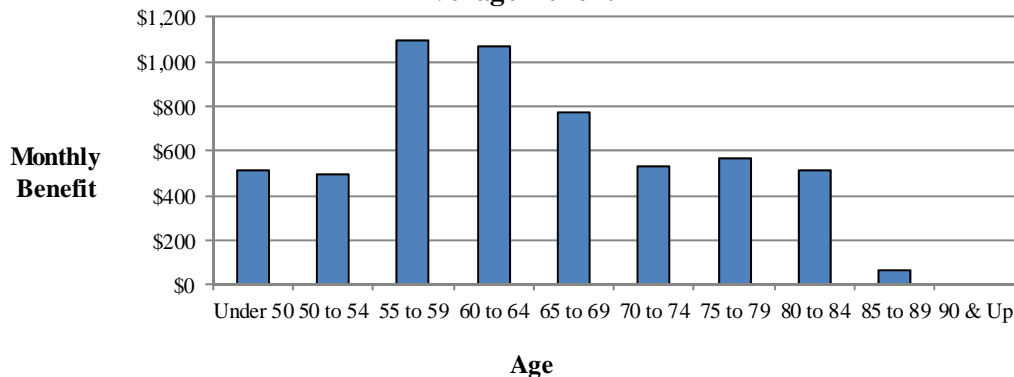
Plan 2

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	1	11	12	\$ 575	\$ 5,557	\$ 6,132
50 to 54	1	4	5	359	2,132	2,491
55 to 59	4	7	11	4,737	7,348	12,085
60 to 64	1	14	15	506	15,484	15,990
65 to 69	2	12	14	1,644	9,186	10,830
70 to 74	4	16	20	2,091	8,571	10,662
75 to 79	0	10	10	0	5,673	5,673
80 to 84	1	7	8	354	3,718	4,072
85 to 89	0	1	1	0	64	64
90 & Up	0	0	0	0	0	0
<b>Total</b>	<b>14</b>	<b>82</b>	<b>96</b>	<b>\$ 10,266</b>	<b>\$ 57,733</b>	<b>\$ 67,999</b>

**Age Distribution**



**Average Benefit**







## **Summary of Benefit Provisions**

### **Defined Benefit Plans 1 and 2**

**Plan 1** is applicable to members employed prior to July 18, 1981 who have not elected to be covered by Plan 2.

**Plan 2** is applicable to members employed or re-employed on or after July 18, 1981 and before January 1, 1994 and to other employees who have elected Plan 2 coverage.

**Plan 3** is applicable to members employed on or after January 1, 1994 who have not become covered by Plan 2. Plan 3 members are automatically transferred to Plan 2 after they have 7 years of service unless they file an irrevocable election to remain in Plan 3.

#### **NORMAL RETIREMENT (NO REDUCTION FACTOR)**

**Eligibility – Plan 1:** Age 60 with 7 or more years of service, or any age with 30 or more years of service.

**Eligibility – Plan 2:** Age 62 with 7 or more years of service (effective August 1, 1990).

**Amount of Pension – Plan 1:** Service times 2.5% of Final Average Salary to a maximum of 75% of Final Average Salary.

**Amount of Pension – Plan 2:** Service times 2.25% of Final Average Salary to a maximum of 75% of Final Average Salary (effective January 1, 2000).

**Final Average Salary – all plans:** Average for the 3 consecutive years of service which produce the highest average and which are within the last 10 years of service.

#### **EARLY RETIREMENT (WITH REDUCTION FACTOR)**

**Eligibility – all plans:** Age 55 with 7 or more years of service.

**Amount of Pension – Plan 1:** Computed as for normal retirement, but reduced for each month retirement precedes age 60. The reduction is 0.05 of 1% if service is 29 years but less than 30 years, increasing by 0.05 of 1% for each additional year of service less than 30 years, to a maximum of 0.50 of 1% if service is less than 21 years.

**Amount of Pension – Plan 2:** Computed as for normal retirement, but reduced for each month retirement precedes age 62. The reduction is 0.6% per month for every year of age less than 62 with a maximum reduction of 50.4% at age 55.



## APPENDIX B: SUMMARY OF BENEFIT PROVISIONS

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### DEFERRED RETIREMENT (VESTED TERMINATION)

**Eligibility – all plans:** 7 or more years of service. A terminated employee may apply for a reduced pension upon meeting the applicable age requirement for early retirement or an unreduced pension upon meeting the applicable age requirement for normal retirement. A terminated employee may elect a refund of employee contributions, plus applicable interest, in lieu of a deferred retirement benefit.

**Amount of Pension – all plans:** An amount computed as for normal retirement. Vested deferred pensions are adjusted during the deferral period based on changes in National Average Earnings, up to 5.5% annual adjustments.

### DEFERRED RETIREMENT OPTION PLAN (DROP)

**Eligibility – all plans:** Member must be eligible to retire under early reduced or normal age and/or service requirements and elect to participate in DROP for up to 5 years.

**Amount of Benefit – all plans:** Benefit computed based on years of service, Final Average Salary as of the DROP election date, and length of DROP period. Benefit is paid into member's notional DROP account during the deferral period. Member and City continue to make required employee and employer contributions during the deferral period. Interest at an annual rate of 5%, compounded monthly, is credited to the notional DROP account. Voluntary termination of employment during the DROP period results in loss of accrued interest. Balance of DROP account is payable within 90 days of actual termination of employment.

### SERVICE-CONNECTED DISABILITY

**Eligibility – all plans:** No age or service requirement. Requires total and permanent disability, as defined in State worker's compensation act, for employment by the City in a position commensurate with the employee's training, experience and education.

**Amount of Pension – Plan 1:** 60% of final rate of Salary.

**Amount of Pension – Plan 2:** 50% of final rate of Salary.

### NON-SERVICE DISABILITY

**Eligibility – all plans:** 7 or more years of service. Requires total and permanent disability for employment by the City in a position commensurate with the employee's training, experience and education.

**Amount of Pension – Plan 1:** 30% of Final Average Salary plus 1% of Final Average Salary times service over 7 years; maximum is 50% of Final Average Salary.

**Amount of Pension – Plan 2:** 25% of final rate of Salary.



## **APPENDIX B: SUMMARY OF BENEFIT PROVISIONS**

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### **POST-RETIREMENT SURVIVOR BENEFITS**

**Eligibility – all plans Surviving Spouse:** Must have been married to retired employee for one year or more, at time of death if retired after January 1, 2000. If retired prior to January 1, 2000, must have been married to retired employee at retirement.

**Eligibility – all plans Minor Children:** Must be less than 18 years old.

**Amount of Pension – all plans Surviving Spouse:** 50% of amount that was being paid to retiree.

**Amount of Pension – all plans Minor Child with Surviving Spouse:** 10% of the member's Final Average Salary for each child under age 18. Maximum, including surviving spouse benefit, is 75% of Final Average Salary.

**Amount of Pension – all plans Minor Child without Surviving Spouse:** 20% of the member's Final Average Salary for each child under age 18. Maximum benefit is 60% of Final Average Salary.

If no survivor benefits are payable, any accumulated employee contributions with interest in excess of benefit payments made is refunded to the member's beneficiary or estate.

### **POST-RETIREMENT FUNERAL BENEFITS**

**Eligibility – Designated Beneficiary:** Must have been designated by the retired employee.

**Amount of Benefit – Plan 1:** \$1,500

**Amount of Benefit – Plan 2:** None

### **PRE-RETIREMENT SURVIVOR BENEFITS**

**Eligibility – Surviving Spouse:** Death of employee with 7 or more years of service.

**Eligibility – Designated Beneficiary:** The beneficiary designated by an unmarried member or by a member who fails to meet the 7 year service requirement for the surviving spouse benefit.

**Amount of Pension – Surviving Spouse:** 50% of amount that that the deceased employee would have been entitled to had he/she been on an unreduced retirement at time of death.

**Amount of Pension – Designated Beneficiary:** The deceased employee's contributions, plus applicable interest, plus one month's Salary for each full year of service up to a maximum benefit of 6 months of Salary.

### **OTHER TERMINATION BENEFITS**

**Eligibility – all plans:** Termination of employment without eligibility for any other benefit.

**Amount of Benefit – all plans:** Accumulated employee contributions with interest at 5% per year compounded monthly are refunded.



## **APPENDIX B: SUMMARY OF BENEFIT PROVISIONS**

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### **POST-RETIREMENT ADJUSTMENTS OF PENSIONS**

**Eligibility – Plan 1:** Completion of 12 months of retirement.

**Eligibility – Plan 2:** If retired on or after January 1, 2000, completion of 12 months of retirement. If retired before January 1, 2000, there is no adjustment (effective February 19, 2000).

**Annual Amount – Plan 1:** 3% of the original base amount of benefit (simple COLA).

**Annual Amount – Plan 2:** 2% of the original base amount of benefit (simple COLA).

### **EMPLOYEE CONTRIBUTIONS**

Plan 1: 6.4% of total compensation

Plan 2: 4.7% of base salary and longevity pay

Plan 3: 4.7% of base salary and longevity pay

### **CITY CONTRIBUTIONS**

Actuarially determined amount which together with employee contributions and investment earnings will fund the obligations of the System in accordance with accepted actuarial principles

Plan 3: 4.7% of base salary and longevity pay, less forfeitures from non-vested terminations.

### **UNUSED SICK LEAVE**

Each bi-weekly service credit of accumulated unused sick leave is converted to a service credit for the purpose of computing annual benefit amounts.

### **VESTING OF CONTRIBUTIONS**

**Plan 3:** Member contributions and investment earnings thereon are 100% vested. City contributions and investment earnings thereon are 25% vested after 3 years of service, 50% vested after 5 years of service, and 100% vested after 7 years of service.

### **DISTRIBUTION OF VESTED ACCOUNTS**

**Plan 3:** Vested accounts are payable upon termination of City employment or death. Available forms of payment are prescribed by the Board.

### **DISABILITY RETIREMENT**

**Plan 3:** Service and non-service connected disability benefits are the same as those of Plan 2. Plan 3 members may alternatively elect to receive a refund of their Plan 3 vested account.



## **APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS**

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### **ACTUARIAL COST METHOD**

The actuarial cost method is a procedure for allocating the actuarial present value of pension benefits and expenses to time periods. The method used for the valuation is known as the Entry Age Normal actuarial cost method, and has the following characteristics:

- (i) The annual normal costs for each individual active member 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 covered compensation.

The Entry Age Normal actuarial cost method allocates the actuarial present value of each member's projected benefits on a level basis over the member's assumed pensionable compensation rates 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 actuarial liability. Deducting actuarial assets from the actuarial liability determines the unfunded actuarial liability or (surplus). The unfunded actuarial liability/(surplus) is financed as a level percent of member payroll over an open 20-year period.

### **ACTUARIAL ASSUMPTIONS**

Retirement System contribution requirements and actuarial present values are calculated by applying experience assumptions to the benefit provisions and membership information of the Retirement System, using the actuarial cost method.

The principal areas of risk which require experience assumptions about future activities of the Retirement System 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, retirees and beneficiaries
- (iv) Rates of termination of employment by active members
- (v) The age patterns of actual retirements



## APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS

In making 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 Retirement System 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 experiences. The result is a continual series of adjustments (usually small) to the computed contribution rate.

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). A complete review of the actuarial assumptions was completed in 2014. The use of updated assumptions was first effective with the December 31, 2014 valuation.

**Investment Rate of Return** (net of administrative expenses): This assumption is 7.75% a year, compounded annually and consists of 3.25% long-term price inflation and a 4.50% real rate of return over price inflation. This assumption, used to equate the value of payments due at different points in time, was adopted by the Board and was first used for the December 31, 1981 valuation, although the allocation between inflation and real return has changed periodically, most recently in 2014.

**Salary Increase Rates:** These rates are used to project current pay amounts to those upon which a benefit will be based. This table was first used in the December 31, 2014 valuation.

Years of Service	Annual Rate of Salary Increase for Sample Service Durations			
	Inflation Component	Productivity Component	Merit and Longevity	Total
1	3.25%	0.75%	3.20%	7.20%
2	3.25	0.75	3.00	7.00
3	3.25	0.75	2.80	6.80
4	3.25	0.75	2.60	6.60
5	3.25	0.75	2.40	6.40
6	3.25	0.75	2.20	6.20
7	3.20	0.75	2.00	6.00
8	3.25	0.75	1.80	5.80
9	3.25	0.75	1.70	5.70
10	3.25	0.75	1.60	5.60
11	3.25	0.75	1.50	5.50
12	3.25	0.75	1.40	5.40
13	3.25	0.75	1.30	5.30
14	3.25	0.75	1.20	5.20
15	3.25	0.75	1.06	5.06
16	3.25	0.75	0.92	4.92
17	3.25	0.75	0.78	4.78
18	3.25	0.75	0.64	4.64
19	3.25	0.75	0.50	4.50
20	3.25	0.75	0.50	4.50
21	3.25	0.75	0.50	4.50
22	3.25	0.75	0.50	4.50
23	3.25	0.75	0.50	4.50
24	3.25	0.75	0.50	4.50
25	3.25	0.75	0.50	4.50
Over 25	3.25	0.75	0.25	4.25



**APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS**

The salary increase assumptions will produce 4.00% annual increases in active member payroll (the inflation and productivity base rate) given a constant active member group size. This is the same payroll growth assumption used to amortize the unfunded actuarial liability. The real rate of return over assumed wage growth is 3.75% per year.

Changes actually experienced in average pay and total payroll (excluding DROP participants) have been as follows:

	Year Ended					5 Year (Average) Compounded Annual Increase
	12/31/15	12/31/14	12/31/13	12/31/12	12/31/11	
Average Payroll	2.1%	1.7%	0.8%	3.2%	(1.1%)	1.3%
Total Payroll	2.9%	3.0%	(0.2%)	2.3%	(10.0%)	(0.5%)

**Mortality Table:** This assumption is used to measure the probabilities of members dying and the probabilities of each pension payment being made after retirement.

Healthy Retirees

And Beneficiaries: RP-2000 Healthy Annuitant Table (ages set forward two years for males, zero for females)

Disabled Retirees: RP-2000 Disabled Table for Males and Females

Active Members: RP-2000 Employee Table (ages set forward two years for males, zero for females)

The RP-2000 Tables are used with generational mortality.

Sample Ages <sup>(1)</sup>	Present Value of \$1 Monthly for Life		Future Life Expectancy (Years)	
	Men	Women	Men	Women
50	\$136.27	\$141.98	30.4	34.6
55	128.67	135.41	25.7	29.7
60	118.41	127.04	21.2	25.1
65	150.86	116.91	16.9	20.7
70	91.20	104.80	13.0	16.7
75	75.12	90.90	9.7	13.0
80	58.98	75.76	6.9	9.8
85	44.42	60.20	4.8	7.1

(1) Reflects values from the basic table based on ages in 2000

This table was first used for the December 31, 2004 actuarial valuation.



**APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS**

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**Rates of Retirement and Deferred Retirement Option Plan (DROP) Elections:** These rates are used to measure the probability of eligible members retiring under either the regular retirement provisions or from the Deferred Retirement Option Plan.

**Percent Retiring During Year**

Retirement		
Age	Plan 1	Plan 2
55	15%	3%
56	15	3
57	15	3
58	15	3
59	15	3
60	40	3
61	40	20
62	20	40
63	20	25
64	20	25
65	100	50
66	N/A	35
67	N/A	20
68	N/A	20
69	N/A	20
70	N/A	100

In addition, the following assumptions would apply to members in this category:

**Plan 2:** 70% of members with 33.33 or more years of service and are at least age 62 will elect the DROP with an average DROP period of 36 months.

All members of the retirement system were assumed to retire on or before age 70.

Deferred vested members are assumed to retire at age 62.

This assumption was first used in the December 31, 2014 actuarial valuation.





## APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS

**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.

Years of Service	Probability of Terminating During Year
0	13.00%
1	13.00
2	11.00
3	9.00
4	8.00
5	7.00
6	6.00
7	5.00
8-12	4.50
13	4.00
14	3.50
15	3.00
16	2.75
17	2.50
18	2.50
19	2.25
20 or more	2.00

These rates were first used for the December 31, 2014 valuation.

**Forfeiture of Vested Benefits:** The assumption is that a percentage of the actuarial present value of vested termination benefits will be forfeited by a withdrawal of accumulated contributions.

Years of Service	Percent Forfeiting
Under 15	60%
15-19	40
20-24	20
25 or more	0

This table was first used for the December 31, 2004 actuarial valuation.

**Rates of Disability:** There is no disability assumption. This assumption was first eliminated in the December 31, 2014 valuation.

**Administrative Expenses:** Assumed to be paid from investment earnings.

**Active Member Group Size:** Assumed to remain constant.

**Vested Deferred Pensions:** Amounts are assumed to increase during the deferral period at 4.0% per year, compounded annually. This assumption was first used for the December 31, 2009 valuation.



## APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS

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### MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

**Marriage Assumption:** 70% of non-retired participants are assumed to be married for purposes of death benefits. In each case, the male was assumed to be three years older than the female.

**Decrement Timing:** Decrements of all types are assumed to occur mid-year.

**Eligibility Testing:** Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year at the start of the year in which the decrement is assumed to occur.

**Benefit Service:** Service calculated to the nearest month, as of the decrement date, is used to determine the amount of benefit payable.

**Other:** The turnover decrement does not operate during retirement eligibility.

**Miscellaneous Loading Factors:** The calculated normal retirement benefits are increased by 2.5% to account for the inclusion of unused sick leave in the calculation of Service. This assumption was changed with the December 31, 2014 valuation.

**Plan 3 Transfer Assumption:** For purposes of the valuation, Plan 3 members are assumed to transfer to Plan 2 if they acquire 7 years of service.



## APPENDIX D: GLOSSARY OF TERMS

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<b>Actuarial Liability</b>	The difference between the actuarial present value of system benefits and the actuarial present value of future normal costs. Also referred to as “accrued liability” or “actuarial liability”.
<b>Actuarial Assumptions</b>	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.
<b>Accrued Service</b>	Service credited under the system which was rendered before the date of the actuarial valuation.
<b>Actuarial Equivalent</b>	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 assumptions.
<b>Actuarial Cost Method</b>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefit between future normal cost and actuarial liability; sometimes referred to as the “actuarial funding method”.
<b>Experience Gain (Loss)</b>	The difference between actual experience and actuarial assumptions anticipated experience during the period between two actuarial valuation dates.
<b>Actuarial Present Value</b>	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.
<b>Amortization</b>	Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with lump sum payment.
<b>Normal Cost</b>	The actuarial present value of retirement system benefits allocated to the current year by the actuarial cost method.
<b>Unfunded Actuarial Liability</b>	<p>The difference between actuarial liability and the valuation assets.</p> <p>Most retirement systems have unfunded actuarial liability. They arise each time new benefits are added and each time an actuarial loss is realized.</p> <p>The existence of unfunded actuarial liability is not in itself bad, anymore than a mortgage on a house is bad. Unfunded actuarial liability does not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial liability and the trend in its amount.</p>