



**Cavanaugh Macdonald**  
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## **Wichita Employees' Retirement System**

**Actuarial Valuation as of December 31, 2013**





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March 26, 2014

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, 2013. The major findings of the valuation are contained in this report, including the contribution rate for fiscal year 2015. The plan provisions, actuarial assumptions, and actuarial 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 calculation 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. Actuarial computations presented in this report under GASB Statements No. 25, 27, and 50 are for purposes of fulfilling financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals, and of GASB Statements No. 25, 27, and 50. 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.

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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, 2013 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 have been no changes in the benefit provisions, actuarial assumptions, or actuarial methods from the last valuation.

The System had an unfunded actuarial liability of \$51.5 million in the December 31, 2012 valuation, which has decreased to \$40.2 million in the December 31, 2013 valuation. A detailed analysis of the change in the unfunded actuarial liability from December 31, 2012 to December 31, 2013 is shown on page 3. The actuarial valuation results provide a “snapshot” view of the System’s financial condition on December 31, 2013. The valuation results reflect net favorable experience for the past plan year as demonstrated by an unfunded actuarial liability that was lower than expected based on the actuarial assumptions used in the December 31, 2012 actuarial valuation. Favorable experience on the actuarial value of assets resulted in an actuarial gain of \$7.4 million and experience on liabilities resulted in a gain of \$4.2 million for an overall actuarial gain of \$11.6 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. Due to deferred investment losses and the smoothing process, the return on the actuarial value of assets in 2013 was 9.2%, despite a return on a market value basis of 19.6%. Because the investment return on the actuarial value of assets was greater than the actuarially assumed rate of return of 7.75%, an actuarial gain on assets occurred. Due to the high return on the market value of assets, the \$26 million deferred (unrecognized) investment loss in the December 31, 2012 valuation has been eliminated, and there is now a \$22 million deferred investment gain in the December 31, 2013 valuation. Actual returns over the next few years will determine if and when the \$22 million of deferred investment gain is recognized. For example, a return of 3.5% on the market value of assets in 2014 would totally eliminate the deferred investment gain, but still result in a return of 7.75% on the actuarial value of assets.

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



## SECTION I: EXECUTIVE SUMMARY

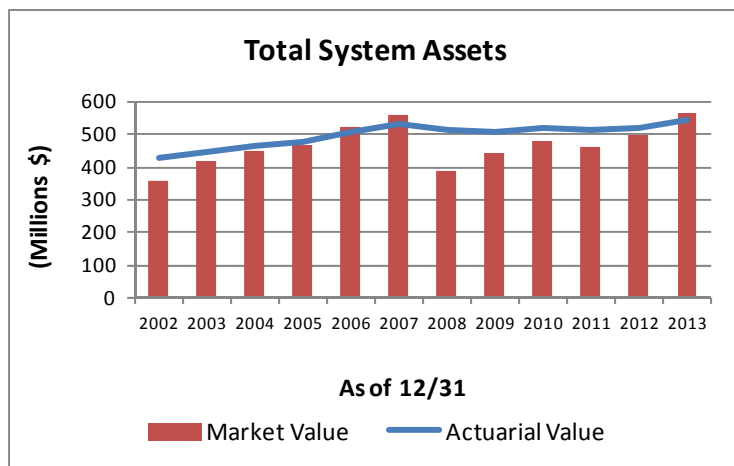
### ASSETS

As of December 31, 2013, the System had total assets of \$564.2 million when measured on a market value basis. This was an increase of \$69.5 million from the December 31, 2012 figure of \$494.7 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 market and expected value. See Table 3 on page 14 for a detailed development of the actuarial value of assets. The rate of return on the actuarial value of assets was 9.2%. Due to a greater than expected rate of return on the market value of assets in 2013, the market value of assets exceeds the actuarial value and a deferred investment gain now exists.

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, 2012	\$494.7	\$520.3
- City and Member Contributions	12.2	12.2
- Benefit Payments, Refunds and Transfers	(37.1)	(37.1)
- Investment Income (net of expenses)	94.4	46.8
Assets, December 31, 2013	\$564.2	\$542.2

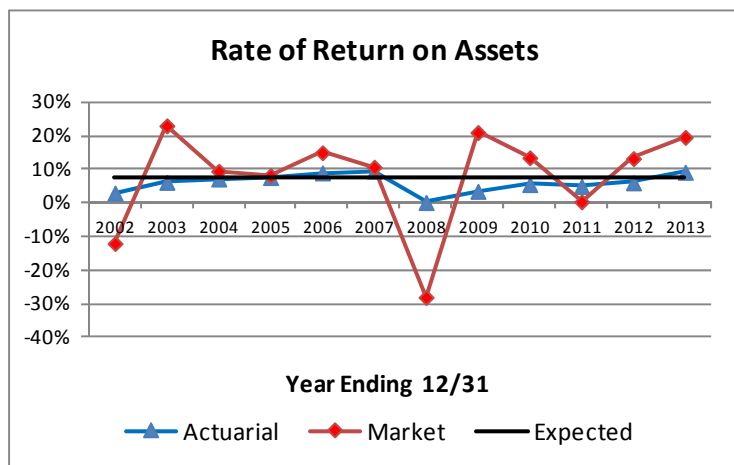
The unrecognized investment gain represents about 4% of the market value of assets. Unless offset by future investment losses or other unfavorable experience, the recognition of the \$22 million gain is expected to have a positive impact on the future funded ratio and actuarial contribution requirement. If the deferred gain was recognized immediately in the actuarial value of assets, the funded percentage would increase from 93% to 97% and the actuarially determined contribution rate for the City would decrease from 12.2% to 10.1% 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.*



**SECTION I: EXECUTIVE SUMMARY**



*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.*

**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, 2013 are:

Actuarial Liability	\$582,385,829
Actuarial Value of Assets	<u>542,157,342</u>
Unfunded Actuarial Liability/(Surplus)	\$ 40,228,487

Between December 31, 2012 and December 31, 2013, the change in the unfunded actuarial liability for the System was as follows (in millions):

Change in Unfunded Actuarial Liability		(\$M)
UAL, December 31, 2012		\$51.5
+ Normal cost for year		8.6
+ Assumed investment return for year		4.3
- Actual contributions (member + city)		12.2
- Assumed investment return on contributions		0.4
= Expected Unfunded Actuarial Liability, December 31, 2013		51.8
+ Change from assumption changes		0.0
= Expected UAL after changes		51.8
Actual UAL, December 31, 2013		40.2
Experience gain/(loss): Expected UAL - Actual UAL		\$11.6

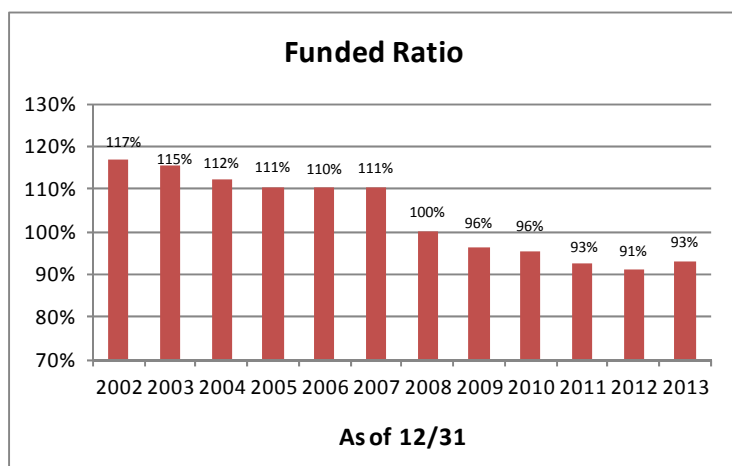


## SECTION I: EXECUTIVE SUMMARY

The experience gain for the 2013 plan year of \$11.6 million reflects the combined impact of an actuarial gain of about \$7.4 million on System assets (actuarial value), and an actuarial gain of about \$4.2 million on System liabilities, largely due to smaller salary increases than expected based on the actuarial assumptions.

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.

	12/31/2009	12/31/2010	12/31/2011	12/31/2012	12/31/2013
Actuarial Liability (\$M)	\$529.3	\$540.4	\$555.2	\$571.8	\$582.4
Actuarial Value of Assets (\$M)	\$509.5	\$516.3	\$513.3	\$520.3	\$542.2
Funded Ratio (Actuarial Value)	96.3%	95.5%	92.5%	91.0%	93.1%
Funded Ratio (Market Value)	84.0%	88.9%	82.6%	86.5%	96.9%



*The funded ratio has declined over this period due to various reasons including benefit improvements, assumption changes and most significantly, investment experience. The deferred investment losses have been eliminated and a deferred gain now exists. Absent investment returns below the 7.75% assumption, the deferred gain will be recognized and the funded ratio will increase 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 about a \$22 million difference between the actuarial value and the market value of assets. To the extent there is not unfavorable investment experience to offset the deferred gain, the \$22 million deferred gain will be recognized in future years and the System's funded status will improve. 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.



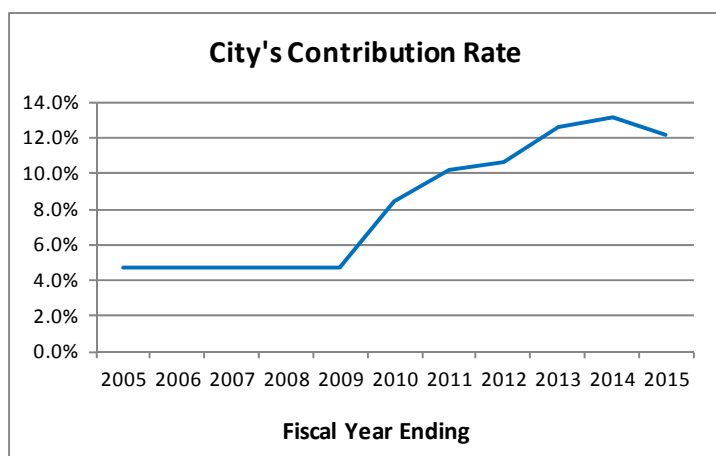


## SECTION I: EXECUTIVE SUMMARY

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 2015 is based on the December 31, 2013 actuarial valuation results.

As of December 31, 2013, the actuarial liability exceeds the actuarial value of assets so an unfunded actuarial liability (UAL) exists. When amortized over a rolling 20-year period, the resulting contribution is 3.9% 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 12.2% of pay (8.3% employer normal cost rate plus 3.9% UAL contribution).

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



*The City's contribution rate is 13.2% and 12.2% for the Fiscal Year Ending 12/31/2014 and 12/31/2015, 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 2013 was 19.6% which eliminated the deferred investment losses that would otherwise have been recognized in the current valuation. Due to the strong return on market value of assets in 2013, the return on the actuarial value of assets was 9.2%. As a result, the System experienced an actuarial gain on assets of \$7.4 million. This gain and the actuarial gain on liabilities of \$4.2 million combined for a total actuarial gain of \$11.6 million.

The deferred investment gain (market value less actuarial value of assets) is \$22 million. Absent investment losses in future years, the deferred investment gain of \$22 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, 2013 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	\$582,385,829	\$582,385,829
Asset Value	542,157,342	564,204,318
Unfunded Actuarial Liability	40,228,487	18,181,511
Funded Ratio	93.1%	96.9%
Normal Cost Rate	13.0%	13.0%
UAL Contribution Rate	<u>3.9%</u>	<u>1.8%</u>
Total Contribution Rate	16.9%	14.8%
Employee Contribution Rate	<u>(4.7%)</u>	<u>(4.7%)</u>
Employer Contribution Rate	12.2%	10.1%

The actuarial gain resulting from experience in 2013 lowered the City's contribution rate from 13.2% in the December 31, 2012 valuation to 12.2% 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 volatility in the City's contribution rate.

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

<b>1. PARTICIPANT DATA</b>	<u>12/31/2013</u> <u>Valuation</u>	<u>12/31/2012</u> <u>Valuation</u>	<u>%</u> <u>Change</u>
Number of:			
Active Members			
Plan 1	2	2	0.0%
Plan 2	927	928	(0.1)%
Plan 3 (excluding Plan 3b)	517	527	(1.9)%
Total	<u>1,446</u>	<u>1,457</u>	(0.8)%
DROP Members			
Plan 1	13	24	(45.8)%
Plan 2	30	22	36.4%
Total	<u>43</u>	<u>46</u>	(6.5)%
Retired Members and Beneficiaries	1,327	1,302	1.9%
Inactive Vested Members	<u>147</u>	<u>142</u>	3.5%
Total Members	2,963	2,947	0.5%
Annual Projected Payroll (Including DROP)			
Plan 1	\$ 940,816	\$ 1,535,362	(38.7)%
Plan 2	50,731,542	50,114,697	1.2%
Plan 3	21,198,908	21,347,008	(0.7)%
Total	<u>\$ 72,871,266</u>	<u>\$ 72,997,067</u>	(0.2)%
Annual Retirement Payments for Retired Members and Beneficiaries	\$ 34,794,864	\$ 33,472,332	4.0%
<b>2. ASSETS AND LIABILITIES</b>			
Total Actuarial Liability	\$ 582,385,829	\$ 571,805,455	1.9%
Market Value of Assets	564,204,318	494,708,674	14.0%
Actuarial Value of Assets	542,157,342	520,320,051	4.2%
Unfunded Actuarial Liability (UAL)	\$ 40,228,487	\$ 51,485,404	(21.9)%
Funded Ratio	93.1%	91.0%	2.3%
<b>3. EMPLOYER CONTRIBUTION RATES AS A PERCENT OF PAYROLL</b>			
Normal Cost	13.0%	12.9%	0.8%
Member Financed	<u>(4.7)%</u>	<u>(4.7)%</u>	0.0%
Employer Normal Cost	8.3%	8.2%	1.2%
Amortization of Unfunded Actuarial Liability or (Surplus)	<u>3.9%</u>	<u>5.0%</u>	(22.0)%
Employer Contribution Rate	12.2%	13.2%	(7.6)%



## SECTION II: SCOPE OF THE REPORT

---

This report presents the actuarial valuation of the Wichita Employees' Retirement System as of December 31, 2013. This valuation was prepared at the request of the System's Board of Trustees. The report is based on plan provisions and actuarial assumptions 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 3 describes the assets and investment experience of the System. Sections 4 and 5 describe how the obligations of the System are to be met under the actuarial cost method in use. Section 6 includes the information required for the financial reporting standards established by the Governmental Accounting Standards Board (GASB).

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, 2013. 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, 2013, the market value of assets for the System was \$564 million. Table 1 is a comparison, at market values, of System assets as of December 31, 2013, and December 31, 2012, in total and by investment category. Table 2 summarizes the change in the market value of assets from December 31, 2012 to December 31, 2013.

#### **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 expected value (based on the actuarial assumption) and market value. Table 3 shows the development of the actuarial value of assets (AVA) as of December 31, 2013.



SECTION III: ASSETS

TABLE 1

Analysis of Net Assets at Market Value

	As of December 31, 2013		As of December 31, 2012	
	<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	\$ 0.3	0.1%	\$ 0.2	0.0 %
Government Securities	33.2	6.1	35.2	7.3
Corporate Debt	40.6	7.4	43.4	9.0
Mortgage Backed Securities	34.7	6.3	37.8	7.9
Pooled Funds	101.9	18.6	81.4	17.0
Domestic Equity	206.0	37.6	163.8	34.1
International Equity	96.0	17.5	78.2	16.3
Real Estate	29.2	5.3	16.8	3.5
Timber	11.7	2.1	10.0	2.1
Commodities	0.0	0.0	11.8	2.5
Securities Lending Collateral Pool	38.5	7.0	29.6	6.2
Other	0.1	0.0	0.2	0.0
Receivables	11.5	2.1	11.0	2.3
Liabilities	(55.5)	(10.1)	(39.7)	(8.2)
<b>Total Plans 1 and 2</b>	<u>\$ 548.2</u>	<u>100.0%</u>	<u>\$ 479.7</u>	<u>100.0%</u>
<b><u>Plan 3 Assets</u></b>				
Members Electing to Stay in Plan 3 (3b)	\$ 5.9		\$ 4.6	
Other Plan 3 Members	16.0		15.0	
<b>Total Plan 3 Assets</b>	<u>21.9</u>		<u>19.6</u>	
<b>Net Assets (Plans 1, 2, 3, and 3b)</b>	\$ 570.1		\$ 499.3	

**SECTION III: ASSETS****TABLE 2****Summary of Changes in Net Assets  
During Year Ended December 31, 2013**

(Market Value)

	<u>Plans 1 &amp; 2</u>	<u>Plan 3*</u>	<u>Total</u>
1. Market Value of Assets as of December 31, 2012	\$ 479,661,059	\$ 15,047,615	\$ 494,708,674
2. Adjustment to Tie to Audited Financial Statements	\$ 3,985	\$ 3,416	\$ 7,401
3. Contributions:			
a. Members	\$ 2,304,481	\$ 949,420	\$ 3,253,901
b. City	7,990,502	949,633	8,940,135
c. Transfers	2,465,600	(3,145,506)	(679,906)
d. Total	\$ 12,760,583	\$ (1,246,453)	\$ 11,514,130
4. Investment Income:			
a. Interest and Dividends	\$ 13,442,278	\$ 408,391	\$ 13,850,669
b. Net Appreciation in Fair Value	81,029,934	2,421,036	83,450,970
c. Commission Recapture	15,430	469	15,899
d. Net Securities Lending Income	122,273	3,724	125,997
e. Total	\$ 94,609,915	\$ 2,833,620	\$ 97,443,535
5. Expenditures:			
a. Refunds of Member Contributions	\$ 570,712	\$ 459,632	\$ 1,030,344
b. Benefits Paid:			
(1) Pension and Death Benefits	32,723,034	0	32,723,034
(2) DROP Payments	2,650,766	0	2,650,766
c. Administrative Expenses	404,514	71,222	475,736
d. Investment Expenses	2,506,414	83,128	2,589,542
e. Total	\$ 38,855,440	\$ 613,982	\$ 39,469,422
6. Net Change [3(d) + 4(e) - 5(e)]	\$ 68,515,058	\$ 973,185	\$ 69,488,243
7. Market Value of Assets as of December 31, 2013 (1) + (2) + (6)	\$ 548,180,102	\$ 16,024,216	\$ 564,204,318

\* Excludes assets for Plan 3b members. The December 31, 2013 value of the assets for this group was \$5,902,760.



**SECTION III: ASSETS**

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**TABLE 3**

**Development of Actuarial Value of Assets  
as of December 31, 2013**

	<u>Plans 1 &amp; 2</u>	<u>Plan 3*</u>	<u>Total</u>
1. Actuarial Value of Assets as of December 31, 2012	\$ 504,506,977	\$ 15,813,074	\$ 520,320,051
2. Actual Contributions/Disbursements			
a. Contributions	\$ 10,294,983	\$ 1,899,053	\$ 12,194,036
b. Transfers	2,465,600	(3,145,506)	(679,906)
c. Benefit Payments and Refunds	(35,944,512)	(459,632)	(36,404,144)
d. Net	\$ (23,183,929)	\$ (1,706,085)	\$ (24,890,014)
3. Expected Value of Assets as of December 31, 2013 [(1) * 1.0775] + [2(d) * (1.0775) <sup>-5</sup> ]	\$ 519,540,724	\$ 15,267,625	\$ 534,808,349
4. Market Value of Assets as of December 31, 2013	\$ 548,180,102	\$ 16,024,216	\$ 564,204,318
5. Difference Between Actual and Expected Values	\$ 28,639,378	\$ 756,591	\$ 29,395,969
6. Actuarial Value of Assets as of December 31, 2013 (3) + [(5) * 0.25]	\$ 526,700,569	\$ 15,456,773	\$ 542,157,342
7. Actuarial Value of Assets Divided by Market Value of Assets	96.1%	96.5%	96.1%
8. Market Value of Assets Less Actuarial Value of Assets	\$ 21,479,533	\$ 567,443	\$ 22,046,976

\* 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, 2013. 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, 2013.

### **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.



TABLE 4

**Present Value of Future Benefits (PVFB)  
as of December 31, 2013**

	<u>Plan 1</u>	<u>Plan 2</u>	<u>Plan 3</u>	<u>Total</u>
1. Active Employees				
a. Retirement Benefit	\$ 688,124	\$ 205,436,950	\$ 33,743,186	\$ 239,868,260
b. Pre-Retirement Death Benefit	0	3,339,959	855,900	4,195,859
c. Withdrawal Benefit	0	10,821,957	5,019,683	15,841,640
d. Disability Benefit	0	5,226,613	1,341,552	6,568,165
e. Total	\$ 688,124	\$ 224,825,479	\$ 40,960,321	\$ 266,473,924
2. DROP Members				
a. DROP Account Balance	\$ 2,832,448	\$ 1,157,006	\$ 0	\$ 3,989,454
b. Monthly Retirement Benefit	8,751,043	10,251,741	0	19,002,784
c. Total	\$ 11,583,491	\$ 11,408,747	\$ 0	\$ 22,992,238
3. Inactive Vested Members	\$ 0	\$ 25,272,938	\$ 0	\$ 25,272,938
4. In Pay Members				
a. Retirees	\$ 216,438,597	\$ 94,338,087	\$ 0	\$ 310,776,684
b. Disabled Members	1,423,599	2,014,030	0	3,437,629
c. Beneficiaries	16,863,368	5,873,415	0	22,736,783
d. Total	\$ 234,725,564	\$ 102,225,532	\$ 0	\$ 336,951,096
5. Total Present Value of Future Benefits 1(e) + 2(c) + (3) + 4(d)	\$ 246,997,179	\$ 363,732,696	\$ 40,960,321	\$ 651,690,196



TABLE 5

**Actuarial Liability  
as of December 31, 2013**

	<u>Plan 1</u>		<u>Plan 2</u>		<u>Plan 3</u>		<u>Total</u>
1. Active Employees							
a. Present Value of Future Benefits	\$ 688,124	\$	224,825,479	\$	40,960,321	\$	266,473,924
b. Present Value of Future Normal Costs	11,992		42,518,412		26,773,963		69,304,367
c. Actuarial Liability 1(a) - 1(b)	\$ 676,132	\$	182,307,067	\$	14,186,358	\$	197,169,557
2. DROP Members	\$ 11,583,491	\$	11,408,747	\$	0	\$	22,992,238
3. Inactive Vested Members	\$ 0	\$	25,272,938	\$	0	\$	25,272,938
4. In Pay Members							
a. Retirees	\$ 216,438,597	\$	94,338,087	\$	0	\$	310,776,684
b. Disabled Members	1,423,599		2,014,030		0		3,437,629
c. Beneficiaries	16,863,368		5,873,415		0		22,736,783
d. Total	\$ 234,725,564	\$	102,225,532	\$	0	\$	336,951,096
5. Reserve for Plan 3 Members	\$ 0	\$	0	\$	0	\$	0
6. Total Actuarial Liability 1(c) + (2) + (3) + 4(d) + (5)	\$ 246,985,187	\$	321,214,284	\$	14,186,358	\$	582,385,829



TABLE 6

**Present Value of Accrued Benefits  
as of December 31, 2013**

The present value of accrued benefits for the System reflects the benefits earned based on service, earnings, and the System provisions as of the valuation date. It also reflects the on-going nature of the System by using the same actuarial assumptions as are used for funding purposes. Further, because the System provides that the accrued benefits of deferred vested members are indexed until benefits begin, the present value of the accrued benefit liability for active members reflects this provision from the assumed termination of employment to the assumed benefit commencement date.

	<u>Plan 1</u>	<u>Plan 2</u>	<u>Plan 3</u>	<u>Total</u>
1. Active Employees	\$ 688,124	\$ 126,933,503	\$ 6,614,361	\$ 134,235,988
2. DROP Members	\$ 11,583,491	\$ 11,408,747	\$ 0	\$ 22,992,238
3. Inactive Vested Members	\$ 0	\$ 25,272,938	\$ 0	\$ 25,272,938
4. In Pay Members				
a. Retirees	\$ 216,438,597	\$ 94,338,087	\$ 0	\$ 310,776,684
b. Disabled Members	1,423,599	2,014,030	0	3,437,629
c. Beneficiaries	16,863,368	5,873,415	0	22,736,783
d. Total	\$ 234,725,564	\$ 102,225,532	\$ 0	\$ 336,951,096
5. Total	\$ 246,997,179	\$ 265,840,720	\$ 6,614,361	\$ 519,452,260
6. Market Value of Assets*	\$ 268,551,031	\$ 289,038,926	\$ 6,614,361	\$ 564,204,318
7. Funded Ratio (6)/(5)	109%	109%	100%	109%

\* Split of assets between Plan 1 and Plan 2 is in proportion to the liabilities for illustrative purposes only.



## **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 fund, 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, 2013 actuarial valuation will be used to determine employer contribution rates to the Wichita Employees’ Retirement System for fiscal year 2015. 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, 2013, 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, 2013, 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, 2013.

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 7**

**Derivation of Unfunded Actuarial Liability Contribution Rate**

1. Actuarial Accrued Liability	\$	582,385,829
2. Actuarial Value of Assets	\$	542,157,342
3. Unfunded Actuarial Liability (UAL)	\$	40,228,487
4. Payment (Adjusted to Mid-Year) to Amortize Unfunded Actuarial Liability/(Surplus) Over 20 Years*	\$	2,863,108
5. Total Projected Payroll for the Year	\$	72,871,266
6. Amortization Payment as a Percent of Payroll		3.9%

\* 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 8**

**Derivation of Normal Cost Rate**

Normal Cost for Year End December 31, 2013	
Service pensions	\$ 6,685,094
Disability pensions	275,452
Survivor Pensions	194,565
Termination Benefits	<u>1,456,488</u>
Total Normal Cost	\$ 8,611,599
Expected Payroll in 2014 for Current Actives	\$ 66,386,071
Total Normal Cost Rate for Year	13.0%



**SECTION V: EMPLOYER CONTRIBUTIONS**

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**TABLE 9**

**Employer Contribution Rates  
for Fiscal Year Commencing in 2015**

	<b>Contribution Requirement as a % of Payroll</b>
Normal Cost	
Service pensions	10.1%
Disability pensions	0.4%
Survivor pensions	0.3%
Termination pensions	2.2%
Total Normal Cost	<u>13.0%</u>
Unfunded Actuarial Liability	
Retired members and beneficiaries <sup>(1)</sup>	0.0%
Active and former members <sup>(2)</sup>	3.9%
Total UAL Contribution	<u>3.9%</u>
Total Contribution Requirement	
Member Financed Portion <sup>(3)</sup>	4.7%
City Financed Portion	<u>12.2%</u>
Total	<u>16.9%</u>

<sup>(1)</sup> Actuarial accrued liability for retired members and beneficiaries was fully funded as of December 31, 2013.

<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**

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**TABLE 10**

**Historical Summary of City Contribution Rates**

Contribution rates are computed in accordance with a level percent of payroll funding objective. As of December 31, 2013, 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



**SECTION V: EMPLOYER CONTRIBUTIONS**

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**TABLE 11**

**Derivation of System Experience Gain/(Loss)**

	(\$M) <b>Year Ended 12/31/2013</b>
(1) UAL* at start of year	\$ 51.5
(2) + Normal cost for year	8.6
(3) + Assumed investment return on (1) and (2)	4.3
(4) - Actual contributions (member + City)	12.2
(5) - Assumed investment return on (4)	0.4
(6) = Expected UAL at end of year	51.8
(7) + Increase (decrease) from assumption changes	0.0
(8) = Expected UAL after changes	51.8
(9) = Actual UAL at year end	40.2
(10) = Experience gain/(loss) (8) - (9)	\$11.6**
(11) = Percent of beginning of year AL	2.0%

\* Unfunded actuarial liability/(surplus)

\*\* Of this amount, \$7.4 million of the experience gain is due to an experience gain on the actuarial value of assets and \$4.2 million represents an experience gain on liabilities.



## SECTION VI: ACCOUNTING 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 preceding methods comply with the financial reporting standards established by the Governmental Accounting Standards Board.

The Entry Age Normal actuarial liability was determined as part of an actuarial valuation of the System as of December 31, 2013. 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, (3.50% attributable to inflation, and 0.50% 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	\$ 197,169,557
DROP members	22,992,238
Retired members and beneficiaries currently receiving benefits	336,951,096
Vested terminated members not yet receiving benefits	<u>25,272,938</u>
Total Actuarial Liability	\$ 582,385,829
Actuarial Value of Assets (market value was \$564,204,318)	\$ 542,157,342
Unfunded Actuarial Liability	\$ 40,228,487

During the year ended December 31, 2013, the System experienced a net increase of \$11 million in the actuarial liability.

**SECTION VI: ACCOUNTING INFORMATION****TABLE 12****Required Supplementary Information  
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

*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.

\*\* 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: ACCOUNTING INFORMATION

TABLE 13

Required Supplementary Information
Schedule of Employer Contributions

Table with 4 columns: Fiscal Year, Actuarial Valuation Date, Annual Required Contribution, and Percent Contributed. Rows range from 1997 to 2013.

\* Reflects contributions to Plans 1, 2, and 3. Excludes contributions for Plan 3b members.
Note: Years prior to 2012 were provided by prior Actuary.

Notes to Required Supplementary Information
Summary of Actuarial Methods and Assumptions

Table listing actuarial methods and assumptions: Valuation Date (December 31, 2013), 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\*, Projected Salary Increases\*, \*Includes Inflation at), and Cost-of-Living Adjustment Provisions (3.00% Non-compounded (Plan 1), 2.00% Non-compounded (Plan 2)).



SECTION VI: ACCOUNTING INFORMATION

TABLE 14
Solvency Test

Table with 8 columns: Valuation Date, (1) Active Member Contributions, (2) Retirants and Beneficiaries\*, (3) Active Members (Employer Financed Portion), Reported Valuation Assets, and three sub-columns for Portion of Actuarial Liabilities Covered by Reported Assets (1), (2), and (3). Rows show data from 12/31/1995 to 12/31/2013.

\* Includes vested termination members.

During the twelve months ended December 31, 2013, the Wichita Employees' Retirement System generated a net actuarial gain of \$11.6 million. The amount is 2.0% of the actuarial liability at the beginning of the year.

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



**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**MEMBER DATA RECONCILIATION**

December 31, 2012 to December 31, 2013

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 12/31/2012	2	928	527	24	22	809	493	1	141	2,947
New Members	0	0	+135	0	0	+5	+7	0	0	+147
Transfers	0	+76	-90	0	0	0	0	0	0	-14
Rehires	0	+1	+2	0	0	0	0	0	-1	+2
Terminations										
Refunded	0	-10	-54	0	0	0	0	0	-4	-68
Deferred Vested	0	-21	0	0	0	0	0	0	+21	0
Retirements										
Service	0	-27	0	-11	-6	+12	+47	-1	-14	0
Disability	0	-1	0	0	0	0	+1	0	0	0
DROP	0	-13	0	0	+13	0	0	0	0	0
Payment Ended	0	0	0	0	0	0	-1	0	0	-1
Deaths										
Cashed Out	0	0	0	0	0	0	0	0	0	0
With Beneficiary	0	-3	0	0	0	-5	-4	0	0	-12
Without Beneficiary	0	-3	-3	0	0	-25	-11	0	0	-42
Data Adjustments	0	0	0	0	+1	-1	0	0	+4	+4
<b>Members as of 12/31/2013</b>	<b>2</b>	<b>927</b>	<b>517</b>	<b>13</b>	<b>30</b>	<b>795</b>	<b>532</b>	<b>0</b>	<b>147</b>	<b>2,963</b>



**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

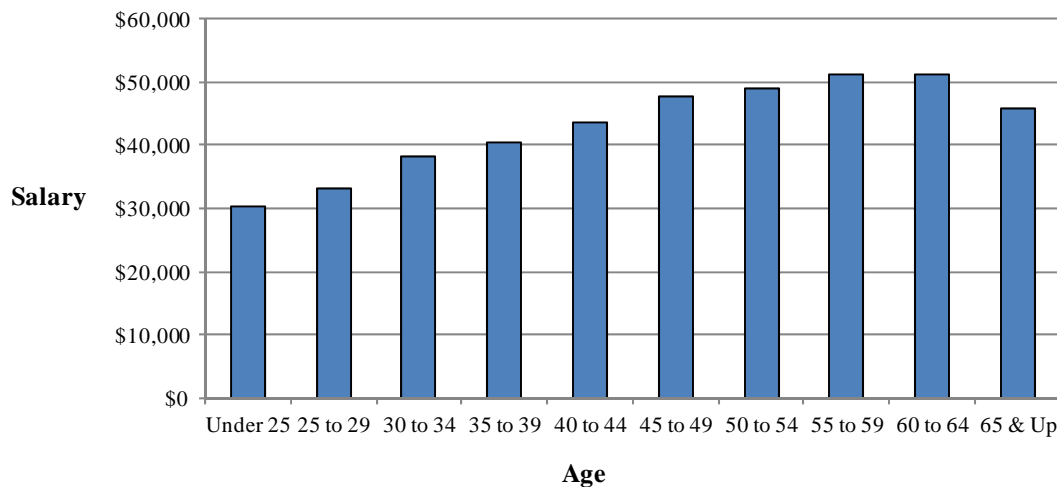
**SUMMARY OF ACTIVE MEMBERS  
(Excluding DROP Members)  
as of December 31, 2013**

All Plans

Age	Number			Valuation Salaries*		
	Male	Female	Total	Male	Female	Total
Under 25	19	8	27	\$ 586,488	\$ 231,450	\$ 817,938
25 to 29	47	25	72	1,577,956	802,587	2,380,543
30 to 34	69	36	105	2,732,848	1,290,832	4,023,680
35 to 39	92	62	154	3,511,226	2,726,808	6,238,034
40 to 44	87	71	158	3,901,575	2,994,016	6,895,591
45 to 49	120	75	195	5,780,489	3,490,496	9,270,985
50 to 54	159	101	260	7,914,455	4,809,105	12,723,560
55 to 59	174	104	278	9,020,803	5,204,041	14,224,844
60 to 64	107	68	175	5,635,769	3,320,705	8,956,474
65 & Up	11	11	22	552,885	455,871	1,008,756
<b>Total</b>	<b>885</b>	<b>561</b>	<b>1,446</b>	<b>\$41,214,494</b>	<b>\$25,325,911</b>	<b>\$66,540,405</b>

\* Actual salary as reported by System for year ending 12/31/2013

**Average Salary by Age**







**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

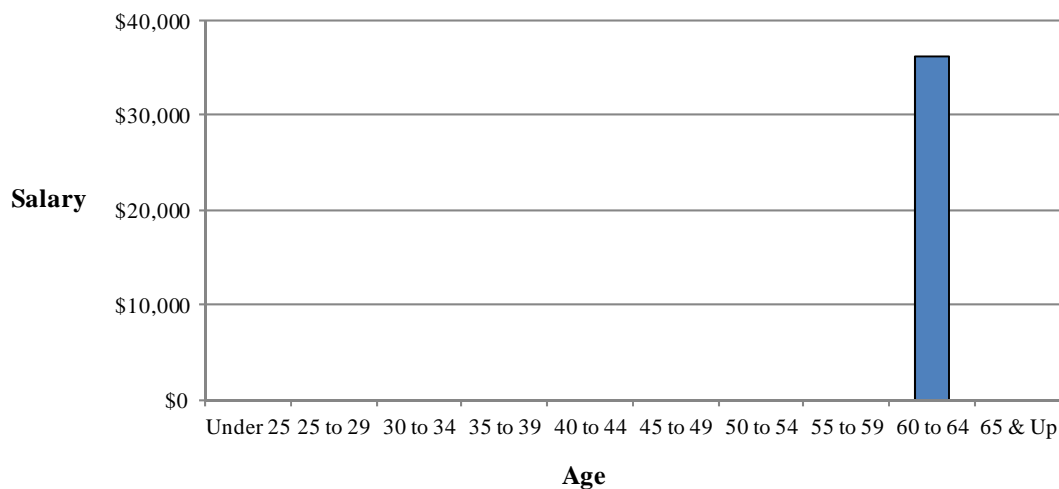
**SUMMARY OF ACTIVE MEMBERS  
(Excluding DROP Members)  
as of December 31, 2013**

Plan 1

Age	Number			Valuation Salaries*		
	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	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0
45 to 49	0	0	0	0	0	0
50 to 54	0	0	0	0	0	0
55 to 59	0	0	0	0	0	0
60 to 64	2	0	2	72,627	0	72,627
65 & Up	0	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>\$72,627</b>	<b>\$ 0</b>	<b>\$72,627</b>

\* Actual salary as reported by System for year ending 12/31/2013

**Average Salary by Age**





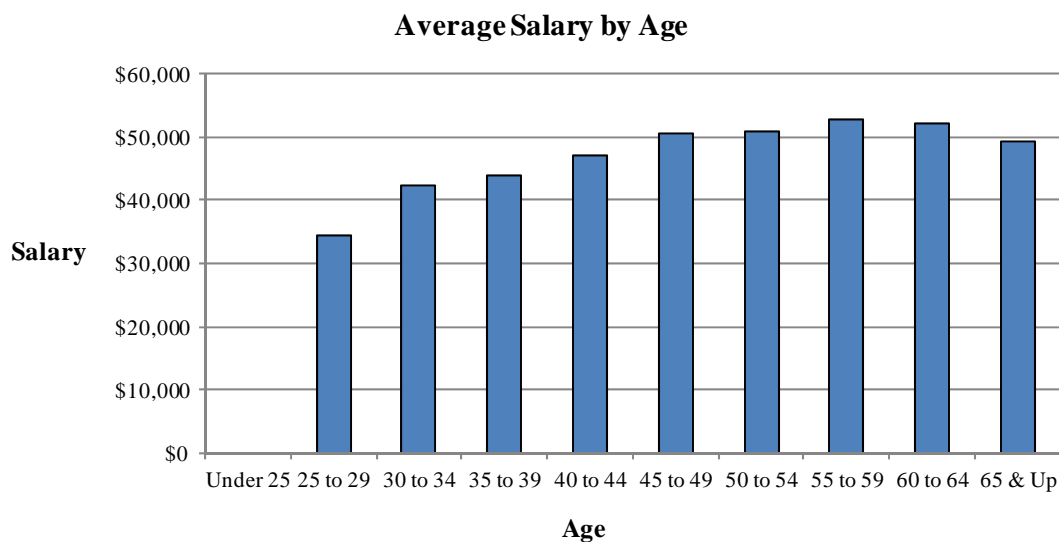
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS  
(Excluding DROP Members)  
as of December 31, 2013**

Plan 2

Age	Number			Valuation Salaries*		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	\$ 0	\$ 0	\$ 0
25 to 29	6	1	7	204,119	37,476	241,595
30 to 34	24	4	28	996,847	188,049	1,184,896
35 to 39	33	22	55	1,373,609	1,034,856	2,408,465
40 to 44	53	38	91	2,566,201	1,718,516	4,284,717
45 to 49	92	54	146	4,654,782	2,708,915	7,363,697
50 to 54	131	77	208	6,644,809	3,944,536	10,589,345
55 to 59	144	88	232	7,594,385	4,658,515	12,252,900
60 to 64	88	57	145	4,745,476	2,815,823	7,561,299
65 & Up	8	7	15	449,067	289,818	738,885
<b>Total</b>	<b>579</b>	<b>348</b>	<b>927</b>	<b>\$29,229,295</b>	<b>\$17,396,504</b>	<b>\$46,625,799</b>

\* Actual salary as reported by System for year ending 12/31/2013





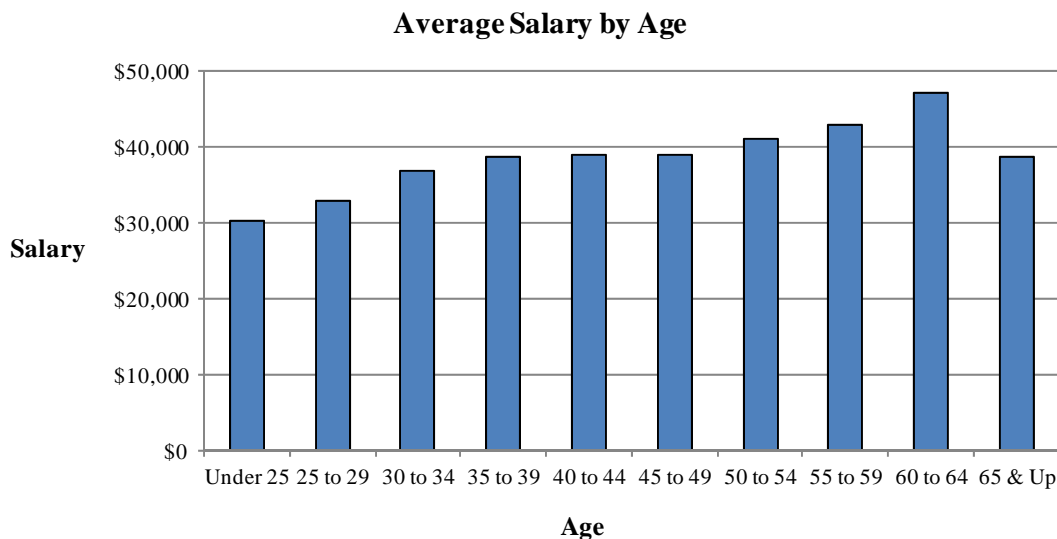
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF ACTIVE MEMBERS**  
as of December 31, 2013

Plan 3

Age	Number			Valuation Salaries*		
	Male	Female	Total	Male	Female	Total
Under 25	19	8	27	\$ 586,488	\$ 231,450	\$ 817,938
25 to 29	41	24	65	1,373,837	765,111	2,138,948
30 to 34	45	32	77	1,736,001	1,102,783	2,838,784
35 to 39	59	40	99	2,137,617	1,691,952	3,829,569
40 to 44	34	33	67	1,335,374	1,275,500	2,610,874
45 to 49	28	21	49	1,125,707	781,581	1,907,288
50 to 54	28	24	52	1,269,646	864,569	2,134,215
55 to 59	30	16	46	1,426,418	545,526	1,971,944
60 to 64	17	11	28	817,666	504,882	1,322,548
65 & Up	3	4	7	103,818	166,053	269,871
<b>Total</b>	<b>304</b>	<b>213</b>	<b>517</b>	<b>\$11,912,572</b>	<b>\$7,929,407</b>	<b>\$19,841,979</b>

\* Actual salary as reported by System for year ending 12/31/2013





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

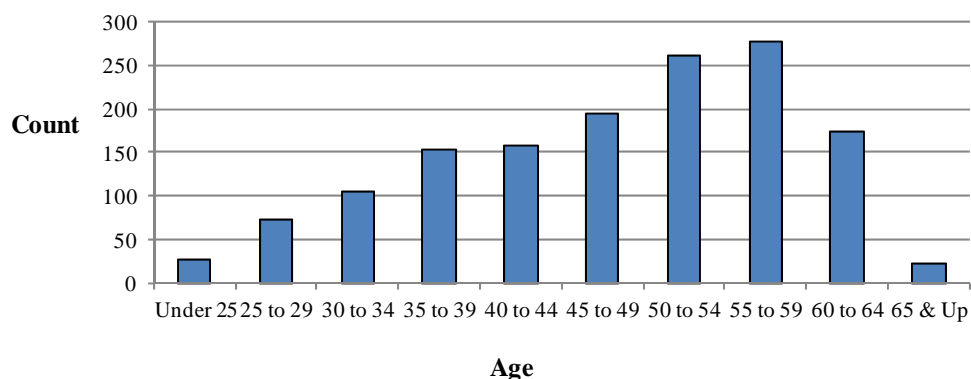
**DISTRIBUTION OF ACTIVE MEMBERS  
(Excluding DROP Members)  
as of December 31, 2013**

All Plans

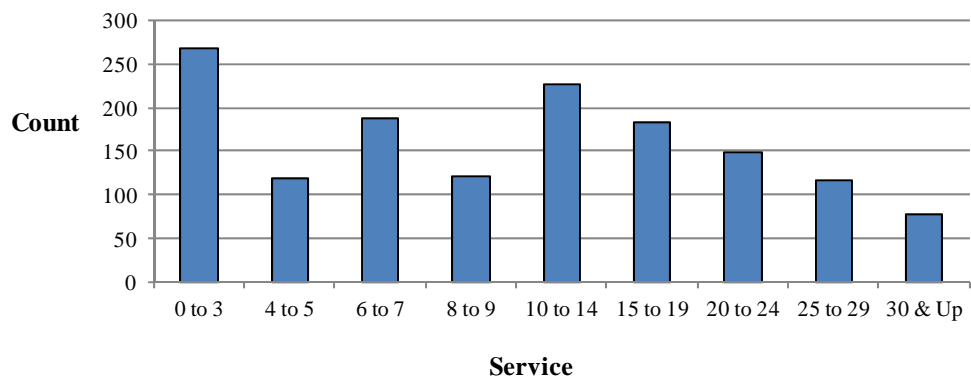
**Years of Service**

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	27	0	0	0	0	0	0	0	0	27
25 to 29	41	13	12	5	1	0	0	0	0	72
30 to 34	42	14	22	13	13	1	0	0	0	105
35 to 39	47	20	40	13	27	7	0	0	0	154
40 to 44	37	18	19	22	31	23	7	1	0	158
45 to 49	20	14	21	15	33	35	46	11	0	195
50 to 54	23	11	31	19	42	36	40	41	17	260
55 to 59	18	17	17	20	46	49	34	40	37	278
60 to 64	12	8	21	11	28	28	21	24	22	175
65 & Up	0	4	4	3	5	4	1	0	1	22
<b>Total</b>	<b>267</b>	<b>119</b>	<b>187</b>	<b>121</b>	<b>226</b>	<b>183</b>	<b>149</b>	<b>117</b>	<b>77</b>	<b>1,446</b>

**Age Distribution**



**Service Distribution**





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

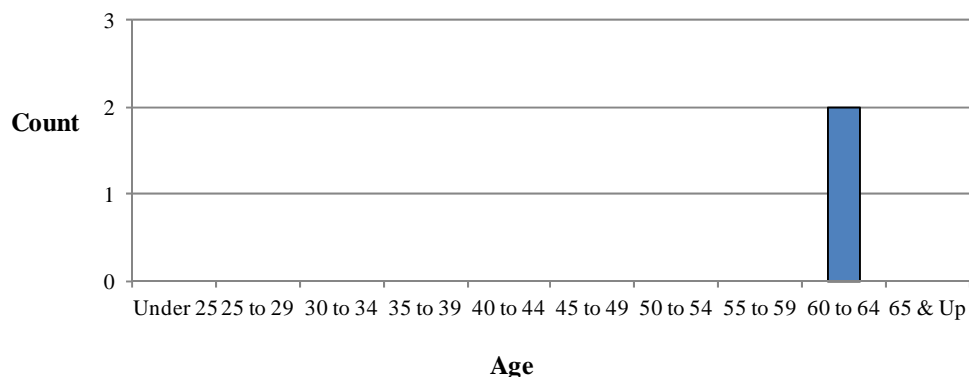
**DISTRIBUTION OF ACTIVE MEMBERS**  
 (Excluding DROP Members)  
 as of December 31, 2013

Plan 1

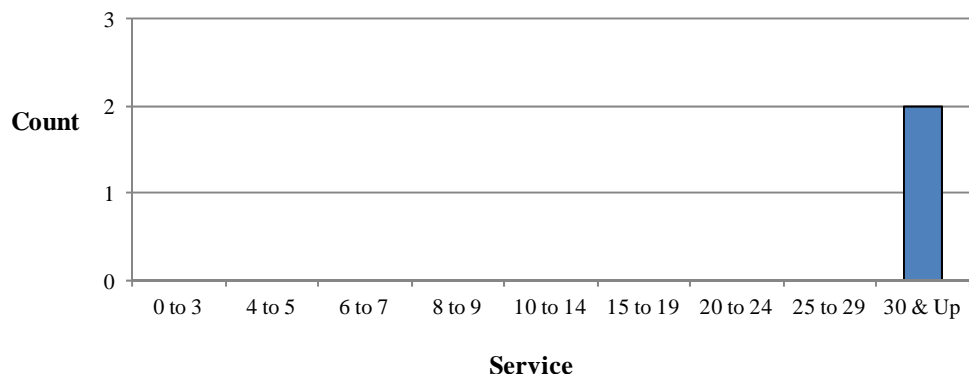
**Years of Service**

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	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	0	0	0	0	0
50 to 54	0	0	0	0	0	0	0	0	0	0
55 to 59	0	0	0	0	0	0	0	0	0	0
60 to 64	0	0	0	0	0	0	0	0	2	2
65 & Up	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>

**Age Distribution**



**Service Distribution**





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

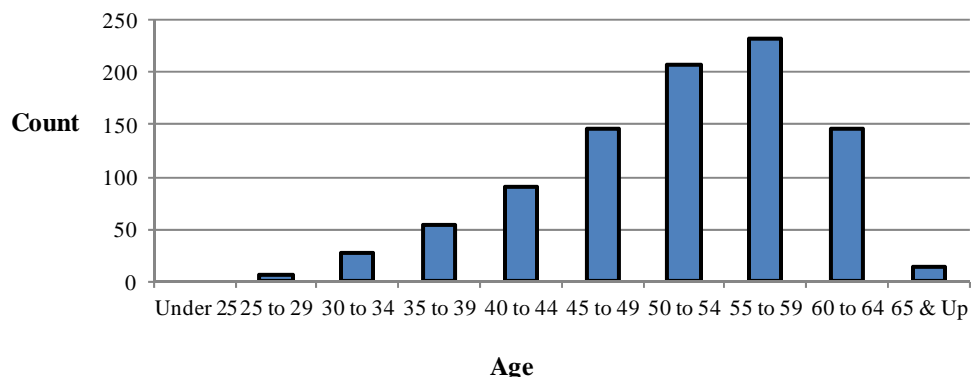
**DISTRIBUTION OF ACTIVE MEMBERS  
(Excluding DROP Members)  
as of December 31, 2013**

Plan 2

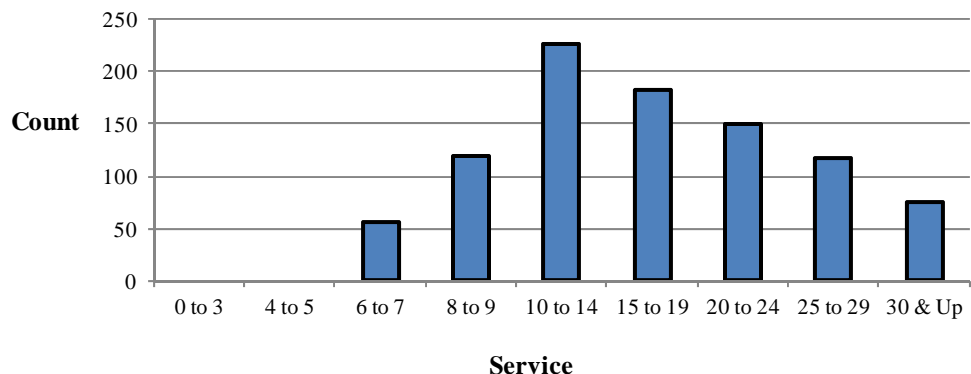
**Years of Service**

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	2	4	1	0	0	0	0	7
30 to 34	0	0	1	13	13	1	0	0	0	28
35 to 39	0	0	8	13	27	7	0	0	0	55
40 to 44	0	0	7	22	31	23	7	1	0	91
45 to 49	0	0	6	15	33	35	46	11	0	146
50 to 54	0	0	13	19	42	36	40	41	17	208
55 to 59	0	0	6	20	46	49	34	40	37	232
60 to 64	0	0	13	11	28	28	21	24	20	145
65 & Up	0	0	1	3	5	4	1	0	1	15
<b>Total</b>	<b>0</b>	<b>0</b>	<b>57</b>	<b>120</b>	<b>226</b>	<b>183</b>	<b>149</b>	<b>117</b>	<b>75</b>	<b>927</b>

**Age Distribution**



**Service Distribution**





**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

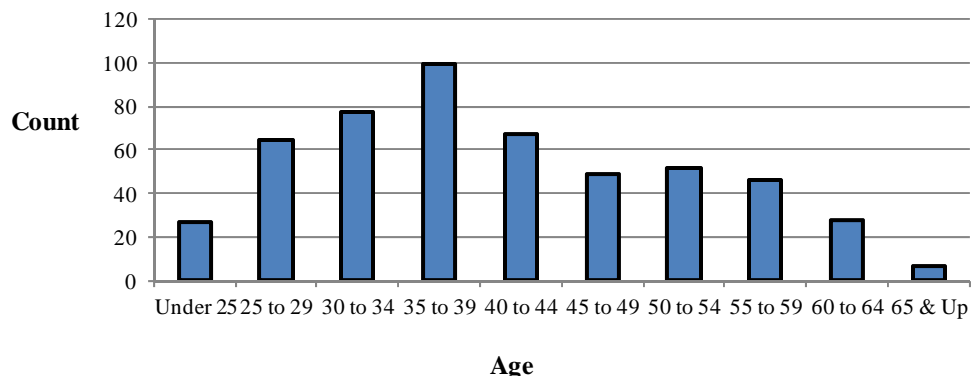
**DISTRIBUTION OF ACTIVE MEMBERS**  
as of December 31, 2013

Plan 3

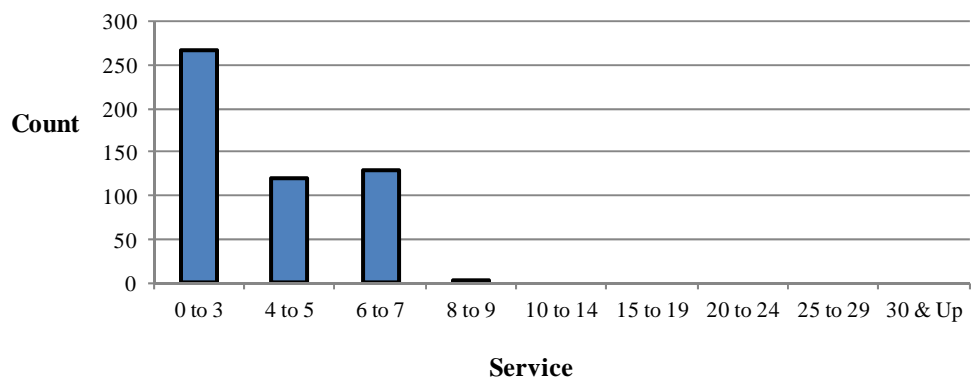
**Years of Service**

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	27	0	0	0	0	0	0	0	0	27
25 to 29	41	13	10	1	0	0	0	0	0	65
30 to 34	42	14	21	0	0	0	0	0	0	77
35 to 39	47	20	32	0	0	0	0	0	0	99
40 to 44	37	18	12	0	0	0	0	0	0	67
45 to 49	20	14	15	0	0	0	0	0	0	49
50 to 54	23	11	18	0	0	0	0	0	0	52
55 to 59	18	17	11	0	0	0	0	0	0	46
60 to 64	12	8	8	0	0	0	0	0	0	28
65 & Up	0	4	3	0	0	0	0	0	0	7
<b>Total</b>	<b>267</b>	<b>119</b>	<b>130</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>517</b>

**Age Distribution**



**Service Distribution**





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

DISTRIBUTION OF DROP MEMBERS

as of December 31, 2013

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	1	0	1
55-59	0	0	0	8	0	8
60-64	0	0	0	2	0	2
65 & Up	0	0	0	2	0	2
Total	0	0	0	13	0	13

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	1	1
55-59	0	0	0	0	8	8
60-64	0	0	0	0	2	2
65 & Up	0	0	0	0	2	2
Total	0	0	0	0	13	13

Age	Monthly Benefits	Current Balance
Under 50	\$ 0	\$ 0
50-54	3,275	175,063
55-59	29,562	1,454,986
60-64	7,580	449,656
65 & Up	13,164	752,744
Total	\$ 53,581	\$ 2,832,449

Covered Payroll \$829,834





APPENDIX A: SUMMARY OF MEMBERSHIP DATA

DISTRIBUTION OF DROP MEMBERS
as of December 31, 2013

Plan 2

Table with columns: Age, Service (Under 20, 20 to 24, 25 to 29, 30 to 34, 35 & Up), Total. Rows: Under 50, 50-54, 55-59, 60-64, 65 & Up, Total.

Table with columns: Age, DROP Duration Elected (months) (1 to 12, 13 to 24, 25 to 36, 37 to 48, 49 to 60), Total. Rows: Under 50, 50-54, 55-59, 60-64, 65 & Up, Total.

Table with columns: Age, Monthly Benefits, Current Balance. Rows: Under 50, 50-54, 55-59, 60-64, 65 & Up, Total.

Covered Payroll \$1,700,376



**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

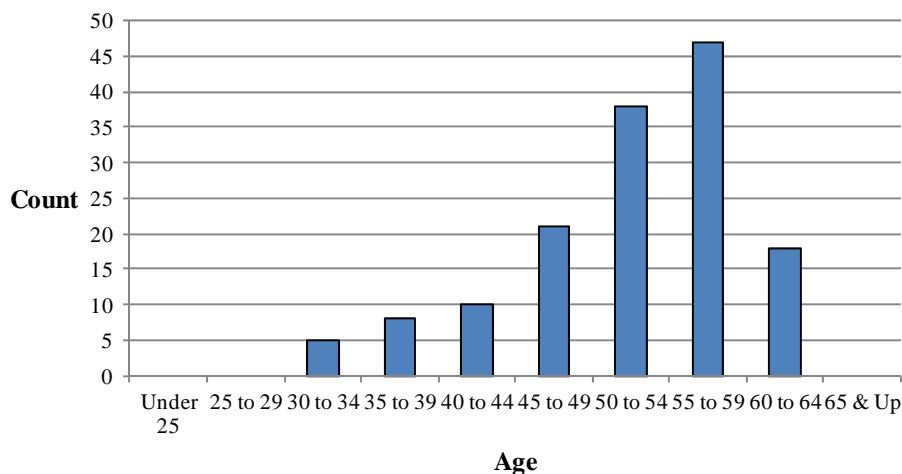
**SUMMARY OF INACTIVE VESTED MEMBERS**  
as of December 31, 2013

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	4	1	5	2,324	399	2,723
35 to 39	4	4	8	3,183	5,133	8,316
40 to 44	6	4	10	5,995	3,843	9,838
45 to 49	9	12	21	9,773	20,239	30,012
50 to 54	19	19	38	28,614	34,608	63,222
55 to 59	24	23	47	45,799	36,219	82,018
60 to 64	9	9	18	17,364	19,180	36,544
65 & Up	0	0	0	0	0	0
<b>Total</b>	<b>75</b>	<b>72</b>	<b>147</b>	<b>\$ 113,052</b>	<b>\$ 119,621</b>	<b>\$ 232,673</b>

\*All Inactive Vested Members are Plan 2 Members

**Age Distribution**





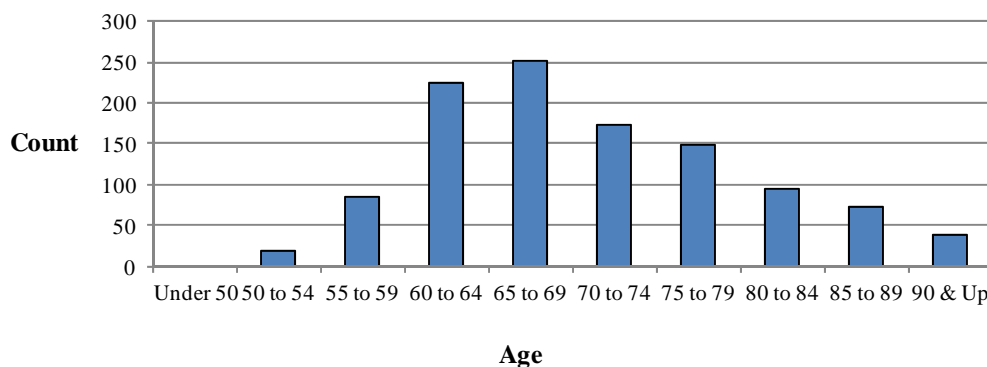
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF RETIRED MEMBERS\***  
as of December 31, 2013

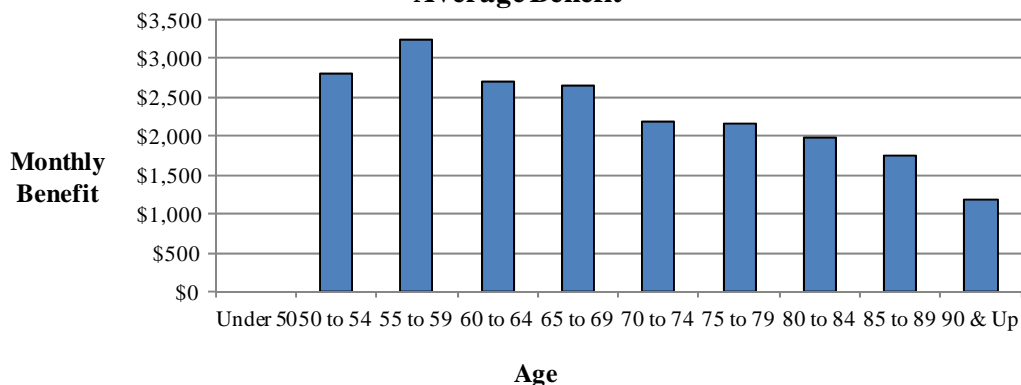
All Plans

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	0	0	0	\$ 0	\$ 0	\$ 0
50 to 54	13	6	19	39,199	14,178	53,377
55 to 59	54	30	84	184,211	88,647	272,858
60 to 64	146	79	225	432,865	175,056	607,921
65 to 69	156	96	252	457,926	206,693	664,619
70 to 74	99	74	173	244,385	131,970	376,355
75 to 79	87	61	148	216,610	105,024	321,634
80 to 84	51	43	94	109,461	77,950	187,411
85 to 89	40	33	73	90,287	36,939	127,226
90 & Up	9	29	38	18,130	27,150	45,280
<b>Total</b>	<b>655</b>	<b>451</b>	<b>1,106</b>	<b>\$ 1,793,074</b>	<b>\$ 863,607</b>	<b>\$ 2,656,681</b>

**Age Distribution**



**Average Benefit**



\*Includes DROP members



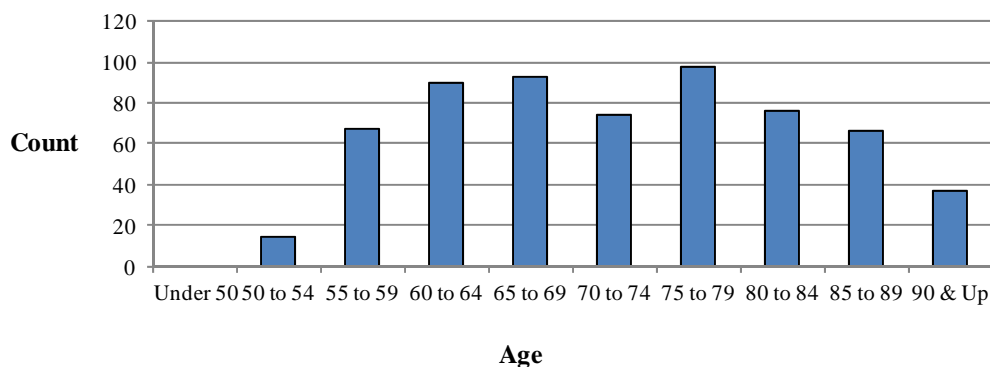
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF RETIRED MEMBERS\***  
as of December 31, 2013

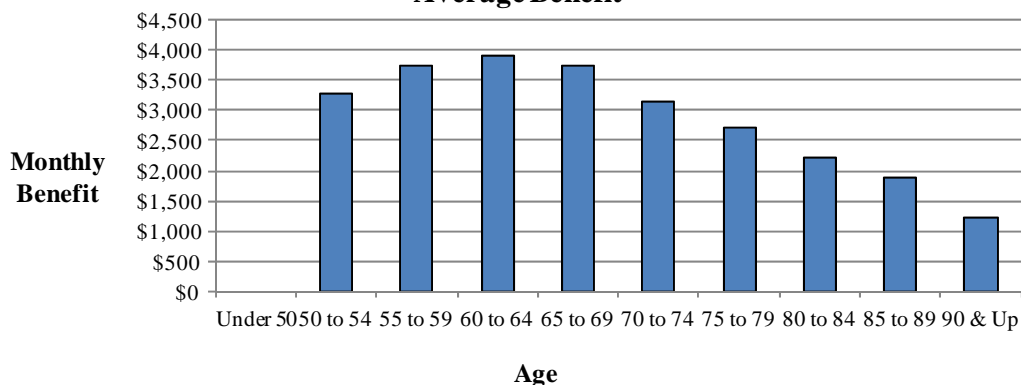
Plan 1

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	0	0	0	\$ 0	\$ 0	\$ 0
50 to 54	10	5	15	35,572	13,345	48,917
55 to 59	43	24	67	169,828	81,522	251,350
60 to 64	66	24	90	277,631	74,867	352,498
65 to 69	65	28	93	262,430	86,288	348,718
70 to 74	47	27	74	165,412	67,552	232,964
75 to 79	63	35	98	190,416	75,812	266,228
80 to 84	39	37	76	96,548	72,232	168,780
85 to 89	37	29	66	88,673	35,395	124,068
90 & Up	9	28	37	18,130	26,802	44,932
<b>Total</b>	<b>379</b>	<b>237</b>	<b>616</b>	<b>\$ 1,304,640</b>	<b>\$ 533,815</b>	<b>\$ 1,838,455</b>

**Age Distribution**



**Average Benefit**



\*Includes DROP members



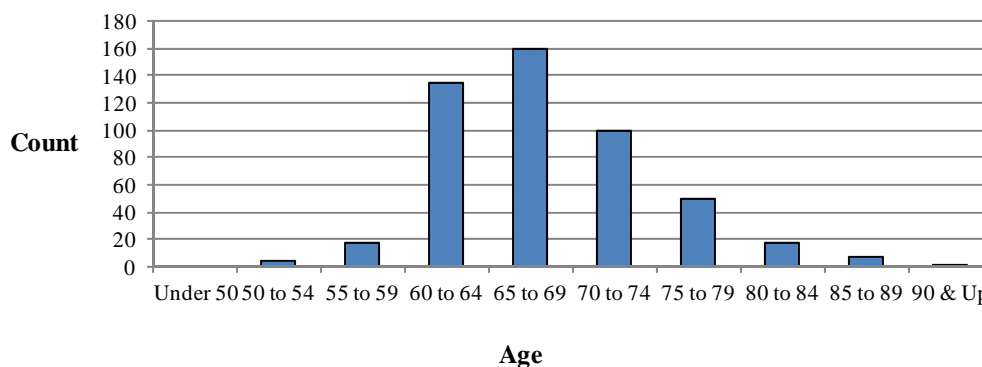
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF RETIRED MEMBERS\***  
as of December 31, 2013

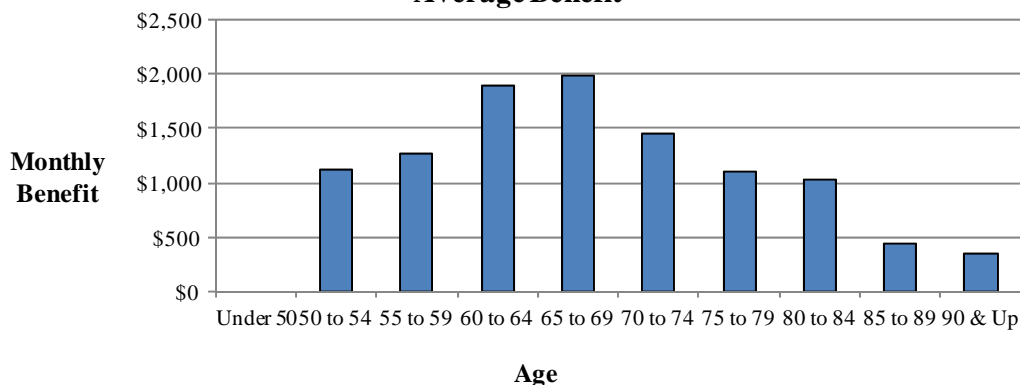
Plan 2

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	0	0	0	\$ 0	\$ 0	\$ 0
50 to 54	3	1	4	3,627	833	4,460
55 to 59	11	6	17	14,383	7,125	21,508
60 to 64	80	55	135	155,234	100,189	255,423
65 to 69	91	68	159	195,496	120,405	315,901
70 to 74	52	47	99	78,973	64,418	143,391
75 to 79	24	26	50	26,194	29,212	55,406
80 to 84	12	6	18	12,913	5,718	18,631
85 to 89	3	4	7	1,614	1,544	3,158
90 & Up	0	1	1	0	348	348
<b>Total</b>	<b>276</b>	<b>214</b>	<b>490</b>	<b>\$ 488,434</b>	<b>\$ 329,792</b>	<b>\$ 818,226</b>

**Age Distribution**



**Average Benefit**



\*Includes DROP members



**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

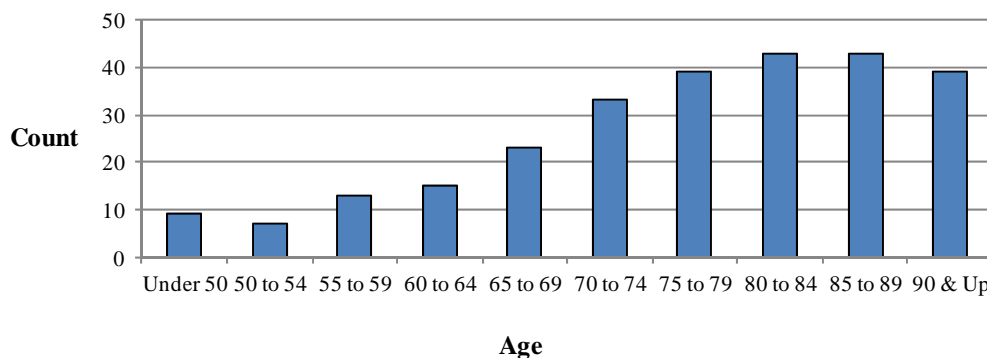
**SUMMARY OF BENEFICIARIES**

as of December 31, 2013

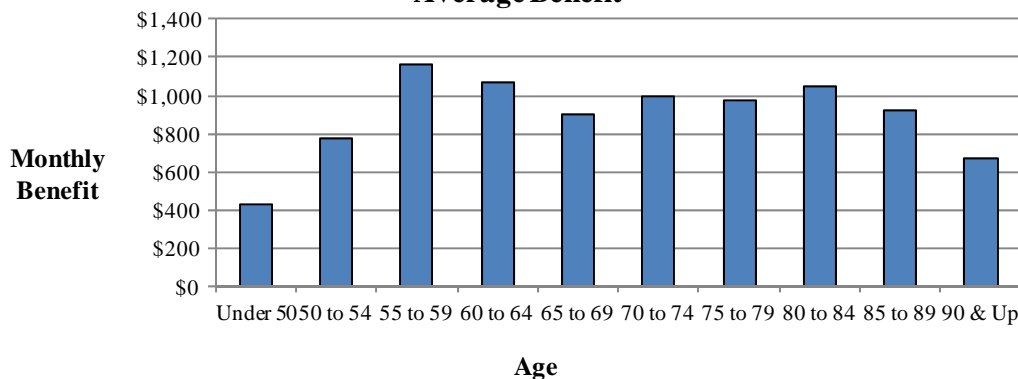
All Plans

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	2	7	9	\$ 899	\$ 3,011	\$ 3,910
50 to 54	1	6	7	1,178	4,266	5,444
55 to 59	2	11	13	2,385	12,786	15,171
60 to 64	1	14	15	726	15,251	15,977
65 to 69	2	21	23	1,417	19,346	20,763
70 to 74	4	29	33	1,764	30,937	32,701
75 to 79	3	36	39	2,327	35,852	38,179
80 to 84	6	37	43	5,208	39,699	44,907
85 to 89	7	36	43	3,468	36,141	39,609
90 & Up	2	37	39	887	25,343	26,230
<b>Total</b>	<b>30</b>	<b>234</b>	<b>264</b>	<b>\$ 20,259</b>	<b>\$ 222,632</b>	<b>\$ 242,891</b>

**Age Distribution**



**Average Benefit**





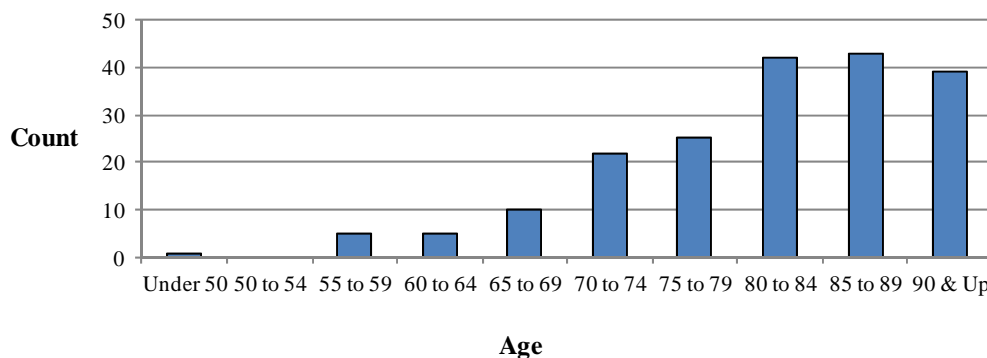
**SUMMARY OF BENEFICIARIES**

as of December 31, 2013

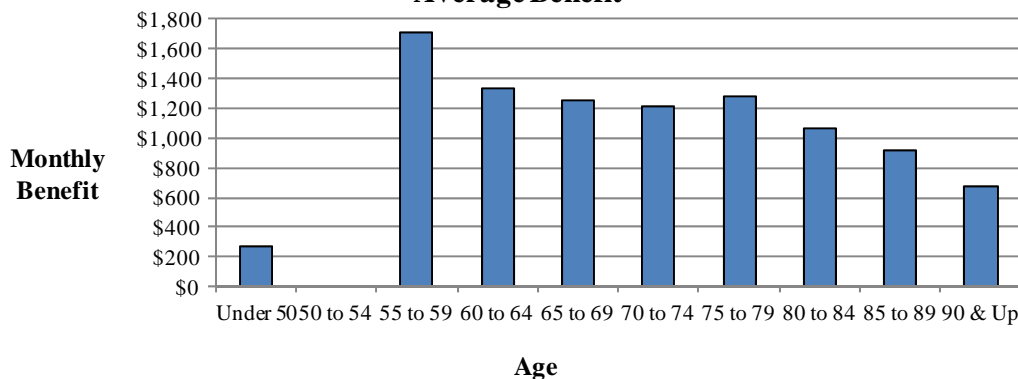
Plan 1

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	0	1	1	\$ 0	\$ 266	\$ 266
50 to 54	0	0	0	0	0	0
55 to 59	0	5	5	0	8,533	8,533
60 to 64	1	4	5	726	5,966	6,692
65 to 69	1	9	10	778	11,796	12,574
70 to 74	2	20	22	1,269	25,384	26,653
75 to 79	2	23	25	1,984	30,049	32,033
80 to 84	6	36	42	5,208	39,636	44,844
85 to 89	7	36	43	3,468	36,141	39,609
90 & Up	2	37	39	887	25,343	26,230
<b>Total</b>	<b>21</b>	<b>171</b>	<b>192</b>	<b>\$ 14,320</b>	<b>\$ 183,114</b>	<b>\$ 197,434</b>

**Age Distribution**



**Average Benefit**





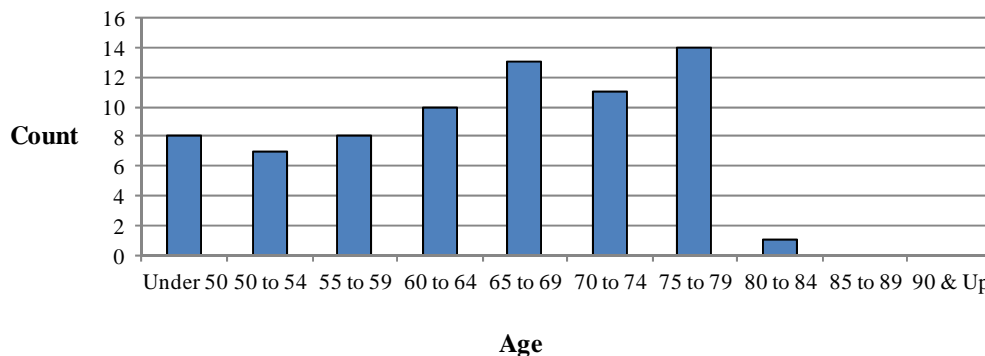
**APPENDIX A: SUMMARY OF MEMBERSHIP DATA**

**SUMMARY OF BENEFICIARIES**  
as of December 31, 2013

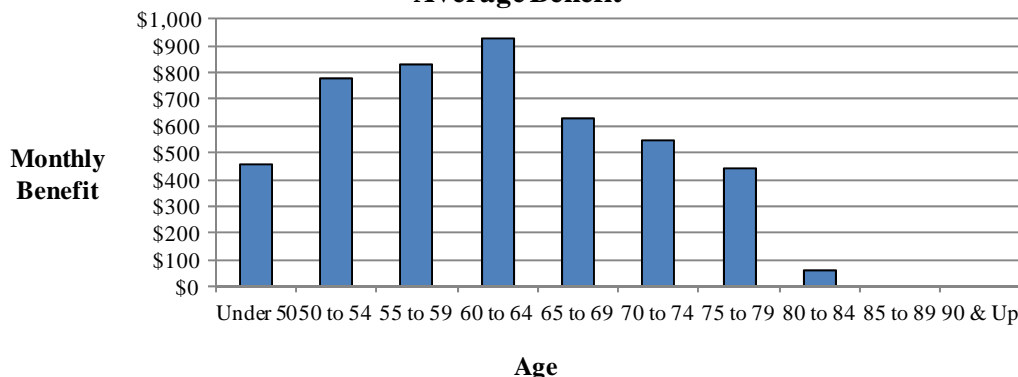
Plan 2

Age	Number			Monthly Benefit		
	Male	Female	Total	Male	Female	Total
Under 50	2	6	8	\$ 899	\$ 2,745	\$ 3,644
50 to 54	1	6	7	1,178	4,266	5,444
55 to 59	2	6	8	2,385	4,253	6,638
60 to 64	0	10	10	0	9,285	9,285
65 to 69	1	12	13	639	7,550	8,189
70 to 74	2	9	11	495	5,553	6,048
75 to 79	1	13	14	343	5,803	6,146
80 to 84	0	1	1	0	63	63
85 to 89	0	0	0	0	0	0
90 & Up	0	0	0	0	0	0
<b>Total</b>	<b>9</b>	<b>63</b>	<b>72</b>	<b>\$ 5,939</b>	<b>\$ 39,518</b>	<b>\$ 45,457</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 continues to make required employee 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.

### **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 of 6 years.

### **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 base amount of benefit (simple COLA).

**Annual Amount – Plan 2:** 2% of the 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 (effective February 19, 2000)

Plan 3: 4.7% of compensation (effective February 19, 2000)

### 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 compensation, less forfeitures from non-vested terminations (effective February 19, 2000).

### 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 have 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 withdrawal of active members
- (v) Rates of disability among active members
- (vi) 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 2009. The use of updated assumptions was effective with the December 31, 2009 valuation.

**Investment Rate of Return** (net of administrative expenses): This assumption is 7.75% a year, compounded annually and consists of 3.5% long-term price inflation and a 4.25% 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 2009.

**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, 2009 valuation.

Years of Service	Annual Rate of Salary Increase for Sample Service Durations			
	Inflation Component	Productivity Component	Merit and Longevity	Total
1	3.50%	0.50%	3.20%	7.20%
2	3.50	0.50	3.00	7.00
3	3.50	0.50	2.80	6.80
4	3.50	0.50	2.60	6.60
5	3.50	0.50	2.40	6.40
6	3.50	0.50	2.20	6.20
7	3.50	0.50	2.00	6.00
8	3.50	0.50	1.80	5.80
9	3.50	0.50	1.70	5.70
10	3.50	0.50	1.60	5.60
11	3.50	0.50	1.50	5.50
12	3.50	0.50	1.40	5.40
13	3.50	0.50	1.30	5.30
14	3.50	0.50	1.20	5.20
15	3.50	0.50	1.06	5.06
16	3.50	0.50	0.92	4.92
17	3.50	0.50	0.78	4.78
18	3.50	0.50	0.65	4.65
19	3.50	0.50	0.50	4.50
20	3.50	0.50	0.50	4.50
21	3.50	0.50	0.50	4.50
22	3.50	0.50	0.50	4.50
23	3.50	0.50	0.50	4.50
24	3.50	0.50	0.50	4.50
25	3.50	0.50	0.50	4.50
Over 25	3.50	0.50	0.25	4.25



## APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS

The salary increase assumptions will produce 4.0% 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 have been as follows:

	Year Ended					5 Year (Average) Compounded Annual Increase
	12/31/13	12/31/12	12/31/11	12/31/10	12/31/09	
Average Payroll	0.8%	3.2%	(1.1)%	1.1%	5.5%	1.9%
Total Payroll	(0.2)%	2.3%	(10.0)%	(4.3)%	0.8%	(2.4)%

**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 2 years for males, 0 for females)

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

Active Members: RP-2000 Employee Table (ages set forward 2 years for males, 0 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) 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%	5%
56	15	5
57	15	5
58	15	5
59	15	5
60	40	5
61	40	5
62	20	30
63	20	30
64	20	40
65	100	40
66	N/A	30
67	N/A	30
68	N/A	30
69	N/A	30
70	N/A	100

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

**Plan 1:** 70% of members with 30 or more years of service will elect the DROP with an average DROP period of 48 months. The remaining 30% are assumed to retire immediately.

**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.

This assumption was first used in the December 31, 2009 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.

Sample Ages	Years of Service	Probability of Terminating During Year
ALL	0	25.00%
	1	19.00
	2	14.00
	3	11.00
	4	9.00
25	Over 4	9.00
30		7.00
35		5.25
40		4.00
45		3.50
50		2.50
55		1.50
60		1.50

These rates were first used for the December 31, 2009 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:** This assumption measures the probabilities of a member becoming disabled.

Sample Ages	% of Active Members Becoming Disabled During Next Year
25	0.02%
30	0.03
35	0.04
40	0.07
45	0.10
50	0.18
55	0.32
60	0.53

These rates were first used for the December 31, 2009 valuation. Disabilities are assumed to be non-duty related.



## APPENDIX C: ACTUARIAL COST METHOD AND ASSUMPTIONS

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**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. This assumption was first used for the December 31, 2009 valuation.

### 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 3 years older than the female.

**Pay Increase Timing:** Assumed to be mid-year.

**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 were increased by 4% to account for the inclusion of unused sick leave in the calculation of Service. This assumption was changed with the December 31, 2004 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. An additional reserve is held for this group and equals the excess, if any, of the actuarial value of assets over the market value of assets. This assumption was changed with the December 31, 2004 valuation.



## 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>