

**WICHITA EMPLOYEES'  
RETIREMENT SYSTEM**

**INVESTIGATION OF EXPERIENCE  
January 1, 2004 through December 31, 2008**

By:

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August 26, 2009

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

Dear Members of the Board:

It is a pleasure to submit this report of our investigation of the experience of the Wichita Employees' Retirement System (WER) for the calendar years 2004 through 2008. The results of this investigation are the basis for recommended changes in actuarial assumptions for the actuarial valuation to be performed as of December 31, 2009.

The purpose of this report is to communicate the results of our review of the actuarial methods and the economic and demographic assumptions to be used in the completion of the upcoming valuation. Several of our recommendations represent changes from the prior methods or assumptions and are designed to better anticipate the emerging experience of the System.

We have provided financial information showing the estimated impact of the recommended assumptions, if they had been reflected in the December 31, 2008 actuarial valuation. We believe the recommended assumptions provide a reasonable estimate of anticipated experience affecting WER. Nevertheless, the emerging costs will vary from those presented in this report to the extent that actual experience differs from that projected by the actuarial assumptions. Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as the following:

- Plan experience differing from the actuarial assumptions,
- Future changes in the actuarial assumptions,
- Increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as potential additional contribution requirements due to changes in the plan's funded status), and
- Changes in the plan provisions or accounting standards.

Due to the scope of this assignment, we did not perform an analysis of the potential range of such measurements.

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, statutory provisions, employee data, and financial information. In our examination, after discussion with staff and certain adjustments, we have found the data to be reasonably consistent and comparable with data used for other purposes, unless otherwise noted. Since the experience study results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our determinations might need to be revised.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions, and supporting Recommendations of the American Academy of Actuaries.

We further certify that the assumptions developed in this report satisfy ASB Standards of Practice, in particular, No. 27 (Selection of Economic Assumptions for Measuring Pension Obligations) and No. 35 (Selection of Demographic and Other Non-economic Assumptions for Measuring Pension Obligations).

Milliman has been engaged by WER as an independent actuary. Any distribution of this report must be in its entirety, including this cover letter, unless prior written consent is obtained from Milliman. Milliman's work product was prepared exclusively for WER for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning WER's operations, and uses WER's data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose. Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs.

We would like to acknowledge the help in the preparation of the data for this investigation given by the WER staff. We look forward to our discussions and the opportunity to respond to your questions and comments at your next meeting.

I, Patrice A. Beckham, F.S.A. am a member of the American Academy of Actuaries and a Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

I, Brent A. Banister, F.S.A. am a member of the American Academy of Actuaries and a Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

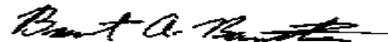
We herewith submit the following report and look forward to discussing it with you.

Respectfully submitted,

MILLIMAN, INC.



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Consulting Actuary



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**WICHITA EMPLOYEES' RETIREMENT SYSTEM  
INVESTIGATION OF EXPERIENCE (2004-2008)**

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# WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

## Section 1: Board Summary

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Any actuarial valuation is based on certain underlying assumptions. Determining the actuarial contribution rate is highly dependent on these assumptions that the actuary uses to project the future benefit payments and then to discount the value of future benefits to determine the present values. Thus, the assumptions are critical in assisting the system in adequately pre-funding for the benefits prior to retirement.

### Overview

To assess the reasonableness of the assumptions used in the valuation, they should be studied regularly. This process is called an investigation of experience (or experience study).

### Summary of Results

This section describes the key findings of this investigation of the experience of the Wichita Employees' Retirement System for the period January 1, 2004 through December 31, 2008. We are recommending several changes to the assumptions. We will refer to our recommended assumptions as the "proposed" assumptions.

The following table shows a summary of the results of the study.

Assumption	Recommendation
Inflation	Decrease from 4.0% to 3.5%
Investment Return	No Change
Wage Growth	Decrease from 4.5% to 4.0%
Mortality	No Change
Retirement	Modify to reflect experience
Disability	Lower rates by 25%
Termination	Modify to reflect experience
Probability of Refund	No Change
Salary Scale	Minor Changes
Index TV Benefit	Decrease from 4.5% to 4.0%

If adopted, the new assumptions would result in an increase in the surplus assets and a small decrease in the actuarial contribution rate. This is discussed further in the Financial Impact section at the end of the Executive Summary.

### Economic Assumptions

Section 2 discusses the economic assumptions: price inflation, general wage growth (includes price inflation and productivity) and the investment return assumption. We have recommended that the Board reduce the inflation assumption from 4.0% to 3.5%. Since price inflation is a component of wage growth, we also recommended that the Board adopt a 4.0% general wage growth assumption (price inflation plus productivity). We are not recommending a change to the investment return assumption.

## Mortality

Overall, the actual number of deaths from healthy retirees was higher than expected (A/E ratio of 103%) for males and lower than expected for females (A/E ratio of 88%). However, in the last experience study, the A/E ratios using the current assumption were 105% and 100% for males and females. When this experience is aggregated, the A/E ratio for the entire 10 year period is 104% for males and 94% for females. Although the ratio exceeds 100% for males, the size of the group is relatively small and therefore, volatility in the results is to be expected.

### Healthy Retirees - Males

	Actual	Expected	A/E Ratio
1998 – 2003	99	94	105%
2004 – 2008	98	95	103%
<b>Total</b>	<b>197</b>	<b>189</b>	<b>104%</b>

### Healthy Retirees - Females

	Actual	Expected	A/E Ratio
1998 – 2003	46	46	100%
2004 – 2008	44	50	88%
<b>Total</b>	<b>90</b>	<b>96</b>	<b>94%</b>

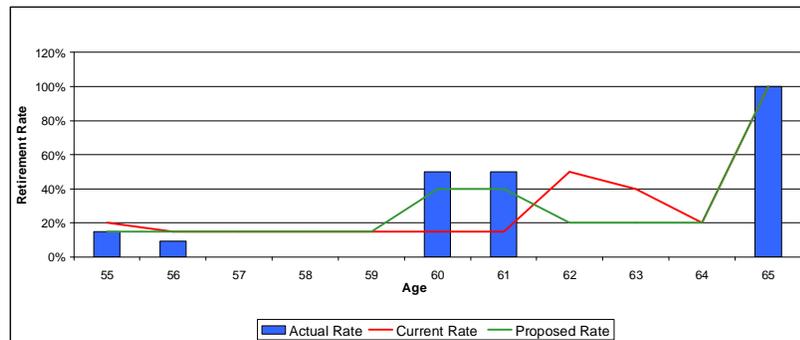
We are not recommending any change to this assumption.

## Retirement

For Plan 1, the actual number of retirements and those electing DROP was close to expected based on the assumptions (A/E ratio of 98%).

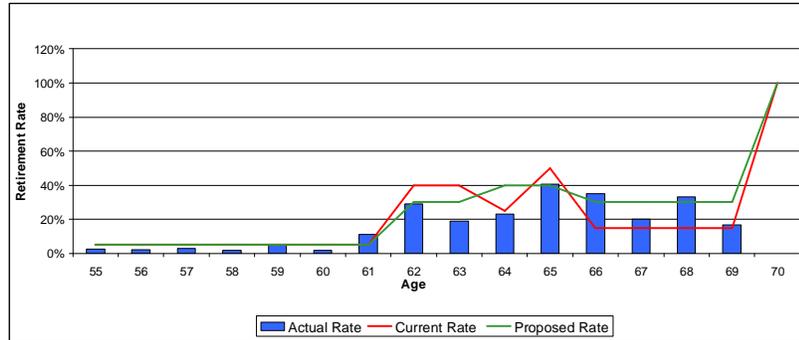
For Plan 2, the actual number of retirements was less than the assumptions predicted (107 actual compared to 144 expected for an A/E ratio of 74%). Due to the size of the group, some volatility in the results is to be expected. The following graphs show the results for members eligible for retirement.

Wichita Employees' Retirement System  
Experience Study 2004-2008  
Plan 1  
Retirement Rates



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	11	13	15
Actual/Expected		85%	73%

**Wichita Employees' Retirement System**  
Experience Study 2004-2008  
Plan 2  
Retirement Rates



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	107	144	139
Actual/Expected		74%	77%

We are recommending the rates of retirement be modified to better reflect experience for both Plan 1 and 2.

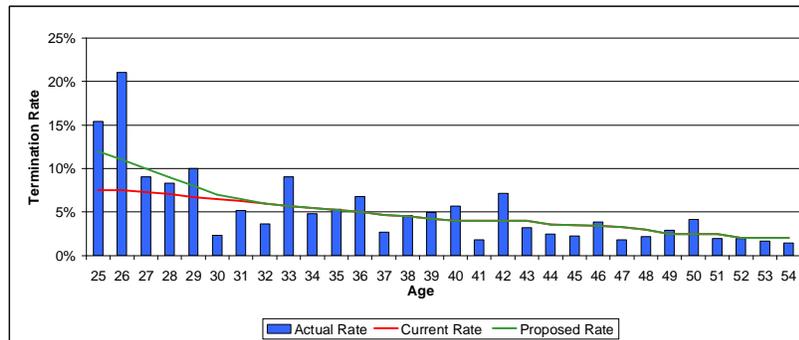
**Disability**

Over the four-year study period, there were 5 disability retirements compared to 22 expected. Given the small size of the group, coupled with the low rates of disability, volatility is expected. However, the A/E ratio in the prior study was 33% (13 actual and 40 expected). Given the consistent pattern over the past decade, we suggest the rates be decreased by 25% at all ages.

**Termination**

Overall, the actual number of terminations was close to the number anticipated by the assumptions. We are recommending the rates at ages 25 to 30 in the ultimate table be increased (see graph below).

**Wichita Employees' Retirement System**  
Experience Study 2004-2008  
Withdrawal Rates  
Ultimate



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	155	157	160
Actual/Expected		99%	97%

**Probability of Refund upon Vested Termination**

The actual number of refunds for vested members at termination was slightly more than the assumptions anticipated. We are recommending the current assumption be retained.

Probability of Refund		
Actual	Expected	A/E
54	50	108%

**Individual Salary Increases due to Promotion and Longevity (Merit)**

Section 9 discusses the individual salary increases due to promotion and longevity – the merit component of salaries. Overall, the results of our salary study show actual increases close to those expected given the general economy during the study period. Specifically, actual general wage growth was around 4.0% while the assumed rate was 4.5%. Therefore, we expected actual wage increases to be about 0.50% lower than expected. Once the dataset was adjusted for consistency, actual salary increases were about 0.50% lower than assumed. The revised merit scale, combined with the general wage assumption of 4.0%, will result in modest changes to the total salary scale.

**Financial Impact of Recommended Assumptions**

Overall, the estimated financial impact of the proposed changes in assumptions is somewhat small, as compared to the total liabilities. The following exhibit is designed to give the reader an idea of how the proposed changes would affect WER as a whole. Note that the proposed changes decrease both the expected annual cost of benefits (Normal Cost percentage) and the Actuarial Liability.

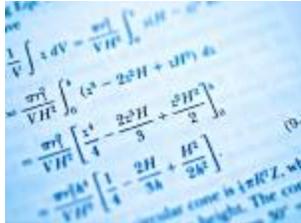
The financial impact was evaluated by performing additional valuations with December 31, 2008 special valuation data and reflecting the proposed assumption changes. This allows us to assess the relative financial impact of the various proposed changes. Note that the relative impact of the various assumption changes by component is somewhat dependent on the order in which they are evaluated.

	Normal Cost %	Actuarial Liability	Actuarial Contribution
12/31/08 Valuation	13.2%	\$512	13.2%
<b>Assumption Changes</b>			
Rates of Retirement	0.0%	(1)	0.0%
Termination Rates	0.0%	0	0.0%
Disability Rates	0.0%	0	0.0%
Salary Scale	(0.1%)	(1)	(0.1%)
Index TV Benefits	(0.1%)	(1)	(0.1%)
Subtotal	(0.2%)	(3)	(0.2%)
12/31/08 Valuation with Changes	13.0%	\$509	12.8%

# WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

## Section 2: Actuarial Methods

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The systematic financing of a pension plan requires that contributions be made in an orderly fashion while a member is actively employed, so that the accumulation of these contributions, together with investment earnings should be sufficient to provide promised benefits and cover administration expenses. The actuarial valuation is the process used to determine when money should be contributed; i.e., as part of the budgeting process.

The actuarial valuation will not impact the amount of benefits paid or the actual cost of those benefits. In the long run, actuaries cannot change the costs of the pension plan, regardless of the funding method used or the assumptions selected. However, actuaries will influence the incidence of costs by their choice of methods and assumptions.

### Actuarial Cost Method

The valuation or determination of the present value of all future benefits to be paid by the Plan reflects the assumptions that best seem to describe anticipated future experience. The choice of a funding method does not impact the determination of the present value of future benefits. The funding method, determines only the incidence of cost. In other words, the purpose of the funding method is to allocate the present value of future benefits determination into annual costs. In order to do this allocation, it is necessary for the funding method to “break down” the present value of future benefits into two components: (1) that which is attributable to the past (2) and that which is attributable to the future. The excess of that portion attributable to the past over the plan assets is then amortized over a period of years. Actuarial terminology calls the part attributable to the past the “past service liability” or the “actuarial liability”. The portion of the present value of future benefits allocated to the future is commonly 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”. The difference between the plan assets and actuarial liability is called the “unfunded actuarial liability”.

Two key points should be noted. First, there is no single “correct” funding method. Second, the allocation of the present value of future benefits and hence cost to the past for amortization and to the future for annual normal cost payments is not necessarily in a one-to-one relationship with service credits earned in the past and future service credits to be earned.

There are various actuarial cost methods, each of which has different characteristics, advantages and disadvantages. The System currently uses the entry age normal actuarial cost method. The rationale of the entry age normal (EAN) funding method is that the cost of each member’s benefit is determined to be a level percentage of his salary from date of hire to the end of his employment with the employer. This level percentage multiplied by the member’s annual salary is referred to as the normal cost and is that portion of the total cost of the employee’s benefit which is allocated to the current year. The portion of the present value of future benefits allocated to the future is determined by multiplying this percentage times the present

value of the member's assumed earnings for all future years including the current year. The entry age normal actuarial liability is then developed by subtracting from the present value of future benefits that portion of costs allocated to the future. To determine the unfunded actuarial liability, the value of plan assets is subtracted from the entry age normal actuarial liability. The current year's cost to amortize the unfunded actuarial liability is developed by applying an amortization factor.

It is to be expected that future events will not occur exactly as predicted by the actuarial assumptions in each year. Actuarial gains/losses from experience under this actuarial cost method can be directly calculated and are reflected as a decrease/increase in the unfunded actuarial liability. Consequently, the gain/loss results in a decrease/increase in the amortization payment, and therefore, the contribution rate.

The Entry Age Normal actuarial cost method develops a normal cost rate which tends to be stable and less volatile than other methods. It is used by about 85% of all public sector plans. **We recommend that WER continue using the Entry Age Normal method.**

## Actuarial Value of Assets

In preparing an actuarial valuation, the actuary must assign a value to the assets of the fund. An adjusted market value, referred to as the actuarial value of assets, is often used to smooth out the volatility in the market value. This is because most plan sponsors would rather have annual costs remain relatively smooth, as percentage of payroll, rather than a cost pattern that is extremely volatile.

The actuary does not have complete freedom in assigning this value. For example, GASB requirements and basic actuarial principles promulgated by the American Academy of Actuaries require any methodology used in assessing the value of assets to:

- Take into account fair market value;
- Produce a result which is not consistently above or below the fair market value;
- Fall within a reasonable range around the market value;
- Recognize differences between the actuarial and market values of assets within a reasonable period of time.

These rules or principles prevent the asset valuation methodology from being used to distort annual funding patterns. No matter what asset valuation method is used, it is important to note that, like a funding method or actuarial assumptions, the asset valuation method does not affect the cost of the plan; it only impacts the incidence of cost.

WER values assets, for actuarial valuation purposes, based on the principle that the difference between actual and expected investment returns should be subject to partial recognition to smooth out fluctuations in the total return achieved by the fund from year to year. This philosophy is consistent with the long-term nature of a retirement system. Under this method, the actuarial value of the assets is the expected value of assets plus 25% of the difference between market value and expected value. The

expected value is last year's actuarial value of assets and subsequent cash flows into and out of the fund accumulated with interest at the actuarial assumed rate of return. This methodology is equivalent to using a weighted average of 75% of the expected value and 25% of actual market value. This methodology was first adopted by the Board in conjunction with the December 31, 2002 valuation.

There are other smoothing methods that would also be acceptable. The one limitation of the current method is that it is more difficult to explain in that each year's gain or loss is not fully recognized at the end of the four year period. However, the method provides an appropriate level of smoothing and, in our opinion, meets actuarial standards. **We recommend no change to the asset valuation method at this time.**

## Amortization of UAL

As described above, actuarial liabilities are the portion of the actuarial present value of future benefits that are not included in future normal costs. Thus it represents the liability that, in theory, should have been funded through historical normal costs. Unfunded actuarial liabilities (UAL) exist when actuarial liabilities exceed plan assets. These deficiencies can result from (i) plan improvements that have not been completely paid for, (ii) experience not being as favorable as expected, (iii) assumption changes that increase liabilities or (iv) contributions less than the actuarial rate. If the actuarial value of assets (AVA) exceeds the actuarial liability (AL), "surplus" exists.

There are a variety of different methods that can be used to amortize the UAL/surplus. Each results in a different payment stream and therefore has cost implications. For each methodology, there are three characteristics:

- The period over which the UAL is amortized,
- The rate at which the amortization amount increases, and
- The number of components of UAL with separate amortization bases.

Statement No. 25 of the Governmental Accounting Standards Board (GASB) sets parameters for all of these characteristics (this standard is currently under review by GASB). The maximum period currently permitted is 30 years. The annual amortization amount can be a level dollar amount or a level percentage of payroll. The UAL may be amortized as one amount or components may be amortized separately.

All non-public pension plans, pursuant to the Internal Revenue Code, must use level dollar amortization to pay off their unfunded actuarial liability for purposes of IRS minimum and maximum funding. This is similar to the method in which a home owner pays off a mortgage. The liability, once calculated, is financed by a constant fixed dollar amount, based on a predetermined number of years, until the liability is extinguished. This results in the liability steadily decreasing while the payments, though remaining level in dollar terms, in all probability decrease as a percentage of payroll. (Even if a plan sponsor's population is not growing or even slightly diminishing, inflationary increases will usually be sufficient to increase the aggregate payroll).

The rationale behind the level percentage of payroll amortization method is that since normal costs are calculated to be a constant percentage of pay, unfunded actuarial liabilities should be paid off in the same manner. When this method of amortizing the unfunded actuarial liability is adopted, the initial amortization payments are lower than they would be under a level dollar amortization payment method but the payments increase at a fixed rate so that ultimately the annual payment far exceeds the level dollar payment. The expectation is that total payroll will increase as rapidly as the payment so the amortization payments will remain constant, as a percentage of payroll. In the initial years, the level percentage of payroll amortization payment is often less than the interest accruing on the unfunded actuarial liability meaning that, even if there are no experience losses, the unfunded actuarial liability will grow. If the plan sponsor is paying off the unfunded actuarial liability over a long period, such as 30 years, it is possible that the unfunded liability will grow for nearly 20 years, gradually reduce and be completely paid off by the 30<sup>th</sup> year. The increasing unfunded liability may be troubling to various interested parties, but should not be worrisome unless the remaining UAL is actually increasing as a percentage of total covered payroll.

The amortization period can be either fixed or open. If it is a fixed or closed amortization period, the period declines each year. Alternatively if the amortization period is an open or rolling period, the amortization period does not decline but is reset in each future year.

Use of the level percentage of payroll amortization has its advantages and disadvantages. From a budgetary standpoint, it makes sense to develop UAL contribution rates that are level as a percentage of payroll and are consistent with the development of the normal cost. However, this approach clearly results in slower funding of the UAL.

WER has had surplus assets for the last twelve years. During recent years the surplus has been amortized as a level percent of payroll over a rolling 20-year period. The open period has been a more conservative approach than a closed period. However, as of December 31, 2008, the system had a significant amount of deferred investment losses. Absent favorable experience to offset the losses they will eventually be reflected in the valuation and the System is expected to have a UAL. When the System has a UAL the open amortization method delays paying off the liability. **We suggest we have further discussions with the Board about the long-term implications of an open amortization period and various options for amortizing the emerging UAL.**

# WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

## Section 3: Economic Assumptions



Actuarial Standard of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, provides guidance to actuaries giving advice on selecting economic assumptions for measuring obligations under defined benefit plans. Because no one knows what the future holds, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes. These estimates are based on a mixture of past experience, future expectations, and professional judgment. The actuary should consider a number of factors, including the purpose and nature of the measurement, and appropriate recent and long-term historical economic data. However, the standard explicitly advises the actuary not to give undue weight to recent experience.

Recognizing that there is not one “right answer”, the standard calls for the actuary to develop a best estimate range for each economic assumption, and then recommend a specific point within that range. Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with every other economic assumption over the measurement period.

In our opinion, the economic assumptions recommended in this report have been developed in accordance with ASOP No. 27. The following table shows our recommendations.

This section will discuss the economic assumptions. In brief, they are as follows (changes are shown in bold):

<b>Economic Assumption</b>	<b>Current Assumption (Annual Rate)</b>	<b>Proposed (Annual Rate)</b>
Consumer Price Inflation	4.00%	<b>3.50%</b>
Investment Return <sup>(1)</sup>	7.75%	7.75%
Wage Growth (includes inflation and productivity)	4.50%	<b>4.00%</b>
Real Wage Inflation (wage growth less price inflation)	0.50%	0.50%
Payroll Growth	4.50%	<b>4.00%</b>

<sup>(1)</sup> *Net of investment and administrative expenses.*

## 1. Consumer Price Inflation

### Use in the Valuation:

When we refer to inflation in this report, we are referring to price inflation. The inflation assumption has an indirect impact on the results of the actuarial valuation through the development of the assumptions for investment return, general wage increases and the payroll increase assumption.

The long-term relationship between inflation and investment return has long been recognized by economists. The basic principle is that the investors demand a “real return” – the excess of actual investment returns over inflation. If inflation rates are expected to be high, investors will demand expected investment returns that are also expected to be high enough to exceed inflation, while lower inflation rates will result in lower demanded expected investment returns, at least in the long run.

The current assumption for inflation is 4.0% per year.

### Historical Perspective:

The data for inflation shown below is based on the national Consumer Price Index, US City Average, All Urban Consumers (CPI-U) as published by the Bureau of Labor Statistics. The data for periods ending in December of each year is documented in Exhibit 1 at the end of this section.

Although economic activities in general, and inflation in particular, do not lend themselves to prediction on the basis of historical analysis, historical patterns and long term trends are a factor to be considered in developing the inflation assumption.

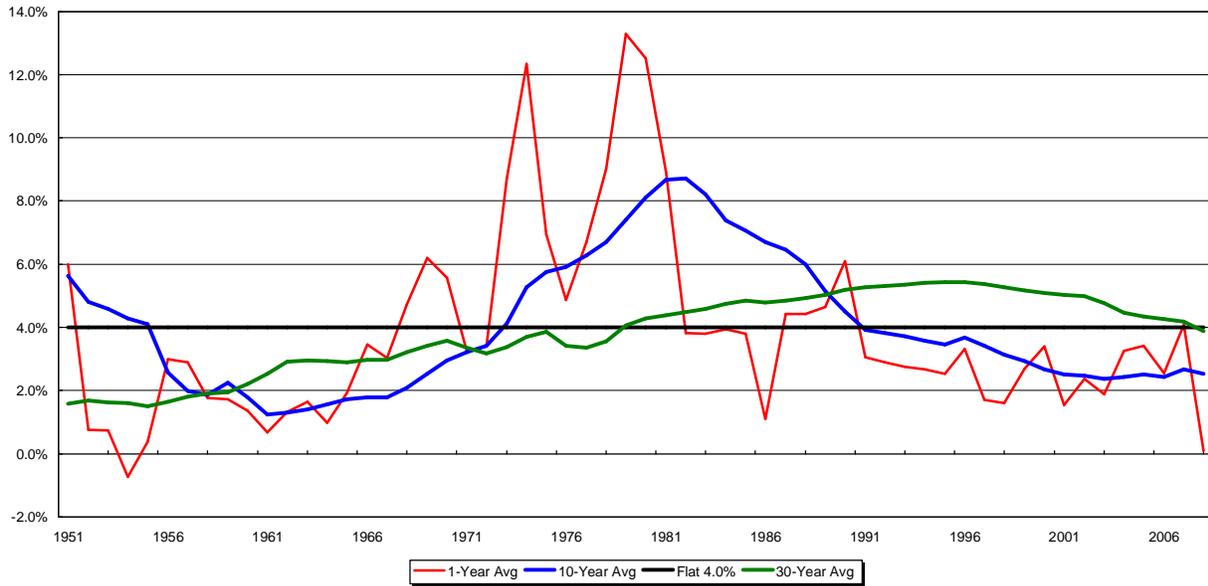
There are numerous ways to review historical data, with significantly differing results. The tables below show the compounded annual inflation rate for various 10-year periods, and for longer periods ended in December 2008.

Time Period	CPI Increase
1998-2008	2.5%
1988-1998	3.1%
1978-1988	5.9%
1968-1978	6.7%
1958-1968	2.1%
1998-2008	2.5%
1988-2008	2.8%
1978-2008	3.8%
1968-2008	4.5%
1958-2008	4.0%
<b>Prior 75 Years</b>	
1933-2008	3.8%

**Historical Perspective  
(Continued)**

The following graph shows historical national CPI increases by year and on 10- and 30-year rolling averages. Note that the actual CPI increase has been less than 4.0% for about the last 20 years.

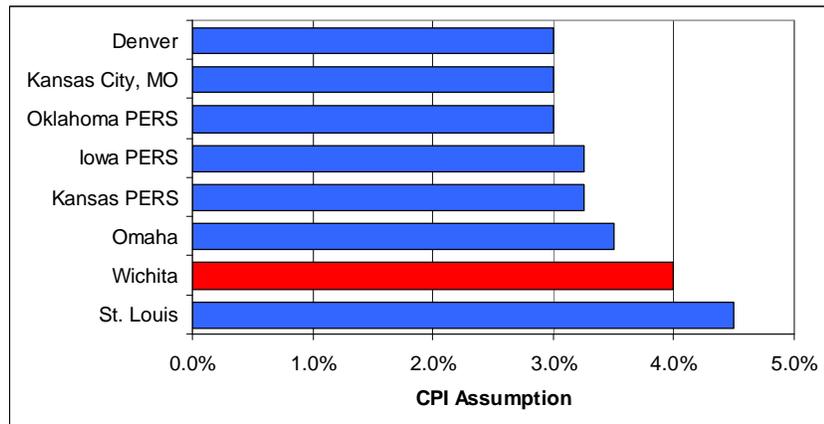
**CPI-U History  
(Annual Increases)**



**Peer System  
Comparison**

According to the *Public Fund Survey* conducted by NASRA, the National Association of State Retirement Administrators, (a survey of approximately 100 large public systems), the average inflation assumption is 3.50%.

Looking at WER's peer systems (major cities in the Midwest), the current inflation assumption is at the high end of the range.



## Forecasts of Inflation

Since the U.S. Treasury started issuing inflation indexed bonds, it is possible to determine the approximate rate of inflation anticipated by the financial markets by comparing the yields on inflation indexed bonds with traditional fixed government bonds. However, given the financial market turmoil that was occurring in December 2008, we looked at the December 2007 rates. Those prices suggest investors were expecting inflation to be about 2.3% over the next 10 years.

Many economists have been forecasting inflation lower than the rate used in actuarial valuations. Economists are generally considering shorter time periods (10 years or less) than may be appropriate for a pension valuation. To find an economic forecast with a time frame long enough to suit our purposes, we looked at the expected increase in the CPI by the Office of the Chief Actuary for the Social Security Administration. In the most recent published report, 2008 Trustees Report, the projected average annual increase in the CPI over the next 75 years under the intermediate cost assumptions was 2.80%. The reasonable range was stated as 1.80% to 3.80%.

## Best Estimate Range and Recommendation

The consumer price inflation assumption is used to determine both the investment return assumption and the wage growth assumption. We believe that the current assumption of 4.0% per year is somewhat on the high side. Although there is considerable discussion about high inflation in the short term, our measurements are performed over a 40-50 year time horizon and we believe it is reasonable to lower the inflation assumption from 4.0% to 3.5%. This also brings the assumption more in line with the assumptions used by other similar systems.

Consumer Price Inflation	
Current Assumption	4.0%
Best Estimate Range	2.50% - 4.50%
Recommended Assumption	Proposed : 3.50%

**WICHITA EMPLOYEES' RETIREMENT SYSTEM  
INVESTIGATION OF EXPERIENCE (2004-2008)**

**Exhibit 2-1**

**US City Average, All Urban Consumers (CPI-U) - December**

<b>December of:</b>	<b>Index</b>	<b>Increase</b>	<b>December of:</b>	<b>Index</b>	<b>Increase</b>
<b>1928</b>	17.1				
<b>1929</b>	17.2	0.6%	<b>1969</b>	37.7	6.2%
<b>1930</b>	16.1	-6.4	<b>1970</b>	39.8	5.6
<b>1931</b>	14.6	-9.3	<b>1971</b>	41.1	3.3
<b>1932</b>	13.1	-10.3	<b>1972</b>	42.5	3.4
<b>1933</b>	13.2	0.8	<b>1973</b>	46.2	8.7
<b>1934</b>	13.4	1.5	<b>1974</b>	51.9	12.3
<b>1935</b>	13.8	3.0	<b>1975</b>	55.5	6.9
<b>1936</b>	14.0	1.4	<b>1976</b>	58.2	4.9
<b>1937</b>	14.4	2.9	<b>1977</b>	62.1	6.7
<b>1938</b>	14.0	-2.8	<b>1978</b>	67.7	9.0
<b>1939</b>	14.0	0.0	<b>1979</b>	76.7	13.3
<b>1940</b>	14.1	0.7	<b>1980</b>	86.3	12.5
<b>1941</b>	15.5	9.9	<b>1981</b>	94.0	8.9
<b>1942</b>	16.9	9.0	<b>1982</b>	97.6	3.8
<b>1943</b>	17.4	3.0	<b>1983</b>	101.3	3.8
<b>1944</b>	17.8	2.3	<b>1984</b>	105.3	3.9
<b>1945</b>	18.2	2.2	<b>1985</b>	109.3	3.8
<b>1946</b>	21.5	18.1	<b>1986</b>	110.5	1.1
<b>1947</b>	23.4	8.8	<b>1987</b>	115.4	4.4
<b>1948</b>	24.1	3.0	<b>1988</b>	120.5	4.4
<b>1949</b>	23.6	-2.1	<b>1989</b>	126.1	4.6
<b>1950</b>	25.0	5.9	<b>1990</b>	133.8	6.1
<b>1951</b>	26.5	6.0	<b>1991</b>	137.9	3.1
<b>1952</b>	26.7	0.8	<b>1992</b>	141.9	2.9
<b>1953</b>	26.9	0.7	<b>1993</b>	145.8	2.7
<b>1954</b>	26.7	-0.7	<b>1994</b>	149.7	2.7
<b>1955</b>	26.8	0.4	<b>1995</b>	153.5	2.5
<b>1956</b>	27.6	3.0	<b>1996</b>	158.6	3.3
<b>1957</b>	28.4	2.9	<b>1997</b>	161.3	1.7
<b>1958</b>	28.9	1.8	<b>1998</b>	163.9	1.6
<b>1959</b>	29.4	1.7	<b>1999</b>	168.3	2.7
<b>1960</b>	29.8	1.4	<b>2000</b>	174.0	3.4
<b>1961</b>	30.0	0.7	<b>2001</b>	176.7	1.6
<b>1962</b>	30.4	1.3	<b>2002</b>	180.9	2.4
<b>1963</b>	30.9	1.6	<b>2003</b>	184.3	1.9
<b>1964</b>	31.2	1.0	<b>2004</b>	190.3	3.3
<b>1965</b>	31.8	1.9	<b>2005</b>	196.8	3.4
<b>1966</b>	32.9	3.5	<b>2006</b>	201.8	2.5
<b>1967</b>	33.9	3.0	<b>2007</b>	210.0	4.1
<b>1968</b>	35.5	4.7	<b>2008</b>	210.2	0.1

## 2. Investment Return

### Use in the Valuation

The investment return assumption is one of the primary determinants in the calculation of the expected cost of the System’s benefits, providing a discount of the future benefit payments that reflects the time value of money. This assumption has a direct impact on the calculation of liabilities, normal costs, and contribution rates. The current investment return assumption is 7.75% per year, net of investment related and administrative expenses.

### Method to Determine Best-Estimate Range for Investment Return

We have determined the best-estimate range for the investment return assumption based upon a model developed by Milliman’s investment practice. As input to this model, we have used Milliman’s assumptions for capital markets and the target asset allocation adopted by the Board. The target asset allocation is summarized in the following chart:

Asset Class	Target Allocation
Domestic Equity	
Large Cap	25.00%
Small Cap	9.40
Index	12.60
Domestic Fixed Income	
Active Core	14.00
Active Core Plus	14.00
International Equity	
Active Core	8.00
Active Core Plus	12.00
Real Estate	
Core	3.00
Value Added	2.00
<b>Total</b>	<b>100.00</b>

This model is used to provide the range of assumptions appropriate for compliance with Actuarial Standard of Practice No. 27, “Selection of Economic Assumptions for Measuring Pension Obligations.” The Standard defines the Best-Estimate Range as “the narrowest range within which the actuary reasonably anticipates that the actual results, compounded over the measurement period, are more likely than not to fall”. By assuming the portfolio is re-balanced annually and that annual returns are lognormally distributed and independent from year-to-year, we can develop expected percentiles for the long-term distribution of annualized returns.

Using properties of the lognormal distribution, we calculate the 25<sup>th</sup> and 75<sup>th</sup> percentiles of the long-term total return distribution. This becomes our best-estimate range because 50% of the outcomes are expected to fall within this range and it is centered about the mean.

**Method to Determine Best-Estimate Range for Investment Return (Continued)**

The capital market assumptions were combined with the target asset allocation policy to generate expected real rates of returns (total return less assumed inflation) which were then added to the recommended inflation assumption of 3.5%. The real rate of return is subject to significant year-to-year volatility as measured by the standard deviation. Volatility over time will lower the mean real rate of return, but diversification by asset class will reduce the volatility and narrow the range of expected total returns for the entire portfolio. The results are summarized as follows:

**Expected Investment Return with 3.50% Inflation**  
(before reflecting investment and administrative expenses)

Horizon In Years	Percentile Results for Nominal Rate of Return				
	5 <sup>th</sup>	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>	95 <sup>th</sup>
1	-10.1%	0.7%	8.9%	17.8%	31.9%
5	0.0%	5.2%	8.9%	12.8%	18.7%
10	2.5%	6.2%	8.9%	11.7%	15.7%
20	4.3%	7.0%	8.9%	10.8%	13.7%
50	6.0%	7.7%	<b>8.9%</b>	<b>10.1%</b>	11.9%

The geometric mean return is 8.9%, but due to the volatility associated with the asset allocation, the range of probable outcomes is quite large. For example, in the first year there is a 5% chance the rate of return will be less than -10.1% and a 5% chance it will be greater than 31.9%. As the time horizon lengthens, the range of the cumulative average results narrows. Note that these are gross returns, prior to adjusting for investment and administrative expenses.

Over a 50-year time horizon, we estimate there is a 25% chance the nominal rate of return will be less than 7.7% and a 25% chance the return will be greater than 10.1% (bold numbers on the bottom line in the table above). Therefore, we can say the return is just as likely to be within the range from 7.7% to 10.1% as not.

We also used the model with capital market assumptions from Callan Associates Inc. and the 3.50% inflation assumption. This produced a median return of 9.1% compared to our result of 8.9%.

## Investment and Administrative Expenses

The investment return used for the valuation is assumed to be net of all investment and administrative expenses. The following tables show the ratio of investment and administrative expenses to the fair market value of assets over the last nine fiscal years ending December 31. The expense ratios are calculated as the total expense divided by the ending asset balance at fair market value.

(\$M)

Year	Market Assets*	Investment Expense	Admin. Expense	Expense Ratio
2000	\$455	\$2.0	\$0.30	0.51%
2001	421	1.8	0.30	0.50
2002	359	1.8	0.30	0.58
2003	425	1.8	0.30	0.49
2004	451	1.8	0.30	0.47
2005	471	2.3	0.30	0.55
2006	524	2.2	0.40	0.50
2007	560	2.8	0.40	0.57
2008	386	1.9	0.60	0.65

\* At December 31

During this period the ratio of expenses to market assets has averaged around 55 basis points (0.55%). We recommend the annual expense assumption (both investment and administrative) be set to 0.55% of assets.

This assumption does not have a direct impact on the actuarial valuation results, but it does provide a measure of gross return on investments that will be needed to meet the actuarial assumption used for the valuation. For example, if the investment return assumption is set equal to 7.75%, then the System would need to earn a gross return on its assets of 8.30% in order to net the 7.75% for funding purposes.

## Best-Estimate Range and Recommendations

Based on the ASOP No. 27 guidelines, we conclude that the reasonable range is the expected real rates of return between the 25<sup>th</sup> and 75<sup>th</sup> percentile projected out 50 years, plus the assumed inflation rate, less investment-related and administrative expenses.

Based upon our model and the current inflation assumption, we have the following results:

Components of Return	Percentile Results		
	25 <sup>th</sup>	50 <sup>th</sup>	75 <sup>th</sup>
Real Rate of Return	4.20%	5.40%	6.60%
Assumed Inflation	3.50%	3.50%	3.50%
Expenses	(0.55%)	(0.55%)	(0.55%)
<b>Net Investment Return</b>	<b>7.15%</b>	<b>8.35%</b>	<b>9.55%</b>

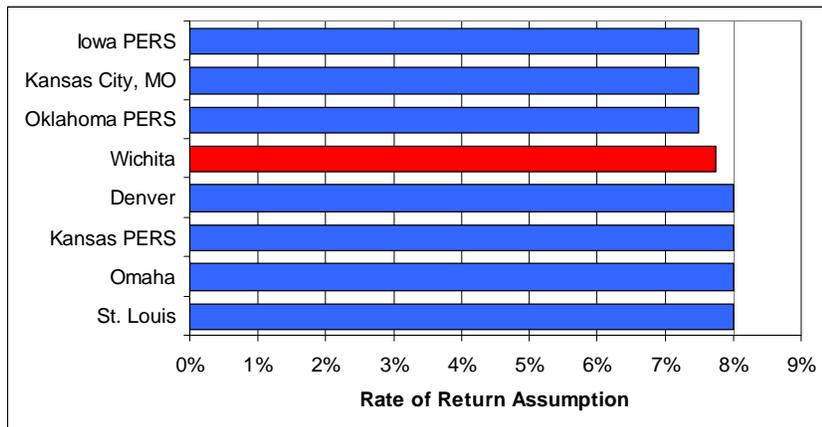
Based upon this model, there is a 60% chance that the net return will be 7.75% or more over a 50-year period. In other words, a net return of 7.75% is at the 40<sup>th</sup> percentile for a 50-year investment horizon.

Generally we like to allow some room for conservatism when recommending the investment return assumption to provide a buffer against future adverse experience. Since the expected return of 8.35% exceeds the assumed investment return of 7.75%, there is currently about 0.60% as a buffer. Therefore, we believe the current assumption is reasonable.

**Peer System Comparison**

According to the *Public Fund Survey*, the average investment return assumption for the systems who participate is 8.0%

Looking at peer systems in the Midwest, the current investment return assumption is also in the mainstream.



**Other Factors for Board Consideration**

Since economic assumptions are subjective in nature, it is our recommendation that the Board be fully comfortable with the implications of the economic assumptions, particularly with the investment return assumption. There is an “actuarial or liability risk” associated with the economic assumptions similar to the investment risk associated with a given portfolio mix.

Actuarial assumptions are used to measure and budget future costs. Changing assumptions will not change the actual cost of future benefits, but may impact the timing of contributions. Aggressive assumptions anticipate good future experience ahead of time and factor it into budget estimates. Conservative assumptions on the other hand tend to recognize good experience only after it happens.

The choice of assumptions depends on a system’s risk tolerance. The final determination on whether or not a set of assumptions was either conservative or aggressive will only be born out by future experience. We believe the current economic assumptions are neither aggressive nor conservative.

## Conclusion

As discussed in the inflation section, we are recommending the inflation assumption be lowered to 3.50%. This means the real rate of return assumption is being increased 0.50%. However, based on portfolio analysis and the recommended inflation assumption, we believe the 7.75% assumption is reasonable and has some buffer for adverse experience. Nonetheless, the expected returns for the portfolio will still have considerable volatility.

<b>Investment Return (net of investment and administrative expenses)</b>	
Current Assumption	7.75%
Best Estimate Range*	7.15% - 9.55%
Recommended Assumption	Proposed : 7.75%*

\* *Based on a 3.5% inflation assumption.*

### 3. Wage Growth

#### Use in the Valuation

Estimates of future salaries are based on two types of assumptions: 1) general wage increase and 2) merit increase. Rates of increase in the general wage level of the membership are directly related to inflation, while individual salary increases due to promotion and longevity occur even in the absence of inflation. The promotion and longevity assumptions, referred to as the merit scale, will be reviewed with the other demographic assumptions.

The current assumption for wage growth is for 0.50% above the inflation assumption, or 4.50%.

#### Historical Perspective

We have used statistics from the Social Security Administration on the National Average Wage back to 1951.

There are numerous ways to review this data. For consistency with our observations of other indices, the tables below show the compounded annual rates of wage growth for various 10-year periods, and for longer periods ended in 2007 (2008 wage data is not yet available). The excess of wage growth over price inflation represents “productivity” or the increase in the standard of living, (also called the real wage inflation rate).

Time Period	Wage Growth	CPI Increase	Real Wage Inflation
1998-2007	4.0%	2.5%	1.5%
1988-1997	4.1%	3.1%	1.0%
1978-1987	6.5%	5.9%	0.6%
1968-1977	6.5%	6.7%	-0.2%
1958-1967	3.6%	2.1%	1.5%
1998-2007	4.0%	2.5%	1.5%
1988-2007	4.0%	2.8%	1.2%
1978-2007	4.8%	3.8%	1.0%
1968-2007	5.3%	4.5%	0.8%
1958-2007	4.9%	4.0%	0.9%
<b>Prior 57 Years</b>			
1951-2007	4.8%	3.7%	0.9%

#### Peer System Comparison

The *Public Fund Survey* does not report the average wage growth assumption. Based on our experience with other systems, we believe the average for this group would be below the current 4.50%.

#### Forecasts of Future Wages

Wage inflation has been projected by the Office of the Chief Actuary of the Social Security Administration. In the 2008 Trustees Report, the long-term annual increase in the National Average Wage is estimated to be 1.1% higher than the Social Security intermediate inflation assumption of 2.8% per year. The range of the assumed real wage growth in the 2008 Trustees Report was from 0.6% to 1.6% per year.

**Reasonable Range and Recommendation**

We believe that a range between 0.50% and 1.50% is reasonable for the actuarial valuation. We recommend that the long-term assumed real wage inflation rate be set to 0.50% per year.

<b>Real Wage Inflation Rate</b>	
Current Assumption	0.50%
Best Estimate Range	0.50% - 1.50%
Recommended Assumption	0.50%

The wage growth assumption is the total of the consumer price inflation assumption and the real wage inflation rate. If the real wage inflation assumption is 0.50% and the price inflation assumption is 3.50%, this would result in a total wage growth assumption of 4.00%.

**Payroll Increase Assumption**

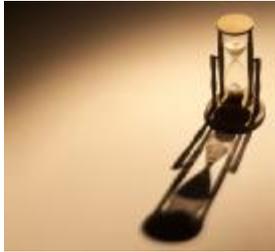
In addition to setting salary assumptions for individual members, the aggregate payroll is expected to increase, without accounting for the possibility of an increase in membership (our current and recommended assumption is that no growth in membership is assumed).

The current payroll increase assumption is equal to the general wage growth assumption of 4.50%. It is our general recommendation to continue to set these two assumptions to be equal. Therefore, we recommend that the payroll increase assumption be set to 4.00%.

## WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

### Section 4: Mortality

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One of the most important demographic assumptions is mortality because this assumption predicts when retirement payments will stop. The life expectancies of current and future retirees are predicated on the assumed rates of mortality at each age. It is commonly known that rates of mortality have been declining throughout this century, which means people, in general, are living longer.

Because of potential differences in mortality, different assumptions may be employed for healthy retirees, disabled retirees and active members. Therefore, experience for each group is typically studied separately.

### Results

#### Healthy Retirees

In the last experience study, the retiree mortality assumption was changed to the RP-2000 Healthy Annuitant Mortality Table with generational mortality improvements. A two year age set forward is used for males (for example a 62 year old is treated as if he is 64 years old). No age adjustment is used for female mortality.

In examining the results of an experience study, if the A/E Ratio is greater than 100% the assumptions have predicted fewer deaths than actually occurred, and therefore have built in some “margin” for future mortality improvements. This is the traditional approach to anticipate future mortality improvements. The RP-2000 Table provides a margin for future mortality improvements using a different, more direct approach. It projects future mortality improvements on a “generational” basis, i.e. mortality rates are set by the year in which a member reaches a particular age. By its “generational” approach, it directly reflects expected improvements in mortality for all members, i.e. greater mortality improvements are anticipated for younger members, which is more likely to occur. With the use of the RP-2000 Table, a “margin” (A/E ratio above 100%) is no longer required as the expected mortality improvements are built into the future mortality rates. As a result, we expect to find A/E ratios around 100%.

Given the relatively small number of exposure, the results are not totally credible on their own, but they provide general insight into the appropriateness of the table. In order to have additional data for our analysis, we aggregated the current and prior experience study results for healthy retirees. Although the A/E Ratio in this study is 103% for males and 88% for females, the A/E Ratio in the last study, using the same table, was 105% and 100% respectively. When the aggregate experience over ten years is considered, the A/E ratio is 104% for males and 94% for females. The results are shown on the following page:

Healthy Retirees - Males			
	Actual	Expected	A/E Ratio
1998 – 2003	99	94	105%
2004 – 2008	98	95	103%
<b>Total</b>	<b>197</b>	<b>189</b>	<b>104%</b>

Healthy Retirees - Females			
	Actual	Expected	A/E Ratio
1998 – 2003	46	46	100%
2004 – 2008	44	50	88%
<b>Total</b>	<b>90</b>	<b>96</b>	<b>94%</b>

The A/E ratio for the ten-year period indicates the assumption is a reasonable fit for the observed experience. **We recommend keeping the current healthy retiree mortality assumption.**

#### **Beneficiaries**

The mortality of beneficiaries applies to the survivors of members who have elected a joint and survivor option. There is never complete data on the mortality experience of beneficiaries prior to the death of the member because there is no requirement that the death be reported to the System. In addition, the data is small. **Therefore, we recommend the standard convention be followed and the mortality basis be set for beneficiaries to the same basis as is used for retired members.**

#### **Disabled Members**

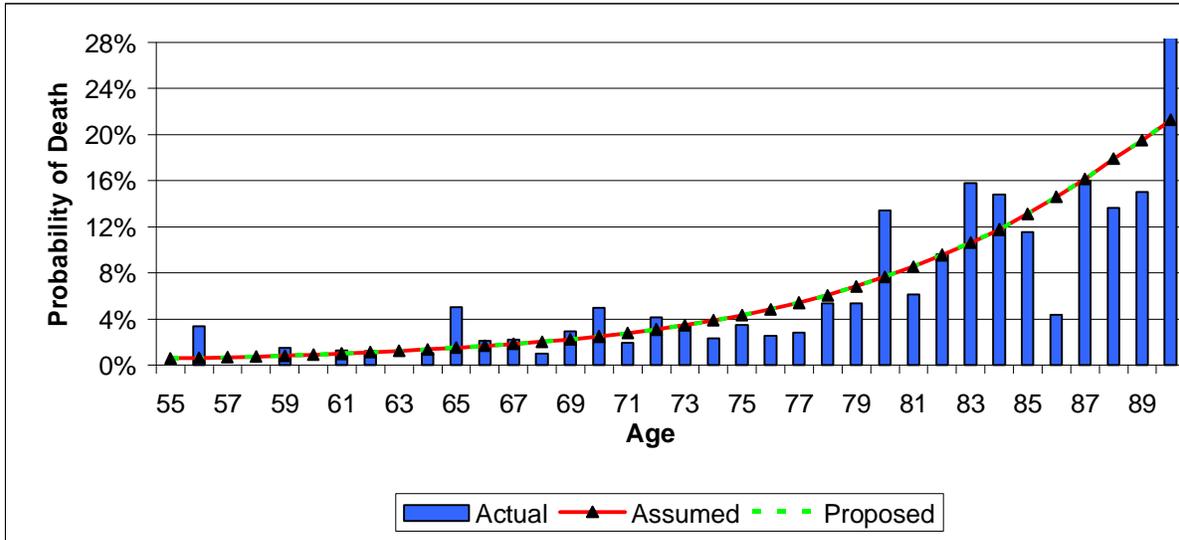
The valuation assumes that disabled members, in general, will not live as long as retired members who met the regular service retirement eligibility. There is an insufficient number of disabled retirees to provide statistically reliable results. When the retiree mortality was changed in the last study, the RP-2000 Disabled Tables for males and females were recommended to be consistent with the table used for Healthy Retirees. **We recommend maintaining the current assumption.**

#### **Active Members**

This assumption predicts eligibility for death benefits prior to retirement, rather than the expected lifetime for pension payments. Mortality among active members has a small financial impact upon the system's liabilities. In groups of a smaller size, such as WER, the mortality rates for active members are often set based on the same assumption as is used for healthy retirees. Given the small probability of death and the relatively low exposure at each age, the results are not credible on their own. **Therefore, we recommend the active member mortality utilize the same basis as is used for retirees, only the Employee Table will be used.**

## Wichita Employees' Retirement System Experience Study 2004-2008

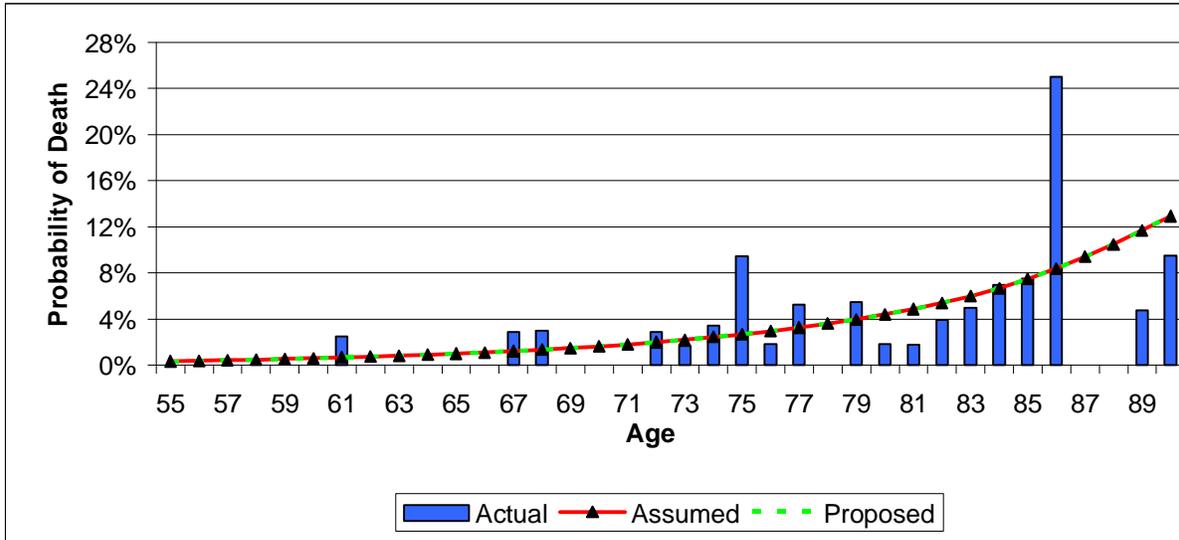
### Probability of Death - Healthy Retirees Males



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	98	95	95
Actual/Expected		103%	103%

## Wichita Employees' Retirement System Experience Study 2004-2008

### Probability of Death - Healthy Retirees Females



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	44	50	50
Actual/Expected		88%	88%

# WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

## Section 5: Retirement



Service retirement measures the change in status from active membership directly to retirement. This assumption does not include the retirement patterns of members who terminated from active membership years prior to their retirement. That experience is studied separately.

If a member is eligible to retire under either early reduced or normal retirement requirements, they may elect to participate in the DROP (Deferred Retirement Option Program). If such election is made, the member's benefit is computed based on years of service and final average salary as of the DROP election date. The monthly benefit, plus 5% annual interest, compounded monthly, is paid into the member's notational DROP account during the DROP period. The member and employer continue to make contributions during the DROP period. At the end of the DROP period, the balance of the DROP account is paid to the member in a lump sum and the monthly benefit is paid to the employee each month going forward.

The eligibility provisions for retirement and the current assumptions vary by Plan so the experience was measured and evaluated on that basis.

### Results – Plan 1

The requirements for early retirement with a reduced benefit are age 55 and 7 years of service. The requirements for retirement with a full (unreduced) benefit are age 60 with 7 years of service or any age with 30 or more years of service (referred to as "normal retirement"). Since July 18, 1981, all new City employees have become Plan 2 or 3 members. As a result of the Plan being closed for nearly 30 years and the eligibility to retire with 30 years, there are very few actives left in Plan 1.

The current assumption is an age based table with rates from ages 55 to 65. In addition, 70% of members with 30 or more years of service are assumed to elect DROP with an average of 48 months and 30% are assumed to retire immediately.

The Plan 1 retirement experience, including those electing DROP, during the study period is summarized below:

**Plan 1 Retirement Experience**

Year	Actual	Expected	A/E Ratio
30+ YOS	76	76	100%
<30 YOS	11	13	85%
Total	87	89	98%

**Recommendation – Plan 1**

We recommend the retirement rates for those with less than 30 years of service be increased at ages 60 and 61 and decreased at ages 62 and 63 to better reflect actual experience. This assumption applies to very few members so the change does not have a significant impact on the valuation.

**Results – Plan 2**

The requirement for early retirement with a reduced benefit is age 55 with 7 years of service. The requirement for Plan 2 retirement with a full (unreduced) benefit is age 62 and 7 years of service.

The results of our experience study are shown below:

**Plan 2 Retirement Experience (2004-08)**

Year	Actual	Expected	A/E Ratio
2004	16	22	73%
2005	22	28	79%
2006	13	28	46%
2007	30	33	91%
2008	26	33	79%
Total	107	144	74%

**Recommendation – Plan 2**

There were fewer retirements than expected during the study period with an A/E ratio of 74%. **We recommend some modifications to the retirement rates at ages 62 through 69 to better fit the experience.** The revised A/E ratio using the proposed rates is 77%, but it is a better fit than the current assumption.

**DROP Experience**

For valuation purposes, we assume that 70% of members with 30 or more years of Service in Plan 1 (or 33 or more years of Service in Plan 2) will elect DROP and the other 30% will retire. All of the exposure for the DROP assumption has been Plan 1 due to the effective date of Plan 2, which was less than 33 years ago.

The DROP election experience in the study period is summarized below:

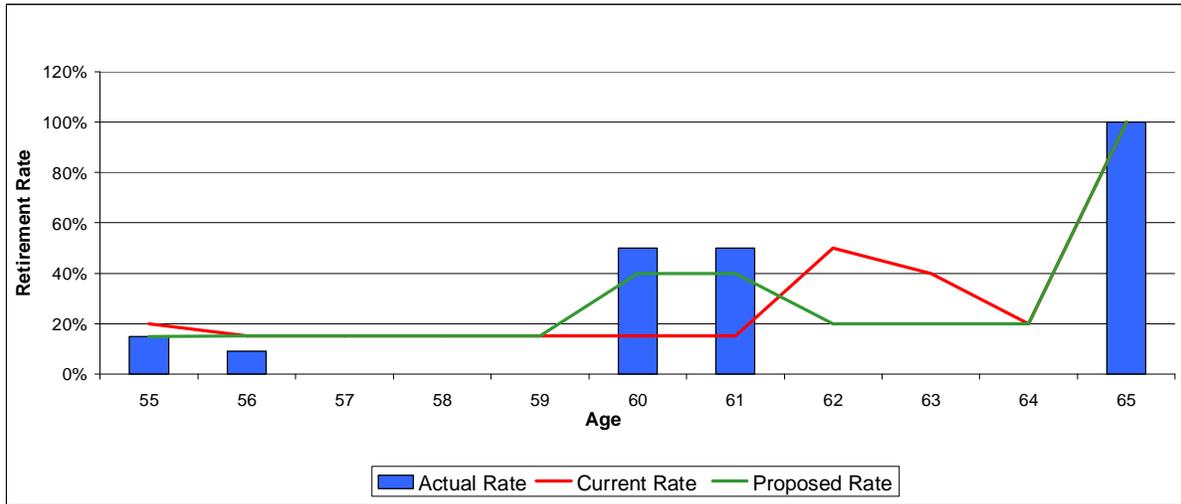
Year	Plan 1		Plan 2	
	DROP	Retire	DROP	Retire
2004	8	7	2	14
2005	9	6	6	17
2006	8	7	2	14
2007	16	7	8	23
2008	<u>13</u>	<u>9</u>	<u>5</u>	<u>21</u>
Total	54	36	23	89

Of those Plan 1 members with 30 years of service, 68% elected into DROP and 32% retired. Our assumption is that 70% elect DROP and 30% retire. **We recommend the current assumption be retained.**

## **Inactive Vested Members**

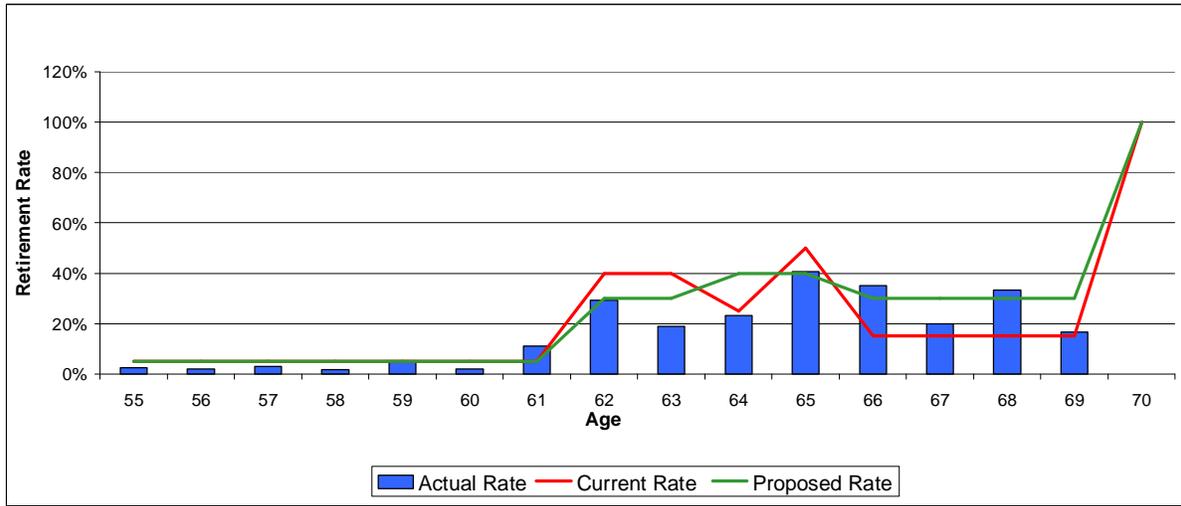
Currently, inactive vested members from Plan 1 who leave their contributions with the System are assumed to retire at age 55. Plan 2 inactive vested members are assumed to retire at age 62. We reviewed the experience during the observation period and found that actual experience was close to that assumed. **We recommend the current assumption be retained.**

**Wichita Employees' Retirement System**  
 Experience Study 2004-2008  
 Plan 1  
 Retirement Rates



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	11	13	15
Actual/Expected		85%	73%

**Wichita Employees' Retirement System**  
 Experience Study 2004-2008  
 Plan 2  
 Retirement Rates



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	107	144	139
Actual/Expected		74%	77%

## WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

### Section 6: Disability



The size of the Retirement System, coupled with the small probability of disablement at most ages, does not permit credible derivation of age related disability rates. Nonetheless, the actual to expected ratio was calculated to provide some indication of actual to expected experience. In general, ratios below 100% indicate fewer disabilities than expected.

#### Results

The table below indicates the number of actual and expected disabilities during the current and prior study period and the resulting A/E Ratios.

**Disability Experience (2004-2008)**

Disabilities	Actual	Expected	A/E Ratio
Males	2	14	14%
Females	3	8	38%
<b>Total</b>	<b>5</b>	<b>22</b>	<b>23%</b>

**Disability Experience (1999-2003)**

Disabilities	Actual	Expected	A/E Ratio
Males	6	25	24%
Females	7	15	47%
<b>Total</b>	<b>13</b>	<b>40</b>	<b>33%</b>

#### Recommendation

The results of this study period are consistent with those of the prior study, i.e. the actual number of disabilities is much lower than expected. Even though the size of the group is small and lacks credibility, we recommend lowering the disability rates by 25% at all ages. The revised A/E ratio, based on the proposed assumption, is 29%.

## WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

### Section 7 Termination of Employment (Withdrawal)



This section of the report summarizes the results of our study of terminations of employment for reasons other than death, retirement, or disability. Rates of termination can vary by both age and years of service. In general, rates of termination are highest at younger ages and in the early years of employment. WER currently uses a set of select and ultimate withdrawal rates. Select rates are used for members with <1, 1, 2, 3 or 4 years of service. The ultimate rates are age based and apply to all members with 5 or more years of service.

The number of withdrawals includes all members reported to have terminated employment. Some of these members subsequently receive refunds of contributions; some return to active membership and some leave their contributions with the System until retirement. We have made explicit assumptions about what happens to vested members who leave their contributions with the System.

#### Results

The following charts show the actual and expected number of terminations for causes other than death, retirement, or disablement, and the corresponding A/E Ratios.

#### Turnover Experience (2004-2008)

Less Than 5 Years of Service			
Service	Actual	Expected	A/E Ratio
Less than 1	122	155	79%
1	79	107	74%
2	61	69	88%
3	45	49	92%
4	31	36	86%
Total	338	416	81%

5 or More Years of Service			
Age	Actual	Expected	A/E Ratio
25 - 29	12	7	171%
30 - 34	14	16	88%
35 - 39	26	26	100%
40 - 44	36	35	103%
45 - 49	34	41	83%
50 - 54	33	32	103%
Total	155	157	99%

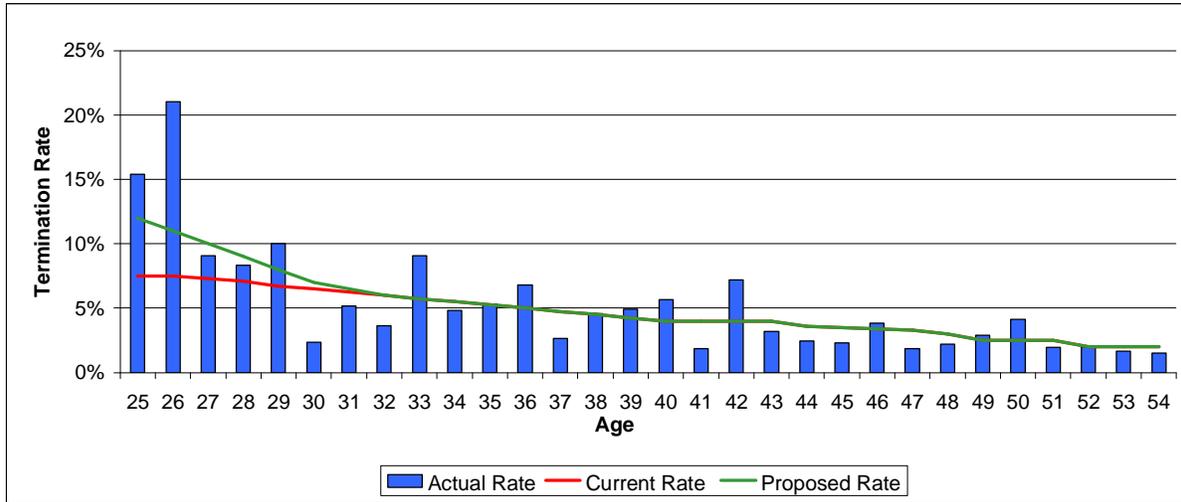
The number of terminations for members with less than five years of service was less than expected (A/E ratio of 81%). For those with 5 or more years of service, the number of terminations was close to that expected.

**Recommendation**

The current assumptions are a reasonably good fit. We recommend increasing the termination rates in the ultimate table at ages 25 to 30 to better reflect experience. The ultimate rates for a member shall not be higher than the select rates that applied in the prior year.

**Wichita Employees' Retirement System**  
Experience Study 2004-2008

**Withdrawal Rates**  
**Ultimate**



	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Count	155	157	160
Actual/Expected		99%	97%

## WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

### Section 8: Probability of Refund Upon Vested Termination



This section of the report deals with the rates at which members elect a refund of their contributions upon termination of service. It only considers active members who will be vested when they terminate, but not yet eligible for service retirement. Vesting requires 7 years of service. Note that non-vested members are assumed to take a refund at termination.

The current assumption, based on years of service, is shown below:

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

The longer the employee has been with the City, the lower the probability is that the member will take a refund.

#### Results

The following is a summary of vested members in Plan 2 who terminated employment and elected to take a refund of their employee contribution balance, thereby forfeiting any right to a benefit in the future.

Years of Service	Number Terminating	Refunds	
		Actual	Expected
Under 15	62	38	37
15-19	28	13	11
20-24	10	3	2
25-29	<u>4</u>	<u>0</u>	<u>0</u>
Total	104	54	50

#### Recommendation

The A/E ratio is 108% (54 actual divided by 50 expected). **Based on the results of both the current and prior experience studies, we recommend the current assumption be retained.**

## WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

### Section 9: Merit Salary Scale



Estimates of future salaries are based on assumptions for two types of increases:

1. Increases in each individual's salary due to promotion or longevity (often called merit scale), and
2. Increases in the general wage level of the membership, which are directly related to price and wage inflation.

Earlier in this report, we recommended that the second of these rates, general wage inflation, be set at 4.00% (3.50% price inflation and 0.50% real wage growth).

Although future salary increases are the result of two components, it is difficult if not impossible, to isolate the true salary adjustment due to inflation and productivity. Therefore, the experience study reviewed total salary increases for the period.

### Results

We compared individual salary increases for all members active in any two consecutive periods (e.g. 2004 and 2005, 2005 and 2006, etc.). Based on the current assumption, which is duration based (rates vary with years of service), the actual salary experience over the five year period is shown below:

Year	Actual	Expected
2004	5.7%	6.0%
2005	5.4%	5.9%
2006	6.6%	5.8%
2007	4.1%	5.9%
2008	9.2%	5.9%
Total	6.2%	5.9%

The first data reported using the Vi-Tech System was the December 31, 2008 valuation data. Attempts to reconcile the large differences between the 2007 and 2008 salary amounts were made. Various reasons were found for the differences (with the one consistent reason being the 4.0% general wage increase in 2008). In the course of the discussion, it was decided that using actual pay for the calendar year would provide a better estimate than using rates of pay (which had been reported and used in the valuation for years prior to 2008). Although we believe the 2008 salary amounts reported were reasonably accurate, since the 2008 experience is not consistent with the prior years' data, we determined that it should be excluded from the experience study. Once the 2008 data is removed, the overall actual experience for the period is 5.4% and the expected is 5.9%.

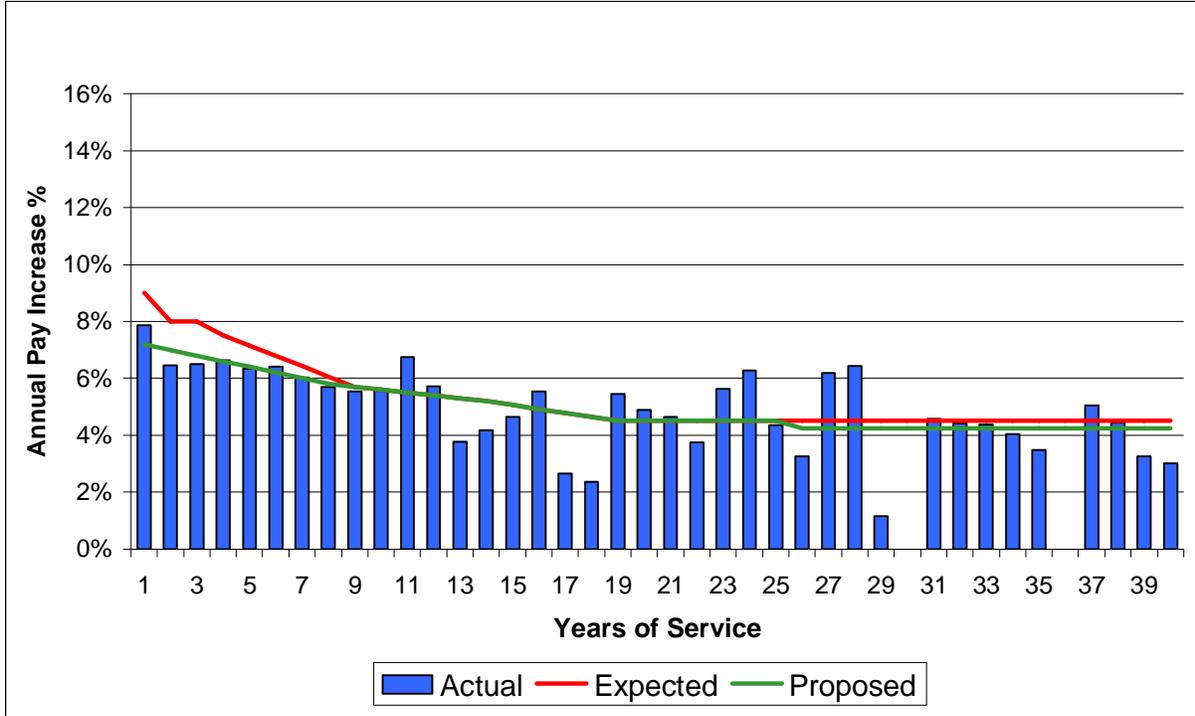
Wage inflation during the study period was 4.0% as compared to the assumption of 4.50%. Therefore, we expected to see actual wage increases during this period about 0.50% lower than the assumed rates. Once the 2008 experience is excluded from the study, the actual results are about 0.50% lower than expected, indicating the salary scale is a good fit overall for recent economic conditions.

## **Recommendation**

Since our general wage increase is 4.0% (the same as actual increase during the study period), we **recommend maintaining the current total salary scale with minor modifications**. The result of this recommendation is an increase to the merit scale.

# Wichita Employees' Retirement System Experience Study 2004-2008

## Salary Scale



## WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

### Section 10: Election of Plan Choice by Plan 3 Members

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Once Plan 3 members have 7 years of service, they may elect to remain in the defined contribution plan (Plan 3b) or elect to participate in Plan 2. The valuation assumes all members will elect into Plan 2 when they become vested.

The actual experience during the current and prior study periods is shown below:

	2002	2003	2004	2005	2006	2007	2008	Total
Plan 2	73	55	70	70	69	74	53	464
Plan 3b	<u>8</u>	<u>4</u>	<u>5</u>	<u>13</u>	<u>8</u>	<u>11</u>	<u>19</u>	<u>68</u>
Total	81	59	75	83	77	85	73	532
DB Election	90%	93%	93%	84%	90%	87%	82%	87%

As shown above, 87% of Plan 3 members elected to transfer to Plan 2. The remaining 13% elected to remain in Plan 3 (defined contribution plan).

Plan 2 benefits have a higher value in all, but a very small number of situations. In addition, actual election experience indicates the vast majority of Plan 3 members elect Plan 2. **We recommend the current assumption be retained.**

## WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

### Section 11: Miscellaneous Assumptions

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#### Sick Leave Service

Upon retirement, each month of accumulated unused sick leave is considered to be a month of service for the purpose of computing benefit amounts. Because the amount of unused sick leave cannot be determined until a member retires, an assumption is used to anticipate the increase in retirement benefits due to this plan provision. Currently, normal retirement benefits are increased by 4% to account for the inclusion of unused sick leave in calculating retirement benefits.

Our review of the increase in retirement benefits due to additional service for unused sick leave indicated an average increase over the study period of 3.0%. This is lower than the experience in the current assumption. **We recommend the 4% load for sick leave service be retained to provide a degree of conservatism.**

#### Marriage Assumption

Actual spousal information is provided for retirees and is used in the valuation. For current active members, whose marital status and spousal information may change before they reach retirement, an assumption is used. The proportion of active members assumed to be married is 80%, with the male assumed to be 3 years older than the female. **The current assumptions are standard assumptions that are used widely by other retirement plans and we recommend they be retained.**

#### Indexation of Vested Deferred Pensions

The amount of pension for the deferred vested members is indexed with the increase in the National Average Wage, but not to exceed 5.5% per year. The current assumption is an annual increase of 4.5%.

Earlier we reported that the increase in the National Average Wage has varied from 3.8% to 5.3% over different decades of time. Earlier we recommended the wage inflation be set to 4.00%. **We recommend this assumption be lowered to 4.00% to be consistent with the other economic assumptions.**

# WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

## APPENDIX A: Proposed Actuarial 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 people 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, retirants and beneficiaries
- (iv) rates of withdrawal of active members
- (v) rates of disability among active members
- (vi) the age patterns of actual retirements.

## APPENDIX A (continued)

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 2004. The use of updated assumptions was effective with the December 31, 2004 valuation.

**Investment Return Rate** (net of administrative expenses). This assumption is 7.75% a year, compounded annually and consists of 4.00% long term price inflation and a 3.75% 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 2004.

**Salary Increase Rates.** These rates are used to project current pay amounts to those upon which a benefit will be based and were first used for the December 31, 2004 valuation.

Years Of Service	Annual Rate of Salary Increase for Sample Ages			
	Inflation Component	Productivity Component	Merit and Longevity	Total
1	4.00%	0.50%	5.50%	10.00%
2	4.00	0.50	4.50	9.00
3	4.00	0.50	3.50	8.00
4	4.00	0.50	3.50	8.00
5	4.00	0.50	3.00	7.50
6	4.00	0.50	2.64	7.14
7	4.00	0.50	2.28	6.78
8	4.00	0.50	1.92	6.42
9	4.00	0.50	1.56	6.06
10	4.00	0.50	1.20	5.70
11	4.00	0.50	1.10	5.60
12	4.00	0.50	1.00	5.50
13	4.00	0.50	0.90	5.40
14	4.00	0.50	0.80	5.30
15	4.00	0.50	0.70	5.20
16	4.00	0.50	0.56	5.06
17	4.00	0.50	0.42	4.92
18	4.00	0.50	0.28	4.78
19	4.00	0.50	0.14	4.64
20+	4.00	0.50	0.00	4.50

**APPENDIX A (continued)**

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

Healthy Retirees and Beneficiaries: RP-2000 Healthy Annuitant Tables  
(ages set forward 2 years for males, 0 for females)

Disabled Retirees: RP-2000 Disabled Table

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 A (continued)**

***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**

<b>Retirement Age</b>	<b>Plan 1</b>	<b>Plan 2</b>
< 55	0%	0%
55	20	5
56	15	5
57	15	5
58	15	5
59	15	5
60	15	5
61	15	5
62	50	40
63	40	40
64	20	25
65	100	50
66	N/A	15
67	N/A	15
68	N/A	15
69	N/A	15
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, 2006 actuarial valuation.

**APPENDIX A (continued)**

**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
Any	0	25.00%
	1	19.00
	2	14.00
	3	11.00
	4	9.00
25	Over 4	7.50
30		6.50
35		5.25
40		4.00
45		3.50
50		2.50
55		1.50
60		1.50

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

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

**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.

## APPENDIX A (continued)

**Rates of Disability.** This assumption measures the probabilities of a member becoming disabled.

Sample Ages	% of Active Members Becoming Disabled During Next Year
25	0.03%
30	0.04
35	0.05
40	0.09
45	0.14
50	0.24
55	0.43
60	0.71

The current rates were first used for the December 31, 1999 valuation.

Disabilities are assumed to be non-duty related.

**Active Member Group Size.** The number of active members was assumed to remain constant.

**Vested Deferred Pensions.** Amounts are assumed to increase during the deferral period at 4.5% per year. This assumption was changed with the December 31, 2004 valuation.

### Miscellaneous and Technical Assumptions

**Marriage Assumption:** 70% of 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 occur 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:** Disability and turnover decrements do not operate during retirement eligibility.

## APPENDIX A (continued)

***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 Credit. 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 the difference between the market and actuarial value of assets. This assumption was changed with the December 31, 2004 valuation

# WICHITA EMPLOYEES' RETIREMENT SYSTEM INVESTIGATION OF EXPERIENCE (2004-2008)

## APPENDIX B: Current Actuarial 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 people 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, retirants and beneficiaries
- (iv) rates of withdrawal of active members
- (v) rates of disability among active members
- (vi) the age patterns of actual retirements.

## APPENDIX B (continued)

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 2004. The use of updated assumptions was effective with the December 31, 2004 valuation.

**Investment Return Rate** (net of administrative expenses). This assumption is 7.75% a year, compounded annually and consists of 3.50% 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 and will first be used for the December 31, 2009 valuation.

Years Of Service	Annual Rate of Salary Increase for Sample Ages			
	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	0.64	4.64
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
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**APPENDIX B (continued)**

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

Healthy Retirees and Beneficiaries: RP-2000 Healthy Annuitant Tables  
(ages set forward 2 years for males, 0 for females)

Disabled Retirees: RP-2000 Disabled Table

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 B (continued)**

***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**

<b>Retirement Age</b>	<b>Plan 1</b>	<b>Plan 2</b>
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 will first be used in the December 31, 2009 actuarial valuation.

**APPENDIX B (continued)**

**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
Any	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	

This assumption will first be used for the December 31, 2009 valuation.

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

**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.

## APPENDIX B (continued)

**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 will first be used for the December 31, 2009 valuation.

Disabilities are assumed to be non-duty related.

**Active Member Group Size.** The number of active members was assumed to remain constant.

**Vested Deferred Pensions.** Amounts are assumed to increase during the deferral period at 4.0% per year. This assumption will be changed with the December 31, 2009 valuation.

### Miscellaneous and Technical Assumptions

**Marriage Assumption:** 70% of 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 occur 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:** Disability and turnover decrements do not operate during retirement eligibility.

## APPENDIX B (continued)

***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 Credit. 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 the difference between the market and actuarial value of assets. This assumption was changed with the December 31, 2004 valuation.

## DEFINITION OF TERMS

<b>Actuarial Accrued Liability</b>	The difference between the actuarial present value of system benefits and the actuarial value of future normal costs. Also referred to as “accrued liability” or “actuarial liability.”
<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 that 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 actuarial assumptions.
<b>Actuarial Cost Method</b>	A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefits between future normal cost and actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”
<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.

**Normal Cost**

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

**Unfunded Actuarial Accrued Liability**

The difference between actuarial accrued liability and the valuation assets. Sometimes referred to as “unfunded accrued liability” or “unfunded liability”.

Most retirement systems have unfunded actuarial accrued liability. They arise anytime new benefits are added and anytime an actuarial loss is realized.

The existence of unfunded actuarial accrued liability is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial accrued liability does not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liability and make payments to finance it. Also of importance are trends in the amount or duration of payment.