

NEW MEXICO EDUCATIONAL RETIREMENT BOARD
ACTUARIAL EXPERIENCE STUDY
AS OF JUNE 30, 2014

June 12, 2015

Board of Trustees
Educational Retirement Board of New Mexico
701 Camino de los Marquez
Santa Fe, NM 87501

Subject: Results of 2014 Experience Study

Dear Members of the Board:

We are pleased to present our report on the results of the 2014 Experience Study for the New Mexico Educational Retirement Board (ERB). It includes a discussion of recent experience, it presents our recommendations for new actuarial assumptions and methods, and it provides information about the actuarial impact of these recommendations on the liabilities and other key actuarial measures.

With the Board's approval of the recommendations in this report, we believe the actuarial condition of the retirement system will be more accurately portrayed. Additionally, mortality experience and population growth will have a notable impact on the future financial health of ERB. The recommended changes to these two assumptions will significantly reduce the risk to ERB that these assumptions are not met in the future which will translate to more prudent projections of ERB's financial health today.

The study was conducted in accordance with generally accepted actuarial principles and practices, and with all of the Actuarial Standards of Practice issued by the Actuarial Standards Board. The undersigned both meet all of the Qualification Standards of the American Academy of Actuaries and both are experienced in performing actuarial valuations for large public retirement systems.

We wish to thank the Executive Director and staff for their assistance in this project.

Respectfully submitted,
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SECTION I
INTRODUCTION

Introduction

In determining liabilities, contribution rates and funding periods for retirement plans, actuaries must make assumptions about the future. Among the assumptions that must be made are:

- Retirement rates
- Mortality rates
- Termination rates
- Disability rates
- Investment return rate
- Salary increase rates
- Inflation rate

For some of these assumptions, such as the mortality rates, past experience provides important evidence about the future. For other assumptions, such as the investment return rate, the link between past and future results is much less relevant. In either case, though, actuaries should review their assumptions periodically and determine whether these assumptions are consistent with actual past experience and with anticipated future experience.

In conducting experience studies, actuaries generally use data over a period of several years. This is necessary in order to gather enough data so that the results are statistically significant. In addition, if the study period is too short, the impact of the current economic conditions may lead to misleading results. It is known, for example, that the health of the general economy can impact salary increase rates and withdrawal rates. Using results gathered during a short-term boom or bust will not be representative of the long-term trends in these assumptions. Also, the adoption of legislation, such as plan improvements or changes in salary schedules, will sometimes cause a short-term distortion in the experience. For example, if an early retirement window was opened during the study period, we would usually see a short-term spike in the number of retirements followed by a dearth of retirements for the following two, or four, years. Using a longer period prevents giving too much weight to such short-term effects. On the other hand, using a much longer period would increase the difficulty of identifying changes in behavior, such as mortality improvement or a change in the ages at which members retire. In our view, using a six-year period is reasonable.

In an experience study, we first determine the number of deaths, retirements, etc. that occurred during the period. Then we determine the number expected to occur, based on the current actuarial assumptions. The number “expected” is determined by multiplying the probability of the occurrence at the given age, by the “exposures” at that same age. For example, let’s look at a rate of retirement of 15% at age 55. The number of exposures can only be those members who are age 55 and eligible for retirement at that time. Thus they are considered “exposed” to that assumption. Finally we calculate the A/E ratio, where "A" is the actual number (of retirements, for example) and "E" is the expected number. If the current assumptions were "perfect", the A/E ratio would be

100%. When it varies much from this figure, it is a sign that new assumptions may be needed. (However, in some cases we prefer to set our assumptions to produce an A/E ratio a little above or below 100%, in order to introduce some conservatism.) Of course we not only look at the assumptions as a whole, but we also review how well they fit the actual results by sex, by age, and by service.

Finally, if the data leads the actuary to conclude that new assumptions are needed, the actuary "graduates" or smoothes the results since the raw results can be quite uneven from age to age or from service year to service year.

Please bear in mind that, while the recommended assumption set represents our best estimate, there are other reasonable assumptions sets that could be supported. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods.

ORGANIZATION OF REPORT

Section II contains our findings and recommendations for each actuarial assumption. The impact of adopting our recommendations on liabilities and contribution rates is shown in Section III. Section IV summarizes the recommended changes. Section V provides a summary of the entire set of proposed actuarial assumptions and methods. Finally, Section VI presents detailed summaries of the data and comparisons of the A/E ratios.

SECTION II

ANALYSIS OF EXPERIENCE AND RECOMMENDATIONS

Analysis of Experience and Recommendations

We will begin by discussing the economic assumptions: inflation, the investment return rate, and the salary increase assumption. Next we will discuss the demographic assumptions: mortality, disability, termination and retirement. Finally we will discuss the actuarial methods used.

ECONOMIC ASSUMPTIONS

Actuarial Standards of Practice (ASOP) No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, provides guidance to actuaries on giving advice on selecting economic assumptions for measuring obligations for defined benefit plans. In September 2013, the Actuarial Standard Board adopted changes to ASOP No. 27 which significantly reduced the reasonable range for an acceptable investment return assumption. The effective date for this new standard is for measurement dates on or after September 30, 2014. Generally speaking, the recently adopted version indicates that economic assumptions should be based on the actuary's estimate of future experience and no longer includes the "best-estimate range" standard.

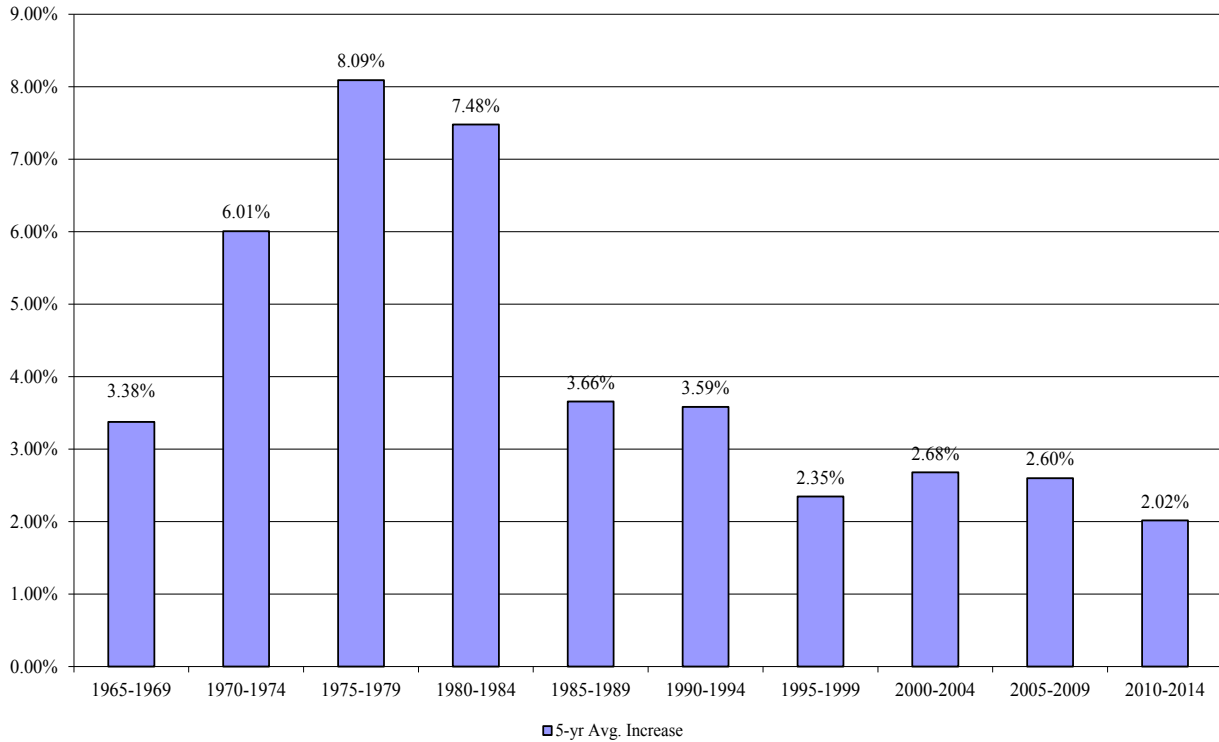
Generally, the economic assumptions are much more subjective in nature than the demographic assumptions. As no one knows what the future holds, it is necessary for the actuary to estimate possible future economic outcomes. These estimates are based on a mixture of past experience, future expectations, 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.

INFLATION

By "inflation," we mean price inflation, as measured by annual increases in the Consumer Price Index (CPI). This inflation assumption underlies most of the other economic assumptions. It primarily impacts investment return and salary increases. The current annual inflation assumption for ERB is 3.00%.

The chart on the next page shows the average annual inflation in each of the ten consecutive five-year periods over the last fifty years:

Average Annual Inflation
CPI-U, Five-Calendar-Year Averages



Source: Bureau of Labor Statistics, CPI-U, all items, not seasonally adjusted

The table below shows the average inflation over various periods, ending June 2014:

Periods Ending June 2014	Average Annual Increase in CPI-U
Last five (5) years	2.02%
Last ten (10) years	2.31%
Last fifteen (15) years	2.43%
Last twenty (20) years	2.41%
Last thirty (30) years	2.81%
Since 1913 (first available year)	3.19%

Source: Bureau of Labor Statistics, CPI-U, all items, not seasonally adjusted

Inflation has been relatively low over the last 20 years, yet over a period closer to 30 years inflation has averaged close to 3.00% per year, or higher.

Most of the investment consulting firms, in setting their capital market assumptions, currently assume that inflation will be less than 3.00%. We examined the 2014 capital market assumption sets for eight investment consulting firms: BNY Mellon, PCA, NEPC, Mercer, Hewitt EnnisKnupp, JP Morgan, R.V. Kuhns, and Towers Watson. The average assumption for inflation was 2.50%, with a range of 2.25% to 3.25%. It should be noted that five of these investment consulting firms set their assumptions based on approximately a ten-year outlook, while

actuaries must make much longer projections. The remaining three firms set their assumptions based on a 20- or 30-year outlook.

In the Social Security Administration's 2014 Trustees Report, the Office of the Chief Actuary is projecting a long-term average annual inflation rate of 2.7% under the intermediate cost assumption. (The low cost assumption was 2.0% and the high cost assumption was 3.4%.) Since 2013, the spread between the low and high cost assumptions has narrowed by 0.6% and the intermediate cost assumption decreased by 0.1%.

The Philadelphia Federal Reserve conducts a quarterly survey of the Society of Professional Forecasters. In their forecast immediately preceding the July 1, 2014 actuarial valuation, second quarter of 2014, was for inflation over the next ten years to average 2.25%. Most observers expect inflation to continue to be low as the economy works out of the recession. However, the society of Professional Forecasters are predicting inflation to average 1.90% for the calendar year 2014 and 2.10% for the 2015 calendar year, so it is not just the next two years that is depressing inflation forecasts.

Another source of information is the Public Funds Survey that is prepared on behalf of the National Association of State Retirement Administrators (NASRA) and the National Council on Teacher Retirement Systems (NCTR). This report includes responses from 126 plans, including all of the largest public funds covering state employees or teachers. The current survey, published in January 2015, shows that the median inflation rate assumed for large public retirement systems in the U.S. is 3.00%, the average inflation rate is 3.16%, and most of the retirement systems in the survey (102 of the 126) have an inflation assumption at, or above, 3.00% (the current inflation assumption for ERB).

Recommendation

We believe that inflation over the next few years may continue to be less than 3.00% annually, but believe it would be more prudent to assume a 3.00% rate of inflation over the long term. This is in line with the average for the last 30 years, and a little below the long-term historical average. Therefore, we are recommending retaining the annual 3.00% inflation assumption. In their 2014 long-term capital market assumption set, NEPC was also projecting the longer-term inflation to be over 3.00%. In our analysis, we have used a 3.00% inflation assumption as the building block for the other economic assumptions.

INVESTMENT AND ADMINISTRATIVE EXPENSES

There are two primary types of expenses that are paid from the trust. First, administrative expenses are those expenses associated with running the retirement system (e.g., staff salaries, office space, actuarial fees, etc.). The other primary type of expense is investment expenses that are paid from the trust (transaction costs, investment consultants, etc.). Since the trust fund pays these expenses from plan assets, it is necessary to incorporate the expected expenses into the actuarial valuation.

There are two common approaches to incorporating these expenses into the actuarial valuation. Plan expenses may be explicitly assumed as a direct increase to the annual normal cost or implicitly assumed by developing an investment return assumption that is expected to meet the return target after paying plan expenses from the investment earnings. Our past practice has been to set the investment return assumption as the net return after payment of both investment and administrative expenses (implicit assumption for all expenses).

This chart shows the administrative and investment expenses for the last five years expressed as a percentage of the assets, adjusted for cash flow, each year:

Annual Expenses Expressed as a Percentage of Assets			
Fiscal Year	Administrative	Investment	Total
2014	0.17%	0.13%	0.30%
2013	0.12%	0.16%	0.28%
2012	0.13%	0.11%	0.24%
2011	0.14%	0.43%	0.57%
2010	0.16%	0.45%	0.61%
Average	0.14%	0.26%	0.40%

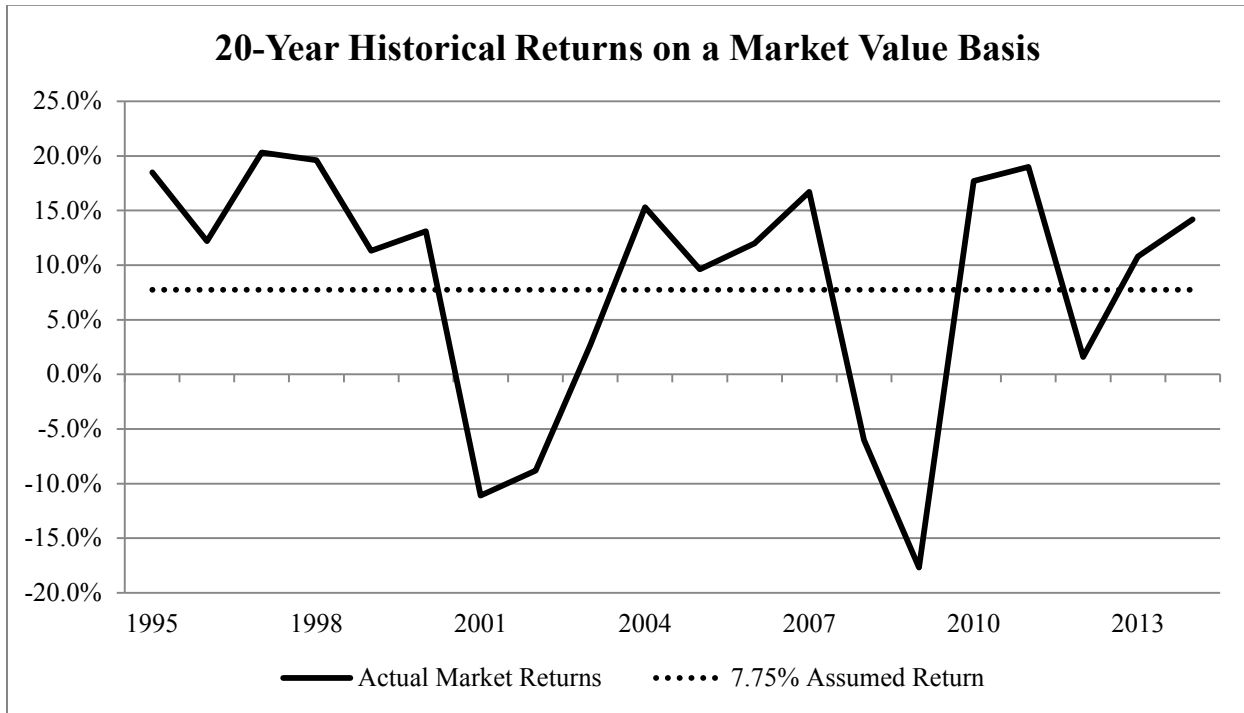
We recommend that the current implicit assumption for administrative and investment expenses be maintained. The following section will outline how these expenses are incorporated into the analysis of the investment return assumption.

INVESTMENT RETURN

The investment return assumption is one of the principal assumptions in any actuarial valuation of a retirement plan. It is used to discount future expected benefit payments to the valuation date, in order to determine the liabilities of the plans. Even a small change to this assumption can produce significant changes to the liabilities and actuarially determined contribution rates.

Currently, ERB assumes an investment return rate of 7.75%, net of investment and administrative expenses. The 7.75% assumption is composed of a 3.00% assumed inflation rate plus a 4.75% assumed real return.

The chart below shows a 20-year year history of ERB market returns through FY 2014 compared to the current assumption of 7.75%.



The returns in the chart above are market returns, net of investment and administrative expenses, as reported in the actuarial valuations. ERB exceeded the expected 7.75% return assumption in 14 of the last 20 years with an average market return during this period of 7.9%, which exceeds the 7.75% assumption.

However, for this assumption, past performance, even averaged over a twenty-year period, is not a reliable indicator of future performance. The actual asset allocation of the trust fund will significantly impact the overall performance, so returns achieved under a different allocation are not meaningful. More importantly, the real rates of return for many asset classes, especially equities, vary so dramatically from year to year that even a twenty-year period is not long enough to provide reasonable guidance.

We believe an appropriate approach to reviewing an investment return assumption is to determine the median expected portfolio return given the retirement plan’s target allocation and a given set of capital market assumptions. Per the ERB Investment Policy Statement, dated August 15, 2014, the target asset allocation for ERB is:

Asset Class	Target
Domestic Equities – Large Cap	18%
Domestic Equities – Small/Mid Cap	2%
International Equities – Developed	5%
International Equities – Emerging Markets	10%
Fixed Income – Opportunistic Credit	20%
Fixed Income – Core Bonds	6%
Fixed Income – Emerging Market Debt	2%

Alternatives – Real Estate/REITS	7%
Alternatives – Real Assets	8%
Alternatives – Private Equity	11%
Alternatives – Global Tactical Asset Allocation	5%
Alternatives – Risk Parity	5%
Cash	1%
Total	100%

Because GRS does not develop or maintain its own capital market assumptions, we reviewed assumptions developed and published by the following investment consulting firms:

- JP Morgan
- NEPC
- PCA
- Mercer
- RV Kuhns
- Towers Watson
- BNY Mellon
- Hewitt EnnisKnupp

These investment consulting firms issue reports that describe their capital market assumptions, which include their estimates of expected returns, volatility, and correlations. While these assumptions are developed based upon historical analysis, many of these firms also incorporate forward looking adjustments to better reflect near-term expectations.

Given the current strategic target asset allocation set for ERB and the investment firms' capital market assumptions for 2014, the development of the average nominal return, net of investment and administrative expenses paid from the trust, is provided in the following table:

Investment Consultant	Investment Consultant Expected Nominal Return	Investment Consultant Inflation Assumption	Expected Real Return (2)-(3)	Actuary Inflation Assumption	Expected Nominal Return (4)+(5)	Plan Incurred Expense Assumption	Expected Nominal Return Net of Expenses (6)-(7)	Standard Deviation of Expected Return (1-Year)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	6.74%	2.75%	3.99%	3.00%	6.99%	0.14%	6.85%	10.30%
2	6.87%	2.22%	4.64%	3.00%	7.64%	0.14%	7.50%	10.40%
3	7.40%	2.50%	4.90%	3.00%	7.90%	0.14%	7.76%	13.80%
4	7.51%	2.25%	5.26%	3.00%	8.26%	0.14%	8.12%	13.80%
5	7.68%	2.26%	5.42%	3.00%	8.42%	0.14%	8.28%	12.30%
6	8.69%	3.25%	5.44%	3.00%	8.44%	0.14%	8.30%	12.80%
7	8.45%	2.50%	5.95%	3.00%	8.95%	0.14%	8.81%	11.90%
8	8.34%	2.30%	6.04%	3.00%	9.04%	0.14%	8.90%	13.30%
Average	7.71%	2.50%	5.21%	3.00%	8.21%	0.14%	8.07%	12.33%

We determined, for each firm, the expected nominal return rate based on ERB's target allocation and then subtracted that investment consulting firm's expected inflation to arrive at their expected real return in column (4). Then we added back ERB's current 3.00% inflation and subtracted 0.14% for administrative expenses to arrive at an expected nominal return net of

expenses. As the table shows, the resulting average arithmetic one-year return of the eight firms is 8.07%.

The forward-looking capital market assumptions and return forecasts developed by investment consulting firms already reflect expected investment expenses. Their return estimates for core investments (i.e., fixed income, equities, and real estate) are generally based on anticipated returns produced by passive index funds that are net of investment related fees. Investment return expectations for the alternative asset class such as private equity and hedge funds are also net of investment expenses. Therefore, we did not make any additional adjustments to account for investment related expenses. This analysis also assumes that investment managers will generate enough alpha to at least cover the cost of the active management. No additional alpha for active management has been considered.

In addition to examining the expected one-year return, it is important to review anticipated volatility of the investment portfolio and understand the range of long-term net returns that could be expected to be produced by the investment portfolio. Therefore, the following table provides the 25th, 50th, and 75th percentiles of the 20-year geometric average of the expected nominal return, net of administrative and investment expenses paid from the trust, as well as the probability of exceeding the current 7.75% assumption.

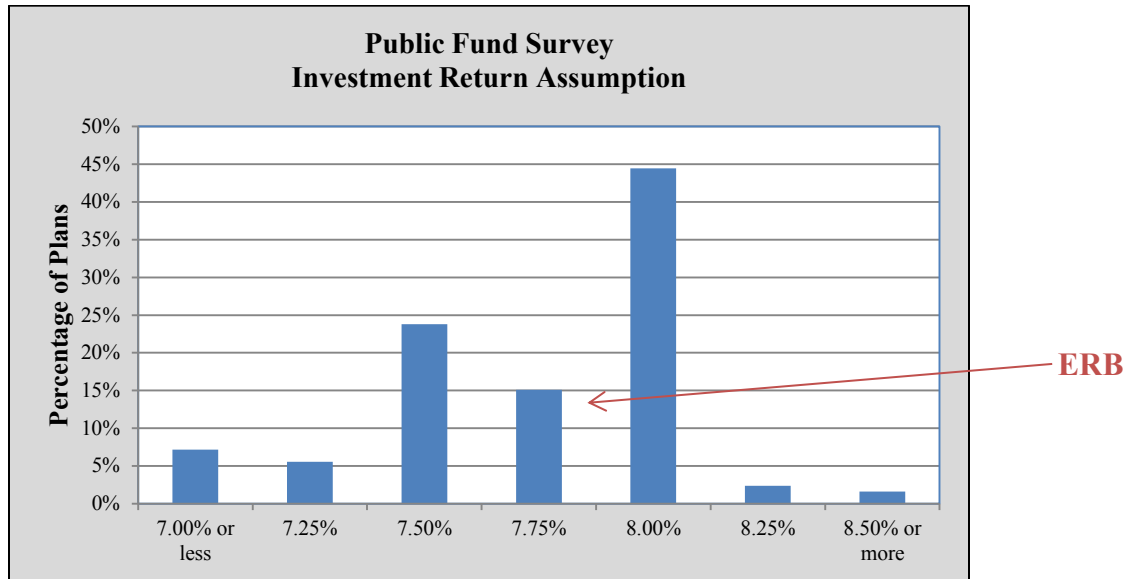
Investment Consultant	Distribution of 20-Year Average Geometric Net Nominal Return			Probability of exceeding 7.75% *
	25th	50th	75th	
(1)	(2)	(3)	(4)	(5)
1	4.82%	6.35%	7.90%	27.1%
2	5.45%	6.99%	8.56%	37.2%
3	4.83%	6.86%	8.94%	38.6%
4	5.21%	7.24%	9.31%	43.3%
5	5.76%	7.58%	9.42%	47.5%
6	5.64%	7.53%	9.46%	47.0%
7	6.38%	8.14%	9.94%	55.9%
8	6.10%	8.07%	10.07%	54.3%
Average	5.52%	7.35%	9.20%	43.9%

*Plan's current return assumption net of expenses.

The table above documents that the average probability of exceeding the current 7.75% investment return assumption over a 20-year period is 44%.

Other Sources of Investment Return Forecasts

As a point of reference, the Public Funds Survey published in January 2015 of 126 large public retirement systems reflects the nominal assumption in use, or announced for use, as of the date of the survey. The average investment return assumption for responding systems was 7.72%. The table below provides the distribution of the different investment return assumptions used by other large public retirement systems.



While we do not recommend the Board select an assumption based on this information, it is still informative to see ERB’s assumption in relation to its peers. The table shows that the 7.75% assumption is consistent with the median return of 7.75% in the survey. You should be aware that several large plans have recently reduced their assumption, and several others are in the middle of a review of this assumption.

Recommendation

Based on this analysis, we believe that the current 7.75% investment return assumption satisfies the best-estimate assumption requirement under ASOP No. 27 as revised and adopted in September 2013.

We recommend that the Board maintain the current 4.75% net real return assumption and, therefore, maintain the 7.75% nominal return assumption, net of administrative and investment expenses.

SALARY INCREASE RATES

The current salary increase rates assumed for the valuation vary by service. They range from 13.00% for new members to 4.25% for members with 10 or more years of service.

Historically, the average pay increases for members active in consecutive valuations for the last six years, with at least one year of service, are as follows:

Period	Increase
FY 2008 to FY 2009	6.58%
FY 2009 to FY 2010	2.68%
FY 2010 to FY 2011	1.41%
FY 2011 to FY 2012	2.05%
FY 2012 to FY 2013	2.48%
FY 2013 to FY 2014	3.46%

The geometric average of these is 3.10%.

Salary increases are composed of both wage inflation and service-based promotional or merit increases. Wage inflation is currently assumed to be 4.25% (3.00% price inflation plus 1.25% productivity increases) with additional merit increases during the first 10 years of employment of up to 8.75%. The following will analyze these two components separately in developing our overall salary increase assumption.

Wage Inflation for Long-Service Employees

Salary increases for longer-service employees are almost entirely driven by wage inflation. Many of the factors that result in pay increases are largely inapplicable or have diminished importance for longer-service employees. Step or service-related increases have ceased or are minimal. Promotions occur with less frequency. Additional training or acquisition of advanced degrees usually occurs early in the career. Thus, longer service employees' wages are assumed to grow at the overall rate of wage inflation. Wage inflation is also the increase in the average wage of all members of the workforce of the employer.

Wage inflation is currently assumed to be 4.25%, and this is the assumed salary increase for longer-service members with at least 10 years of service.

In 2003, New Mexico adopted a new three-tier licensure system for compensating classroom teachers. Once the system was adopted, it took a number of years before the majority of the classroom teachers were being compensated consistent with the new system. As a result, analyzing the individual salary increases over the past ten years may not be the best predictor of the average increase classroom teachers will expect to receive in the future from the new system. However, an analysis of the pay increases over the past six years should provide a more reasonable estimate of how the pay will increase for an average classroom teacher in the future. For members with 10 or more years of service, the observed average salary increase during the

last six years was 1.88%. Inflation during this six-year period averaged 1.43%. Therefore, long-service employees received an average salary increase of 0.45% above inflation.

On this basis and the overall downward pressure on wages, we recommend decreasing the productivity increase from 1.25% to 0.75% for a total wage inflation assumption of 3.75%.

Additional Merit Increases for Shorter-Service Employees

Members who are early in their career typically have salary increases that include both wage inflation as well as a component for promotion. This additional component is part of the service-based component of the salary scale. This component of the salary scale ranges from 8.75% (in addition to wage inflation) in the member's first year of employment to 0.50% in the member's ninth year of employment. The table on the last page of the report contains additional details on these results.

The table on the last page of the report indicates that the actual service-based increases have generally been higher than the current assumption. However, the actual rates of increase have been somewhat varied in recent years so we are not inclined to recommend a change at this time to the service-based component of the salary scale for members with less than 10 years of service.

We do believe that the recommended changes to the productivity increases will help account for the lower overall pay increases that have been observed over the experience period.

We will continue to monitor this service-based component of the salary scale and will recommend a change in the assumption to the Board when we believe it is necessary

If we combine this result with our 3.75% recommendation for wage inflation, the result is a total salary increase assumption ranging from 12.50% for new members to 3.75% for members with 10 or more years of service.

PAYROLL GROWTH RATE

The salary increase rates discussed above are assumptions applied to individuals. They are used in projecting future benefits. We also use a separate payroll growth assumption, currently 3.50%, in determining the charge needed to amortize the unfunded actuarial accrued liability. The amortization payments are calculated to be a level percentage of payroll, so as payroll increases over time, these charges do as well. The amortization percentage is dependent on the rate at which payroll is assumed to increase.

Note that the payroll growth assumption is also used in our projections to project future ARP contributions.

The chart below shows the membership and payroll growth for the last six years:

Fiscal Year	Membership Growth	Payroll Growth	Adjusted Payroll Growth
2014	-0.01%	0.87%	0.88%
2013	0.53%	0.88%	0.35%
2012	-1.33%	-1.14%	0.19%
2011	-2.56%	-2.02%	0.56%
2010	-0.82%	-0.38%	0.44%
2009	0.19%	3.77%	3.58%
Geometric Average	-0.67%	0.31%	0.99%

Payroll has grown at 0.31% over the last six years, 1.71% over the last ten years, and 3.57% over the last 20 years. Part of this increase, though, comes from the growth in the number of active members. If we adjust to remove the effect of the increase in membership, payroll growth has averaged 0.99% over the last six years, 1.99% over the last ten years, and 2.92% since 1994 (the last 20 years). Finally, the primary component of payroll growth is inflation (as with all economic assumptions). If we adjust the actual payroll growth rate experience for the difference between actual and assumed inflation, the normalized experience now becomes 2.56%, 2.68%, and 3.51%, respectively.

Payroll can grow at a rate different from the average pay increase for individual members. There are two reasons for this. First, when older, longer-service members terminate, retire or die, they are generally replaced with new teachers who have a lower salary. Because of this, in most populations that are not growing in size, the growth in total payroll will be smaller than the average pay increase for members. Second, payroll can grow due to an increase in the size of the group. However, this assumption is generally set such that anticipated membership growth is excluded in setting the payroll growth assumption.

Theoretically, over the long term the total payroll for a population of constant size should grow at about the rate that starting pays increase. These will generally rise with inflation, plus some adjustment for the excess of wage inflation over price inflation, plus an industry-specific adjustment. However, because of the lack of turnover in the last few years combined with stagnant individual wage increases, payroll growth has been less than assumed. Additionally, because of the baby boomer retirements expected over the next 10-15 years, we expect actual payroll growth to lag behind the wage inflation assumption. Based on this analysis and the proposed wage inflation of 3.75%, we believe that a 3.50% payroll growth is reasonable.

DEMOGRAPHIC ASSUMPTIONS

As previously mentioned, actuaries are guided by the Actuarial Standards of Practice (ASOP) adopted by the Actuarial Standards Board (ASB). One of these standards is ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*. This standard provides guidance to actuaries giving advice on selecting noneconomic assumptions for measuring obligations under defined benefit plans. We believe the recommended assumptions in this report were developed in compliance with this standard.

POST-RETIREMENT MORTALITY RATES

ERB's liability depends in part on how long retirees live. If members live longer, benefits will be paid for a longer period of time, and the liability will be larger. Additionally, teachers have longer life expectancies compared to the general population. This experience is also true for the retired teachers and educators in ERB, and it will be important to reflect this in the mortality assumption used in the valuation.

The mortality table currently being used for non-disabled retirees and for beneficiaries receiving benefits is the RP-2000 Combined Mortality Table with White Collar Adjustments projected forward 14 years (i.e. to 2014) using Scale AA. The base rates from these tables are further multiplied by 90% and the rates for females are set back one year. To analyze the data, we begin by determining the expected number of deaths in each year at each age for males and females. Then we compare the actual number to the expected number. The ratio of the actual deaths to the expected deaths—the A/E ratio—then tells us whether the assumptions are reasonable.

There were 1,896 deaths among male retirees and 2,440 deaths among female retirees during the last six years. (These figures exclude deaths among beneficiaries and disabled retirees.) Based on the current mortality assumption, we expected 1,796 and 2,356 deaths respectively. This produced A/E ratios of 106% for males and 104% for females. Two years ago when the current assumption was set, the A/E ratios were 111% for males and 107% for females based on the same mortality assumption. This experience suggests that there is continued improvement in life expectancy for the retired members.

Static versus Generational Mortality Improvements

The current assumption applies mortality improvements to the published RP-2000 mortality table for a fixed number of years (e.g., 14 years) and the resulting set of mortality rates is used for every future year in the valuation projection. This approach is referred to as a “static” mortality projection and is a commonly accepted approach to setting mortality assumptions. Since this approach does not assume continuing mortality improvement beyond the fixed number of years at the valuation date, the assumption must include a margin of conservatism to allow for future improvements in mortality rates. As long as the mortality of ERB annuitants continues to improve, this margin will periodically need to be reestablished.

The other commonly accepted approach to incorporating mortality improvement into an actuarial valuation of a pension plan is referred to as “generational” mortality projection. A generational

mortality projection does not build in a margin up front, but the mortality is assumed to improve every future year in the valuation projection. Since this form of mortality projection assumes continual mortality improvements, there should be no need to periodically reestablish margin for future mortality improvements in the mortality assumption.

Improvement in mortality continues to be a reality and this trend can be seen throughout the past experience studies for ERB. In an effort to better anticipate these continued mortality improvements, our recommended assumption for post-retirement mortality will include “generational” mortality improvements going forward.

Proposed Assumption

Since the “generational” mortality assumption will anticipate the future mortality improvements, there is no longer a need to establish a mortality assumption with margin to allow for future improvements in mortality rates. As a result, our goal was to find mortality tables with the best fit for the mortality experience of ERB over the past six years (i.e., A/E ratios close to 100%).

For males, we recommend the RP-2000 Combined Healthy for males with White Collar Adjustments. This assumption produces an A/E ratio of 96% over the experience period. Further, the mortality rates are projected on a fully generational basis using Scale BB from the table’s base year of 2000.

GRS works with teacher retirement systems across the country and, in particular, many teacher retirement systems in the Southwest region of the United States. We have generally found that that the published mortality tables do not provide a good match to the mortality experience of retired female teachers, especially at the core ages between 60 and 84. As a result, GRS has developed a specialized mortality table for retired female teachers in the Southwest region. Based on the experience of ERB over the past six years, this specialized table provides a superior fit to the mortality experience of ERB.

For females, we recommend the GRS Southwest Region Teacher Mortality Table with the base rates set back one year. This assumption produces an A/E ratio of 99% over the experience period. Further, the mortality rates are projected on a fully generational basis using Scale BB from the table’s base year of 2012.

DISABLED MORTALITY RATES

This assumption has a much smaller impact on the actuarial valuation as there are relatively few disability occurrences and disability benefits comprise a small portion of the total benefits provided by the retirement system. There were 92 deaths among the male disabled retirees and 97 deaths among female disabled retirees during the last six years. Based on the current mortality assumptions, we expected 94 and 129 deaths for males and females respectively. This produces A/E ratios of 98% for males and 75% for females compared to 112% for males and 92% for females in the prior experience study.

Even though the number of disabled retirees is relatively low, it is important that the assumption going forward more closely resemble (have an A/E ratio of at least 100%) the actual experience over the past six years. As a result, we recommend that the mortality assumption for disabled retirees be updated to the RP-2000 Disability Mortality Table with mortality improvements projected forward 16 years (i.e. to 2016) using Scale BB. For males, the rates are set back three years. This assumption produces an A/E ratio of 103% for males and 108% for females over the experience period.

ACTIVE MORTALITY RATES

This is another minor assumption with a relatively small impact on the actuarial valuation as the probability of death for a member during their working career is low. In fact, mortality across employee groups is generally lower than the mortality rates in the post-retirement mortality tables.

However, the number of actual deaths is considerably higher than that reported by ERB for the six-year period. This is a common occurrence for many of our clients, especially when the beneficiary of a deceased active member only receives a refund of contributions, because the data we receive generally indicates that the active member terminated. Because of situations similar to this, we augmented the data by performing a check against the Social Security Administration (SSA) database for additional deaths among the members originally reported as terminations.

There were 383 actual deaths (188 males and 195 females), while there were 460 expected deaths (224 males and 236 females). This produced A/E ratios of 84% for males and 82% for females.

Even though the number of deaths among active members is relatively low, it is important that the assumption going forward more closely resemble (have an A/E ratio of at least 100%) the actual experience over the past six years. As a result, we recommend that the mortality assumption for active members be updated to the RP-2000 Employee Mortality Table with mortality improvements projected forward 16 years (i.e. to 2016) using Scale BB. For males, the rates are scaled to 80% and set back two years. For females, the rates are scaled to 70% and set back five years. This assumption produces an A/E ratio of 102% for males and 100% for females over the experience period.

DISABILITY RATES

Disability is a minor assumption with a relatively small impact on the actuarial valuation as the occurrence of disability is significantly less frequent than termination and retirement rates. Even though the occurrence is somewhat infrequent, the value of the benefit for the disabled member can be significant.

There were 178 new disabled retirees (62 males and 116 females) during the period, while we expected 292 (96 males and 196 females). The A/E ratios were 65% for males and 59% females. Because the A/E ratios are lower than we would prefer, we recommend modifying the current

assumption at certain ages to better fit the experience. After these changes, the A/E ratios increase to 93% for males and 91% for females. We prefer that the resulting A/E ratios are below 100% to be conservative and to account for members who may have become disabled late in the period but who were not approved for disability by the end of the period.

RETIREMENT RATES

We currently use retirement rates that vary by age, service, and sex. There were 3,262 male retirements during the six-year period, and there were 7,649 female retirements. This includes only members who retired from active status. It excludes those who were inactive for over a year before retiring.

The analysis shows A/E ratios of 102% for males and 97% for females. (Rates less than 100% are conservative.) In the last study, the A/E was 100% for males and 94% for females. For the current study, the A/E's for members with at least 25 years of service—these are the members with the largest liability—are 109% for males and 98% for females. The A/E's for members who met the Rule of 75 (with at least age 60) are 100% for males and 102% for females. However, the A/E's for members who became eligible for normal retirement upon attaining age 65 with 5 years of service are 92% for males and 92% for females. Additionally, the average retirement age for males is 60.2 (actual) compared to 60.8 (expected). For females, these ages are 59.9 (actual) and 60.1 (expected). In the last experience study, the actual ages at retirement were 59.8 (males) and 59.5 (females).

Currently, members who joined ERB by June 30, 2010 are eligible for a Normal Retirement Benefit upon the earliest of age 65 with 5 years of service, Rule of 75 (with at least age 60), or 25 years of service. This group makes up virtually all of the plan experience over the past six years. As a result, we have enough experience to develop reasonable experience-based tables that reflect the retirement patterns for members eligible to retire under these provisions.

Alternatively, members who joined ERB after June 30, 2010 are eligible for a Normal Retirement Benefit upon the earliest of age 67 with 5 years of service, Rule of 80 (with at least age 65), or 30 years of service. It should be noted that members who joined ERB after June 30, 2013 that retire with 30 years of service will have their benefit reduced prior to age 55.

In order to model the career and future retirement benefits of a member who joined ERB after June 30, 2010, we must develop a set of assumed retirement rates for this group when there is virtually no experience on which to base the assumption. We previously developed a separate retirement assumption for these members which was based on a modification of the experience for members who joined ERB by June 30, 2010.

We are proposing a change to this assumption for members who joined ERB after June 30, 2010. The premise is that all members, whether they joined before or after June 30, 2010, have the same inherent probability of retirement upon reaching retirement eligibility. The primary difference is that members who joined ERB after June 30, 2010 must work a few years longer in order to retire with a Normal Retirement Benefit.

As a result, we propose that the retirement rates for members who joined ERB after June 30, 2010 are the same as the experience-based rates for members who joined ERB by June 30, 2010 with one exception. The probability of retirement upon first eligibility for Normal Retirement reflects the accumulated probability of retirement from the first eligibility for members who joined ERB by June 30, 2010 (generally, 25 years of service or Rule of 75) to their actual first eligibility (generally, 30 years of service or Rule of 80).

TERMINATION RATES

Termination rates reflect members who leave for any reason other than death, disability, or service retirement. They apply whether the termination is voluntary or involuntary, and whether the member takes a refund or keeps their account balance on deposit. The current termination rates reflect the member's gender and service.

There were 35,398 terminations (15,703 males and 19,695 females) during the period, while we expected 35,097 (15,811 males and 19,286 females). As a result, the current assumptions produced an A/E ratio of 99% for males and 102% for females compared to 101% for males and 101% for females in the prior experience study. For this assumption, A/E ratios over 100% are conservative.

The most recent experience is very consistent with the experience from the prior study. As a result, we are not recommending any change to the assumed termination rates.

Termination Rates – Males			
		<i>Current Assumption</i>	
Service Years	Actual terms	Expected terms	A/E ratio
0-4	12,432	12,628	98%
5-9	2,187	2,190	100%
10 or more	1,084	993	109%
Totals	15,703	15,811	99%

Termination Rates – Females			
		<i>Current Assumption</i>	
Service Years	Actual terms	Expected terms	A/E ratio
0-4	11,729	11,619	101%
5-9	5,094	4,932	103%
10 or more	2,872	2,735	105%
Totals	19,695	19,286	102%

OTHER ASSUMPTIONS AND REFUNDS

There are other assumptions made in the course of a valuation, such as the percentage of members who are married, the age difference between husbands and wives (both of which only impact the death benefit liability), the likelihood that a terminating employee will take a refund, etc, all of which have a minor impact on liabilities. We reviewed these, and believe these are generally realistic or conservative, so we decided to recommend no changes to these other assumptions.

ACTUARIAL METHODS

Actuarial Funding Cost Method

We have reviewed the actuarial cost method being used—the Entry Age Normal (EAN) cost method—and we continue to believe that this is the method of choice for this plan, since this method usually does the best job of keeping costs level as a percentage of payroll. It is by far the most commonly used actuarial cost method for large public retirement systems.

The plan specifically uses the Individual Entry Age Normal actuarial cost method. This method will base the normal cost calculation on the individual members currently in the valuation and the benefit provisions that apply to that individual (as opposed to basing the normal cost on a hypothetical group of new entrants). For instance, that means the normal cost for Tier 1 members will be based on their benefits and eligibilities and, likewise, the normal cost for Tier 2 and Tier 3 members will be based on their respective benefits and eligibilities.

Asset Valuation Method

We believe the method used to determine the actuarial value of assets (AVA) is appropriate, since it does a good job of smoothing asset gains and losses, and reduces fluctuations in the funding period. The current method smoothes the differences between the expected returns (based on the annual investment return assumption) and actual returns, net of expenses, over a five-year period. This method of determining the actuarial value of assets is very common. It does not distinguish between types of return (interest, dividends, realized gains/losses, and unrealized gains/losses) like some other methods. It treats different asset classes and different investment styles the same. We do not believe the method has a bias relative to market. In other words, we expect the ratio of the AVA to MVA to average about 100% over the very long term. Therefore, we recommend no change to this method.

Membership Growth

After the completion of the annual actuarial valuation, a thirty-year open group projection is prepared on ERB's funded ratio and Funding Policy Contribution. This projection takes into account a number of factors that are not incorporated in the annual actuarial valuation: (i) lower normal cost rate in the future since all new members will be eligible for Tier 3 benefits, (ii) the known deferred asset gains and losses that are reflected in the actuarial value of assets and that will be recognized over the next four years, (iii) anticipated cost-of-living adjustments less than

the assumed 2% per year, and (iv) expected future growth in the active membership (0.50% per annum).

As noted, these projections currently assume the active membership in the plan will grow 0.50% per year over the projection period. Over the last ten years, the membership has been virtually flat or decreasing. Besides 2012, the current active headcount of 61,173 is the lowest number of active members participating in ERB since 2002. (See the payroll growth assumption discussion earlier in this report for additional detail regarding recent membership growth.)

The recent recession and budget constraints may have affected hiring patterns. However, even if the ERB membership is expected to grow over the short term, it may be too aggressive to assume that the membership will experience sustained growth of 0.50% per year for the next 30 years (which translates to approximately 10,000 more teaching positions over that time) for a mature plan like ERB. Therefore, we recommend eliminating the assumption regarding growth in the active membership, altogether. Since the contributions received on the payroll of members hired after July 1, 2013 exceed their normal cost, every additional member assumed to participate in ERB will serve to pay down the unfunded liability over a shorter period of time (i.e., lower population growth results in a lower projected funded ratio). Further, eliminating this assumption will be more consistent with the methods used by peer retirement systems.

It should be noted that this assumption has no impact on the stated results of the annual actuarial valuation for the current fiscal year (i.e., funded ratio, unfunded liability, and funding policy contribution) since the valuation is a snapshot based only on the plan membership on the valuation date.

SECTION III

ACTUARIAL IMPACT OF RECOMMENDATIONS

Actuarial Impact of Recommendations

ERB's Funding Policy Contribution is determined actuarially, based on the plan provisions in effect as of the valuation date, the actuarial assumptions adopted by the Board, and the methodology set forth in the statutes. The member and employer contribution rates are set in statute and are not directly impacted by the annual actuarial valuation. However, the actuarial valuation assesses the adequacy of the statutory contribution rates on an annual basis.

The Funding Policy Contribution and plan liabilities are computed using the Entry Age actuarial cost method. The Funding Policy Contribution is the sum of two pieces: the employer normal cost rate and the amortization rate. The total normal cost rate is determined as a percent of pay. The employer normal cost is the difference between the total normal cost rate and the member contribution rate. The amortization rate is determined as a level percent of pay. It is the amount required to amortize the unfunded actuarial accrued liability over the stated number of years (28 in the examples below).

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. In the absence of benefit improvements and assuming that the contribution rates are sufficient to pay for at least the normal cost and the interest accruing on the unfunded liability, the funded ratio should increase over time until it reaches 100%.

Impact on Valuation Results

The combined impact of all proposed assumption changes, compared to the results of the June 30, 2014 actuarial valuation, is summarized in the following table. Sensitivity to each of the proposed assumption changes has also been included later in this report.

	June 30, 2014 <u>Actuarial Valuation</u>	Impact of <u>Experience Study</u>
Normal Cost % (member and employer)	13.11%	12.98%
Unfunded actuarial accrued liability (UAAL)	\$ 6,256 million	\$ 6,555 million
Funded Ratio	63.1%	62.0%
Funding Policy Contribution (employer only)	16.32%	16.94%
Funding Period – Actuarial Valuation	42.1 years	47.1 years
Funding Period – Open Group Projection	26 years	32 years

Impact of Individual Proposed Changes

The following table itemizes the impact of the individual proposed assumption changes on three key valuation results.

	<u>June 30, 2014 Funded Ratio</u>	<u>FY2015 Funding Policy Contribution</u>	<u>Funding Period with Open Group Projection</u>
Final June 30, 2014 Actuarial Valuation (based on Current Assumptions)	63.1%	16.32%	26 years
Proposed Assumption Changes:			
Mortality Assumptions	(1.9%)	1.69%	7 years
Disability Incidence	0.0%	0.04%	0
Retirement Rates	0.4%	(0.31%)	(1)
Wage Inflation	0.4%	(0.80%)	(4)
Population Growth	<u>0.0%</u>	<u>0.00%</u>	<u>4</u>
Resulting Impact of Proposed Assumption Changes	(1.1%)	0.62%	6 years
Recast June 30, 2014 Actuarial Valuation (based on Proposed Assumptions)	62.0%	16.94%	32 years

SECTION IV

SUMMARY OF RECOMMENDATIONS

Summary of Recommendations

As noted previously, we recommend making the following changes to the current actuarial assumptions and actuarial methods:

- Changes to post-retirement mortality
- Changes to disabled mortality
- Changes to active mortality
- Changes to rates of disability incidence
- Changes to retirement rates for members who joined ERB after June 30, 2010
- Decrease wage inflation from 4.25% to 3.75%
- Lower the population growth assumption to zero (no impact on valuation results)

We recommend that the Board formally accept this report and adopt the proposed assumptions for the June 30, 2015 and June 30, 2016 actuarial valuations.

SECTION V

SUMMARY OF ASSUMPTIONS AND METHODS INCORPORATING THE RECOMMENDED ASSUMPTIONS

I. Valuation Date

The valuation date is June 30th of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

II. Actuarial Cost Method

The contribution rate is set by statute for both employees and for the employers. The funding period is determined, as described below, using the Individual Entry Age Normal actuarial cost method.

The Individual Entry Age Normal actuarial cost method assigns the plan's total unfunded liabilities (the actuarial present value of future benefits less the actuarial value of assets) to various periods. The unfunded actuarial accrued liability is assigned to years prior to the valuation, and the normal cost is assigned to the year following the valuation. The remaining costs are the normal costs for future years. Then each year's contribution is composed of (i) that year's normal cost, plus (ii) a payment used to reduce the unfunded actuarial accrued liability.

The normal contribution is determined using the Entry Age Normal method. Under this method, a calculation is made to determine the rate of contribution which, if applied to the compensation of each individual member during the entire period of anticipated covered service, would be required to meet the cost of all benefits payable on his behalf. The salary-weighted average of these rates is the normal cost rate. This calculation reflects the plan provisions that apply to each individual member. The employer normal cost rate is equal to (i) the normal cost rate, minus (ii) the member contribution rate.

The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs. The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of assets.

The balance of the employers' contributions--the remainder after paying their share of the normal cost--is used to reduce the unfunded actuarial accrued liability. The funding period is the length of time required for the unfunded actuarial accrued liability to be completely amortized, assuming that the portion used to reduce the unfunded liability remains level as a percentage of total payroll, which is assumed to grow 3.50% per year. The 3.00% contribution made by employers to ERB on behalf of employees who elected to participate in the Alternative Retirement Plan is also used to amortize the unfunded actuarial accrued liability.

It is assumed that contributions are made monthly at the end of the month.

III. Actuarial Value of Assets

The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment return in excess of (less than) expected investment income. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year). Returns are measured net of all investment and administrative expenses.

IV. Actuarial Assumptions

A. Economic Assumptions

1. Investment return: 7.75%, compounded annually, net of expenses. This is made up of a 3.00% inflation rate and a 4.25% real rate of return.
2. Salary increase rate: Inflation rate of 3.00% plus productivity increase rate of 0.75% plus step-rate/promotional as shown:

Years of Service	Annual Step-Rate/Promotional Component Rates of Increase	Total Annual Rate of Increase
0	8.75%	12.50%
1	3.00%	6.75%
2	2.00%	5.75%
3	1.50%	5.25%
4	1.25%	5.00%
5	1.00%	4.75%
6	0.75%	4.50%
7	0.50%	4.25%
8	0.50%	4.25%
9	0.50%	4.25%
10 or more	0.00%	3.75%

3. Cost-of-living increases: 2% per year, compounded annually. Note that increases are deferred until July 1 following the year a member retires, or the year in which a member attains the age of 65, whichever is later or, for disabled retirees, until July 1 of the third year following retirement.
4. Payroll growth: 3.50% per year (with no allowance for membership growth)
5. Contribution accumulation: Member contributions are assumed to have grown at 5.50% per year, with 4.00% interest, compounded annually, applicable to the account balances in the past as well as the future.

B. Demographic Assumptions

1. Mortality after termination or retirement:
 - a. Healthy males – RP-2000 Combined Healthy mortality table for males with White Collar Adjustments, no set back. Generational mortality improvements in accordance with Scale BB from the table’s base year of 2000.
 - b. Healthy females – GRS Southwest Region Teacher Mortality Table, set back one year. Generational mortality improvements in accordance with Scale BB from the table’s base year of 2012.
 - c. Disabled males – RP-2000 Mortality Table for disabled males, set back three years. Static mortality improvement from the table’s base year of 2000 to the year 2016 in accordance with Scale BB.
 - d. Disabled females – RP-2000 Mortality Table for disabled females, no set back. Static mortality improvement from the table’s base year of 2000 to the year 2016 in accordance with Scale BB.

Mortality Improvement: The nondisabled annuity mortality assumption includes an explicit generational mortality improvement assumption. To account for future mortality improvement for disabled annuitants, the tables and table multipliers selected above were chosen so that the assumed mortality rates are slightly smaller than the rates observed in the last experience study, covering experience for FY 2009 – FY 2014. The ratio of the actual number of deaths occurring during this period to the expected number based on the selected assumptions was 103% for disabled male annuitants and 108% for disabled female annuitants.

2. Mortality rates of active members – RP-2000 Employee Mortality Tables, with males set back two years and scaled at 80%, and females set back five years and scaled at 70%. Static mortality improvement from the table’s base year of 2000 to the year 2016 in accordance with Scale BB. No future improvement was assumed for pre-retirement mortality.

3. Disability Incidence – As shown below for selected ages (rates are only applied to eligible members, which are members with at least 10 years of service):

Age	Occurrence of Disability per 100 Members	
	Males	Females
25	.007	.010
30	.007	.020
35	.042	.050
40	.091	.080
45	.133	.120
50	.168	.168
55	.182	.168

4. Retirement – Select and ultimate as shown below for selected ages (rates are only applied to members eligible for retirement):

Retirement Per 100 Members

Age	Males - Years of Service					
	0-4	5-9	10-14	15-19	20-24	25+
45	0.00	0.00	0.00	0.00	0.00	15.00
50	0.00	0.00	0.00	0.00	0.00	18.00
55	0.00	0.00	0.00	0.00	5.00	20.00
60	0.00	0.00	0.00	15.00	20.00	25.00
62	0.00	0.00	30.00	30.00	30.00	30.00
65	0.00	40.00	35.00	30.00	30.00	30.00
67	0.00	25.00	25.00	25.00	30.00	30.00
70	100.00	100.00	100.00	100.00	100.00	100.00

Age	Females - Years of Service					
	0-4	5-9	10-14	15-19	20-24	25+
45	0.00	0.00	0.00	0.00	0.00	15.00
50	0.00	0.00	0.00	0.00	0.00	18.00
55	0.00	0.00	0.00	0.00	6.00	23.00
60	0.00	0.00	0.00	20.00	15.00	25.00
62	0.00	0.00	40.00	30.00	30.00	35.00
65	0.00	35.00	40.00	40.00	40.00	40.00
67	0.00	25.00	25.00	25.00	30.00	30.00
70	100.00	100.00	100.00	100.00	100.00	100.00

The retirement assumption was further modified for members who joined after June 30, 2010. The probability of retirement upon first eligibility for Normal Retirement reflects the accumulated probability of retirement from the first eligibility for members who joined ERB by June 30, 2010 (generally, 25 years of service or Rule of 75) to their actual first eligibility for Normal Retirement (generally, 30 years of service or Rule of 80).

Early Retirement Per 100 Members – Members joined after June 30, 2010

Age	Years of Service					
	Males			Females		
	15-19	20-24	25-29	15-19	20-24	25-29
55			5.00			6.00
60		20.00	20.00		15.00	15.00
62	30.00	30.00	30.00	30.00	30.00	30.00
65	30.00	30.00	30.00	40.00	40.00	40.00

5. Termination (for causes other than death, disability or retirement) – Service-based rates are applied as follows:

Completed Service	Terminations per 100 Members	
	Males	Females
0	43.4	31.4
1	28.1	23.8
2	19.6	17.2
3	14.3	13.5
4	11.9	10.6
5	10.0	9.8
6	9.1	8.6
7	7.3	7.2
8	6.1	6.3
9	5.7	5.5
10	5.2	5.0
11	4.2	4.7
12	4.0	4.2
13	3.4	3.6
14	3.4	3.5
15	3.1	3.3
16	2.2	2.3
17	2.3	2.7
18	2.3	2.1
19 and over	0.0	0.0

Rates are not applied after the member is eligible for reduced or unreduced retirement benefits.

C. Other Assumptions

1. Age difference: Males are assumed to be three years older than females. All beneficiaries are assumed to be spouses.
2. Percent electing annuity on death: It is assumed that beneficiaries of deceased members will elect to receive the refund of contributions with interest, unless the member is eligible for early or normal retirement, in which case the beneficiary will elect to receive the survivor annuity.
3. Percent electing deferred termination benefit: All vested active members terminating prior to eligibility for a retirement benefit are assumed to elect the more valuable of (i) an immediate refund, or (ii) a deferred annuity commencing when the member is eligible for an unreduced retirement benefit.
4. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt when eligible for an unreduced benefit (or attained age if later).
5. Investment and administrative expenses: The assumed investment return rate is intended to be the net rate of return after payment of all investment and administrative expenses.
6. Percent married: For valuation purposes 100% of members are assumed to be married.

V. Participant Data

Participant data was supplied on an electronic file for (i) active members, (ii) inactive members, who are entitled to either a future deferred benefit or a refund of their employee contributions and the accumulated interest, and (iii) members and beneficiaries receiving benefits.

The data for active and inactive, non-retired members included birth date, sex, years of service, salary, and accumulated employee contributions (without interest). For retired members and beneficiaries, the data included date of birth, sex, beneficiary or joint annuitant date of birth (where applicable), current monthly benefit, date of retirement, and a form of payment code.

Salary supplied for the current year was the total earnings for the year preceding the valuation date. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data.

SECTION VI

SUMMARY OF DATA AND EXPERIENCE

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**NON-DISABLED EMPLOYEES
POST-RETIREMENT MORTALITY - MALE**

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	9	1,588	0.0057	0.0017	0.0024	3	4	317%	223%
55-59	36	5,361	0.0067	0.0029	0.0039	16	22	221%	165%
60-64	86	11,393	0.0075	0.0053	0.0066	64	79	134%	109%
65-69	150	14,412	0.0104	0.0105	0.0120	150	174	100%	86%
70-74	226	12,272	0.0184	0.0174	0.0202	213	249	106%	91%
75-79	316	9,370	0.0337	0.0317	0.0359	298	337	106%	94%
80-84	383	6,650	0.0576	0.0603	0.0635	392	417	98%	92%
85-89	391	3,590	0.1089	0.1077	0.1115	375	391	104%	100%
90-94	208	1,259	0.1652	0.1830	0.1920	217	230	96%	90%
95-99	85	254	0.3346	0.2624	0.2869	63	69	134%	123%
100-104	5	10	0.5000	0.3345	0.3636	3	3	161%	147%
Other	1	221	0.0045			0	0	370%	278%
Totals	1,896	66,380				1,796	1,975	106%	96%

**NON-DISABLED EMPLOYEES
POST-RETIREMENT MORTALITY - FEMALE**

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	4	2,869	0.0014	0.0013	0.0029	4	8	101%	49%
55-59	40	10,968	0.0036	0.0024	0.0031	28	35	141%	115%
60-64	103	23,582	0.0044	0.0044	0.0043	109	104	95%	99%
65-69	193	27,653	0.0070	0.0082	0.0066	226	185	85%	104%
70-74	205	21,748	0.0094	0.0140	0.0109	301	237	68%	87%
75-79	284	15,083	0.0188	0.0229	0.0205	346	311	82%	91%
80-84	427	10,544	0.0405	0.0391	0.0415	407	434	105%	98%
85-89	508	6,103	0.0832	0.0695	0.0819	415	492	122%	103%
90-94	412	2,928	0.1407	0.1195	0.1521	338	427	122%	96%
95-99	219	925	0.2368	0.1797	0.2250	157	200	140%	109%
100-104	42	116	0.3621	0.2204	0.3019	25	33	170%	126%
Other	3	318	0.0063			1	2	294%	162%
Totals	2,440	122,837				2,356	2,468	104%	99%

POST-RETIREMENT DISABILITY MORTALITY - MALE

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40 - 44	0	21	0.0000	0.0187	0.0215	0	0	0%	0%
45 - 49	3	114	0.0263	0.0222	0.0215	3	2	117%	121%
50 - 54	13	220	0.0591	0.0258	0.0264	6	6	226%	221%
55 - 59	11	340	0.0324	0.0304	0.0325	10	11	106%	99%
60 - 64	19	448	0.0424	0.0349	0.0369	16	17	122%	115%
65 - 69	5	267	0.0187	0.0403	0.0405	11	11	47%	46%
70 - 74	7	231	0.0303	0.0466	0.0468	11	11	64%	64%
75 - 79	10	184	0.0543	0.0660	0.0609	12	11	82%	89%
80 - 84	12	120	0.1000	0.1040	0.0812	12	10	97%	124%
85 - 89	8	45	0.1778	0.1485	0.1059	6	5	124%	172%
90 - 94	1	12	0.0833	0.2020	0.1395	2	2	42%	59%
95 +	3	16	0.1875	0.2730	0.2240	4	4	68%	84%
Totals	92	2,018				94	89	98%	103%

POST-RETIREMENT DISABILITY MORTALITY - FEMALE

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
40 - 44	1	27	0.0370	0.0168	0.0071	0	0	211%	522%
45 - 49	1	151	0.0066	0.0199	0.0085	3	1	32%	74%
50 - 54	9	401	0.0224	0.0232	0.0128	9	5	96%	172%
55 - 59	12	639	0.0188	0.0273	0.0167	17	11	69%	112%
60 - 64	14	756	0.0185	0.0314	0.0199	24	15	59%	92%
65 - 69	15	561	0.0267	0.0362	0.0258	20	14	75%	104%
70 - 74	13	369	0.0352	0.0420	0.0353	16	13	83%	100%
75 - 79	14	205	0.0683	0.0594	0.0491	12	10	116%	141%
80 - 84	9	163	0.0552	0.0936	0.0678	15	11	60%	82%
85 - 89	4	61	0.0656	0.1337	0.0944	8	6	51%	72%
90 - 94	2	12	0.1667	0.1818	0.1384	2	2	93%	123%
95 +	3	6	0.5000	0.2457	0.2019	2	1	189%	241%
Totals	97	3,351				129	89	75%	108%

MALE PRE-RETIREMENT MORTALITY

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	200	0.0000	0.0011	0.0002	0	0	0%	0%
20-24	1	2,953	0.0003	0.0011	0.0003	3	1	33%	125%
25-29	3	8,711	0.0003	0.0010	0.0003	9	3	34%	120%
30-34	-	10,823	0.0000	0.0009	0.0003	9	4	0%	0%
35-39	28	21,579	0.0013	0.0007	0.0006	16	13	178%	219%
40-44	12	15,338	0.0008	0.0009	0.0008	13	13	89%	95%
45-49	26	15,580	0.0017	0.0012	0.0011	19	18	136%	144%
50-54	21	17,665	0.0012	0.0018	0.0016	32	29	65%	73%
55-59	29	17,522	0.0017	0.0026	0.0023	45	41	64%	71%
60-64	34	11,737	0.0029	0.0036	0.0035	41	40	82%	85%
65-69	27	3,840	0.0070	0.0054	0.0050	20	19	134%	145%
70-74	6	1,157	0.0052	0.0064	0.0062	7	5	81%	120%
75 and over	1	1,292	0.0008	0.0064	0.0000	8	-	12%	N/A
Totals	188	128,397				224	184	84%	102%

FEMALE PRE-RETIREMENT MORTALITY

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	98	0.0000	0.0007	0.0001	0	0	0%	0%
20-24	-	3,056	0.0000	0.0006	0.0001	2	0	0%	0%
25-29	3	13,443	0.0002	0.0002	0.0001	3	2	118%	171%
30-34	1	20,781	0.0000	0.0002	0.0001	4	3	23%	32%
35-39	15	28,410	0.0005	0.0004	0.0002	10	7	145%	223%
40-44	9	32,034	0.0003	0.0003	0.0004	12	12	74%	75%
45-49	13	37,617	0.0003	0.0005	0.0006	20	22	66%	60%
50-54	35	42,095	0.0008	0.0010	0.0009	44	37	80%	94%
55-59	45	38,542	0.0012	0.0017	0.0013	65	50	69%	89%
60-64	46	22,387	0.0021	0.0024	0.0019	53	41	87%	112%
65-69	21	5,653	0.0037	0.0031	0.0027	17	15	124%	143%
70-74	7	1,241	0.0056	0.0036	0.0038	4	5	159%	154%
75 and over	-	763	0.0000	0.0036	0.0000	3	0	0%	0%
Totals	195	246,120				236	194	82%	100%

MALE DISABILITY EXPERIENCE

Age	Actual Disabilities	Total Count	Actual Rate	Assumed Rate		Expected Disabilities		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N\A	0.0001	0.0001	-	-	N\A	N\A
20-24	-	-	N\A	0.0001	0.0001	-	-	N\A	N\A
25-29	-	-	N\A	0.0001	0.0001	-	-	N\A	N\A
30-34	-	736	0.0000	0.0002	0.0001	0	0	0%	0%
35-39	-	3,245	0.0000	0.0009	0.0006	3	2	0%	0%
40-44	4	5,699	0.0007	0.0016	0.0011	9	6	44%	63%
45-49	9	7,638	0.0012	0.0021	0.0015	16	11	56%	80%
50-54	21	9,630	0.0022	0.0025	0.0018	24	17	87%	124%
55-59	19	9,997	0.0019	0.0026	0.0018	26	18	74%	106%
60-64	9	6,475	0.0014	0.0023	0.0016	15	10	60%	86%
65-69	-	1,853	0.0000	0.0012	0.0008	3	2	0%	0%
70-74	-	-	N\A	0.0004	0.0003	-	-	N\A	N\A
75 and over	-	-	N\A	0.0004	0.0003	-	-	N\A	N\A
Totals	62	45,273				96	67	65%	93%

FEMALE DISABILITY EXPERIENCE

Age	Actual Disabilities	Total Count	Actual Rate	Assumed Rate		Expected Disabilities		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N\A	0.0001	0.0001	-	-	N\A	N\A
20-24	-	-	N\A	0.0001	0.0001	-	-	N\A	N\A
25-29	-	50	0.0000	0.0001	0.0001	0	0	0%	0%
30-34	-	2,031	0.0000	0.0005	0.0004	1	1	0%	0%
35-39	3	8,684	0.0003	0.0009	0.0005	8	6	37%	54%
40-44	12	13,726	0.0009	0.0013	0.0010	19	13	65%	90%
45-49	29	19,858	0.0015	0.0017	0.0016	34	31	85%	95%
50-54	38	26,290	0.0014	0.0019	0.0017	51	44	74%	86%
55-59	24	26,115	0.0009	0.0020	0.0012	52	33	46%	73%
60-64	10	14,693	0.0007	0.0019	0.0000	28	-	36%	N\A
65-69	-	3,358	0.0000	0.0010	0.0000	4	-	0%	N\A
70-74	-	-	N\A	0.0003	0.0000	-	-	N\A	N\A
75 and over	-	-	N\A	0.0003	0.0000	-	-	N\A	N\A
Totals	116	114,805				196	128	59%	91%

TERMINATION EXPERIENCE
MALE

Service	Actual Terminations	Total Count	Actual Rate	Assumed Rate		Expected Terminations		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0	2,645	6,440	0.411	0.434	0.434	2,795	2,795	95%	95%
1	4,771	17,475	0.273	0.281	0.281	4,910	4,910	97%	97%
2	2,534	12,685	0.200	0.196	0.196	2,486	2,486	102%	102%
3	1,470	10,054	0.146	0.143	0.143	1,437	1,438	102%	102%
4	1,012	8,404	0.120	0.119	0.119	1,000	1,000	101%	101%
5	725	7,112	0.102	0.100	0.100	711	711	102%	102%
6	536	5,985	0.090	0.091	0.091	544	545	99%	98%
7	382	5,357	0.071	0.073	0.073	391	391	98%	98%
8	295	4,782	0.062	0.061	0.061	291	292	101%	101%
9	249	4,447	0.056	0.057	0.057	253	253	98%	98%
10	220	4,131	0.053	0.052	0.052	214	215	103%	102%
11	178	3,889	0.046	0.042	0.042	163	163	109%	109%
12	129	3,586	0.036	0.040	0.040	143	143	90%	90%
13	121	3,328	0.036	0.034	0.034	113	113	107%	107%
14	99	3,103	0.032	0.034	0.034	105	106	94%	93%
15	87	2,865	0.030	0.031	0.031	89	89	98%	98%
16	53	2,606	0.020	0.022	0.022	57	57	93%	93%
17	47	2,455	0.019	0.023	0.023	56	56	84%	84%
18	35	2,315	0.015	0.023	0.023	53	53	66%	66%
19 & over	115	12,159						N/A	N/A
Totals	15,703	123,178				15,811	15,816	99%	99%

**TERMINATION EXPERIENCE
FEMALE**

Service	Actual Terminations	Total Count	Actual Rate	Assumed Rate		Expected Terminations		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0	1,167	3,666	0.318	0.314	0.314	1,151	1,151	101%	101%
1	4,111	17,398	0.236	0.238	0.238	4,141	4,141	99%	99%
2	2,768	15,836	0.175	0.172	0.172	2,724	2,724	102%	102%
3	2,083	15,078	0.138	0.135	0.135	2,035	2,036	102%	102%
4	1,600	14,791	0.108	0.106	0.106	1,568	1,568	102%	102%
5	1,465	14,436	0.101	0.098	0.098	1,414	1,415	104%	104%
6	1,251	13,831	0.090	0.086	0.086	1,189	1,189	105%	105%
7	925	12,946	0.071	0.072	0.072	932	932	99%	99%
8	792	12,186	0.065	0.063	0.063	767	768	103%	103%
9	661	11,454	0.058	0.055	0.055	630	630	105%	105%
10	558	10,837	0.051	0.050	0.050	541	542	103%	103%
11	478	10,249	0.047	0.047	0.047	481	482	99%	99%
12	393	9,577	0.041	0.042	0.042	402	402	98%	98%
13	314	8,899	0.035	0.036	0.036	320	320	98%	98%
14	273	8,213	0.033	0.035	0.035	287	287	95%	95%
15	221	7,586	0.029	0.033	0.033	250	250	88%	88%
16	166	6,854	0.024	0.023	0.023	157	158	106%	105%
17	136	6,365	0.021	0.027	0.027	172	172	79%	79%
18	97	5,941	0.016	0.021	0.021	125	125	78%	78%
19 & over	236	28,177						N/A	N/A
Totals	19,695	234,320				19,286	19,292	102%	102%

RETIREMENT EXPERIENCE
MALE

Age	Actual Retirement	Total Count	Expected Retirement		Actual/Expected	
			Current	Proposed	Current (2) / (4)	Proposed (2) / (5)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Under 50	100	442	66	66	151%	151%
50	48	234	42	42	114%	114%
51	73	415	58	58	127%	127%
52	78	542	70	70	111%	111%
53	90	666	76	76	118%	118%
54	124	796	80	80	155%	155%
55	118	915	107	107	110%	110%
56	134	996	120	120	111%	111%
57	156	1,102	137	137	113%	113%
58	163	1,155	149	149	109%	109%
59	202	1,212	168	168	121%	121%
60	240	1,223	244	244	98%	98%
61	304	1,140	316	316	96%	96%
62	279	1,020	306	306	91%	91%
63	189	848	235	235	80%	80%
64	215	736	217	217	99%	99%
65	284	923	317	317	90%	90%
66	178	679	180	180	99%	99%
67	130	532	141	141	92%	92%
68	90	374	99	99	91%	91%
69	67	305	81	81	83%	83%
Total	3,262	16,255	3,210	3,210	102%	102%

**RETIREMENT EXPERIENCE
FEMALE**

Age	Actual Retirement	Total Count	Expected Retirement		Actual/Expected	
			Current	Proposed	Current (2) / (4)	Proposed (2) / (5)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Under 50	165	975	146	146	113%	113%
50	100	574	103	103	97%	97%
51	142	889	135	135	106%	106%
52	167	1,146	160	160	104%	104%
53	208	1,483	185	185	113%	113%
54	269	1,811	209	209	129%	129%
55	330	2,207	297	297	111%	111%
56	375	2,536	386	386	97%	97%
57	413	2,801	470	470	88%	88%
58	463	3,022	539	539	86%	86%
59	650	3,105	619	619	105%	105%
60	628	3,013	596	596	105%	105%
61	790	2,812	809	809	98%	98%
62	639	2,339	768	768	83%	83%
63	462	1,861	498	498	93%	93%
64	498	1,585	460	460	108%	108%
65	560	1,747	675	675	83%	83%
66	320	1,166	310	310	103%	103%
67	205	802	213	213	96%	96%
68	144	570	151	151	95%	95%
69	121	447	118	118	102%	102%
Total	7,649	36,891	7,847	7,847	97%	97%

**New Mexico ERB
2014 Experience Study
Salary Scale - Males & Females Combined (6 Years of Experience)**

Service	Current Salary Scales		Actual Experience (6 Years)			Proposed Salary Scale	
	Total	Step Rate/ Promotional	Total	Above inflation	Steprate/ Promotional	Total	Steprate/ Promotional
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0	13.00%	8.75%	7.77%	6.34%	5.89%	12.50%	8.75%
1	7.25%	3.00%	5.61%	4.18%	3.73%	6.75%	3.00%
2	6.25%	2.00%	5.52%	4.09%	3.64%	5.75%	2.00%
3	5.75%	1.50%	4.35%	2.92%	2.47%	5.25%	1.50%
4	5.50%	1.25%	3.87%	2.44%	1.99%	5.00%	1.25%
5	5.25%	1.00%	3.56%	2.13%	1.68%	4.75%	1.00%
6	5.00%	0.75%	3.01%	1.58%	1.13%	4.50%	0.75%
7	4.75%	0.50%	2.94%	1.51%	1.06%	4.25%	0.50%
8	4.75%	0.50%	2.56%	1.13%	0.68%	4.25%	0.50%
9	4.75%	0.50%	2.37%	0.94%	0.49%	4.25%	0.50%
10+	4.25%	0.00%	1.88%	0.45%	0.00%	3.75%	0.00%

	2014
a. Current Inflation Assumption	3.00%
b. Current Productivity Component	1.25%
c. Actual CPI-U Inflation for 6/30/08 - 6/30/14	1.43%
d. Proposed Inflation Assumption	3.00%
e. Apparent Productivity Component	0.45%
f. Proposed Productivity Component	0.75%