**NEW MEXICO EDUCATIONAL
RETIREMENT BOARD**

*ACTUARIAL EXPERIENCE STUDY
AS OF JUNE 30, 2004*

Gabriel, Roeder, Smith & Company

May 17, 2005

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

Subject: **Results of 2004 Experience Study - DRAFT**

We are pleased to present our report on the results of the 2004 Experience Study for the New Mexico Educational Retirement Board (ERB). It includes our recommendations for new actuarial assumptions to be effective for the June 30, 2005 actuarial valuation, and it describes the actuarial impact produced by these recommendations as though they had been effective for the June 30, 2004 actuarial valuation.

With the Board's approval of the recommendations in this report, we believe the actuarial condition of the System will be more accurately portrayed. The Board's decisions should be based on the appropriateness of each recommendation individually, not on their collective effect on the funding period or the unfunded liability.

We wish to thank the ERB staff for their assistance in providing data for this study.
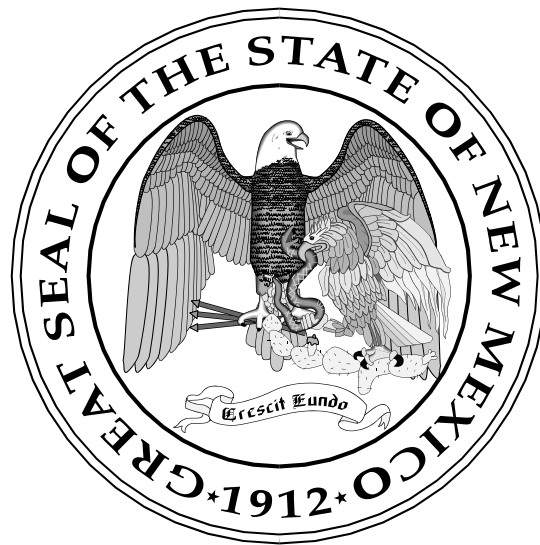
Sincerely,
Gabriel, Roeder, Smith & Company

J. Christian Conradi, ASA, MAAA, EA
Senior Consultant

William B. Fornia, FSA, MAAA, EA
Senior Consultant

W. Michael Carter, FSA. MAAA, EA
Senior Consultant

3010\2005\exp\ExpStudy2004.doc

TABLE OF CONTENTS

SECTION I

EXECUTIVE SUMMARY

Section I
Executive Summary

- Purpose

  - To review actuarial assumptions and methods and to compare to actual experience
  - Use data from five-year period ending June 30, 2004 (use a ten-year period for salary analysis)

- Inflation rate
  - Currently 3.00%
  - Recommend no change in rate
  - Five-year average increase in CPI-U is 2.68%, ten-year average is 2.51%, twenty-year average is 3.07%
  - Bond market predicts inflation of 2.89% over more than 20 years, most investment consultants' capital market assumptions are well under 3.00%, most other systems use 3.00% or higher
  - Component of investment return assumption, COLA assumption, salary increase assumption, and assumed payroll growth rate

- Investment return rate
  - Currently 8.00%
  - Actual net market return of 1.66% for last 5 years and 8.74% for last 10 years, net of investment expenses
  - Recommend no change in rate, although 7.75% could have also been justified
  - Assumed rate represents total return, net of administrative and investment expenses
  - Rate is composed of a 3.00% inflation rate and a 5.00% real rate of return
  - Justified by anticipated asset allocation and expected returns by asset class
  - Most common investment return assumption for large public retirement systems

- Cost-of-living increases
  - Current assumption of 2.00%
  - Deferred to age 65, except for disabled retirees
  - Recommend no change
  - Based on inflation assumption (3.00%) and current provisions (one-half CPI, maximum 4%, but not less than the smaller of a 2% increase or 100% CPI increase)
  - Consistent with inflation assumption, since when inflation equals 3.00%, formula produces 2.00% COLA

- Payroll growth rate

- Rate at which total ERB payroll is expected to grow
- Must not reflect any anticipated membership growth, per GASB #25
- Current assumed payroll growth rate is 3.75%
- Will be lower than expected salary increases for the average member, because members who terminate, retire, etc. are usually replaced with lower-paid members
- Retirements of baby boomers over next 20 years will depress payroll growth
- Only affects funding period, not liability
- In last five years, payroll grew 5.52%, including the effect of 1.42% membership growth. May be misleading because of large increases in July 2000 and 2001
- In last ten years, payroll grew 5.46%, including effect of 1.59% membership growth
- In last twenty years, payroll grew 5.98%, including effect of 2.24% membership growth.
- Removing membership growth suggests pure payroll growth has averaged around 3.75% for last 10-20 years.
- Recommend making no change to assumption

- Salary increase rate
  - Comprised of inflation, overall "productivity" increases, and longevity/promotional component
  - 3.00% inflation, plus 1.50% across-the-board increases, plus additional service-related increases during first 10 years of service
  - Produces expected average increase of about 6.00%
  - Recommend 0.25% increase, less than experience suggests
  - Experience matches service-related component (longevity/promotional) of assumption closely
  - Study covers ten-year period. (Longer period used to smooth out impact of legislative activity on annual salary increases.)
  - Actual average increase over 10-year study was 6.31%, higher than assumed, particularly because inflation was only 2.51%
  - For members with more than 10 years of service, actual average increase was 5.36% over period, vs. 4.50% assumption, despite 2.51% inflation
  - Prior study had similar findings, but we thought it might be an aberration

- Reflection of three-tier licensure system
  - Currently not considered explicitly in actuarial valuation process
  - Minimum salaries will apply through FY 2008 for classroom teachers
  - We propose explicit assumptions in our valuation to reflect these minimums

- Post-retirement mortality rates (nondisabled retirees):

Gabriel, Roeder, Smith & Company

- Current tables: 1994 Uninsured Pensioner Mortality Table, males set back 3 years and females set back 2 years
- 1,158 male deaths and 1,516 female deaths (excludes beneficiaries and disabled)
- Expected 1,029 male deaths and 1,328 female deaths
- A/E ratio (actual to expected deaths) on current tables is 112% for males, 114% for females, and 113% combined
- Mortality improvements (longer life expectancies) are anticipated
- We prefer to set this assumption with margin (above 100% A/E)
- We recommend no change in rates

- Disabled mortality rates:
  - Recommend no changes, good fit to experience
  - 56 male deaths and 80 female deaths
  - 111% A/E ratio for males, 103% for females, overall ratio is 106%

- Retirement rates:
  - 2,151 male retirements during five-year period, and 4,158 female retirements (from active employment)
  - Average retirement age of 57.8 for males and 58.1 for females
  - Current tables produce A/E ratios of 95% for males and 90% for females
  - Good fit by age
  - Recommend no change to rates

- Termination rates:
  - Recommend no changes to rates set in 1996
  - A/E ratios at 101% for males, 107% for females, and 105% combined
  - Ratios over 100% for this assumption are conservative
  - Ratios decreased slightly from last experience study

- Refunds:
  - Currently we assume that vested members choose the more valuable of a refund or a deferred benefit
  - Conservative & reasonable. Assumes members choose wisely.
  - Recommend retaining this assumption.

- Other assumptions:
  - Active member mortality, disability, etc.
  - Recommend no changes in any of these assumptions
  - A/E for disability was 86% (males), 106% (females), and 99% (combined)
  - Small numbers and close match on combined results justifies making no change at this time

- Actuarial methods:

- – Entry Age actuarial method still appropriate
- – Most widely used method among public, statewide plans
- – Actuarial asset method (five-year smoothing) still appropriate
- – Recommend updating hypothetical group of new entrants used to determine normal cost
- – Reflects actual distribution of new members in last four plan years
- – Almost no change (average age = 37.0, 72% are female, avg. pay = $25,491)

- Summary of recommendations:
  - – Update new entrant profile for normal cost calculations
  - – Modify procedures to reflect minimum salaries under three-tier licensure system
  - – Increase real salary growth rate by 0.25%

- Impact of all recommended changes:
  - – Increases normal cost from 12.92% to 13.20%
  - – Increases present value of future benefits by $263 million, which is a 2.2% increase.
  - – UAAL increases by $131 million, from $2,439 million to $2,570 million
  - – The rest of the $263 million increase in the present value of future benefits is accounted for in the increase to normal cost.
  - – Funding period from 21.4 years to 24.1 years
  - – Decreases funded ratio from 75.4% to 74.5%
  - – Increases 40-year funding cost from 10.67% to 11.23%
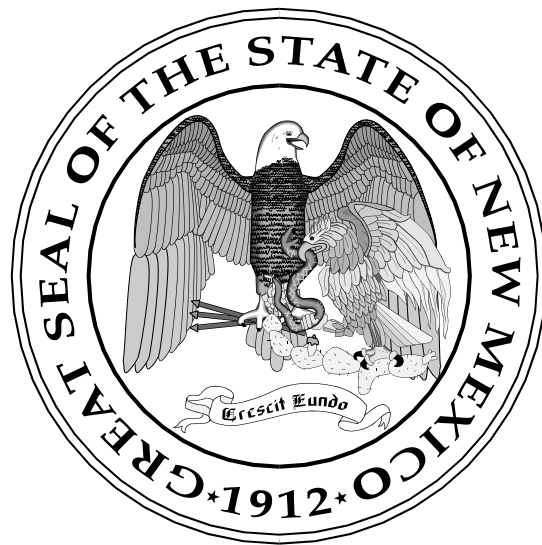
SECTION II

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
- Turnover 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 weaker. 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.

For this purpose, therefore, we have reviewed and analyzed ERB's data for the five-year period from June 30, 1999 through June 30, 2004. (In examining salary increase rates, however, we used the ten-year period from June 30, 1994 through June 30, 2004, in order to smooth some of the year-to-year fluctuations and in order to increase the soundness of our conclusions.) In our view, a period this long is reasonable. Sufficient data can usually be gathered so that the results have statistical significance. Legislation, such as plan improvements or changes in statewide salary schedules, can sometimes affect the results. Using a several-year period prevents giving too much weight to such short-term effects. Finally, using a much longer period would water down real changes that may be occurring, such as mortality improvement or a change in the ages at which teachers retire.

In an experience study, we first determine the number of deaths, retirements, etc. that occurred during the period. Then we determine the number expected, based on the current actuarial assumptions. 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 100.0%. When it varies much from this figure, it is a sign that new assumptions may be needed. 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 tables are needed, the actuary "graduates" or smoothes the results, since the raw results can be quite uneven from age to age or from service to service.
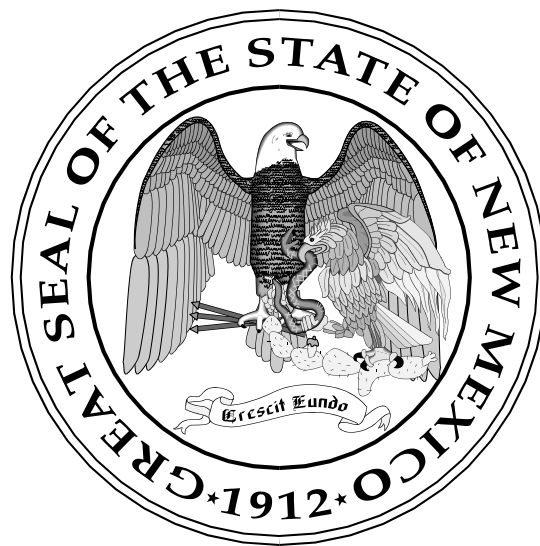
SECTION III

ANALYSIS OF EXPERIENCE
AND RECOMMENDATIONS

Section III
Analysis of Experience and Recommendations

We will begin by discussing the economic assumptions: inflation, the investment return rate, the salary increase assumption, the cost-of-living increases and the payroll growth rate. Then we will discuss the demographic assumptions: mortality, disability, termination and retirement. Finally we will discuss the actuarial methods used.

Inflation rate

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

Over the five-year period from June 1999 through June 2004, the CPI-U has increased at an average rate of 2.68%, and over the last ten years it has averaged 2.51% per year. The average over longer periods is shown in the table below.

Periods Ending June 2004	Average Increase in CPI-U
Last five (5) years	2.68%
Last ten (10) years	2.51%
Last fifteen (15) years	2.87%
Last twenty (20) years	3.07%
Last twenty-five (25) years	3.93%
Last fifty (50) years	3.98%
Since 1913 (91 years)	3.31%

As you can see, while inflation has been relatively low over the last five or ten years, if we look back over a period of 20 or more years, inflation has averaged above 3.00%.

We recognize that most of the investment consulting firms, in setting their capital market assumptions, currently assume that inflation will be less than 3.00%. For example, Callan assumes 2.60%, Watson Wyatt assumes 2.80%, and Wilshire assumes 2.25%. However, the investment consulting firms usually set assumptions based on a five or ten year outlook, while actuaries must make much longer projections.

Another source for predicting future inflation is the treasury bond market. The current inflation indexed bond yields for bonds maturing in 2032 is 1.85% plus actual inflation. The yield for long non-indexed treasury bonds maturing in 2031 is 4.74%. This means that the bond market is predicting long term (25 + years) inflation of about 2.89% (4.74 – 1.85).

The Public Funds survey prepared by Keith Brainard on behalf of NASRA and NCTR shows that the median inflation rate assumed for large statewide retirement systems is 3.75%, and that our current 3.00% assumption is among the lowest.

Gabriel, Roeder, Smith & Company

We believe that inflation over the next few years may continue to be less than 3.00%, 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 20 years, and a little below the long-term historical average. Therefore, we are not recommending a change in this assumption.

Investment return rate

Currently, we assume that future investment returns will average 8.00% per year, net of investment and administrative expenses. This is the rate used in discounting future payments in order to determine the actuarial present value of those payments. Since we assume that future inflation will average 3.00%, this means we anticipate a 5.00% real return, net of expenses.

While ERB's average market return for the five years ending June 30, 2004 was only about 1.7%, over the last ten years ERB has averaged an 8.7% return. These figures are gross returns, and must be reduced for the effect of investment and administrative expenses, which have averaged 0.17% of assets for these periods. Therefore, for the last ten years, ERB's net returns have averaged about 8.5%.

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

Although ERB's expenses averaged 17 basis points over the five year period, policy changes were effective in FY 2004 which we anticipated will increase expenses. Expenses in FY 2004 were 27 basis points. We assume future expenses will be 30 basis points for our investment return analysis.

The current target asset allocation for the fund is:

Equities – large cap US	40%
Equities – small cap US	6%
Equities – international (EAFE)	18%
Equities – emerging markets	2%
Domestic Fixed income	20%
Inflation Indexed Bonds	4%
High Yield Bonds	5%
REITs	5%
Total	100%

We have modeled the expected return for ERB, given its current target asset allocation, using various sets of capital market assumptions set by different investment consulting firms for 2005. These produce expected portfolio returns in the range from 7.47% to 8.30%. Then we have reduced the returns to reflect the fund's anticipated administrative and investment expenses of 0.30%. We then adjusted the returns to reflect our assumed inflation of 3.0% instead of the inflation assumed by the investment consultants. The net returns, therefore, are forecast to fall somewhere between 7.67% and 8.40%.

We have decided not to recommend a change to the assumed investment return rate, because we believe that 8.00% is still roughly in the middle of the range of expected net returns produced using various investment consulting firms' capital market assumptions. The public plan survey mentioned previously shows that 8.00% remains the median investment return assumption for statewide retirement systems. However, because most investment consulting firms have reduced their expected returns for most asset classes, including traditional domestic equities and domestic fixed income investments, the current assumption is less conservative than it was five or ten years ago. Another contributing factor in our recommendation is that ERB anticipates changes in their asset allocation policy which are anticipated to increase expected returns.

You should also keep in mind that actual returns can vary significantly from this assumption. For example, a Monte Carlo simulation on one of the capital market assumption sets produces a median net return of about 7.8%. The same analysis shows that even over a period as long as 20 years, there is still about a 25% chance that the average net return for the period could exceed 9.6% and about a 25% chance that it could be less than 6.1%.

Salary increase rates

For this assumption, we used data over a ten-year period, since we have often seen that, salary increases tend to vary significantly from year to year, and a longer period provides a more accurate picture. The average pay increases for members active in both valuations are as follows:

Period	Increase
— FY 1994 to FY 1995	— 7.95 %
— FY 1995 to FY 1996	— 5.01 %
— FY 1996 to FY 1997	— 3.39 %
— FY 1997 to FY 1998	— 6.75 %
— FY 1998 to FY 1999	— 6.34 %
— FY 1999 to FY 2000	— 6.20 %
— FY 2000 to FY 2001	— 9.00 %
— FY 2001 to FY 2002	— 9.61 %
— FY 2002 to FY 2003	— 3.27 %
— FY 2003 to FY 2004	— 5.78 %
Arithmetic Average	6.33%

The geometric average for these ten years is 6.31%.

The current salary increase rates vary by service. They range from 13.00% for new teachers to 4.50% for the teachers with 10 or more years of service.

Theoretically, the salary increase rates can be divided into three components: (i) inflation, (ii) a productivity component that applies to all employees regardless of service, and (iii) a longevity/merit/promotional component that is a function of service. During the study period, inflation averaged 2.51%, and productivity—the excess increase for members with 10 or more years of service—averaged 2.85%.

Large pay increases occurred between the 2000 and 2001 school years, and again between the 2001 and 2002 school years. We may be inclined to discount this spike as short term in nature. It may reflect an attempt to quickly remedy a salary schedule that was perceived to be uncompetitive. Because of this and the large disparity between the 2.85% experienced productivity and our assumed 1.50% assumed productivity, we recommend that we increase our productivity assumption marginally from 1.50% to 1.75%.

It should also be noted that the service-related part of the assumption matched experience closely. We recommend no change in the serviced component of our salary scale.

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 3.75%, 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 too. The amortization percentage is dependent on the rate at which payroll is assumed to increase.

As shown in the following table, over the last five years, payroll growth has averaged 5.52%, and it has averaged 5.46% over the last ten years.

Period	Average Payroll Growth Rate	Average Membership Growth Rate	Average Growth in Member Pay
Five Years	5.52%	1.42%	4.10%
Ten Years	5.46%	1.59%	3.87%
Twenty Years	5.98%	2.24%	3.74%

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, despite the fact that ERB has been experiencing substantial growth in membership (at an average of 1.59% over the last ten years), GASB 25 prohibits systems from using anticipated membership growth in setting the payroll growth assumption.

Gabriel, Roeder, Smith & Company

14

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 possibly some adjustment for the excess of wage inflation over price inflation, plus possibly an industry-specific adjustment. As can be seen from the table above, average member pay has grown by 3.74% over the last twenty years. We recommend maintaining our 3.75% payroll growth assumption. This assumption has no impact on the liabilities of ERB, but it does impact the amortization period, since we assume future contributions will increase by 3.75% per year, and these future contributions can be used to amortize the unfunded actuarial accrued liability.

Reflection of three-tier licensure system

In 2003, New Mexico adopted a new three-tier licensure system for its classroom teachers. Under this system, teachers are categorized into one of three tiers:

- Provisional Teachers (teachers in their first three years of teaching)
- Professional Teachers (teachers with more than three years of teaching who meet certain mandatory requirements)
- Master teachers (teachers with at least seven years of teaching who meet certain requirements)

It is expected that teachers who do not fulfill their mandatory requirements after three years will leave the profession. On the other hand, only a fraction of the teachers with seven or more years of service will become master teachers. Many will never attain this status.

For the most part, this type of pay provisions does not normally directly impact the actuarial process, except that:
   1) there are new minimum salaries mandated in connection with this system, and
   2) we may in the future see some shifting of the service-related increases to correspond to the beginning of the fourth and seventh years.

NM ERB also covers higher education members, administrators and support personnel, none of whom is covered by this new pay banding system.

The new minimum salaries are:

1) $30,000 for all teachers, effective in FY 2004. (Therefore, this is already reflected in the latest actuarial data.)
2) $35,000 for all professional and master teachers, effective in FY 2005
3) $40,000 for all professional and master teachers, effective in FY 2006
4) $45,000 for master teachers, effective in FY 2007
5) $50,000 for master teachers, effective in FY 2008

We propose the following expansion of our actuarial assumptions:

- For FY 2005, assume minimum pay of $35,000 for everyone with at least three years of service whose FY 2004 pay was $30,000 or higher

Gabriel, Roeder, Smith & Company

Analysis of Experience and Recommendations - Continued

- For FY 2006, assume a minimum pay of $40,000 for everyone with at least three years of service whose FY 2004 pay was $30,000 or higher
- For FY 2007, add an extra $1,000 increase to the pay of everyone with at least six years of service whose FY 2004 pay was $30,000 or higher and whose pay in FY 2007 is less than $44,000 before the increase. This $1,000 increase is to recognize that not everyone will become a master teacher.
- For FY 2008, add an extra $2,000 increase is to the pay of everyone with at least six years of service whose FY 2004 pay was $30,000 or higher and whose pay in FY 2008 is less than $48,000 before the increase. This $2,000 increase to recognize that not everyone will become a master teacher.

We believe that this approach will more accurately reflect the short term impact of this three-tier licensure program.

Cost-of-living increase assumption

ERB provides automatic post-retirement increases to retired members after they reach 65. Currently, increases are assumed to be 2.00% per year. Some members in a grandfathered group receive an increase before age 65, also assumed to be 2.00%.

The amount of the increase depends on the increase in the CPI-U index, but in most cases it is 50% of the CPI-U increase, not more than 4.00%, and not less than the smaller of 2.00% and 100% of the CPI-U index. When inflation is 3.00%, the ERB benefit increase will still be 2.00%. Therefore, we have left this assumption unchanged.

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 increase.

The mortality tables currently being used for non-disabled retirees and for beneficiaries receiving benefits are the 1994 Uninsured Pensioner Mortality Tables for males and females. These tables are then adjusted by using a three-year setback for males and a two-year setback for females. (Setbacks and setforwards are traditional actuarial techniques used to adjust a table to match the data. When a table is set back two years, the actuary uses the table's rate for an age two years younger. For example, the mortality rate used for a 60-year old female retiree is the rate in the 1994 Uninsured Pensioner Mortality Table for females at age 58.)

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. We generally want to keep the ratio for this assumption around 110% (i.e., 10% more deaths than expected) to introduce some conservatism, since we expect life expectancies to continue to increase in the future. The results of this analysis are shown below:

Retirees and beneficiaries (nondisabled)	Males	Females	Total

Analysis of Experience and Recommendations - Continued

Number of actual deaths	1,158	1,516	2,674
Number of expected deaths (current assumptions)	1,029	1,328	2,357
A/E ratio	112%	114%	113%

As you can see, the A/E ratios are slightly higher than the 110% target that we aim for. This means that there is a 12% to 14% margin in our mortality tables, sufficient to anticipate future mortality improvement. Therefore, we recommend that the mortality rates for nondisabled retirees and beneficiaries not be changed.

Disabled mortality rates

This is a minor assumption, and it has little impact on the liabilities of ERB. There were 56 male deaths and 80 female deaths among the disabled retirees during the five-year study period. This produced A/E ratios of 111% and 103% respectively, or 106% combined. Because of the small numbers involved, we cannot expect a close fit between the assumptions and experience at individual ages. Therefore, we are recommending no change to this assumption.

Active mortality rates

A separate mortality table is used for active teachers. Because there were some problems with some of the files reporting deaths for active members, we could not study this assumption. We do not think this is a serious problem, though, since this assumption has a very minor impact. Therefore, we recommend that we continue to use the current mortality rates for active members.

Disability rates

Disability is also a minor assumption, with little effect on the liabilities. We found a reasonably close fit between experience and the disability assumption, so we are not recommending making any changes to this assumption either. The A/E ratio was 86% for males, but it was 106% for females, and on a combined basis it was 99%. This is considered a good match, given the small numbers of disabled lives. We recommend no change in this assumption.

Retirement rates

We currently use retirement rates that vary by age, service, and sex.

There were 2,151 male retirements during the five-year period, and there were 4,158 female retirements. (This includes only members who retired from active status. It excludes those who were inactives for over a year before retiring.) This produces A/E ratios of 95% for males and 90% for females, for a combined A/E of 91%. (Rates less than 100% are conservative.)

Gabriel, Roeder, Smith & Company

The average age at retirement for males was 57.8 and for females was 58.1. Our expected average retirement ages are 58.1 and 57.9, respectively. The assumptions fit fairly closely by age also. Our recommendation is that we make no change in this assumptions.

The A/E ratios have decreased a bit from two years ago, when males were at 100% (after we revised their rates) and females were at 93%. This verifies our prior observation that the trend towards earlier and earlier retirements in New Mexico has reversed; however, we haven't seen rates fall enough to justify changing them at this time. The enactment of the return-to-work program, effective as of Jan. 1, 2002, has not produced an observable upswing in the retirement rates or a decrease in the average age of retirement.

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 his/her account balance on deposit in ERB. The current termination rates reflect the member's age, service and sex, and we want to continue this practice.

In the aggregate, the current assumptions produce an A/E ratio for males of 101% and an A/E ratio for females of 107%, for a combined A/E ratio of 105%. For this assumption, A/E ratios over 100% are conservative. This is a reasonably good match, and we do not recommend making a change at this time.

Other assumptions

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, the likelihood that a terminating employee will take a refund, etc. We reviewed these, and decided to recommend no changes to these other assumptions.

Actuarial methods

We have reviewed the actuarial cost method being used—the Entry Age Normal cost method (EAN)—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. We also 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.

However, the version of the Entry Age cost method that is being used for ERB uses a hypothetical group of new members to determine the normal cost. The current "profile" was based on new members who joined ERB in the four years ending FY 2002. We have reset the profile based on the age-sex-pay mix of members who joined ERB during the five years FY 1999

through FY 2004. This had little effect on the plan's costs, since the new profile looks very similar to the one we had been using. However, we prefer to update his assumption in each Experience Study, so that we do not miss a change in the hiring pattern for new members.

In the actuarial review conducted for ERB in 2004, Mellon commented on the appropriateness of the particular version of the EAN used for ERB. We continue to believe this method is particularly appropriate. For example, the average age at hire for the most recent five years was 37.0, the average hire age for the full population is 36.2, and the average hire age in 1994 was 34.3. If we had used the traditional EAN, the normal cost would have increased significantly over the last ten years. Based on current information, we believe that this could occur in the next ten years also. Although changing to traditional EAN would decrease costs today, costs would increase unless new hires are younger than currently anticipated.
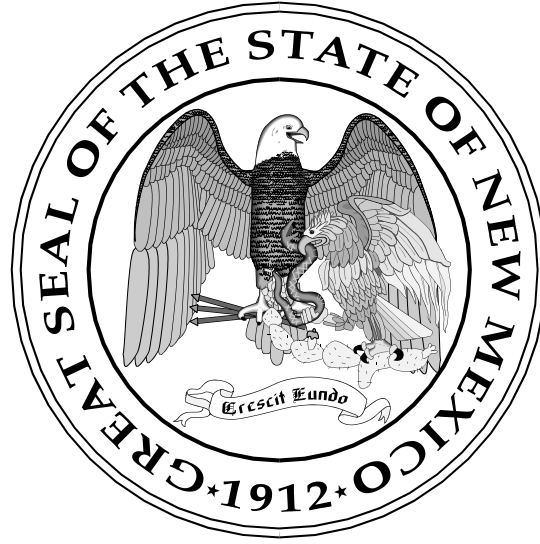
Section IV

Actuarial Impact of Recommendations

Shown below is a table that compares key statistics from the June 30, 2004 actuarial valuation before and after taking into account the recommended new assumptions. The net result of making all the recommended changes makes a modest change in the picture of ERB's actuarial status.

New Mexico Educational Retirement Board
### Impact of Proposed Changes to Actuarial Assumptions
As of June 30, 2004

Item	Actuarial Valuation	Increase Base Salary Increase Rate from 4.50% to 4.75%	In Addition, Reflect the 3-Tier Salary Schedule
1.a. Normal cost	12.92%	13.20%	13.20%
b. Increase from actuarial valuation	0.00%	0.28%	0.28%
2.a. Unfunded actuarial accrued liability (millions)	2,439.1	2,488.8	2,569.7
b. Increase from actuarial valuation (millions)	-	49.7	130.6
3. Funded ratio	75.4%	75.1%	74.5%
4.a. GASB Annual Required Contribution (40-years)	10.67%	11.05%	11.23%
b. Increase from actuarial valuation	0.00%	0.38%	0.56%
5.a. Funding period (in years, actuarial value of assets)	21.4	23.1	24.1
b. Funding period (in years, market value of assets)	29.4	32.0	33.4

Note: Funding period calculations do not reflect any active membership growth.
The normal cost is the average expected cost for a typical new member. The figures shown include both the 7.60% contribution paid by members and the balance to be paid by the

employers. The difference between the total contribution paid by the employers, and the portion devoted to the normal cost, is used to amortize the unfunded actuarial accrued liability (UAAL). The UAAL is the portion of the total present value of future benefits that is assigned to past years and is in excess of the actuarial value of assets. The funding period is the number of years that will be required to amortize the UAAL, assuming that the employer contribution rate increases from 8.65% as required under SB 181. The amortization calculations are made assuming payments increase annually at the payroll growth rate.

As you can see, the two changes are not insignificant. The change in salary growth has the largest effect on the funding period. The change to reflect the three-tier licensure system has no impact on normal cost, but does increase the liabilities and lengthen the funding period.

The Board's decisions should be based on the appropriateness of each recommendation individually, not on their collective effect on the funding period or the unfunded liability.
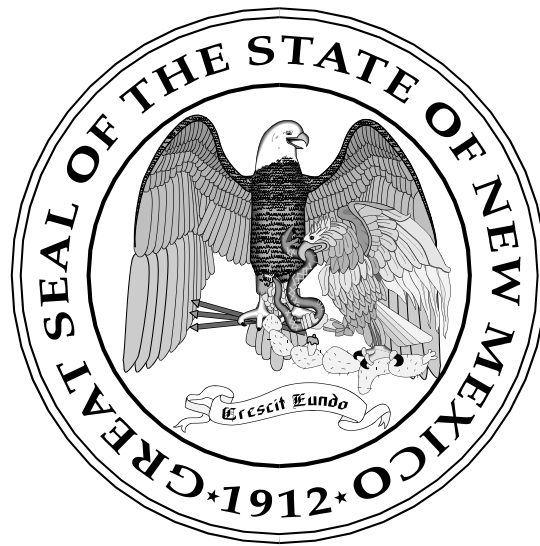
SECTION V

SUMMARY OF RECOMMENDATIONS

Section V
Summary of Recommendations

Our recommendations may be summarized as follows:

1. Change the profile of typical new hires to one based on new members during the 2000 through 2004 actuarial valuations. (The previous profile was based on new members during the 1999 through 2002 actuarial valuations.)

2. Increase the productivity component of the salary scale from 1.50% to 1.75%

3. Incorporate procedures to reflect minimum salaries under the three-tier licensure system.

4. Make no changes to the other actuarial assumptions and methods being used.
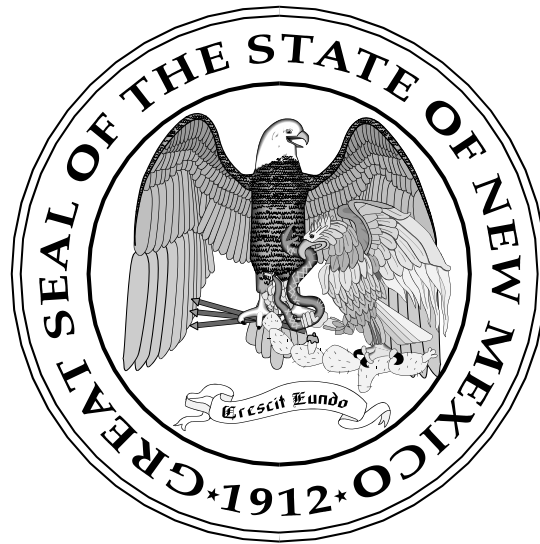
SECTION VI

**SUMMARY OF ASSUMPTIONS
AND METHODS INCORPORATING
THE RECOMMENDED ASSUMPTIONS**

Section VI
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 Entry Age Normal actuarial cost method.

The 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 cost is the level (as a percentage of pay) contribution required to fund the benefits for a new member. This is determined based upon a hypothetical group of new entrants. This group is based on the age-pay-sex distribution of new members joining ERB during the four-year period ending June 30, 2002. Part of the normal cost is paid from the employees' own contributions. The local employers pay the balance from their contributions.

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 remains level as a percentage of total payroll, which is assumed to grow 3.75% 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 amortization payments are made monthly at the end of the month.

Summary of Actuarial Methods and Assumptions - Continued

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: 8.00%, compounded annually, net of expenses. This is made up of a 3.00% inflation rate and a 5.00% real rate of return.

2. Salary increase rate: Inflation rate of 3.00% plus productivity increase rate of 1.75% plus step-rate/promotional as shown:

Years of Service	Annual Step-Rate/Promotional Component Rates of Increase	Total Annual Rate of Increase
0	8.50%	13.25%
1	2.75%	7.50%
2	1.75%	6.50%
3	1.25%	6.00%
4	1.00%	5.75%
5	0.75%	5.50%
6	0.50%	5.25%
7	0.25%	5.00%
8	0.25%	5.00%
9	0.25%	5.00
10 or more	0.00%	4.75%

In addition, minimum salaries are applied as follows:

a. For FY 2005, assume minimum pay of $35,000 for everyone with at least three years of service whose FY 2004 pay was $30,000 or higher

b. For FY 2006, assume a minimum pay of $40,000 for everyone with at least three years of service whose FY 2004 pay was $30,000 or higher

c. For FY 2007, add an extra $1,000 increase to the pay of everyone with at least six years of service whose FY 2004 pay was $30,000 or higher and whose pay in FY 2007 is less than $44,000 before the increase.

d. For FY 2008, add an extra $2,000 increase to the pay of everyone with at least six years of service whose FY 2004 pay was $30,000 or higher and whose pay in FY 2008 is less than $48,000 before the increase.

Gabriel, Roeder, Smith & Company

Summary of Actuarial Methods and Assumptions - Continued

3. Cost-of-living increases:

    a. All retirees and beneficiaries - 2% per year increase, beginning in the year the member reaches age 65

    b. Members retired prior to July 1, 1984 - 2% per year until they reach age 65

4. Payroll growth:

    3.75% per year (with no allowance for membership growth)

B. Demographic Assumptions

1. Mortality after termination or retirement -

    a. Healthy males - 1994 Uninsured Pensioner Mortality Table for males, set back three years

    b. Healthy females - 1994 Uninsured Pensioner Mortality Table for females, set back two years

    c. Disabled males and females - 1981 Disability Table

        See sample rates below:

	Deaths per 100 Lives		
Age	Healthy Males	Healthy Females	Disabled Males and Females
40	.10	.06	1.76
45	.13	.09	2.08
50	.20	.13	2.42
55	.35	.21	2.83
60	.60	.36	3.29
65	1.09	.72	3.76
70	1.94	1.26	4.36
75	3.06	1.97	5.62
80	4.86	3.41	8.84
85	8.12	5.90	12.95

Gabriel, Roeder, Smith & Company

2. Mortality rates of active members - As shown below for sample ages:

Age	Deaths per 100 Members	
	Males	Females
25	.10	.02
30	.10	.02
35	.08	.04
40	.08	.03
45	.11	.05
50	.15	.10
55	.23	.17
60	.31	.24
65	.46	.31

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

Age	Occurrence of Disability per 100 Members	
	Males	Females
25	.00	.00
30	.00	.03
35	.06	.07
40	.13	.12
45	.19	.16
50	.24	.19
55	.26	.20
60	.24	.19
65	.18	.16

Summary of Actuarial Methods and Assumptions - Continued

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

<u>Retirement Per 100 Members</u>

<u>Males</u>

Years of Service

<u>Age</u>	0-4	5-9	10-14	15-19	20-24	25+
45	0.00	0.00	0.00	0.00	0.00	20.00
50	0.00	0.00	0.00	0.00	0.00	20.00
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	40.00	40.00	35.00	35.00
65	0.00	25.00	40.00	45.00	45.00	45.00
70	100.00	100.00	100.00	100.00	100.00	100.00

<u>Females</u>

Years of Service

<u>Age</u>	0-4	5-9	10-14	15-19	20-24	25+
45	0.00	0.00	0.00	0.00	0.00	20.00
50	0.00	0.00	0.00	0.00	0.00	20.00
55	0.00	0.00	0.00	0.00	6.00	23.00
60	0.00	0.00	0.00	20.00	15.00	30.00
62	0.00	0.00	50.00	35.00	35.00	40.00
65	0.00	35.00	35.00	35.00	35.00	35.00
70	100.00	100.00	100.00	100.00	100.00	100.00

5. Termination (for causes other than death, disability or retirement) - Select and ultimate as shown below for selected ages:

Terminations per 100 Members

Males

Years of Service

Age	0	1	2	3	4	5	6	7	8	9	10+
25	45.10	33.50	23.39	17.10	13.75	11.68	10.21	8.94	7.79	7.10	8.86
30	42.28	28.78	20.12	14.85	11.95	10.34	9.17	8.08	7.04	6.28	5.99
35	40.37	26.82	18.43	13.40	10.65	9.29	8.37	7.48	6.58	5.80	3.84
40	39.28	26.65	17.89	12.64	9.85	8.56	7.82	7.13	6.38	5.65	2.40
45	38.59	26.98	18.04	12.55	9.58	8.20	7.49	6.94	6.37	5.79	1.81
50	37.83	27.06	18.60	13.10	9.90	8.24	7.35	6.83	6.45	6.13	2.50
55	36.87	26.97	19.58	14.29	10.83	8.70	7.43	6.77	6.54	6.59	5.30
60	35.79	27.22	21.09	16.11	12.36	9.58	7.69	6.74	6.57	7.11	10.67
65	34.67	28.18	23.21	18.55	14.47	0.00	0.00	0.00	0.00	0.00	0.00

Females

Years of Service

Age	0	1	2	3	4	5	6	7	8	9	10+
25	40.50	29.30	21.62	17.88	16.08	14.90	13.60	11.81	9.39	6.66	7.55
30	36.06	25.45	18.97	15.08	12.93	11.68	10.69	9.58	8.12	6.36	5.47
35	33.25	23.24	16.75	12.79	10.57	9.37	8.62	7.94	7.11	6.03	3.87
40	31.79	22.00	15.10	11.14	9.05	7.99	7.34	6.86	6.35	5.66	2.76
45	31.29	21.37	14.28	10.40	8.46	7.48	6.83	6.32	5.87	5.32	2.20
50	31.49	21.39	14.49	10.65	8.71	7.71	6.96	6.32	5.74	5.18	2.27
55	32.32	22.32	15.72	11.79	9.67	8.47	7.57	6.76	6.02	5.39	3.10
60	33.76	24.34	17.95	13.71	11.24	9.62	8.51	7.54	6.72	6.07	4.95
65	35.82	27.54	21.14	16.33	13.36	0.00	0.00	0.00	0.00	0.00	0.00

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

Gabriel, Roeder, Smith & Company

      C.   <u>Other Assumptions</u>

          1.   Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses. 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.

V. <u>Participant Data</u>

Participant data was supplied on 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.