NEW MEXICO EDUCATIONAL RETIREMENT BOARD

ACTUARIAL EXPERIENCE STUDY

AS OF JUNE 30, 2006

Gabriel Roeder Smith & Company

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August 24, 2007

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

Dear Members of the Board:

Subject: Results of 2006 Experience Study

We are pleased to present our report on the results of the 2006 Experience Study for the New Mexico Educational Retirement Board (ERB). We have reviewed each of the actuarial assumptions and compared them to actual experience over a six year period. This report summarizes our findings. It is our recommendation that no changes be made in the actuarial assumptions or methods used for the ERB actuarial valuations.

We wish to thank the ERB staff for their assistance in providing data for this study.

Sincerely,

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Senior Consultant

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SECTION I

EXECUTIVE SUMMARY

Executive Summary

- ***Purpose***
  - To review actuarial assumptions and methods and to compare to actual recent experience
  - Used data from six-year period ending June 30, 2006

- ***Inflation rate***
  - Currently 3.00%
  - Six-year average increase in CPI-U is 2.75%, ten-year average is 2.62%, twenty-year average is 3.13%
  - Component of investment return assumption, COLA assumption, salary increase assumption, and assumed payroll growth rate
  - Recommend no change in assumed inflation rate

- ***Investment return rate***
  - Currently 8.00%
  - Actual net market return of 5.80% for last 5 years and 7.88% for last 10 years
  - Rate is net of administrative and investment expenses
  - Assume these expenses consume 30 basis points of return, based on recent experience
  - Therefore, assumed rate is composed of a 3.00% inflation assumption and an assumed 5.00% net real return (5.30%, reduced by 0.30% for expenses)
  - Justified by current asset allocation and expected returns by asset class
  - Still most common rate for large public retirement systems
  - Recommend no change in assumed investment return rate

- ***Cost-of-living increases***
  - Current assumption of 2.00%
  - COLAs are deferred to age 65, except for disabled retirees and a small grandfathered group
  - 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)
  - COLA will be 2.00% unless inflation is below 2.00% or above 4.00%
  - We recommend no change to this assumption

- ***Salary increase rate, including effect of three-tier licensure program***
  - Salary increases are comprised of price inflation, overall "productivity" increases, and longevity/promotional component
  - We assume 3.00% inflation, plus 2.00% across-the-board increases, plus additional service-related increases during first 10 years of service
  - We adjust for minimum salaries under three-tier licensure program
  - Produces expected average increase of about 7.8% for FY 2007
  - Average increase for last ten years of 6.73%
  - Could not do usual analysis because of impact of three-tier increases during analysis period
  - Current assumptions are conservative
  - We recommend no change to these assumptions

- ***Payroll growth rate***
  - Rate at which total ERB payroll is expected to grow
  - Current assumed payroll growth rate is 3.75%
  - Only affects funding period, not liability
  - Will be lower than expected salary increases for the average member, because members who terminate, retire, etc. are usually replaced with lower-paid members
  - Assumes no membership growth, per GASB 25
  - In last five years, payroll grew 4.0%, including the effect of 0.6% membership growth
  - In last ten years, payroll grew 4.6%, including effect of 1.0% membership growth
  - Payroll is assumed to increase more slowly than the 5.00% wage inflation assumption, due to the impact of baby boomers retiring in large numbers over the next 10-15 years
  - Recommend no change to the 3.75% payroll growth assumption

- ***Post-retirement mortality rates (nondisabled retirees):***
  - Current tables: 1994 Uninsured Pensioner Mortality Table, males set back 3 years and females set back two years
  - 1,518 male deaths and 2,010 female deaths (excludes beneficiaries and disabled)
  - Expected 1,400 male deaths and 1,816 female deaths
  - A/E ratio (actual to expected deaths) for males is 108%
  - For females, the A/E ratio is 111%
  - A/E ratios in study two years ago were 112% for males, 114% for females
  - Mortality improvements (longer life expectancies) have used up some of the margin for future improvement
  - Currently, we feel adequate margin exists for this assumption
  - We recommend no change to this assumption

- ***Disabled mortality rates***:
  - 64 male deaths and 107 female deaths; expected 62 male and 98 female deaths
  - 103% A/E ratio for males, 109% for females, overall ratio is 107%
  - At the last study, the A/E for males was 111%, 103% for females and 106% overall
  - We recommend no change to this assumption

- ***Retirement rates:***
  - 2,810 male retirements during six-year period, and 5,342 female retirements (from active employment)
  - These numbers exclude retirements of previously terminated members
  - Average retirement age of 58.41 for males and 58.59 for females
  - Current tables produce A/E ratios of 103% for males and 101% for females
  - The A/Es at 25+ years of service are 96% for males and 92% for females
  - We recommend no change to this assumption

- ***Termination rates:***
  - A/E ratios at 107% for males and 112% for females
  - Ratios over 100% for this assumption are conservative
  - Ratios increased very slightly from last experience study
  - We recommend no change to this assumption

- ***Disability:***
  - A/E for disability was 81% (males), 94% (females), and 90% (combined)
  - Small numbers and close match on combined results justifies making no change at this time
  - We recommend no change to this assumption

- ***Refunds:***
  - Currently we assume that vested members choose the more valuable of a refund or a deferred benefit
  - Conservative and reasonable. Assumes members choose wisely.
  - We recommend no change to this assumption

- ***Other assumptions:***
  - Active member mortality, percent married, etc.
  - These assumptions are reasonable or conservative
  - We recommend no change to these assumptions

- ***Actuarial methods:***
  - Entry Age Normal actuarial cost method still appropriate
  - Most widely used method among public, statewide plans
  - Actuarial asset method (five-year smoothing) still appropriate
  - New entrant profile still appropriate; it reflects actual distribution of new members from FY 2000 through FY 2004
  - Distribution of new members has changed very little

- ***Summary of recommendations:***
  - No changes to any assumptions or methods

- ***Impact of all recommended changes:***
  - No impact

SECTION II

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
- 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.

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-to-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 water down real changes that may be occurring, 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 from using the probability of the occurrence at the given age, times the “exposures” at that same age. For example, let’s look at a rate of retirement of 50% 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. 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, 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.

ORGANIZATION OF REPORT

Section III contains our findings and recommendations for each actuarial assumption. The impact of adopting our recommendations on liabilities and contribution rates is shown in Section IV. Section V summarizes the recommended changes. Section VI presents a summary of all the actuarial assumptions and methods, including the recommended changes.

SECTION III

ANALYSIS OF EXPERIENCE AND RECOMMENDATIONS

Analysis of Experience and Recommendations

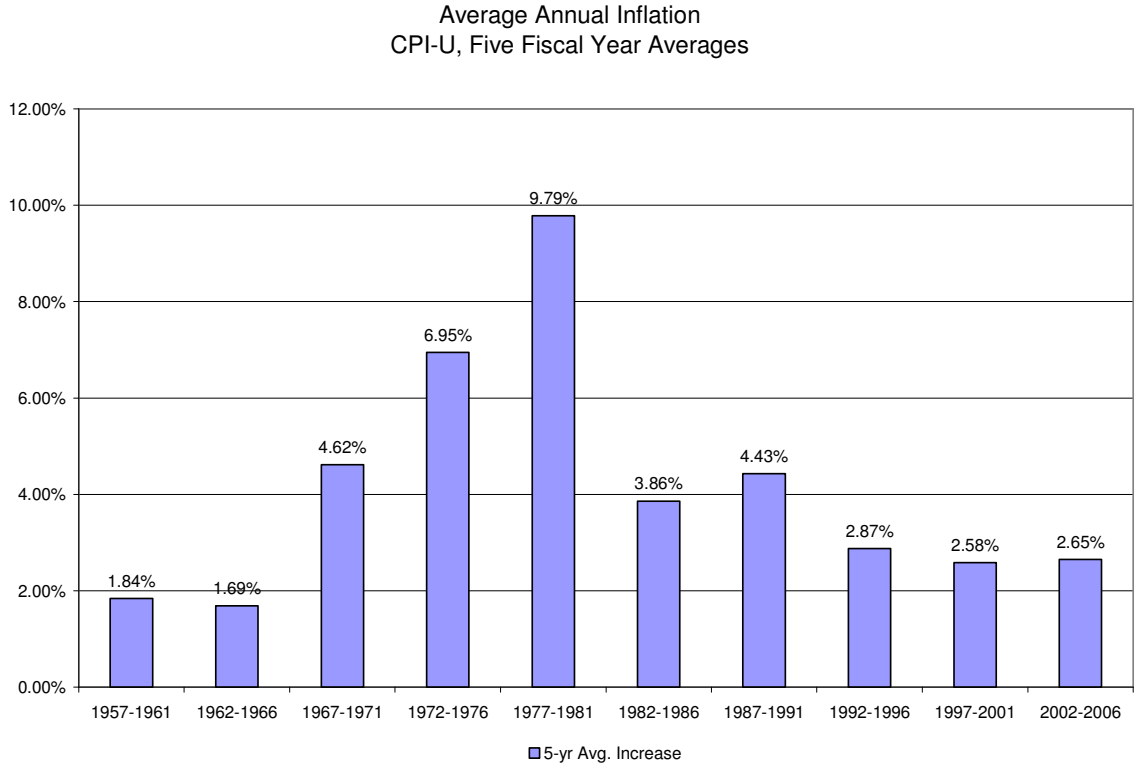
We will begin by discussing the economic assumptions: inflation, the investment return rate, the salary increase assumption, the cost-of-living increases, and the payroll growth rate. Then we will discuss the demographic assumptions: mortality, disability, termination and retirement. Finally we will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

INFLATION RATE

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

Over the six-year period from June 2000 through June 2006, the CPI-U has increased at an average rate of 2.75%. However, the assumed inflation rate is only weakly tied to past results, and this has been a period of relatively low inflation.

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



The table on the next page shows the average inflation over various periods, ending June 2006:

Periods Ending June 2006	Average Annual Increase in CPI-U
Last five (5) years	2.65%
Last ten (10) years	2.62%
Last fifteen (15) years	2.70%
Last twenty (20) years	3.13%
Last thirty (30) years	4.34%
Since 1913 (first available year)	3.31%

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

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

We recognize that many of the investment consulting firms, in setting their capital market assumptions, currently assume that inflation will be less than 3.00%. We examined the 2006 or 2007 capital market assumption sets for four investment consulting firms: New England Pension Consulting (NEPC), Callan, Watson Wyatt, and Wilshire. Of course, NEPC is ERB's investment consultant. The assumptions for inflation used by these four firms are 3.00%, 2.75%, 2.70%, and 2.25%, respectively. However, the investment consulting firms typically set their assumptions based on a five or ten year outlook, while actuaries must make much longer projections.

Another source of information about future inflation is the market for US Treasury bonds. For example, the May 25, 2007 yield for a 20-year inflation indexed Treasury bond was 2.52% plus actual inflation. The yield for a 20-year non-indexed US Treasury bond was 5.09%. This means that on that day the bond market was predicting that inflation over the next twenty years would average 2.57% (5.09% – 2.52%) per year. However, this analysis can fluctuate quite a bit over a short period of time. This approach produced a 2.75% predicted inflation using Treasury bond yields on June 30, 2006.

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 (NCTR). This report surveys 100-125 plans, including all of the largest public funds covering state employees or teachers. The current survey shows that the median inflation rate assumed for large public retirement systems in the U.S. is 3.50%. Our current 3.00% assumption is used by about 25% of the surveyed systems, with almost all of the rest using higher assumptions.

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 20 years, and a little below the long-term historical average. Therefore, we are recommending retaining the annual 3.00% inflation assumption.

INVESTMENT AND ADMINISTRATIVE EXPENSES

Since the trust fund pays expenses in addition to member benefits and refunds, we must make some assumption about these. Almost all actuaries treat investment expenses as an offset to the investment return assumption. That is, the investment return assumption represents expected return after payment of investment expenses.

On the other hand, there is a divergence of practice on the handling of administrative expenses. Some actuaries make an assumption that administrative expenses will be some fixed or increasing dollar amount. Others assume that the administrative expenses will be some percentage of the plan's actuarial liabilities or normal cost. And others treat administrative expenses like investment expenses, as an offset to the investment return assumption. Our practice is to set the investment return assumption as the net return after payment of both investment and administrative expenses.

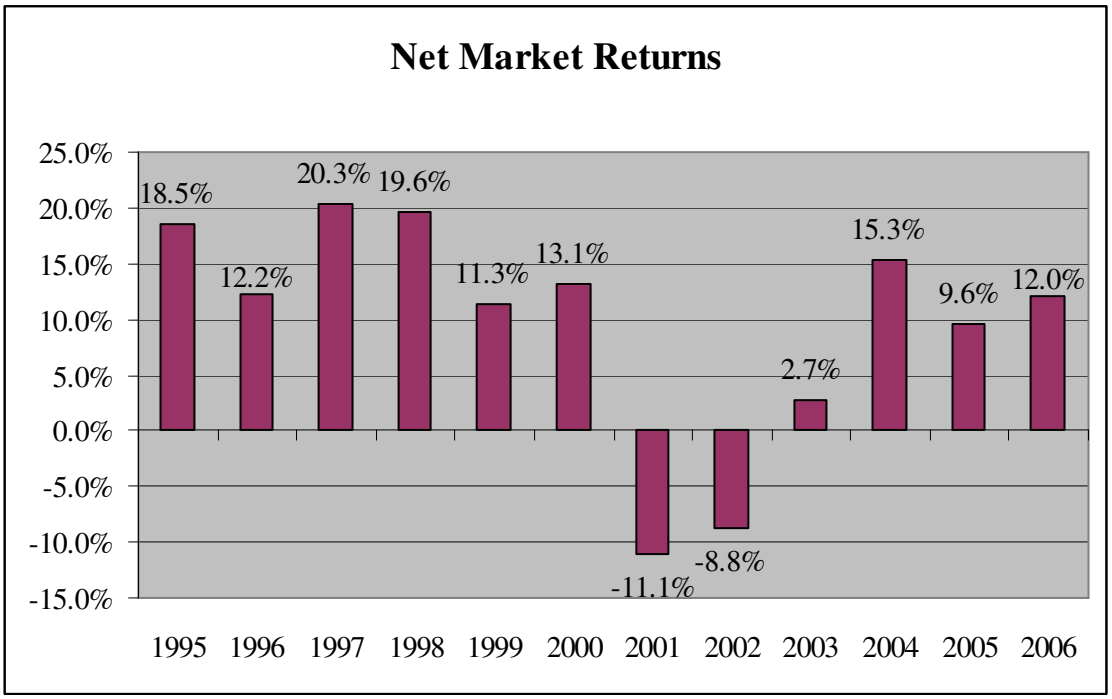
This chart shows the administrative and investment expenses for the last six years expressed as a percentage of the assets, adjusted for cash flow, each year:

Annual Expenses Expressed as a Percentage Assets			
Fiscal Year	Administrative	Investment	Total
2006	0.07%	0.23%	0.30%
2005	0.08%	0.23%	0.31%
2004	0.04%	0.22%	0.26%
2003	0.07%	0.11%	0.18%
2002	0.09%	0.06%	0.15%
2001	0.05%	0.06%	0.11%
Average	0.07%	0.15%	0.22%

Based on this information, we have assumed that investment and administrative expenses will consume 0.30% (30 basis points) of each year's investment return. (The more recent investment expenses reflect the change to allow investments in additional asset classes, such as private equity.) This assumption is then used in setting the investment return assumption.

INVESTMENT RETURN RATE

Currently, ERB assumes an investment return rate of 8.00%, net of investment and administrative expenses. This is the rate used in discounting future payments in calculating the actuarial present value of those payments. The current assumption assumes inflation of 3.00% per annum and an annual real rate of return of 5.00%, net of expenses. The following chart shows the year-by-year returns, net of investment and administrative expenses, for the last ten fiscal years.



For the last five years, the average market return net of investment and administrative expenses has been 5.80%, and for the last ten years the average net return has been 7.88%. However, for this assumption, past performance, even averaged over a ten-year period, is not a reliable indicator of future performance. For example, if we just extend the examination period from the last ten years to the last twelve years, the average return increases to 9.08%.

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 ten-year period is not long enough to provide reasonable guidance.

We believe a better approach to selecting an investment return assumption is to determine the median expected portfolio return given the fund's target allocation and given a set of capital market assumptions. Since we are not investment professionals, we looked at the results under the capital market assumptions used by four investment consulting firms: NEPC, Callan, Watson Wyatt, and Wilshire.

Per information received from NEPC, ERB's current target asset allocation is:

Equities – Large Cap US	35%
Equities – Small Cap US	5%
Equities – International (EAFE)	15%
Equities – Emerging Markets	3%
Private Equity	5%
Hedge Funds/Absolute Returns	5%
Fixed Income	22%
High Yield Bonds	5%
REITS	5%
Total	100%

The modeling results are shown in the table below:

Investment Consultant	Expected Gross Return	Consultant's Assumed Inflation	Expected Real Return [(2)-(3)]	Assumed Offset for Expenses	Expected Net Real Return [(4)-(5)]
(1)	(2)	(3)	(4)	(5)	(6)
Consultant 1	7.95%	2.25%	5.70%	0.30%	5.40%
Consultant 2	7.76%	2.70%	5.06%	0.30%	4.76%
Consultant 3	8.61%	2.75%	5.86%	0.30%	5.56%
Consultant 4	8.18%	3.00%	5.18%	0.30%	4.88%
Average	8.13%	2.68%	5.45%	0.30%	5.15%

Therefore, two of the assumption sets support a 5.00% net real return, and two do not. The average of the four is a bit above 5.00%. Therefore, we have decided not to recommend a change in this assumption at this time.

You should note that 8.00% is still the median investment return assumption used by large public pension plans, per the Public Funds survey.

We believe it is also important for the Retirement Board to bear in mind the risk involved. You can see from the chart of annual returns shown earlier how wildly the year-by-year returns can swing. Only in three of the ten years was the return within 5.00 percentage points (500 basis points) of the 8.00% assumption.

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 anywhere between 2.00% and 4.00%, the ERB benefit increase will be 2.00%. We recommend leaving this assumption unchanged.

SALARY INCREASE RATES AND THREE-TIER LICENSURE SYSTEM

The current salary increase rates assumed for the valuation vary by service. They range from 13.50% for new members to 5.00% for members with 10 or more years of service. In addition, we adjust projected salaries for the effect of the minimum salaries under the three-tier licensure system, as discussed below. The average assumed increase for FY 2007, taking into account ERB's age/service distribution, is about 7.8%.

The average pay increases for members active in both valuations with at least 1.00 year of service are as follows:

Period	Increase
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%
FY 2004 to FY 2005	5.70%
FY 2005 to FY 2006	7.17%

The geometric average of these is 6.73%.

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 six 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 six or more years of service will become master teachers. Many will never attain this status.

Typically, such a structure would not be taken into account in our valuation. We would expect over time to see some effects show up in the data, such as higher termination rates at the end of three years, or higher salary increases after year three and year six.

However, the legislation that created the three-tier licensure program provided for mandatory minimum salaries for classroom teachers at various stages. The new minimum salaries are:

- $30,000 for all teachers, effective in FY 2004.
- $35,000 for all professional and master teachers, effective in FY 2005
- $40,000 for all professional and master teachers, effective in FY 2006
- $45,000 for master teachers, effective in FY 2007
- $50,000 for master teachers, effective in FY 2008

Note that the first three increases are presumably already reflected in the member data received for the valuations. Also note that these increases are not indexed in any way after FY 2008.

In the last experience study, we recommended and the Board adopted a conservative assumption to deal with the three-tier licensure program. For all members who met the mandated minimum salary of $30,000 in FY 2004, we assume that they will reach master teacher status after six years of service, and therefore, their salary will meet the mandated minimums of $45,000 in FY 2007 and $50,000 in FY 2008 and later years.

NM ERB also covers higher education members, administrators and support personnel, none of whom is covered by this new pay banding system. However, our assumption applies to all members, since we have no way to distinguish members included from others. However, by restricting the minimums to members whose pay in FY 2004 is at least $30,000, we believe we exclude most of the support personnel.

Because of the three-tier licensure program, however, we could not effectively analyze salary increases using standard approaches. For example, we usually examine increases by years of service, but in this case, the application of the minimum increases hid the “standard increase” that would typically be given for some members. And because many teachers received substantial increases due to the minimum salary requirements, we could not assume that the observed increases would continue into the future.

Therefore, we are recommending making no changes to the current salary increase assumptions. We believe that using a minimum 5.00% salary increase for all members—call this the wage inflation rate—is conservative, compared to most other teacher retirement systems. (For most of our other teacher retirement systems, we assume a wage inflation rate of 4.25% to 4.75%.) Given the large increases granted by the legislature in recent years, though, we believe this is still a reasonable assumption for ERB.

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.

Over the last five years, payroll growth has averaged 4.0%, down from the 5.5% measured in the last experience study, and it has averaged 4.6% over the last ten years.

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 1.0% over the last ten years), GASB 25 prohibits systems from using anticipated membership growth 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 baby boomer retirements expected over the next 10-15 years, we expect actual payroll growth to lag behind the wage inflation assumption. Therefore, we recommend no change to the payroll growth rate of 3.75%. This has no impact on the liabilities of ERB, but it does impact the amortization period, since we assume there will be more future contributions (3.75% more per year) that can be used to amortize the unfunded actuarial accrued liability.

POST-RETIREMENT MORTALITY RATES

The mortality table currently being used for non-disabled retirees and for beneficiaries receiving benefits is the 1994 Uninsured Pensioner Mortality Table. The table has separate rates for males and females. The rates are then adjusted by using a three-year setback for males and a two-year setback for females. (Set-backs and set-forwards are traditional actuarial techniques used to adjust a table to match the actual observed data. When a table is set back three years, the actuary uses the table's rate for an age three years younger than the person actually is. For example, the mortality rate used for a 60-year old male retiree is the rate in the 1994 Group Annuity Mortality Table for males at age 57.)

There were 1,518 deaths among the male retirees and 2,010 deaths among female retirees during the last six years. (These figures exclude deaths among beneficiaries and disabled retirees.) Based on the current tables, we expected 1,400 and 1,816 deaths respectively. This produced A/E ratios

of 108% for males and 111% for females. This is a good match, and we expect to see continuing mortality improvement (longer life expectancies) in the future. These ratios are still within an acceptable range - generally 105% to 115%. Last year, the A/E ratios were 112% for males, 114% for females and 113% overall. Thus we recommend no changes to the post-retirement assumption for mortality. The results of this analysis are shown below:

Post-Retirement Mortality (non-disabled) – Males			
Age	Actual deaths	Expected deaths	A/E ratio*
50-54	35	6	543%
55-59	41	23	175%
60-64	73	62	119%
65-69	152	145	105%
70-74	197	231	85%
75-79	259	276	94%
80-84	315	282	112%
85-89	256	214	119%
90-94	139	117	118%
95-99	44	37	121%
100-104	7	6	116%
Other	0	1	0%
Totals	1,518	1,400	108%

** Expected deaths are rounded to the nearest number. A/E ratios are based on the unrounded number of expected deaths.*

Post-Retirement Mortality (non-disabled) – Females			
Age	Actual deaths	Expected deaths	A/E ratio*
50-54	24	6	405%
55-59	74	21	359%
60-64	76	67	114%
65-69	148	155	96%
70-74	211	213	99%
75-79	263	260	101%
80-84	322	331	97%
85-89	395	354	112%
90-94	341	275	124%
95-99	134	117	114%
100-104	20	16	126%
Other	2	2	100%
Totals	2,010	1,816	111%

** Expected deaths are rounded to the nearest number. A/E ratios are based on the unrounded number of expected deaths.*

DISABLED MORTALITY RATES

This is a minor assumption, and it has little impact on the liabilities of ERB. There were 64 male deaths and 107 female deaths among the disabled retirees during the six-year study period. This produced A/E ratios of 103% and 109% respectively. At the time of the last experience study, the A/E ratios were 111% for males, 103% for females and 106% overall. Due to the small sample size as well as the reasonable A/E ratios, we recommend no change to this assumption. The results of this analysis are shown below:

Disability Mortality – Males			
Age	Actual deaths	Expected deaths	A/E ratio
45-49	2	2	78%
50-54	5	5	109%
55-59	3	7	42%
60-64	14	9	158%
65-69	3	8	38%
70-74	13	8	165%
75-79	7	6	121%
80-84	7	8	88%
85-89	6	6	96%
90-94	4	3	131%
Other	0	0	0%
Totals	64	62	103%

** Expected deaths are rounded to the nearest number. A/E ratios are based on the unrounded number of expected deaths.*

Disability Mortality – Females			
Age	Actual deaths	Expected deaths	A/E ratio*
40-44	5	1	585%
45-49	7	3	223%
50-54	15	8	183%
55-59	11	14	79%
60-64	14	16	86%
65-69	10	11	92%
70-74	9	9	102%
75-79	10	10	104%
80-84	8	8	104%
85-89	8	8	98%
90-94	6	8	74%
Other	4	2	175%
Totals	107	98	109%

** Expected deaths are rounded to the nearest number. A/E ratios are based on the unrounded number of expected deaths.*

ACTIVE MORTALITY RATES

A separate mortality table is used for active members. The results of this analysis are shown below:

Active mortality rates	Males	Females	Total
Number of actual deaths	70	69	139
Number of expected deaths	184	238	422
A/E ratio	38%	29%	33%

Typically, a discrepancy this large between experience and our assumption would cause us to make a change in the assumption. In this case, we would have to reduce the active mortality rates by 60-70%. However, the experience we see here is out of line with that of other teacher retirement systems, and we suspect that there may be a reporting problem that caused some active member deaths to be reported as other terminations. 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. We will initiate discussions with ERB staff to determine whether some deaths are misreported.

DISABILITY RATES

Disability is also a minor assumption. The A/E ratio was 81% for males and 94% for females, and on a combined basis it was 90%. This is a reasonably good match, given the small numbers of disabled lives. (In the previous experience study the A/E ratios were 86% for males, 106% for females and 99% overall). The results of this analysis are shown below:

Active disability rates	Males	Females	Total
Number of actual disabilities	77	164	241
Number of expected disabilities	95	174	269
A/E ratio	81%	94%	90%

Also, for the last three years, there were 133 actual disabilities and 131 expected disabilities, suggesting that the current rates are not too conservative. Therefore, we recommend leaving this assumption unchanged.

RETIREMENT RATES

We currently use retirement rates that vary by age, service, and sex. There were 2,810 male retirements during the six-year period, and there were 5,342 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 103% for males and 101% for females. (Rates less than 100% are conservative.) In the last study, the A/E was 95% for males and 90% 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 96% for males and 92% for females. Additionally, the average retirement age for males is 58.41 (actual) vs. 58.41(expected). For females, these ages are 58.59 (actual) and 58.09 (expected). In the last experience study, the actual ages at retirement were 57.85 (males) and 58.12 (females). The results of this analysis are shown on the next page:

AE's - MALES							
	0-4	**5-9**	**10-14**	**15-19**	**20-24**	**25+**	**Total**
45-49	0%	0%	0%	0%	0%	92%	103%
50-54	0%	0%	0%	0%	0%	91%	96%
55-59	0%	0%	0%	0%	0%	111%	118%
60-64	0%	0%	140%	88%	94%	89%	99%
65+	0%	130%	118%	88%	69%	84%	102%
Total	0%	154%	136%	98%	100%	96%	103%
AE's - FEMALES							
	0-4	**5-9**	**10-14**	**15-19**	**20-24**	**25+**	**Total**
45-49	0%	0%	0%	0%	0%	73%	83%
50-54	0%	0%	0%	0%	0%	88%	93%
55-59	0%	0%	0%	0%	0%	96%	105%
60-64	0%	0%	86%	99%	108%	95%	99%
65+	0%	119%	115%	134%	147%	134%	129%
Total	0%	138%	99%	117%	128%	92%	101%

We believe there is a reasonably good match between experience and our assumptions, and we recommend leaving the current assumptions unchanged.

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 107% and an A/E ratio for females of 112%. 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. The results are shown below:

Termination Rates – Males			
Service Years	Actual terms	Expected terms	A/E ratio
0-4	10,287	9,748	106%
5-9	2,097	1,784	118%
10 or more	1,033	984	105%
Totals	13,417	12,517	107%
Vested (5 or more years)	3,130	2,768	113%

Termination Rates – Females			
Service Years	Actual terms	Expected terms	A/E ratio
0-4	19,495	17,825	109%
5-9	4,936	4,352	113%
10 or more	2,578	1,938	133%
Totals	27,009	24,115	112%
Vested (5 or more years)	7,514	6,290	119%

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, the likelihood that a terminating employee will take a refund, etc. We reviewed these, and believe these are generally realistic or conservative, so we 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—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 five years ending FY 2004. We examined the new entrant data for the six years ending FY 2006, and typically we would change to this profile for the next two valuations. However, we found that the new pattern was very similar to the current profile being used. Therefore, we recommend not changing the current profile, since we are making no other changes.

SECTION IV

ACTUARIAL IMPACT OF RECOMMENDATIONS

Actuarial Impact of Recommendations

For this experience study cycle, we have recommended making no changes to the actuarial assumptions or methods. Therefore, the experience study has no actuarial impact.

SECTION V

SUMMARY OF RECOMMENDATIONS

Summary of Recommendations

As noted previously, we recommend making no changes to the current actuarial assumptions and actuarial methods.

We recommend, however, that the Board formally accept this report and readopt the current assumptions for the June 30, 2007 and June 30, 2008 actuarial valuations.

SECTION VI

SUMMARY OF ASSUMPTIONS AND METHODS INCORPORATING THE RECOMMENDED ASSUMPTIONS

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 five-year period ending June 30, 2004. 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 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: 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 2.00% 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%	13.50%
1	2.75%	7.75%
2	1.75%	6.75%
3	1.25%	6.25%
4	1.00%	6.00%
5	0.75%	5.75%
6	0.50%	5.50%
7	0.25%	5.25%
8	0.25%	5.25%
9	0.25%	5.25%
10 or more	0.00%	5.00%

3. Three-Tier Licensure Increased: In 2003, the legislature adopted a new framework for classroom teacher salaries with minimum salaries mandated for certain classes of teachers beginning in FY 2004. For teachers who met the mandated minimum salary of $30,000 in FY 2004, their salaries were assumed to meet the mandated minimum of $35,000 in FY 2005 and $40,000 in FY 2006 and later years for "professional" teachers if they had at least three years of service at each respective valuation date. Likewise, for teachers who met the mandated minimum salary of $30,000 in FY 2004, their salaries were assumed to meet the mandated minimum of $45,000 in FY 2007 and $50,000 in FY 2008 and later years for "master" teachers if they had at least six years of service at each respective valuation date.

4. Cost-of-living increases:

   a. All retirees and beneficiaries - 2% per year increase, beginning in the year the member reaches age 65, or the third year following retirement for disabled retirees.

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

5. Payroll growth:

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

6. Contribution accumulation: Member contributions are assumed to have grown at 5.50% per year, with 6.00% interest, compounded annually.

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

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

	Deaths per 100 Members	
Age	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):

	Occurrence of Disability per 100 Members	
Age	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

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

Retirement Per 100 Members

Males

	Years of Service					
Age	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

Females

	Years of Service					
Age	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.

C. Other Assumptions

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.

6. Percent married: For valuation purposes 100% of members are assumed to be married.

V. Participant Data

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. 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.