GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

EMPLOYEES' RETIREMENT SYSTEM OF RHODE ISLAND

ACTUARIAL EXPERIENCE STUDY
FOR THE SIX–YEAR PERIOD ENDING JUNE 30, 2010

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Subject: Results of 2010 Actuarial Experience Study for ERSRI

We are pleased to present our report on the results of the 2010 Actuarial Experience Study for the Employees' Retirement System of Rhode Island (ERSRI). It includes a discussion of recent experience, it presents our recommendations for new actuarial assumptions and methods, and it provides information about the actuarial impact of these recommendations on the liabilities and other key actuarial measures. This report only contains the results of the experience study for ERSRI, covering state employees and teachers. Separate, supplemental information will be provided with the results for MERS, State Police, and State Judges.

Using the recommended set of actuarial assumptions should present a more accurate portrayal of ERSRI's financial condition and should reduce the magnitude of future experience gains and losses.

The study was conducted in accordance with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. The undersigned meet the Qualification Standards of the American Academy of Actuaries.

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

Sincerely,

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TABLE OF CONTENTS

SECTION I

EXECUTIVE SUMMARY

Section I
Executive Summary

1. Purpose
   a. Review all current actuarial assumptions and methods and compare to actual recent experience
   b. Used data from the six-year period ending June 30, 2010 (data over longer or shorter periods were used, where appropriate)

2. Annual (price) inflation rate
   a. Currently 3.00%
   b. Recommend decrease to 2.75%
   c. Five-year average increase in CPI-U is 2.18%, ten-year average is 2.34%, twenty-year average is 2.50%
   d. Current bond market predicts inflation of 2.54% over the next 20 years, most investment consultants' capital market assumptions are under 3.00%, but over 50% of large public retirement systems use an assumption between 3.00% and 3.50%
   e. It is a component of investment return assumption, salary increase assumption, Schedule B COLA assumption, and assumed payroll growth rate

3. Annual investment return rate
   a. Currently 8.25% per annum
   b. Assumed annual rate represents total return, net of administrative and investment expenses
   c. Current assumption is composed of a 3.00% inflation rate and a 5.25% net real rate of return (5.70% less 0.45% for expenses)
   d. Actual market return was 2.28% for last 10 years ending June 30, 2010, net of investment and administrative expenses and 9.21% since 1984, gross of expenses
   e. Current real rate of return assumption is not justified by asset allocation and forward-looking expected returns by asset class
   f. Less than 35% probability of achieving current assumed return over the next 20 years using current capital market assumptions
   g. Recommend decreasing the net nominal return to 7.50%, composed of 2.75% inflation, a 5.15% real rate of return, for a gross return of 7.90%, less 0.40% for investment and administrative expenses
   h. Will significantly increase the liabilities and contribution requirements

4. COLA assumption
   a. Fixed 3.00% COLA for Schedule A members requires no assumption
   b. For Schedule B members, COLA based on CPI increases, maximum 3.00%
   c. Current assumption for Schedule B COLA is 2.50%
   d. Recommend decreasing to 2.35% because of change in assumed inflation

5. Salary increase rate
   a. Separate assumptions currently used for state employees and teachers
   b. Assumption is composed of wage inflation and service-related increases to capture step-increases, promotions, additional degrees, etc.
   c. Wage inflation equals price inflation plus "productivity" increases
   d. Currently wage inflation assumption is 4.50% for both state employees and teachers (3.00% wage inflation plus 1.50% productivity)
   e. Recommend decreasing wage inflation from 4.50% to 4.00%, partly because of decrease in inflation assumption and partly due to decrease in assumed productivity increases
   f. Currently use graded scale based on years of service for shorter service employees
   g. Recommend minor changes in the service-related increases for both groups

6. Payroll growth rate
   a. Rate at which the total payroll is expected to grow each year
   b. Must not reflect any anticipated membership growth, per GASB 25
   c. Current assumed payroll growth rate is 4.25%
   d. Only affects contribution rates, not actuarial liabilities
   e. Recommend decreasing assumption to 3.75%, consistent with wage inflation decrease

7. Post-retirement mortality for healthy retirees:
   a. Current tables based on 1994 Group Annuity Mortality Tables state employees and a teacher mortality specific table for teachers. Adjustments have been made to the tables to better match experience.
   b. Study shows very significant improvement in mortality experience.
   c. There was a relatively large increase in the assumed life expectancy in the last experience study, with the A/E ratios set above 110% for all groups.
   d. Experience shows that life expectancy increased even more than assumed during the last decade.
   e. We are recommending resetting base mortality tables and adding an explicit mortality improvement assumption
   f. Besides the investment return assumption, this is the single most significant change being recommended.

8. Disabled mortality:
   a. Used in valuing benefits for disabled retirees.
   b. Relatively few disabled retirees compared to the number of service retirees, but analysis shows similar increases in life expectancy as healthy retirees.
   c. Recommend extending assumed life expectancy.

9. Pre-termination mortality:
   a. Minor changes recommended, partly because of change to base retiree mortality tables
   b. This is a low-significance assumption

10. Disability incidence:
   a. Currently using separate rates for males and females, for state employees and teachers, and for ordinary and accidental disability
   b. Reasonable agreement between assumptions and experience, given relatively small numbers
   c. Recommend minor adjustments to this assumption

11. Retirement:
   a. Due to legislative changes during the analysis period, we do not believe recent experience is likely to resemble future retirement patterns.
   b. We are recommending no changes at this time.

12. Termination:
   a. Currently using separate tables for teachers and state employees and for males and females
   b. Current set of assumptions are based on service
   c. Overall A/E ratios looks conservative for teachers, but we feel economy may have over influenced recent termination behavior
   d. Recommend minor changes to the teacher assumption
   e. Recommend no change to the assumption for state employees

13. Marriage assumption:
   a. Current assumption: 85% of members are married. Children's benefits are ignored.
   b. Used in valuing death benefits
   c. Census data suggest the current assumption is reasonable

14. Other assumptions:
   a. Recommend no changes in any of the other miscellaneous assumptions

15. Actuarial Cost Method:
   a. Entry Age Normal actuarial method, set by statute
   b. Most widely used method among large public plans
   c. Recommend no change

16. Actuarial Value of Assets Method:
    a. Method phases in differences between actual net market return and assumption over five years, at 20% per year
    b. Current method is reasonable and is common industry practice

17. Impact of all recommended changes (State Employees)
    a. Significant changes
    b. UAAL increases by $581 million and funded ratio decreases from 54.4% to 48.4%
    c. Normal cost rate increases from 9.35% to 11.39%
    d. Employer contribution rate increases from 26.55% to 36.34%, and the projected FY 2013 contribution increases from $182.5 million to $246.5 million

18. Impact of all recommended changes (Teachers)
    a. Significant changes
    b. UAAL increases by $855 million, and funded ratio decreases from 54.2% to 48.4%
    c. Normal cost increases from 10.00% to 11.82%
    d. Employer contribution rate increases from 26.21% to 35.25%, and projected FY 2013 contribution increases from $282.8 million to $375.3 million. (These are combined figures for state and local employer shares of the employer contribution for teachers.)

SECTION II

INTRODUCTION

Section II
Introduction

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

- 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 others, such as the investment return assumption, the link between past and future results is much weaker. In either case, actuaries should review the plan's assumptions periodically and determine whether these assumptions are consistent with actual past experience and with anticipated future experience.

The last such experience study was performed in conjunction with the June 30, 2006 actuarial valuation. One was originally scheduled to be performed in conjunction with the June 30, 2009 actuarial valuation, however, the Board, upon our recommendation, decided to delay the scheduled analysis because the last few years have shown atypical retirement and termination experience due to enacted legislation, such as the changes made to the retiree health-care benefits by Article 4 of the 2008 supplemental budget, which prompted a surge of retirements in 2008. For this experience study, we have analyzed ERSRI's experience for the six-year period from June 30, 2004 through June 30, 2010 (FY 2005 – FY 2010). Note that the first two years, FY 2005 and FY 2006, were also included in the last experience study.

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 a few instances, we chose to use a longer period, up to ten years, in order to smooth some of the year-to-year fluctuations and in order to increase the soundness of our conclusions.

In an experience study, we first determine the number of deaths, retirements, etc. that occurred during the period. Then we determine the number expected to occur, based on the current actuarial assumptions. The number "expected" is determined by multiplying the probability of the occurrence at the given age, by the "exposures" at that same age. For example, let's look at a rate of retirement of 15% at age 55. The number of exposures can only be those members who are age 55 and eligible for retirement at that time. Thus they are considered "exposed" to that assumption. Finally we calculate the A/E ratio, where "A" is the actual number (of retirements, for example) and "E" is the expected number. If the current assumptions were "perfect", the A/E ratio would be 100%. When it varies much from this figure, it is a sign that new assumptions may be needed. (However, in some cases we prefer to set our assumptions to produce an A/E ratio a little above or below 100%, in order to introduce some conservatism.) Of course we not only look at the assumptions as a whole, but we also review how well they fit the actual results by sex, by age, and by service.

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.

Please bear in mind that, while the recommended assumption set represents our best estimate, there are other reasonable assumptions sets that could be supported. Some reasonable assumption sets would show much higher or lower liabilities or costs. For example, while our analysis concludes that the current 8.25% investment return assumption should be decreased to 7.50%, others might argue that a 7.25% or 7.75% rate is more appropriate.

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. Finally, tables summarizing the analysis of the assumptions are in Section VII.

Section VII Exhibits

The exhibits in Section VII should generally be self-explanatory. For example, on page 78, we show the exhibit analyzing the termination rates for male teachers. The second column shows the total number of male teachers who terminated during the study period. This excludes members who died, became disabled or retired. Column (3), labeled "Total Count" shows the total exposures. This is the number of males who could have terminated during any of the years. On this exhibit, the exposures exclude anyone eligible for retirement. A member is counted in each year he could have terminated, so the total shown is the total exposures for the six-year period. Colum (4) shows the probability of termination based on the raw data. That is, it is the result of dividing the actual number of terminations (col. 2) by the number exposed (col. 3). Column (5) shows the current

termination rate and column (6) shows the new recommended termination rate. Columns (7) and (8) show the expected numbers of terminations based on the current and proposed termination assumptions. Columns (9) and (10) show the Actual-to-Expected ratios under the current and proposed termination assumptions.

SECTION III

ANALYSIS OF EXPERIENCE AND RECOMMENDATIONS

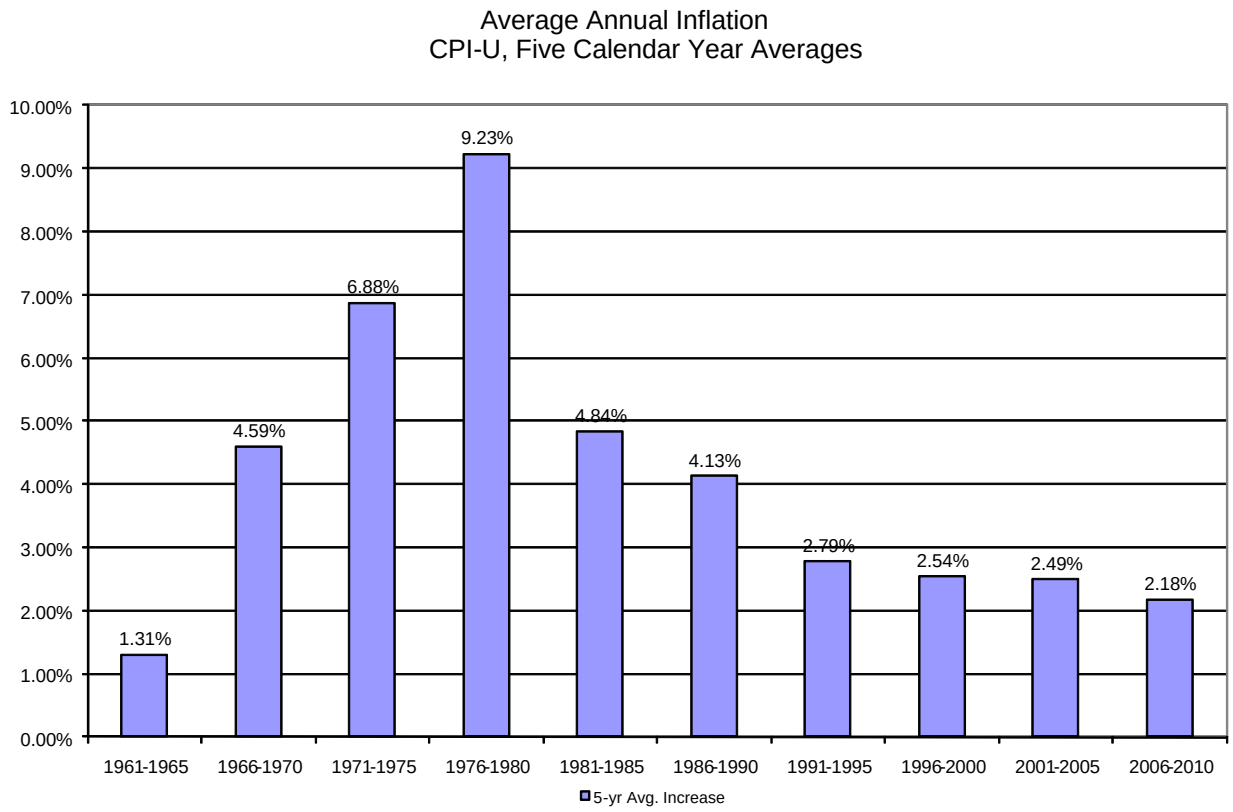
Section III
Analysis of Experience and Recommendations

We will begin by discussing the economic assumptions: inflation, the investment return rate, the salary increase assumptions, the payroll growth rate, the COLA for Schedule B employees, etc. Then we will discuss the demographic assumptions: mortality, disability, termination, retirement, etc. 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, for the employees under Schedule B, their cost-of-living increases. Our current annual inflation assumption is 3.00%.

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 December 31, 2010:

Periods Ending December 2010	Average Annual Increase in CPI-U
Last five (5) years	2.18%
Last ten (10) years	2.34%
Last fifteen (15) years	2.40%
Last twenty (20) years	2.50%
Last twenty-five (25) years	2.82%
Last thirty (30) years	3.16%
Since 1913 (first available year)	3.23%

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 twenty-five years, if we look back over a period of 30 or more years, inflation has averaged slightly above 3.00% per year. However, it is hard to ignore the steady march downwards in inflation statistics over the last 25 years shown in the charts above.

Most of the investment consulting firms, in setting their capital market assumptions, currently assume that inflation will be less than 3.00%. We examined the 2010 or 2011 capital market assumption sets for seven investment consulting firms: PCA (ERSRI's consultant), Callan, Towers Watson, JP Morgan, Hewitt Ennis Knupp, RV Kuhns, and New England Pension Consulting (NEPC). The average assumption for inflation was 2.64%, with a range of 2.30% to 3.00%. 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 December 31, 2010 yield for 20-year inflation indexed Treasury bonds was 1.59% plus actual inflation. The yield for 20-year non-indexed US Treasury bonds was 4.13%. Simplistically, this means that on that day the bond market was predicting that inflation over the next twenty years would average 2.54% (4.13% – 1.59%) per year. One year earlier, as of December 31, 2009, the spread between the 20-year inflation protected and constant maturity bonds was only marginally higher, with a difference of 2.55%, so there has been little change in this expectation. The US Treasury recently began issuing 30-year TIPs, and the imputed 30-year inflation level is close to the 20-year level.

However, this analysis is known to be imperfect. It ignores the inflation risk premium that buyers of US Treasury bonds should ask for, and it ignores the differences in liquidity between US Treasury bonds and TIPS.

In the Social Security Administration's 2010 Trustees Report, the Office of the Chief Actuary is projecting a long-term average annual inflation rate of 2.8% under the intermediate cost

assumption. (The inflation assumption is 1.8% and 3.8% respectively in the low cost and high cost projection scenarios.) These inflation assumptions were unchanged from their prior year's report.

The Philadelphia Federal Reserve conducts a quarterly survey of the Society of Professional Forecasters. Their most recent forecast (first quarter of 2011) was for inflation over the next ten years to average 2.30%. Most observers expect inflation to continue to be low as the economy works out of the recession. (Short-term spikes in energy and food costs are possible, due to the disaster in Japan and current turmoil in the Mideast and North Africa, but core inflation remains very low.) However, the society of Professional Forecasters is implicitly assuming a 2.50% inflation rate from 2016-2020, so it is not just the next 2-3 years that is depressing inflation forecasts.

Another source of information about this assumption 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 about 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 30% of the surveyed systems, with almost all of the rest using higher assumptions.

Based on all of this information, we believe a reasonable long-term inflation assumption is between 2.25% to 3.00%. We recommend reducing the current 3.00% assumption to 2.75%, putting us closer to recent inflation levels and closer to the levels expected in the bond market. This happens to be PCA's inflation assumption. As we will see, this reduction affects all of the other economic assumptions.

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
2010	0.13%	0.22%	0.35%
2009	0.11%	0.26%	0.37%
2008	0.10%	0.34%	0.44%
2007	0.10%	0.35%	0.45%
2006	0.10%	0.45%	0.55%
2005	0.10%	0.36%	0.46%
Average	0.11%	0.32%	0.43%

Note the sharp drop in expenses since FY 2006. This occurred even while the market value of assets (the denominator of the measurement) was falling, due to the recession. The General Treasurer's staff has told us that some of the recent decrease in investment expenses is due to the shift toward more passive management, but that total expenses are expected to rise back towards 0.40% as the Real Return asset category becomes fully invested. Therefore, we have decided to recommend an assumption that investment and administrative expenses will consume 0.40% (40 basis points) of each year's investment return. This assumption is then used in setting the investment return assumption.

Investment Return Assumption

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

You may recall that in 2006, when we presented last experience study, we recommended decreasing the investment return rate to 8.00%, but the Retirement Board kept the assumption at 8.25%. We agreed at the time that 8.25% was within the range of reasonable investment return assumptions.

ASOP 27 – Current Standard of Practice

Actuaries are required to comply with Actuarial Standard of Practice No. 27 (ASOP 27) in setting economic assumptions for retirement plans, including the assumed investment return rate.

In a public retirement system like ERSRI, it is ultimately the Retirement Board's responsibility, as fiduciaries, to set the actuarial assumptions used in the actuarial valuations and used to set the contribution rates. It is the actuary's duty to provide the Board with information needed to make those decisions, and to make recommendations to the Board. Although the Board is the ultimate

decision-making body, we are still bound by ASOP 27 in providing advice or recommendations to the Board.

The standard requires the actuary to identify the components of each assumption, to evaluate relevant data, and to set a best-estimate range. Then the actuary selects a point within this best-estimate range. Alternatively, the actuary may simply set the assumption without specifying a best-estimate range. Additionally, the ASOP requires that all economic assumptions be consistent with one another.

The best-estimate range is "the narrowest range within which the actuary reasonably anticipates that the actual results, compounded over the measurement period, are more likely than not to fall." If the best-estimate range for the investment return assumption is from m% to n%, we must believe that just over half the time the actual compound rate of return in the future will be within this range.

ASOP 27 – Proposed New Standard of Practice

For several reasons, the actuarial profession has decided that ASOP 27 should be updated, and a new exposure draft has been published. One criticism of the current standard is that the range of potential investment return assumptions that could be considered reasonable under the current standard is too wide. The "best estimate range" described above has been eliminated from the new draft standard. The new standard will require the actuary to set an assumption, generally a single point estimate. The standard does not conclude that any other assumption would be deemed unreasonable; there is some leeway for rounding and it's unlikely that a 0.25% difference is large enough to make one "right" and the other "unreasonable." Nonetheless, an actuary who believes x% is correct may conclude that x+0.75% or even x+0.50% is unreasonable, even if it falls within the previous best-estimate range.

While the new standard is not effective yet, and it could still be changed, we believe it would be reckless to ignore it, particularly because the new standard will likely be in effect for the June 30, 2011 actuarial valuation. Assumptions chosen by the Board based on this Experience Study are intended to remain in effect for at least three years.

Well, one might ask, if the Retirement Board is the ultimate arbiter of the assumption chosen, what difference does all this make? Just this: ASOP 4 (Measuring Pension Obligations and Determining Pension Plan Costs or Contributions) requires the actuary to disclose the fact if he/she believes an assumption set by the Board is unreasonable. (This is true even under the current version of ASOP 4, but this requirement may be strengthened soon, based on a Discussion Document issued by the Actuarial Standards Board.)

Further, we believe that calculations done using assumptions deemed unreasonable by the actuary could not be used for reporting under GASB Statements No. 25 and No. 27. This could create a situation in which the calculated contribution, based on assumptions chosen by the Board but deemed unreasonable by the actuary, would be less than the GASB 25 Annual Required Contribution as calculated by the actuary based on reasonable assumptions, resulting in a liability appearing on the employer's balance sheet.

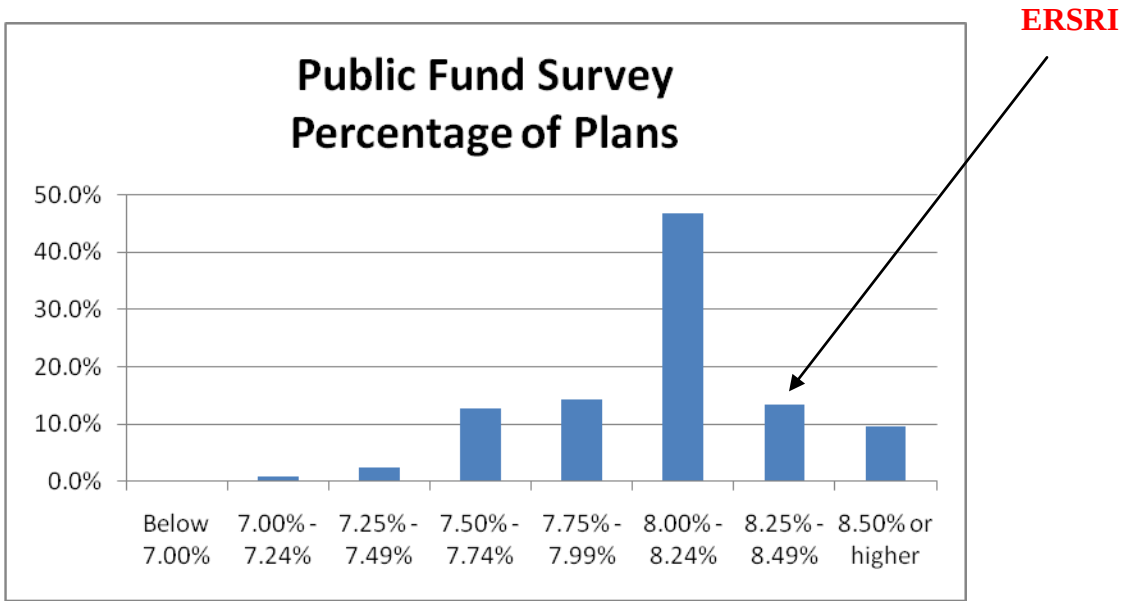
Structure of the Investment Return Assumption

We view the investment return assumption as having three components: the assumed rate of (price) inflation, the real return net of inflation, and an offset for expected investment and administrative expenses. The current 8.25% assumption is composed of a 3.00% assumed inflation rate plus a 5.70% assumed real return, for a gross expected return of 8.70%. This is offset by 0.45% for expected investment and administrative expenses. This "building block" approach is one explicitly permitted under ASOP 27.

We have already discussed the inflation assumption and the offset for expenses. The next section is an analysis of the real rate of return. However, the reader should note that the decrease in the expected inflation rate (0.25%), offset by the decrease in the allowance for expenses (0.05%), implies that, even if the expected real return were unchanged, the nominal rate of return assumption should decrease by 0.20%.

Comparison to Peers

Below is a table providing the prevalence of different investment return assumptions used by other statewide retirement systems. While we do not recommend the Board select an assumption based on prevalence information, it is still informative to see where ERSRI is compared to its peers.

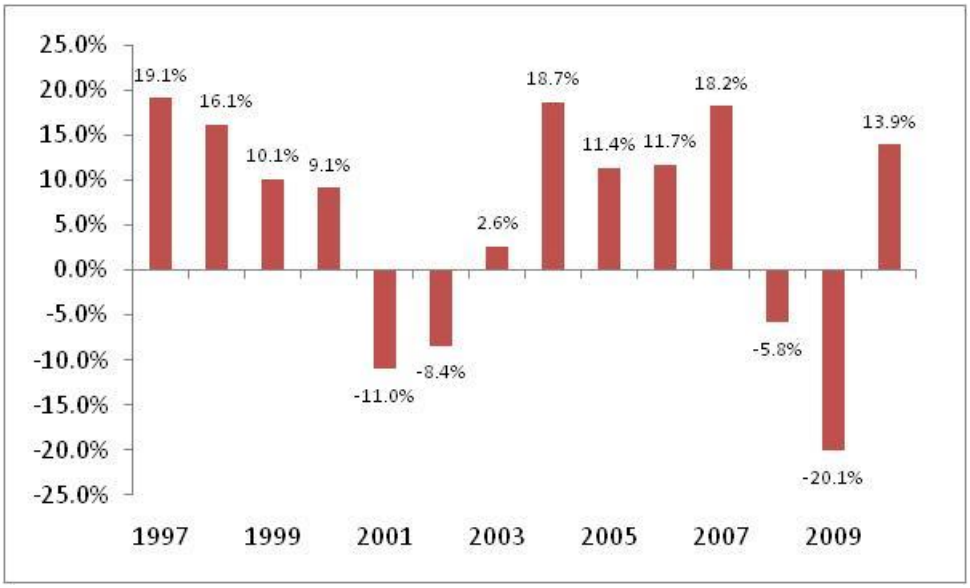


Source: Public Funds Survey (n=126). Median investment return assumption: 8.00% nominal return.

While the table shows that 8.00% assumption is currently the median, you should be aware that the data in the table, because of the lag in reporting, is not a "real time" picture, and several large plans have recently reduced their assumption, while several others are currently reviewing this assumption. A comparison of this survey with the one two year's prior shows some movement towards lower return assumptions.

Experience

The following chart shows the year-by-year returns, net of investment and administrative expenses, for the last fourteen fiscal years, 1997 through 2010. While the plan did exceed the expected 8.25% return assumption in nine of the last fourteen years, the average market return during this period was only 5.37%, which is significantly less than the 8.25% assumption.



The retirement system provided information showing a total return since 1984 through December 31, 2009 of 9.21%. (This return is a gross return, not reduced for the effect of expenses.)

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

Target Asset Allocation

The allocation of assets within the universe of investment options will significantly impact the overall performance. Therefore, it is meaningful to identify the range of expected returns based on the fund's targeted allocation of investments and an overall set of capital market assumptions.

Here is a table with the plan's current target asset allocation as well as the target allocation in effect during the prior assumption review conducted in 2006.

Asset Category	2010 Target Asset Allocation	2006 Target Asset Allocation	Change	PCA Expected Return for Asset Class	Impact on Total Fund Expected
Domestic Equities	36.0%	42.5%	-6.5%	8.75%	-0.57%
International Equities	17.5%	20.0%	-2.5%	9.00%	-0.23%
Domestic Fixed Income	22.0%	25.0%	-3.0%	3.30%	-0.10%
Real Estate	5.0%	5.0%	-	7.00%	0.00%
Alternatives	7.5%	7.5%	-	12.00%	0.00%
Real Return	10.0%	0.0%	10.0%	6.50%	0.65%
Cash Equivalents	2.0%	0.0%	2.0%	3.00%	0.06%
Total	100.0%	100.0%	0.0%	7.41%	-0.19%

As you can see, the target asset allocation has changed since 2006. There has been a shift in allocation from traditional equities to an asset class designed to provide a targeted real return above inflation. Currently assets invested in this class are devoted to a US TIPs investment fund, although it is expected the fund will add investments in hedge funds and commodities.

As shown in the far left column, this change in allocation results in a decrease in the expected return of the total fund by 0.19%. In addition, not shown above, is that the change lowered the standard deviation of the portfolio by 1.40% from 13.0% to 11.6%. Therefore, a decision was made to lower the risk of the portfolio, and that decision has also lowered the expected return. Based on this decision, we believe a corresponding decrease in the investment return assumption, just based on this reallocation, would be prudent.

Expected Real Returns

Because GRS is a benefits consulting firm and does not provide investment advice, we reviewed capital market assumptions developed and published by the following seven independent investment consulting firms:

- Callan
- JP Morgan
- R.V. Kuhns
- NEPC
- PCA (ERSRI's consultant)
- Hewitt Ennis Knupp
- Towers Watson

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

investments (i.e. fixed income, equities, and real estate) are generally based on anticipated returns produced by passive index funds.

Given the plan's current target asset allocation and the investment consultant's capital market assumptions, the development of the average nominal return, net of administrative and investment expenses, is provided in the following table:

Investment Consultant	Investment Consultant Expected Nominal Return	Investment Consultant Inflation Assumption	Expected Real Return (2)–(3)	Actuary Inflation Assumption	Expected Nominal Return (4)+(5)	Plan Incurred Expense Assumption	Expected Nominal Return Net of Expenses (6)-(7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	7.41%	2.75%	4.66%	2.75%	7.41%	0.40%	7.01%
2	7.90%	3.00%	4.90%	2.75%	7.65%	0.40%	7.25%
3	7.48%	2.40%	5.08%	2.75%	7.83%	0.40%	7.43%
4	7.83%	2.50%	5.33%	2.75%	8.08%	0.40%	7.68%
5	7.87%	2.50%	5.37%	2.75%	8.12%	0.40%	7.72%
6	8.52%	3.00%	5.52%	2.75%	8.27%	0.40%	7.87%
7	8.14%	2.30%	5.84%	2.75%	8.59%	0.40%	8.19%
Average	**7.88%**	**2.64%**	**5.24%**	**2.75%**	**7.99%**	**0.40%**	**7.59%**

Note: Return assumption is based on the arithmetic average.

We have determined for each firm the expected nominal return rate, then subtracted that firm's expected inflation to arrive at their expected real return in col. (4). Then we have added back our 2.75% inflation assumption and subtracted 0.40% for expenses to get a net nominal return. As the table shows, the average one-year return of the seven firms is 7.59%, which is 0.66% less than the current assumption of 8.25%. Additionally, when we adjust for differences in inflation assumptions and for the administrative and investment expenses, none of the firms has an expected nominal return above 8.25%, and only one has a nominal return above 8.00%.

In addition to examining the expected one-year return, it is important to review anticipated volatility of the investment portfolio and understand the range of long-term net return that could be expected to be produced by the investment portfolio. Therefore, the table on the following page provides the 25th, 50th, and 75th percentiles of the 20-year geometric average of the expected nominal return, net of expenses, as well as the probability of exceeding the current 8.25% assumption.

Investment Consultant	Distribution of 20-Year Average Geometric Net Nominal Return			Probability of exceeding
	25th	50th	75th	8.25%*
(1)	(2)	(3)	(4)	(5)
1	4.63%	6.36%	8.13%	23.5%
2	4.52%	6.44%	8.41%	26.7%
3	5.45%	6.95%	8.47%	28.2%
4	5.21%	6.99%	8.81%	32.0%
5	5.03%	6.94%	8.88%	32.4%
6	5.35%	7.16%	9.01%	34.6%
7	5.39%	7.36%	9.37%	41.4%
Average	**5.08%**	**6.89%**	**8.72%**	**31.3%**

*Plan's current return assumption net of expenses.

As the analysis shows, there is a 50% likelihood that the 20-year average net real return will be between 5.08% and 8.72%. This is the best-estimate range under ASOP 27, as it currently exists. However, none of the capital market assumptions provided by the investment consulting firms indicate there is more than a 50% chance of exceeding the current assumption. Furthermore, the average results of all seven firms indicate there is less than a one in three chance that the plan will produce an average return that exceeds 8.25% over the next 20 years.

Recommendation

We recommend an investment return assumption of 7.50%, net of expenses. This would be composed of (i) and inflation rate of 2.75%, a real return of 5.15%, for a gross return of 7.90%. This would then be offset by 0.40% for investment and administrative expenses, for a nominal return assumption of 7.50%.

The 5.15% assumption for real return is very close to the average of 5.24% shown on the chart on the preceding page.

The 0.75% change from the current 8.25% assumption can be thought of as due to the following factors:

- Decrease in inflation assumption: -0.25%
- Decrease in offset for expenses: +0.05%
- Change in target allocation: -0.19%
- Change in capital market assumptions: -0.36%

We do acknowledge that there is an argument that says, because the capital market assumption sets of the investment consulting firms are usually focused on the next ten years, and sometimes an even shorter period, they may not be appropriate for long-term projections. For example, real fixed income returns are depressed at the present, and a reasonable argument can be made that in the long run these will have to increase. On the other hand, higher returns on fixed income in the long run may also depress equity returns, since these are often negatively correlated. Therefore, we do not believe that this justifies increasing the assumed return rate at this time. Any validity this argument has is offset in our view by the following considerations:

- ERSRI's investment consultant, PCA, is on the more conservative end of the spectrum represented by the seven firms included in our analysis

- Based on the capital market assumptions, there is around a 60% chance that ERSRI will not achieve an average return (geometric) at or above 7.50% over the next 20 years.

As we will see later, reducing the investment return assumption will significantly increase plan liabilities and required contributions. This would, however, also increase the probability that the actual investment return will exceed the assumed rate of return, and it would decrease the size of the investment losses that are incurred when the actual investment returns are less than assumed.

COLA for Schedule B retirees

The COLA for Members under Schedule A is a fixed 3.00%, so no assumption needs to be made with regard to this. Members under Schedule B, however, receive a COLA that is based on CPI increases, but is capped at 3.00%.

Although we assume price inflation will average 2.75%, inflation in any given year may be greater than or less than this. When it is less than 3.00%, the full increase will be given, based on the change in the CPI. However, when inflation is greater than 3.00%, only a 3.00% increase will be given. Therefore, the average COLA increase depends on the distribution of the CPI increases.

Previously we assumed inflation would average 3.00%, but that the Schedule B COLA would average 2.50%. The COLA assumption needs to be reset because of the decrease in our inflation assumption. Based on an assumption that CPI increases are distributed normally with a mean of 2.75% and a standard deviation of 1.30%, we are recommending that the Schedule B COLA assumption be reduced to 2.35%.

Salary increase rates

In order to project future benefits, the actuary must project future salary increases. Salaries may increase for a variety of reasons:

- Across-the-board increases for all employees;
- Across-the-board increases for a given group of employees;
- Increases to a minimum salary schedule;
- Additional pay for additional duties;

- Step or service-related increases;
- Increases for acquisition of advanced degrees or specialized training;
- Promotions; or
- Merit increases, if available.

Our salary increase assumption is meant to reflect all of these types of increases.

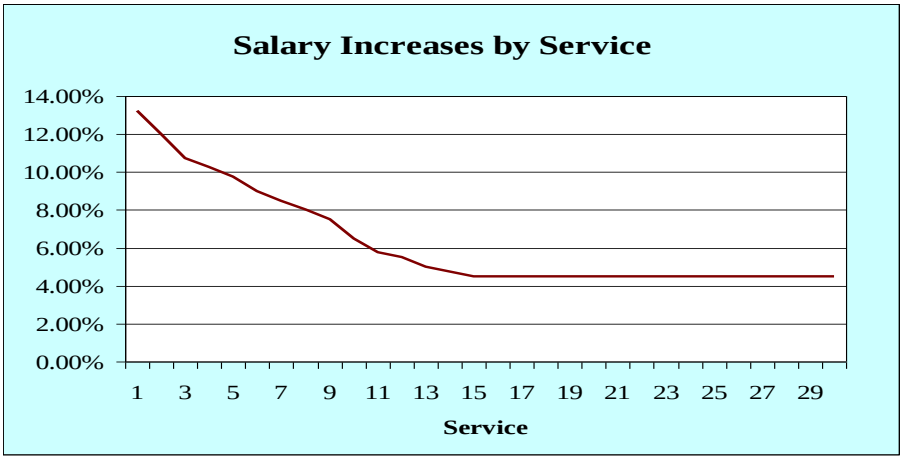
The actuary should not look at the overall increases in payroll in setting this assumption, because payroll can grow at a rate different from the average pay increase for individual members. There are two reasons for this. First, when older, longer-service employees terminate, retire or die, they are generally replaced with new employees who have a lower salary. Because of this, in most populations that are not growing in size, the growth in total payroll is smaller than the average pay increase for members. Second, payroll can change due to an increase or decrease in the size of the group. Therefore, to analyze salary increases, we examine the actual increase in salary for each member who is active in two consecutive fiscal years.

Salary increases for governmental employees can vary significantly from year to year. When the employer's tax revenues stall or increase slowly, salary increases often are small or nonexistent. During good times, salary increases can be larger. Our experience across many governmental plans also shows several occasions in which salary increases will be low for a period of several years followed by a significant increase in one year. Therefore, for this assumption in particular, we prefer to use data over a longer period in establishing our assumptions. We used a ten-year period for this analysis.

Most actuaries recommend salary increase assumptions that include an element that depends on the member's age or service, especially for large, public retirement systems. It is typical to assume larger pay increases for younger or shorter-service employees. This is done in order to reflect pay increases that accompany step increases, changes in job responsibility, promotions, demonstrated merit, etc. The experience shows salaries have been more closely correlated to service (rather than age), as promotions and productivity increases tend to be greater in the first few years of a career, even if the new employee is older than the average new hire.

We analyzed the salary increases based on the change in the member's reported pay from one year to the next. That is, we looked at each member who appeared as an active member in two consecutive valuations individually, and measured his/her salary increase. Then we grouped the increases for all members with the same service, and determined their average increase.

If we graph the increases by service, we usually get a graph where the increases are larger for shorter service employees and then level out at a lower level after a period that may be ten to twenty-five years. It might look like this, although in practice not this smooth:



Therefore, we divide the task of setting the salary increase into two pieces:

1. Determining the assumption for long-service employees
2. Determining the additional increases to be applied to shorter-service employees

The next two subsections will discuss these components of the salary assumption.

Salary increase assumptions for long-service employees (wage inflation)

Many of the factors that result in pay increases are largely inapplicable or have diminished importance for longer-service employees. Step or service-related increase have stopped or are minimal. Promotions occur with less frequency. Additional training or acquisition of advanced degrees usually occurs early in the career. In theory, then, salary increases for longer-service employees are almost entirely driven by wage inflation. Wage inflation is the increase in the average wage of all members of the workforce.

Historically, wage inflation almost always exceeds price inflation. This is because wage inflation is in theory the result of (a) price inflation, and (b) productivity gains being passed through to wages. For the last ten years, for the economy as a whole, wage inflation has outpaced price inflation by about 0.30%, and for the last twenty years, wage inflation has exceeded price inflation by about 0.79%. Since 1951, wage inflation has been about 1.00% a year larger than price inflation.

We currently assume wage inflation for both state employees and teachers will be 4.50%, and this is the assumed salary increase for members with fifteen or more years of service. This 4.50% assumed increase can be thought of as the sum of our 3.00% price inflation assumption and 1.50% addition for productivity gains. Note that the assumed productivity growth is above the both the 50-year average and the last ten-year average for the economy as a whole.

The analysis we carried out shows that salary increases for state employees level off after about twenty-five years. (We had previously used a fifteen year period for this, but the experience shows increases for the 15-25 year group clearly larger than the increases for members with

twenty-five or more years of service.) For state employees, our study shows that for members with at least twenty-five years of service, the average salary increase during the ten-year period was 3.70%. Inflation during this 10-year period averaged 2.37%. Therefore, long-service employees received an average salary increase of 1.33% above inflation. We are proposing a decrease from 4.50% to 4.00% for wage inflation. The new 4.00% assumption is composed of a 2.75% inflation rate plus 1.25% for productivity growth. The following table summarizes this:

Wage Inflation for State Employees			
	10-Year Experience	Current Assumption	Proposed Assumption
Inflation	2.37%	3.00%	2.75%
Productivity	1.33%	1.50%	1.25%
Total	3.70%	4.50%	4.00%

Thus the decrease of 0.50% in the assumption is due partly to a decrease in the inflation assumption (0.25%) and partly by a decrease in the amount long-service employees are expected to receive above inflation (0.25%). While the ERSRI data does not completely support the productivity decrease, we believe it is reasonable because:

- The national statistics show a continuing decrease in the spread between wage inflation and price inflation.
- Data for the last six years of the period supports the lower assumption. During this period, members with at least 25 years of service received 0.87% above inflation.
- We expect increasing pressure on salaries due to the projected increases in the costs for ERSRI.

For teachers, the story is a little different. The ten-year data shows a sharp decrease in pay increases occurring after about ten-twelve years of service. Pay increases then remain at a lower level from then on. Therefore, for teachers, we treated increases for members with more than twelve years of service as due to wage inflation. The average increase for members in this group was 3.96%, or 1.59% above the 2.37% actual inflation. We are recommending a decrease from 4.50% to 4.00% for wage inflation for teachers, composed of a 2.75% inflation rate and a 1.25% productivity component. The following table summarizes this:

Wage Inflation for Teachers			
	10-Year Experience	Current Assumption	Proposed Assumption
Inflation	2.37%	3.00%	2.75%
Productivity	1.59%	1.50%	1.25%
Total	3.96%	4.50%	4.00%

We are recommending a lower productivity component (1.25%) than was present in the last ten-years' experience (1.59%), for reasons similar to those discussed above for state employees. Over the last six years, teachers with twelve or more years of experience received 1.25% more than inflation.

Salary increase assumptions for shorter-service employees

To analyze the service-related salary assumption, we looked at the excess in the average increases for shorter employees over the average for longer-service employees. For example, teachers with three years of service received an average increase of 10.17%, which was 6.21% more than the average increase of 3.96% for teachers with twelve or more years of service.

We then determined new service-related assumptions reflecting this data. In the case of state employees, we lowered the serve-related increases at the shorter services and raised them for service after ten years of service. The schedule was also extended from 15 to 25 years of service.

For Teachers, the impact was small, with some increases at services above five generally offset by the elimination of service-related increases for service from twelve to fifteen.

Details of our analysis are shown in Section VII on pages 80-81.

Salary Increases – Combined Effect

In the aggregate, the current assumptions project the member salaries at 5.44% per year for state employees and 6.10% per year for teachers. Under our proposed assumptions, the average projected increase will decrease to 5.08% and 5.75% respectively.

The 0.36% decrease for state employees from 5.44% to 5.08% can be viewed as resulting from:

- A 0.25% decrease in inflation
- A 0.25% decrease in productivity
- A 0.14% increase in short-service increases

Similarly, the 0.35% decrease for teachers from 6.10% to 5.75% can be viewed as the result of:

- A 0.25% decrease in inflation
- A 0.25% decrease in productivity
- A 0.15% increase in short-service increases

Payroll growth rate

The salary increase rates discussed above are assumptions applied to individuals and are used in projecting future benefits. We use a separate payroll growth assumption (currently 4.25% annually) in determining the annual payment needed to amortize the unfunded actuarial accrued

liability. The amortization payments are calculated to be a level percentage of payroll. Therefore, as payroll increases over time, these amortization payments will also increase.

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 members 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, Governmental Accounting Standards Board Statements No. 25 and 27 (GASB 25 and GASB 27) prohibit actuaries from using anticipated membership growth in setting the payroll growth assumption.

In theory, payroll growth in the absence of membership growth should approximate the wage inflation assumption (proposed to be 4.00%). However, we have generally set this assumption more conservatively, because we anticipate slower growth over the next twenty years as baby boomers retire and are replaced by younger members with lower salaries.

Over the last ten valuations, the payroll for state employees has grown an average of 1.86% per year. However, the number of state employees actually decreased by 16% over this period. Backing out the decreasing population, payroll would have grown on average by 3.70% if the population had been constant. This represents payroll growth 1.33% above inflation (2.37%).

Teacher payroll over the same period has increased an average of 3.64% per year, after adjusting for the very small decrease in active membership. Compared to actual inflation, this represents payroll growth 1.27% above inflation.

This would appear to support a 4.00% payroll growth rate—2.75% inflation plus 1.25% over inflation—relatively consistent with the experience over the last ten years.

However, this ignores the impact of the coming baby boomer retirements. We projected the payroll for current members based on the assumed salary increases for the individuals and their assumed termination or retirement rates. We then added in enough new employees each year to replace them. Pay for the first group of new members was initialized based on actual average pay for current new members, and thereafter pay was projected based on the salary assumption and expected retirements and terminations for this cohort of new members. For each subsequent cohort of new members needed to replace the retired and terminated members, we increased the starting average pay by 4.00%.

Based on this analysis, we found that payroll over the next thirty years was projected to increase less than 4.00% for both groups, therefore less than our wage inflation assumption. Therefore we are recommending setting this assumption at 3.75% for both state employees and teachers. This change, from a 4.25% payroll growth rate to 3.75%, is consistent with the change to the wage inflation rate.

Post-retirement mortality rates (service retirees)

The longer retirees live and receive their benefits, the larger the liability of the plan, thus increasing the contributions necessary to fund the plan.

It may be of interest that Rhode Island consistently ranks in the top 10 in highest life expectancy in the U.S. according to reports from 2006. In fact all of the New England states have long life expectancies.

We use separate mortality tables for teachers and state employees. Life expectancy for teachers is on average longer than for other state and local government employees. Of course, we also use separate tables for males and females. Separate tables discussed in the following section are used for disabled retirees.

For state employees, we currently use the 1994 Group Annuity Mortality Table. For females, we use the table without adjustment, but for males, we set the table forward one year. (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 forward one year, the actuary uses the table's rate for an age one year older 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 61.)

For teachers, we currently use tables that were constructed by GRS based on an analysis of teacher mortality in another state with similar high life expectancies. We use the unadjusted male table for ERSRI teachers, and we multiply the rates for female teachers by 95%.

To analyze the data, we began by determining the expected number of deaths in each year at each age for males and females. The analysis uses only the retirees, not the beneficiaries, joint annuitants, or survivors. For this one analysis, we also grouped the retired state employees with retirees in MERS, because the results were similar, and combining the groups gave us more data, giving us more confidence in the results.

Next we compared the actual number to the expected number. The ratio of the actual deaths to the expected deaths—the A/E ratio—tells us whether the assumptions are reasonable. While 100% might indicate a match between the assumption and experience, for mortality we traditionally aimed for a ratio between 110% - 120%, i.e., 10% - 20% more actual deaths than expected, to introduce some conservatism, since we expect life expectancies to continue to increase in the future. We also examined the results in five-year age groups, checking how well the pattern in the table matched actual experience. A summary of the results of this analysis are shown below:

Group	State Employees		Teachers	
Gender	Males	Females	Males	Females
Number of actual deaths	1,338	1,362	373	601
Number of expected deaths (under current assumptions)	1,389	1,333	390	625
A/E ratio (current)	96%	102%	96%	96%

More detail is shown on the tables in Section VII. See pages 58-61. What stands out is not only that the A/E ratio had fallen below 100% for three of these groups, but also the speed at which the experience appears to be changing. In the last experience study, the current assumptions for State employees produced A/E ratios of 109% and 116% for males and females, respectively. Likewise, for teachers, the current assumptions produced A/E ratios of 115% and 112% for males and females. It is worth observing that we have recently seen similar large improvements in life expectancy on several other retirement systems.

The table below presents the data from another perspective to illustrate the overall change from the last experience study. This table provides the assumed life expectancy based on the current assumptions for a 65 year old retiree compared to the actual life expectancy in the current experience period and in the prior experience study. In addition, we have added information on our proposed baseline assumption before projecting increases in life expectancy.

Life Expectancy for an Age 65 Retiree in Years					
Group	Actual Experience from			Assumed based on	
	2000-2006	2004-2010	Change	Current Assumptions	Proposed Baseline Assumptions
State Employee - Male	16.4	18.0	+1.6	17.1	18.2
State Employee - Female	20.2	21.2	+1.0	21.3	21.6
Teacher - Male	18.9	20.1	+1.2	19.8	20.7
Teacher - Female	21.5	22.6	+1.1	22.7	23.4

Based on this analysis, we believe two changes are necessary:

- First, we need to choose new tables that better match current experience, and
- Second, we need to establish a new approach to projecting future increases in life expectancy, since setting a 10-20% margin on the A/E ratios is has been insufficient to keep up with the actual increases in life expectancy

The issue of future mortality improvement is one that our profession has recently become more concerned about. This has resulted in recent changes to the relevant actuarial standard of practice, ASOP 35, Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations. The standard now requires pension actuaries to make and disclose an assumption as to expected mortality improvement after the valuation date. However, even without the revision to the standard, we would feel compelled to make a larger allowance for mortality improvement.

Therefore, we are recommending, first, the adoption of the following new base tables:

- For nondisabled retirees (state employees and MERS): the RP-2000 Combined mortality table with white collar adjustment for males and females
    - With the male rates multiplied by 115%
    - With the female rates multiplied by 95%
- For nondisabled retired teachers: the same GRS teacher mortality tables for males and females currently being used,
    - With male rates multiplied by 97% (rather than 100%)
    - With female rates multiplied by 92% (rather than 95%)

Second, we will apply Scale AA, an industry standard mortality improvement table used in both pension and life insurance work. By doing this, future mortality rates will be projected to continually decrease each year in the future. Therefore, the life expectancy at age 65 for someone reaching 65 now will not be as long as the life expectancy for someone reaching 65 in 2020, and her life expectancy will not be as long as someone reaching 65 in 2040, etc. The following table provides the life expectancy for individuals retiring in future years based on the proposed assumption with full generational projection.

Proposed Life Expectancy for an Age 65 Retiree in Years					
Group	Year of Retirement				
	2010	2015	2020	2025	2030
State Employee - Male	18.8	19.2	19.6	19.9	20.3
State Employee - Female	22.1	22.3	22.5	22.7	23.0
Teacher - Male	21.4	21.7	22.1	22.4	22.7
Teacher - Female	24.2	24.5	24.8	25.0	25.3

Scale AA was released in conjunction with the RP-2000 tables, and is the most current projection table published by the profession. Under Scale AA, mortality rates will decrease 0.1% - 2.0% each year, depending on the age and sex.

Because of this assumption of continuous improvement, life expectancies for today's younger active members are expected to be materially longer than those of today's retirees, and this has a significant impact on costs and liabilities.

The base year for both tables is 2000. That is, improvement is projected from that year to each year in the future. In setting the multipliers on the base tables, we compared the base tables, projected to 2007, roughly the midpoint of the experience study data, with actual deaths. This is what is shown on the detailed tables in Section VII, pages 58-61. As you can see from these tables, the multipliers were set to produce an A/E ratio, before projection into the future, of about or just over 100%.

Post-retirement mortality rates (disabled retirees)

This is a minor assumption, and it has little impact on the liabilities of ERSRI. Because of the small numbers of disabled retirees and disabled deaths, we combined all the ERSRI and MERS disabled lives for our analysis. There were a total of 272 disabled deaths during the analysis period, compared to 328 expected deaths. The A/E ratio was 95% for males and 70% for females, and combining the sexes gives a unisex A/E of 83%. We recommend increasing the life expectancy by decreasing the multiplier on the base table to 60% for both males for females. This change would produce an A/E of 106% in total.

Active mortality rates

Currently, for active mortality, we apply a multiplier (currently 65%) to the underlying table used for post-retirement mortality. Similar to experience in other plans we work with, using the retiree mortality projects too many active deaths.

For state employees, we expected 154 deaths and there were 140 actual deaths, while for teachers, we expected 105 deaths, but there were only 77. The fit on state employees was reasonable, but because we are changing the underlying tables for retirees, we are recommending modifying this assumption. The proposal is to use the RP-2000 Combined tables with white-collar adjustment for males and females as the base table, and then to apply a 75% for state employees and a 50% multiplier for teachers.

Details are shown in Section Vii on pages 64-67.

Disability rates

We analyzed disability separately for males and females, state employees and teachers, and ordinary and accidental disability.

We compared the number of actual and expected disabilities by group, taking into account the fact that members with less than five years of service and members eligible for retirement are not eligible for ordinary disability.

The analysis shows a reasonably close match across the groups, given the relatively small numbers. Although there are detailed tables on each of the groups in Section VII, here are tables showing some summary information, first for state employees:

State Employees			
Group/Type	Actual Number	Expected Number	A/E Ratio
Male ordinary	56	42	133%
Female ordinary	79	72	110%
Male accidental	30	43	70%
Female accidental	24	22	109%
Total males	86	85	101%
Total females	103	94	110%
Total ordinary	135	114	118%
Total accidental	54	65	83%
Total disabilities	189	179	106%

As shown, the assumption in total appears reasonable with an A/E of 106%, but we are currently assuming too many accidental disabilities and too few ordinary. We are recommending slight modifications to move some of the accidental to ordinary.

Here is the same information for teachers:

Teachers			
Group/Type	Actual Number	Expected Number	A/E Ratio
Male ordinary	24	10	240%
Female ordinary	58	42	138%
Male accidental	2	9	22%
Female accidental	13	12	108%
Total males	26	19	137%
Total females	71	54	131%
Total ordinary	82	52	158%
Total accidental	15	21	71%
Total disabilities	97	73	133%

Similarly to State employees, we are currently overestimating the accidental disabilities and underestimating the ordinary. Therefore, we are recommending slight modifications to move some of the accidental to ordinary. However, the assumption in total appears to assume too few disabilities and so we are also recommending an increase in the overall expected number of disabilities.

These changes will have a minor impact on the liabilities and contribution requirements. Details are shown in Section VII on pages 68-75.

Retirement pattern

The retirement rates are only applied to members eligible for retirement. Separate rates are set for males and females, and for state employees, correctional officers, and teachers. Currently, the rates

for retirement prior to age 60 are indexed to the member's service, and rates for retirement at or after age 60 are indexed to the member's age. (In other words, there is a rate of retirement that applies to a member at 62, regardless of service.)

Due to the passage of several Articles over the past few years which impacted the benefit provisions of the retirement system and the retiree medical benefits, the experience from this analysis period is likely to not represent a reasonable comparison for future retirement patterns. We have completed the analysis, but are not recommending changes at this time.

Section VII provides detail about the actual and expected number of retirements. See pages 82-90.

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, whether the member is vested or non-vested, and whether the member takes a refund or keeps his/her account balance on deposit and takes a deferred benefit.

We use separate termination rates for males and females and for state employees and teachers. The current rates are structured as a function of service. No terminations are assumed once a member becomes eligible for retirement. The current tables were based on ERSRI experience and developed in the prior experience study. For this analysis, we have used data from the prior experience study and extended the experience period to nine years as termination patterns tend to be very cyclical with the overall economy.

Our analysis showed that the current assumption for state employees continues to be reasonable, but for teacher the current tables were conservative, projecting too many withdrawals. However, we believe the recent downturn in the economy has impacted these results, and therefore, we are only recommending minor changes at this time. The tables below provide detail on the analysis.

Termination Experience – All Data				
	State Employees		Teachers	
	Males	Females	Males	Females
Actual number	1,933	2,004	993	2,932
Expected number	1,887	1,976	811	2,622
A/E ratio (Current)	102%	101%	122%	112%
A/E ratio (Proposed)	102%	101%	119%	107%

(An A/E ratio above 100% is conservative.)

Termination Experience – Vested Members Only				
	State Employees		Teachers	
	Males	Females	Males	Females
Actual number	475	530	159	567
Expected number	470	561	121	609
A/E ratio	101%	95%	131%	93%
A/E ratio (Proposed)	101%	95%	111%	96%

You can see the full detail in the tables in Section VII, on pages 76-79.

Marriage Assumption

The marriage assumption is a minor one for ERSRI. We currently assume 85% of the members are married at death, and that there are no children or other beneficiaries who will receive benefits. Because we do not receive information on marital statuses for the membership, we instead examined general census statistics, particularly at ages above 45, when the mortality rates are higher and the assumption has more impact on the liabilities. Based on the census figures, the marriage rates are a bit below 80% for males and 70% for females. This suggests that the current assumption provides a small margin, which we want because we do not explicitly value benefits for orphaned children. Therefore, we are recommending no change in this assumption.

Spousal age difference

Currently, we assume that male members are three years older than their spouses and female members are three years younger than their spouses. This is reasonable, based on general census statistics and we are not recommending changing this assumption.

Refund of contributions

We currently assume that members who are vested and terminate in the future will choose the more valuable of a refund or a deferred annuity. This is a bit conservative, since some people do choose a refund when the deferred benefit is worth more, but we are recommending no change in this assumption.

Other assumptions

There are other technical assumptions made in the course of a valuation, such as the timing of terminations and retirements during the year, and the timing of pay increases. We reviewed these and are recommending no changes.

Actuarial cost method

The individual Entry Age Normal cost method (EAN) is the current funding method being used to allocate the actuarial costs of the Fund. Under this method, the normal cost for each member is determined to be the level percentage of payroll which, if contributed from the date of entry to the date of retirement, would accumulate assets sufficient to pay the retirement benefits when due. Use

of this method is required by statute. The Entry Age Normal method will generally produce relatively level contribution amounts as a percentage of payroll from year to year, and allocates costs among various generations of taxpayers in a reasonable fashion. It is by far the most commonly used actuarial cost method for large public retirement systems. We continue to believe this is the best funding method for ERSRI and recommend no change.

We should observe that we have employed a variant of EAN called the ultimate or replacement-life variation. Under this variation, the normal cost is based on the benefits applicable to new hires under the benefit structure applicable to Schedule B members. Essentially, the normal cost is determined based on the long term expectation. This produces a theoretically level pattern of costs if experience tracks the assumptions.

The other variation uses the provisions applicable to each individual member to determine the normal cost. Under this method, if benefits are reduced for future hires, there is no immediate savings. Instead, contribution rates would decrease slowly as more of the members are covered by the new provisions in the future. It would take a generation of new employees before the savings from the benefit reduction would be fully recognized.

The ultimate EAN variation has been subject to some criticism because it allows recognition of savings before members are covered by the new provisions. However, we believe the advantage of producing theoretically level costs is important, and we recommend retaining it in determining the contribution rates.

Actuarial Value of Assets

Actuaries generally recommend using a smoothed actuarial value of assets (AVA), rather than market value (MVA), in order to dampen the fluctuations in measurements such as the required contribution amount and the funded status of the system.

The current method smoothes the differences between the expected returns (based on the annual investment return assumption) and actual returns, net of expenses, over a five-year period. For example, if the actual return is 13.25% in one year, then currently 8.25% is reflected immediately in the AVA, and the other 5.00% is recognized in 20% increments over five years, beginning with 20% for the current year.

This method of determining the actuarial value of assets is very common. We believe this method is reasonable. It does not distinguish between types of return (interest, dividends, realized gains/losses, and unrealized gains/losses) like some other methods. It treats different asset classes and different investment styles the same. We do not believe the method has a bias relative to market. In other words, we expect the ratio of the AVA to MVA to average about 100% over the very long term.

At the time of the last experience study, we discussed whether or not a "corridor" should be added, restricting the AVA to no more than 120% of the market value and no less than 80% of the market value. We noted that this would ensure that the AVA and MVA were always somewhat close together, but might increase volatility. After a discussion the board decided to

retain the current approach, without incorporating a corridor, because of concerns about volatility. We continue to believe that is a reasonable position to have taken, and recommend no changes..

Amortization period

The unfunded actuarial accrued liability is being amortized over a closed 30-year period from June 30, 1999. The current amortization period is 19 years. We are not recommending any change to this in connection with the current experience study, although the Retirement Board may need to review the suitability of this procedure in light of the contribution rates generated by the recommended assumptions.

SECTION IV

ACTUARIAL IMPACT OF RECOMMENDATIONS

Section IV
Impact of Proposed Changes to Actuarial Assumptions

Under Rhode Island General Laws, the employer contribution rates for state employees and for teachers are certified annually by the State of Rhode Island Retirement Board. These rates are determined actuarially, based on the plan provisions in effect as of the valuation date, the actuarial assumptions adopted by the Board, and the methodology set forth in the statutes. The Board's current policy is that the contribution rates determined by a given actuarial valuation become effective two years after the valuation date. For example, the rates determined by the June 30, 2010 actuarial valuation will be applicable for the year beginning July 1, 2012 and ending June 30, 2013.

The actuarial cost method and the amortization period are set by statute. Contribution rates and liabilities are computed using the Entry Age actuarial cost method. The employer contribution rate is the sum of two pieces: the employer normal cost rate and the amortization rate. The normal cost rate is determined as a percent of pay. The employer normal cost is the difference between this and the member contribution rate. The amortization rate is determined as a level percent of pay. It is the amount required to amortize the unfunded actuarial accrued liability over a closed period (19 years as of June 30, 2010). The amortization rate is adjusted for the two-year deferral in contribution rates. Separate employer contribution rates are determined for state employees and for teachers.

Effect of the proposed assumptions

Shown below is a table that compares key results from the June 30, 2010 actuarial valuation with these same results redetermined using the recommended actuarial assumptions and methods. As you can see, the assumption changes substantially increase the contribution requirements and actuarial liabilities.

State Employees			
Item	Current Assumptions and Methods	Recommended Assumptions and Methods	Increase/ Decrease
Normal cost	9.35%	11.39%	2.04%
Unfunded actuarial accrued liability	$2,119 million	$2,700 million	$581 million
Funded ratio	54.4%	48.4%	-6.0%
FY 2013 Annual Required Contribution			
a. Percent of payroll	26.55%	36.34%	9.79%
b. Estimated dollar amount	$182.5 million	$246.5 million	$64.0 million

Teachers			
Item	Current Assumptions and Methods	Recommended Assumptions and Methods	Increase/ Decrease
Normal cost	10.00%	11.82%	1.82%
Unfunded actuarial accrued liability	$3,278 million	$4,133 million	$855 million
Funded ratio	54.2%	48.4%	-5.8%
FY 2013 Annual Required Contribution			
a. Percent of payroll	26.21%	35.25%	9.04%
b. Estimated dollar amount	$282.8 million	$375.3 million	$92.5 million

The normal cost is the average expected cost for a typical new member. The normal cost includes both the 8.75% for State employees and 9.50% for teachers contribution paid by members and the balance to be paid by the employers. The unfunded actuarial accrued liability 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 remains at current levels, and assuming there are no gains, losses, benefit changes, assumption changes, etc. The annual required contribution (ARC) is the sum of the employer's share of the normal cost and an amount needed to amortize the UAAL over 19 years with payments increasing at the assumed payroll growth rate.

We believe the Board's decision about whether or not to adopt our recommendations should be based on the appropriateness of each recommendation individually, not on their collective effect on the contribution rate or the actuarial liabilities. However, for informational purposes, the table on the next page shows the changes in (i) the UAAL, and (ii) the ARC expressed as a percent of payroll, due to each of the recommended assumption changes.

Item	State Employees		Teachers	
	UAAL (millions)	ARC (% of Payroll)	UAAL (millions)	ARC (% of Payroll)
June 30, 2010 Actuarial Valuation – Current Assumptions	$2,119	26.55%	$3,278	26.21%
Increase/(decrease) due to:				
Inflation	93	1.53%	151	1.61%
Payroll growth rate	0	0.61%	0	0.60%
Life expectancy	230	4.13%	295	3.35%
Investment return rate	269	3.64%	441	4.04%
All other changes	(10)	(0.12%)	(32)	(0.55%)
All changes reflected	$2,700	36.34%	$4,133	35.25%

Note: Columns may not sum to total due to rounding

The change to inflation includes the reduction in the nominal investment return assumption from 8.25% to 8.00%, decrease in the ultimate wage inflation from 4.50% to 4.25%, decrease in the payroll growth assumption from 4.25% to 4.00%, and the decrease in the Schedule B COLA from 2.50% to 2.35%.

The change in investment return is the decrease in the real return from 5.25% to 4.75%, or the post reduction in inflation nominal return assumption of 8.00% to 7.50%.

As can be seen, the changes in the investment return and the mortality rates were the most significant items, each increasing the combined UAAL by over $500 million. Decreasing the inflation rate and the payroll growth assumptions also added to the increase. The other items had much smaller effects.

The figures above were calculated as of June 30, 2010, using the same benefit provisions and the same member and financial data that are being used to prepare the regular June 30, 2010 actuarial valuation report.

SECTION V

SUMMARY OF RECOMMENDATIONS

Section V
Summary of Recommendations

Our recommendations may be summarized as follows:

1. Decrease the price inflation assumption from 3.00% to 2.75% per year.

2. Decrease the assumed net real return on investments from 5.25% to 4.75% per year. Combined with #1 decreases the nominal assumed investment rate of return from 8.25% to 7.50%.

3. Based on #1, change the COLA assumption from 2.50% to 2.35% for Schedule B retirees.

4. Modify the service-related components of the salary increase rates for both state employees and teachers; also change the wage inflation assumption from 4.50% to 4.00%.

5. Decrease the payroll growth rate from 4.25% to 3.75% for both state employees and teachers.

6. Improve the mortality assumption for active, and retired members, including the addition of an assumption for ongoing future improvements in life expectancy. Also improve the mortality assumption for disabled retirees, and lower pre-retirement mortality.

7. Make slight changes to the rates of disability for active male state employees and all teachers.

8. Make no change to the retirement rates for state employees or teachers.

9. Make no change to the termination assumption for state employees. Slightly increase the termination rates for teachers.

10. No change to the percentage of members that are assumed to be married.

11. No change to the actuarial cost method or the method for calculating the actuarial value of assets.

12. No other changes are recommended for any of the other actuarial assumptions or any of the actuarial methods.

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 actuarial valuation uses the Entry Age Normal (EAN) actuarial cost method. Under this method, the employer contribution rate is the sum of (i) the employer normal cost rate, and (ii) a rate that will amortize the unfunded actuarial accrued liability (UAAL).

1. First, the actuarial present value of future benefits is determined by discounting the projected benefits for each member back to the valuation date using the assumed investment return rate as the discount rate. For active members, the projected benefits are based on the member's age, service, sex and compensation, and based on the actuarial assumptions. The calculations take into account the probability of the member's death, disability, or termination of employment prior to becoming eligible for a retirement benefit, as well as the possibility of the member will remain in service and receive a service retirement benefit. Future salary increases are anticipated. The present value of the expected benefits payable to all active members is added to the present value of the expected future payments to retired participants and beneficiaries to obtain the present value of all expected benefits. Liabilities for future members are not included.

2. The employer contributions required to support the benefits are determined as a level percentage of salary, and consist of a normal contribution and an amortization contribution.

3. The normal contribution is determined using the Entry Age Normal method. Under this method, a calculation is made to determine the rate of contribution which, if applied to the compensation of each new member during the entire period of anticipated covered service, would be required to meet the cost of all benefits payable on his behalf. This is the normal cost rate. The normal cost rate is determined using the plan provisions applicable to new members, i.e., the provisions for Schedule B members.

4. The employer normal cost rate is equal to (i) the normal cost rate, minus (ii) the member contribution rate.

5. The actuarial accrued liability is equal to the present value of all benefits less the present value of future normal costs. The unfunded actuarial accrued liability

(UAAL) is then determined as (i) the actuarial accrued liability, minus (ii) the actuarial value of assets.

6. The amortization contribution rate is the level percentage of payroll required to reduce the UAAL to zero over the remaining amortization period. The UAAL is being amortized over the remainder of a closed 30-year period from June 30, 1999. The employer contribution rate determined by this valuation will not be effective until two years after the valuation date. The determination of the contribution rate reflects this deferral. The unfunded actuarial accrued liability (UAAL) and covered payroll are projected forward for two years, and we then determine the amortization charge required to amortize the UAAL over the remaining amortization period from that point. In projecting the UAAL, we increase the UAAL for interest at the assumed rate and we decrease it for the amortization payments. The amortization payments for these two years are determined by subtracting the current employer normal cost from the known contribution rates for these years, based on the two prior actuarial valuations. Contributions are assumed to be made monthly throughout the year.

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). The returns are computed net of administrative and investment expenses.

IV. Actuarial Assumptions

A. Economic Assumptions

1. Investment return: 7.50% per year, compounded annually, composed of an assumed 2.75% inflation rate and a 4.75% net real rate of return. This rate represents the assumed return, net of all investment and administrative expenses.

2. Salary increase rate: The sum of (i) a 4.00% wage inflation assumption (composed of a 2.75% price inflation assumption and a 1.25% additional general increase), and (ii) a service-related component as shown below:

Salary Increase Rates				
	State Employees		Teachers	
Service	Service-Related Component	Total Increase	Service-Related Component	Total Increase
(1)	(2)	(3)	(4)	(5)
0	3.00%	7.00%	8.75%	12.75%
1	3.00%	7.00%	7.50%	11.50%
2	3.00%	7.00%	6.25%	10.25%
3	2.75%	6.75%	5.50%	9.50%
4	2.75%	6.75%	5.00%	9.00%
5	2.75%	6.75%	4.75%	8.75%
6	1.50%	5.50%	4.50%	8.50%
7	1.50%	5.50%	4.25%	8.25%
8	1.25%	5.25%	4.00%	8.00%
9	1.25%	5.25%	3.75%	7.75%
10	1.25%	5.25%	1.50%	5.50%
11	1.25%	5.25%	0.00%	4.00%
12	1.25%	5.25%	0.00%	4.00%
13	1.00%	5.00%	0.00%	4.00%
14	1.00%	5.00%	0.00%	4.00%
15	1.00%	5.00%	0.00%	4.00%
16	0.75%	4.75%	0.00%	4.00%
17	0.75%	4.75%	0.00%	4.00%
18	0.50%	4.50%	0.00%	4.00%
19	0.50%	4.50%	0.00%	4.00%
20	0.50%	4.50%	0.00%	4.00%
21 or more	0.00%	4.00%	0.00%	4.00%

Salary increases are assumed to occur once a year, on July 1. Therefore the pay used for the period year following the valuation date is equal to the reported pay for the prior year, increased by the salary increase assumption. For employees with less than one year of service, the reported rate of pay is used rather than the fiscal year salary paid.

3. Payroll growth rate: In the amortization of the unfunded actuarial accrued liability, payroll is assumed to increase 3.75% per year. This increase rate is solely due to the effect of wage inflation on salaries, with no allowance for future membership growth.

4. Post-retirement Benefit Increase: For members with at least 10 years of contributory service as of June 30, 2005 (i.e., Schedule A members) and for all members receiving a disability benefit, the post-retirement benefit increases are equal to 3.00% by statute. They are not a function of the actual increases in the cost of living. For members with less than 10 years of contributory service as of June 30, 2005, i.e., Schedule B members, members receive a compound increase each year equal to the increase in the CPI, but limited to 3.00%. This limit lowers the expected increases granted in each year below the inflation assumption of 2.75%. The assumed average increase received for this group of employees is 2.35%.

B. Demographic Assumptions

1. Post-termination mortality rates (non-disabled)

   a. Male state employees: 115% of RP-2000 Combined Healthy for Males with White Collar adjustments, projected with Scale AA from 2000.

   b. Female state employees: 95% of RP-2000 Combined Healthy for Females with White Collar adjustments, projected with Scale AA from 2000.

   c. Male teachers: 97% of rates in a GRS table based on male teacher experience, projected with Scale AA from 2000.

   d. Female teachers: 92% of rates in a GRS table based on female teacher experience, projected with Scale AA from 2000.

2. Post-retirement mortality (disabled lives): One set of rates is used for both state employees and teachers

   a. Males: 60% of the PBGC Table Va for disabled males eligible for Social Security disability benefits

   b. Females: 60% of the PBGC Table VIa for disabled females eligible for Social Security disability benefits.

   Sample rates are shown below:

Number of Deaths per 100		
Age	Males	Females
25	2.90	1.58
30	2.17	1.42
35	1.67	1.28
40	1.69	1.25
45	1.93	1.34
50	2.30	1.54
55	2.89	1.77
60	3.62	1.99
65	4.07	2.22
70	4.43	2.47
75	5.05	2.95
80	6.77	4.48

3. Pre-retirement mortality: Use the RP-2000 Combined tables with white-collar adjustment for males and females as the base table, and then to apply a 75% for state employees and a 50% multiplier for teachers. Sample rates are shown below:

Number of Deaths per 100				
	State Employees		Teachers	
Age	Males	Females	Males	Females
25	0.03	0.02	0.02	0.01
30	0.03	0.02	0.02	0.01
35	0.04	0.03	0.03	0.02
40	0.07	0.05	0.04	0.03
45	0.10	0.08	0.07	0.05
50	0.15	0.12	0.10	0.08
55	0.25	0.19	0.17	0.13
60	0.42	0.35	0.28	0.23
65	0.83	0.65	0.55	0.43
70	1.45	1.14	0.96	0.76

4. Disability rates: Sample rates are shown below. Ordinary disability rates are not applied to members eligible for retirement. One half the accidental disabilities are assumed to be totally and permanently disabled from any occupation.

	Number of Disabilities per 1,000							
Age	State Ordinary Males	State Accidental Males	State Ordinary Females	State Accidental Females	Teachers Ordinary Males	Teachers Accidental Males	Teachers Ordinary Females	Teachers Accidental Females
25	0.36	0.16	0.45	0.09	0.23	0.04	0.23	0.04
30	0.44	0.20	0.55	0.11	0.28	0.04	0.28	0.04
35	0.60	0.27	0.75	0.15	0.38	0.06	0.38	0.06
40	0.88	0.40	1.10	0.22	0.55	0.09	0.55	0.09
45	1.44	0.65	1.80	0.36	0.90	0.14	0.90	0.14
50	2.44	1.10	3.05	0.61	1.53	0.24	1.53	0.24
55	4.04	1.82	5.05	1.01	2.53	0.40	2.53	0.40
60	5.64	2.54	7.05	1.41	3.53	0.56	3.53	0.56

5. Termination rates (for causes other than death, disability, or retirement) are a function of the member's sex and service. Termination rates are not applied to members eligible for retirement. Rates are shown below:

Service	State Employees		Teachers	
	Males	Females	Males	Females
0	0.2400	0.1200	0.1700	0.0890
1	0.0882	0.1000	0.0900	0.0778
2	0.0761	0.0778	0.0562	0.0681
3	0.0656	0.0682	0.0455	0.0595
4	0.0565	0.0599	0.0364	0.0521
5	0.0487	0.0526	0.0289	0.0455
6	0.0421	0.0463	0.0229	0.0398
7	0.0366	0.0409	0.0181	0.0348
8	0.0321	0.0363	0.0145	0.0305
9	0.0285	0.0325	0.0120	0.0266
10	0.0257	0.0293	0.0120	0.0233
11	0.0235	0.0267	0.0120	0.0204
12	0.0219	0.0246	0.0120	0.0178
13	0.0208	0.0228	0.0120	0.0156
14	0.0199	0.0214	0.0120	0.0136
15	0.0194	0.0202	0.0120	0.0119
16	0.0189	0.0191	0.0120	0.0104
17	0.0185	0.0181	0.0120	0.0091
18	0.0179	0.0170	0.0120	0.0080
19	0.0172	0.0158	0.0120	0.0070
20	0.0162	0.0144	0.0094	0.0061
21	0.0147	0.0128	0.0094	0.0053
22	0.0127	0.0107	0.0094	0.0047
23	0.0101	0.0082	0.0094	0.0041
24	0.0068	0.0051	0.0094	0.0036

6. Retirement rates (unreduced):

Separate male and female rates, based on schedule, age and service. For members who reach become retirement eligible before age 60, service-based rates are used. For members who do not reach retirement eligibility until age 60 or later, age-based rates are used instead. Legislators have the same rates as state employees shown below except 100% are assumed to retire at age 62 and completion of 10 years of service if still active. The following tables show the probabilities of retirement.

State Employees Excluding Corrections – Schedule A Members							
Males				Females			
Service		Age		Service		Age	
Service	Ret. Rate	Age	Ret. Rate	Service	Ret. Rate	Age	Ret. Rate
28	17.5%	60	10.0%	28	20.0%	60	15.0%
29	13.0%	61	5.0%	29	15.0%	61	10.0%
30	13.0%	62	17.5%	30	15.0%	62	20.0%
31	13.0%	63	15.0%	31	15.0%	63	15.0%
32	13.0%	64	15.0%	32	15.0%	64	15.0%
33	17.5%	65	20.0%	33	15.0%	65	20.0%
34	17.5%	66	17.5%	34	15.0%	66	25.0%
35	40.0%	67	17.5%	35	40.0%	67	20.0%
36	35.0%	68	17.5%	36	30.0%	68	20.0%
37	35.0%	69	17.5%	37	30.0%	69	20.0%
38	35.0%	70	17.5%	38	30.0%	70	20.0%
39	35.0%	71	17.5%	39	30.0%	71	20.0%
40	100.0%	72	17.5%	40	100.0%	72	20.0%
		73	17.5%			73	20.0%
		74	17.5%			74	20.0%
		75	100.0%			75	100.0%

Schedule B members: 60% of members are assumed to retire when first eligible, either at age 59 with 29 years of service, or at age 65 with 10 years of service. The rates in the table above are applied after first eligibility.

Because of the enactment of Article 7 in 2009, the retirement assumption was modified for members not eligible for retirement by October 1, 2009. Members who would have been assumed to retire prior to age 62 under the above schedule under the rules in effect before the enactment of Article 7 are assumed to retire when first eligible for an unreduced benefit under Article 7.

6. Retirement rates (continued):

Teachers – Schedule A Members							
Males				Females			
Service (00/28)		Age (60/10)		Service (00/28)		Age (60/10)	
Service	Ret. Rate	Age	Ret. Rate	Service	Ret. Rate	Age	Ret. Rate
28	25.0%	60	20.0%	28	20.0%	60	20.0%
29	15.0%	61	15.0%	29	15.0%	61	15.0%
30	20.0%	62	30.0%	30	20.0%	62	25.0%
31	20.0%	63	25.0%	31	20.0%	63	20.0%
32	30.0%	64	10.0%	32	30.0%	64	20.0%
33	30.0%	65	25.0%	33	30.0%	65	35.0%
34	40.0%	66	25.0%	34	35.0%	66	25.0%
35	55.0%	67	25.0%	35	50.0%	67	25.0%
36	40.0%	68	25.0%	36	40.0%	68	25.0%
37	40.0%	69	25.0%	37	40.0%	69	25.0%
38	40.0%	70	25.0%	38	40.0%	70	25.0%
39	40.0%	71	25.0%	39	40.0%	71	25.0%
40	100.0%	72	25.0%	40	100.0%	72	25.0%
		73	25.0%			73	25.0%
		74	25.0%			74	25.0%
		75	100.0%			75	100.0%

Schedule B members: 75% of members who reach age 59 with 29 years of service before age 65 are assumed to retire when first eligible, at age 59 with 29 years of service. 75% of other members are expected to retire when first eligible, at age 65 with 10 years of service. The rates in the table above are applied after first eligibility.

Because of the enactment of Article 7 in 2009, the retirement assumption was modified for members not eligible for retirement by October 1, 2009. Members who would have been assumed to retire prior to age 62 under the above schedule under the rules in effect

before the enactment of Article 7 are assumed to retire when first eligible for an unreduced benefit under Article 7.

6. Retirement rates (continued):

For correctional officers: A set of unisex rates, indexed by service, as shown below. All members still active are assumed to retire at age 65 with 10 years of service.

Corrections	
Service	Ret. Rate
20	5.0%
21	5.0%
22	5.0%
23	5.0%
24	5.0%
25	5.0%
26	5.0%
27	5.0%
28	5.0%
29	5.0%
30	13.0%
31	13.0%
32	13.0%
33	20.0%
34	20.0%
35	35.0%
36	25.0%
37	25.0%
38	25.0%
39	25.0%
40	100.0%

Because of the enactment of Article 7 in 2009, the retirement assumption was modified for members not eligible for retirement by October 1, 2009. Members who would have been assumed to retire prior to age 62 under the above schedule under the rules in effect before the enactment of Article 7 are assumed to retire when first eligible for an unreduced benefit under Article 7.

7. Reduced retirement for Schedule B members (state employees and teachers, males and females). Rates based on age as shown below:

Age	Ret. Rate
55	0%
56	0%
57	0%
58	0%
59	1%
60	2%
61	2%
62	2%
63	3%
64	4%

C. Other Assumptions

1. Percent married: 85% of employees are assumed to be married.

2. 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.

3. Percent electing annuity on death (when eligible): All of the spouses of vested, married participants are assumed to elect an annuity.

4. Percent electing deferred termination benefit: Vested terminating members are assumed to elect a refund or a deferred benefit, whichever is more valuable at the time of termination.

5. Recovery from disability: None assumed.

6. Remarriage: It is assumed that no surviving spouse will remarry and there will be no children's benefit.

7. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt at the first age at which unreduced benefits are available.

8. Investment and administrative expenses: The assumed investment return rate represents the anticipated net return after payment of all investment and administrative expenses.

9. Inactive members: Liabilities for inactive members are approximated as a multiple of their member contribution account balances. For nonvested inactive members, the multiple is 1.0. For vested inactive members, the multiple is 8.0 for members with 25 or more years of service, 3.0 for members age 45 or older, and 1.0 for other vested members younger than age 45.

10. Decrement timing: For all state employees, decrements are assumed to occur at the middle of the year. For teachers the retirement and termination decrements are assumed to occur at the beginning of the year, while death and disability are assumed to occur at the middle of the year.

D. Participant Data

Participant data was supplied on electronic files. There are separate files for (i) active and inactive members, and (ii) members and beneficiaries receiving benefits.

The data for active members included birthdate, sex, service, salary and employee contribution account balance. For retired members and beneficiaries, the data included date of birth, sex, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and a form of payment code.

Salary supplied for the current year was based on the earnings for the fiscal year preceding the valuation date. However, for members with less than one year of service, the current rate of salary was used. This salary was adjusted by the salary increase rate for one year.

Assumptions were made to correct for missing, bad, or inconsistent data. These had no material impact on the results presented.

SECTION VII

SUMMARY OF DATA AND EXPERIENCE

List of Tables

List of Tables (Continued)

NON-DISABLED STATE EMPLOYEES AND MERS
POST-RETIREMENT MORTALITY - MALE

				Assumed Rate		Expected Deaths		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	5	1,206	0.0041	0.0036	0.0025	5	3	100%	167%
55-59	24	2,918	0.0082	0.0063	0.0042	19	13	126%	185%
60-64	49	4,598	0.0107	0.0115	0.0076	54	36	91%	136%
65-69	89	4,870	0.0183	0.0199	0.0147	97	72	92%	124%
70-74	144	5,085	0.0283	0.0312	0.0247	160	128	90%	113%
75-79	222	4,954	0.0448	0.0502	0.0444	251	223	88%	100%
80-84	321	4,271	0.0752	0.0825	0.0815	350	346	92%	93%
85-89	315	2,356	0.1337	0.1270	0.1435	291	327	108%	96%
90-94	135	677	0.1994	0.1984	0.2388	128	153	105%	88%
95-99	30	109	0.2752	0.2853	0.3400	29	35	103%	86%
100-104	4	14	0.2857	0.3685	0.4274	5	6	80%	67%
Totals	1,338	31,058				1,389	1,342	96%	100%

Proposed Rate fit to 1/1/2007, the mid point of the study period

NON-DISABLED STATE EMPLOYEES AND MERS
POST-RETIREMENT MORTALITY - FEMALE

				Assumed Rate		Expected Deaths		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current (3) * (5)	Proposed (3) * (6)	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	4	1,090	0.0037	0.0017	0.0017	2	2	200%	200%
55-59	12	2,341	0.0051	0.0029	0.0030	7	7	171%	171%
60-64	25	4,180	0.0060	0.0058	0.0055	26	24	96%	104%
65-69	59	6,001	0.0098	0.0108	0.0100	65	61	91%	97%
70-74	99	6,496	0.0152	0.0165	0.0171	109	112	91%	88%
75-79	192	6,964	0.0276	0.0284	0.0285	201	201	96%	96%
80-84	290	6,224	0.0466	0.0492	0.0483	305	300	95%	97%
85-89	336	3,785	0.0888	0.0840	0.0854	312	315	108%	107%
90-94	240	1,548	0.1550	0.1420	0.1405	212	210	113%	114%
95-99	93	416	0.2236	0.2197	0.2031	86	80	108%	116%
100-104	12	29	0.4138	0.3171	0.2418	8	7	150%	171%
Totals	1,362	39,074				1,333	1,319	102%	103%

Proposed Rate fit to 1/1/2007, the mid point of the study period

NON-DISABLED TEACHERS
POST-RETIREMENT MORTALITY - MALE

				Assumed Rate		Expected Deaths		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	1	292	0.0034	0.0035	0.0029	1	1	100%	100%
55-59	15	2,868	0.0052	0.0050	0.0043	14	12	107%	125%
60-64	30	5,291	0.0057	0.0052	0.0045	27	23	111%	130%
65-69	32	3,799	0.0084	0.0076	0.0067	30	27	107%	119%
70-74	49	2,540	0.0193	0.0201	0.0176	49	43	100%	114%
75-79	72	1,895	0.0380	0.0307	0.0272	59	53	122%	136%
80-84	74	1,211	0.0611	0.0666	0.0610	79	73	94%	101%
85-89	47	599	0.0785	0.1235	0.1149	72	67	65%	70%
90-94	37	224	0.1652	0.2059	0.1955	44	42	84%	88%
95-99	15	49	0.3061	0.2994	0.2864	14	13	107%	115%
100-104	1	2	0.5000	0.3767	0.3654	1	1	0%	0%
Totals	373	18,770				390	355	96%	105%

Proposed Rate fit to 1/1/2007, the mid point of the study period

NON-DISABLED TEACHERS
POST-RETIREMENT MORTALITY - FEMALE

				Assumed Rate		Expected Deaths		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
50-54	2	806	0.0025	0.0021	0.0019	2	2	100%	100%
55-59	21	6,906	0.0030	0.0046	0.0043	31	29	68%	72%
60-64	36	7,549	0.0048	0.0039	0.0036	31	29	116%	124%
65-69	26	4,828	0.0054	0.0052	0.0049	26	24	100%	108%
70-74	46	3,277	0.0140	0.0108	0.0101	35	32	131%	144%
75-79	55	2,872	0.0192	0.0174	0.0161	53	48	104%	115%
80-84	83	2,213	0.0375	0.0433	0.0399	95	88	87%	94%
85-89	120	1,555	0.0772	0.0925	0.0871	142	133	85%	90%
90-94	122	800	0.1525	0.1587	0.1505	123	117	99%	104%
95-99	76	315	0.2413	0.2352	0.2262	71	68	107%	112%
100-104	14	52	0.2692	0.3239	0.3137	16	15	88%	93%
Totals	601	31,173				625	585	96%	103%

Proposed Rate fit to 1/1/2007, the mid point of the study period

ALL EMPLOYEES
POST-RETIREMENT DISABILITY MORTALITY - MALE

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
30-34	10	527	0.0190	0.0208	0.0192	15	3	69%	295%
35-39	21	751	0.0280	0.0176	0.0163	26	7	81%	283%
40-44	19	674	0.0282	0.0193	0.0178	28	13	68%	142%
45-49	20	461	0.0434	0.0221	0.0204	21	24	96%	83%
50-54	20	355	0.0563	0.0273	0.0252	18	26	112%	78%
55-59	26	258	0.1008	0.0345	0.0319	15	19	169%	135%
60-64	21	183	0.1148	0.0418	0.0386	16	16	135%	128%
65-69	8	89	0.0899	0.0453	0.0418	11	14	72%	56%
70-74	5	14	0.3571	0.0504	0.0466	2	14	207%	35%
75-79	2	3	0.6667	0.0590	0.0545	1	10	274%	20%
80-84	0	0	N/A	0.0859	0.0793	0	2	0%	0%
85-89	0	0	N/A	0.1287	0.1188	0	1	0%	0%
Other	7	681	0.0103	0.0000	0.0000	14	5	49%	128%
Totals	159	3,996				167	157	95%	101%

ALL EMPLOYEES
POST-RETIREMENT DISABILITY MORTALITY - FEMALE

Age	Actual Deaths	Total Count	Actual Rate	Assumed Rate		Expected Deaths		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
30-34	5	419	0.0119	0.0227	0.0136	11	1	44%	427%
35-39	15	675	0.0222	0.0210	0.0126	21	3	72%	481%
40-44	19	690	0.0275	0.0213	0.0128	24	7	80%	272%
45-49	16	547	0.0293	0.0235	0.0141	21	13	76%	126%
50-54	8	368	0.0217	0.0272	0.0163	16	14	50%	55%
55-59	13	278	0.0468	0.0307	0.0184	16	13	82%	102%
60-64	15	191	0.0785	0.0347	0.0208	17	10	89%	154%
65-69	10	111	0.0901	0.0386	0.0232	15	10	69%	100%
70-74	6	46	0.1304	0.0433	0.0260	9	11	68%	57%
75-79	2	10	0.2000	0.0578	0.0347	3	9	71%	22%
80-84	0	4	0.0000	0.0885	0.0531	2	5	0%	0%
85-89	0	0	N/A	0.1322	0.0793	0	2	0%	0%
Other	4	290	0.0138	0.0000	0.0000	7	2	60%	242%
Totals	113	3,629				161	99	70%	114%

STATE EMPLOYEES AND MERS
MALE PRE-RETIREMENT MORTALITY (COMBINED ORDINARY AND DUTY)

				Assumed Rate		Expected Deaths		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	1	0.0000	0.0003	0.0002	-	-	N/A	N/A
20-24	1	166	0.0060	0.0004	0.0003	-	-	N/A	N/A
25-29	1	924	0.0011	0.0005	0.0003	-	-	N/A	N/A
30-34	2	1,980	0.0010	0.0006	0.0003	1	1	200%	200%
35-39	1	5,018	0.0002	0.0006	0.0005	3	3	33%	33%
40-44	3	4,479	0.0007	0.0009	0.0008	4	4	75%	75%
45-49	10	5,671	0.0018	0.0014	0.0012	8	7	125%	143%
50-54	11	6,153	0.0018	0.0023	0.0019	14	11	79%	100%
55-59	15	5,486	0.0027	0.0041	0.0031	22	17	68%	88%
60-64	11	3,080	0.0036	0.0075	0.0055	22	16	50%	69%
65-69	7	1,033	0.0068	0.0129	0.0105	13	10	54%	70%
70-74	4	341	0.0117	0.0203	0.0179	7	6	57%	67%
75 and over	9	22	0.4091	0.0326	0.0318	1	1	900%	900%
Totals	75	34,354				95	76	79%	99%

STATE EMPLOYEES AND MERS
FEMALE PRE-RETIREMENT MORTALITY (COMBINED ORDINARY AND DUTY)

				Assumed Rate		Expected Deaths		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	3	0.0000	0.0002	0.0001	-	-	N/A	N/A
20-24	-	202	0.0000	0.0002	0.0001	-	-	N/A	N/A
25-29	-	1,122	0.0000	0.0002	0.0002	-	-	N/A	N/A
30-34	2	2,048	0.0010	0.0003	0.0003	1	1	200%	200%
35-39	1	5,176	0.0002	0.0004	0.0004	2	2	50%	50%
40-44	3	4,698	0.0006	0.0005	0.0006	3	3	100%	100%
45-49	7	6,672	0.0010	0.0007	0.0009	5	6	140%	117%
50-54	11	7,423	0.0015	0.0011	0.0014	8	11	138%	100%
55-59	18	5,957	0.0030	0.0019	0.0025	11	15	164%	120%
60-64	14	3,866	0.0036	0.0038	0.0045	14	17	100%	82%
65-69	4	1,482	0.0027	0.0070	0.0082	10	12	40%	33%
70-74	4	395	0.0101	0.0107	0.0141	4	5	100%	80%
75 and over	1	27	0.0370	0.0184	0.0237	1	1	100%	100%
Totals	65	39,071				59	73	110%	89%

TEACHERS
MALE PRE-RETIREMENT MORTALITY (COMBINED ORDINARY AND DUTY)

				Assumed Rate		Expected Deaths		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N/A	0.0003	0.0002	-	-	N/A	N/A
20-24	-	26	0.0000	0.0004	0.0002	-	-	N/A	N/A
25-29	-	843	0.0000	0.0005	0.0002	-	-	N/A	N/A
30-34	1	2,969	0.0003	0.0006	0.0002	2	1	50%	100%
35-39	1	4,930	0.0002	0.0006	0.0004	3	2	33%	50%
40-44	1	2,796	0.0004	0.0009	0.0005	2	1	50%	100%
45-49	1	2,132	0.0005	0.0013	0.0008	3	2	33%	50%
50-54	3	2,934	0.0010	0.0022	0.0012	7	4	43%	75%
55-59	10	3,091	0.0032	0.0032	0.0020	10	6	100%	167%
60-64	6	1,287	0.0047	0.0033	0.0037	4	4	150%	150%
65-69	3	254	0.0118	0.0049	0.0070	1	2	300%	150%
70-74	-	40	0.0000	0.0131	0.0119	-	-	N/A	N/A
75 and over	1	2	0.5000	0.0200	0.0212	-	-	N/A	N/A
Totals	27	21,304				32	22	84%	123%

TEACHERS
FEMALE PRE-RETIREMENT MORTALITY (COMBINED ORDINARY AND DUTY)

				Assumed Rate		Expected Deaths		Actual/Expected	
Age	Actual Deaths	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N/A	0.0002	0.0001	-	-	N/A	N/A
20-24	-	213	0.0000	0.0002	0.0001	-	-	N/A	N/A
25-29	-	3,436	0.0000	0.0002	0.0001	1	-	0%	N/A
30-34	2	8,159	0.0002	0.0003	0.0002	2	2	100%	100%
35-39	2	11,115	0.0002	0.0004	0.0003	4	3	50%	67%
40-44	7	7,933	0.0009	0.0005	0.0004	4	3	175%	233%
45-49	8	8,035	0.0010	0.0007	0.0006	6	5	133%	160%
50-54	7	10,416	0.0007	0.0014	0.0010	15	10	47%	70%
55-59	15	9,670	0.0016	0.0030	0.0017	27	16	56%	94%
60-64	5	3,760	0.0013	0.0025	0.0030	10	11	50%	45%
65-69	3	800	0.0038	0.0034	0.0055	3	4	100%	75%
70-74	1	123	0.0081	0.0070	0.0094	1	1	100%	100%
75 and over	-	3	0.0000	0.0113	0.0158	-	-	N/A	N/A
Totals	50	63,663				73	55	68%	91%

STATE EMPLOYEES
MALE ORDINARY DISABILITY EXPERIENCE

				Assumed Rate		Expected Disabilities		Actual/Expected	
Age	Actual Disabilities	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
20-24	-	4	0.0000	0.0003	0.0003	-	-	N/A	N/A
25-29	-	293	0.0000	0.0003	0.0004	-	-	N/A	N/A
30-34	-	1,116	0.0000	0.0004	0.0005	1	1	0%	0%
35-39	1	2,394	0.0004	0.0006	0.0007	2	2	50%	50%
40-44	12	3,974	0.0030	0.0010	0.0011	4	4	300%	300%
45-49	6	4,949	0.0012	0.0016	0.0018	8	9	75%	67%
50-54	15	4,246	0.0035	0.0027	0.0031	11	13	136%	115%
55-59	17	3,322	0.0051	0.0041	0.0047	13	15	131%	113%
60-64	3	621	0.0048	0.0056	0.0064	3	4	100%	75%
65-69	1	-	N/A	0.0000	0.0000	-	-	N/A	N/A
70-74	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
75 and over	1	-	N/A	0.0000	0.0000	-	-	N/A	N/A
Totals	56	20,919	0.003			42	48	133%	117%

STATE EMPLOYEES
FEMALE ORDINARY DISABILITY EXPERIENCE

				Assumed Rate		Expected Disabilities		Actual/Expected	
Age	Actual Disabilities	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
20-24	-	6	0.0000	0.0004	0.0004	-	-	N/A	N/A
25-29	-	321	0.0000	0.0005	0.0005	-	-	N/A	N/A
30-34	-	1,132	0.0000	0.0006	0.0006	1	1	0%	0%
35-39	3	2,672	0.0011	0.0009	0.0009	2	2	150%	150%
40-44	7	3,940	0.0018	0.0014	0.0014	5	5	140%	140%
45-49	7	5,572	0.0013	0.0023	0.0023	13	13	54%	54%
50-54	22	5,338	0.0041	0.0038	0.0038	20	20	110%	110%
55-59	29	4,305	0.0067	0.0058	0.0058	25	25	116%	116%
60-64	8	768	0.0104	0.0080	0.0080	6	6	133%	133%
65-69	1	-	N/A	0.0000	0.0000	-	-	N/A	N/A
70-74	1	-	N/A	0.0000	0.0000	-	-	N/A	N/A
75 and over	1	-	N/A	0.0000	0.0000	-	-	N/A	N/A
Totals	79	24,054	0.003			72	72	110%	110%

TEACHERS
MALE ORDINARY DISABILITY EXPERIENCE

				Assumed Rate		Expected Retirement		Actual/Expected	
Age	Actual Retirement	Total Count	Actual Rate	Current	Proposed	Current (3) * (5)	Proposed (3) * (6)	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
20-24	-	-	N/A	0.0001	0.0002	-	-	N/A	N/A
25-29	-	370	0.0000	0.0002	0.0002	-	-	N/A	N/A
30-34	-	1,782	0.0000	0.0002	0.0003	-	1	N/A	0%
35-39	-	3,525	0.0000	0.0003	0.0004	1	2	0%	0%
40-44	1	2,621	0.0004	0.0004	0.0007	1	2	100%	50%
45-49	2	1,968	0.0010	0.0007	0.0012	1	2	200%	100%
50-54	7	2,305	0.0030	0.0013	0.0019	3	4	233%	175%
55-59	13	1,828	0.0071	0.0019	0.0029	3	5	433%	260%
60-64	1	308	0.0032	0.0026	0.0040	1	1	100%	100%
65-69	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
70-74	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
75 and over	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
Totals	24	14,707				10	17	240%	141%

TEACHERS
FEMALE ORDINARY DISABILITY EXPERIENCE

				Assumed Rate		Expected Retirement		Actual/Expected	
Age	Actual Retirement	Total Count	Actual Rate	Current	Proposed	Current (3) * (5)	Proposed (3) * (6)	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
20-24	-	1	0.0000	0.0001	0.0002	-	-	N/A	N/A
25-29	-	1,579	0.0000	0.0002	0.0002	-	-	N/A	N/A
30-34	1	5,656	0.0002	0.0002	0.0003	1	2	100%	50%
35-39	4	8,423	0.0005	0.0003	0.0004	3	4	133%	100%
40-44	2	7,248	0.0003	0.0005	0.0007	4	5	50%	40%
45-49	9	7,366	0.0012	0.0008	0.0012	6	9	150%	100%
50-54	13	8,484	0.0015	0.0014	0.0019	12	16	108%	81%
55-59	23	6,846	0.0034	0.0021	0.0029	14	20	164%	115%
60-64	5	841	0.0059	0.0029	0.0040	2	3	250%	167%
65-69	1	-	N/A	0.0000	0.0000	-	-	N/A	N/A
70-74	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
75 and over	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
Totals	58	46,444				42	59	138%	98%

STATE EMPLOYEES
MALE DUTY DISABILITY EXPERIENCE

Age	Actual Disabilities	Total Count	Actual Rate	Assumed Rate		Expected Disabilities		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
20-24	-	166	0.0000	0.0002	0.0001	-	-	N/A	N/A
25-29	-	924	0.0000	0.0002	0.0002	-	-	N/A	N/A
30-34	-	1,980	0.0000	0.0003	0.0002	1	-	0%	N/A
35-39	2	5,018	0.0004	0.0004	0.0003	2	2	100%	100%
40-44	6	4,479	0.0013	0.0006	0.0005	3	2	200%	300%
45-49	3	5,656	0.0005	0.0010	0.0008	6	5	50%	60%
50-54	5	6,058	0.0008	0.0017	0.0014	10	8	50%	63%
55-59	6	5,332	0.0011	0.0026	0.0021	14	11	43%	55%
60-64	7	2,105	0.0033	0.0036	0.0029	7	6	100%	117%
65-69	1	-	N/A	0.0000	0.0000	-	-	N/A	N/A
70-74	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
75 and over	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
Totals	30	31,718				43	34	70%	88%

STATE EMPLOYEES
FEMALE DUTY DISABILITY EXPERIENCE

				Assumed Rate		Expected Disabilities		Actual/Expected	
Age	Actual Disabilities	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
20-24	-	202	0.0000	0.0001	0.0001	-	-	N/A	N/A
25-29	-	1,122	0.0000	0.0001	0.0001	-	-	N/A	N/A
30-34	-	2,048	0.0000	0.0001	0.0001	-	-	N/A	N/A
35-39	2	5,176	0.0004	0.0002	0.0002	1	1	200%	200%
40-44	2	4,698	0.0004	0.0003	0.0003	1	1	200%	200%
45-49	2	6,649	0.0003	0.0005	0.0005	3	3	67%	67%
50-54	8	7,256	0.0011	0.0008	0.0008	6	6	133%	133%
55-59	4	5,794	0.0007	0.0012	0.0012	7	7	57%	57%
60-64	6	2,589	0.0023	0.0016	0.0016	4	4	150%	150%
65-69	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
70-74	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
75 and over	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
Totals	24	35,534				22	22	109%	109%

TEACHERS
MALE DUTY DISABILITY EXPERIENCE

Age	Actual Retirement	Total Count	Actual Rate	Assumed Rate		Expected Retirement		Actual/Expected	
				Current	Proposed	Current (3) * (5)	Proposed (3) * (6)	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
20-24	-	26	0.0000	0.0001	0.0000	-	-	N/A	N/A
25-29	-	843	0.0000	0.0001	0.0000	-	-	N/A	N/A
30-34	-	2,969	0.0000	0.0001	0.0001	-	-	N/A	N/A
35-39	-	4,930	0.0000	0.0002	0.0001	1	-	0%	N/A
40-44	-	2,796	0.0000	0.0002	0.0001	1	-	0%	N/A
45-49	-	2,132	0.0000	0.0004	0.0002	1	-	0%	N/A
50-54	-	2,934	0.0000	0.0007	0.0003	2	1	0%	0%
55-59	1	3,091	0.0003	0.0010	0.0005	3	1	33%	100%
60-64	1	991	0.0010	0.0014	0.0006	1	1	100%	100%
65-69	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
70-74	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
75 and over	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
Totals	2	20,712				9	3	22%	67%

TEACHERS
FEMALE DUTY DISABILITY EXPERIENCE

Age	Actual Retirement	Total Count	Actual Rate	Assumed Rate		Expected Retirement		Actual/Expected	
				Current	Proposed	Current (3) * (5)	Proposed (3) * (6)	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 20	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
20-24	-	213	0.0000	0.0000	0.0000	-	-	N/A	N/A
25-29	-	3,436	0.0000	0.0000	0.0000	-	-	N/A	N/A
30-34	-	8,159	0.0000	0.0001	0.0001	-	-	N/A	N/A
35-39	-	11,115	0.0000	0.0001	0.0001	1	1	0%	0%
40-44	3	7,933	0.0004	0.0001	0.0001	1	1	300%	300%
45-49	2	8,035	0.0002	0.0002	0.0002	1	1	200%	200%
50-54	2	10,416	0.0002	0.0003	0.0003	3	3	67%	67%
55-59	4	9,670	0.0004	0.0005	0.0005	4	4	100%	100%
60-64	1	2,816	0.0004	0.0006	0.0006	2	2	50%	50%
65-69	1	-	N/A	0.0000	0.0000	-	-	N/A	N/A
70-74	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
75 and over	-	-	N/A	0.0000	0.0000	-	-	N/A	N/A
Totals	13	61,793				12	12	108%	108%

STATE EMPLOYEES
SERVICE BASED WITHDRAWAL EXPERIENCE - MALE

				Assumed Rate		Expected Withdrawal		Actual/Expected	
Service	Actual Withdrawal	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	467	2,176	0.2146	0.2400	0.2400	522	522	89%	89%
2	257	2,492	0.1031	0.0882	0.0882	220	220	117%	117%
3	205	2,353	0.0871	0.0761	0.0761	179	179	114%	114%
4	164	2,140	0.0766	0.0656	0.0656	140	140	117%	117%
5	123	1,992	0.0617	0.0565	0.0565	113	113	109%	109%
6	78	1,705	0.0457	0.0487	0.0487	83	83	94%	94%
7	64	1,509	0.0424	0.0421	0.0421	64	64	101%	101%
8	40	1,411	0.0283	0.0366	0.0366	52	52	77%	77%
9	60	1,396	0.0430	0.0321	0.0321	45	45	134%	134%
10	54	1,414	0.0382	0.0285	0.0285	40	40	134%	134%
11	31	1,370	0.0226	0.0257	0.0257	35	35	88%	88%
12	43	1,498	0.0287	0.0235	0.0235	35	35	122%	122%
13	36	1,545	0.0233	0.0219	0.0219	34	34	106%	106%
14	41	1,641	0.0250	0.0208	0.0208	34	34	120%	120%
15	31	1,776	0.0175	0.0199	0.0199	35	35	88%	88%
16	40	1,815	0.0220	0.0194	0.0194	35	35	114%	114%
17	26	1,807	0.0144	0.0189	0.0189	34	34	76%	76%
18	26	1,893	0.0137	0.0185	0.0185	35	35	74%	74%
19	37	1,817	0.0204	0.0179	0.0179	33	33	114%	114%
20	27	1,740	0.0155	0.0172	0.0172	30	30	90%	90%
21	23	1,586	0.0145	0.0162	0.0162	26	26	90%	90%
22	17	1,522	0.0112	0.0147	0.0147	22	22	76%	76%
23	17	1,449	0.0117	0.0127	0.0127	18	18	92%	92%
24	15	1,364	0.0110	0.0101	0.0101	14	14	109%	109%
25	11	1,331	0.0083	0.0068	0.0068	9	9	122%	122%
Totals	1,933	42,742				1,887	1,887	102%	102%

STATE EMPLOYEES
SERVICE BASED WITHDRAWAL EXPERIENCE - FEMALE

				Assumed Rate		Expected Withdrawal		Actual/Expected	
Service	Actual Withdrawal	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	248	1,772	0.1400	0.1200	0.1200	213	213	117%	117%
2	308	2,877	0.1071	0.1000	0.1000	288	288	107%	107%
3	213	2,809	0.0758	0.0778	0.0778	219	219	97%	97%
4	198	2,759	0.0718	0.0682	0.0682	188	188	105%	105%
5	133	2,526	0.0527	0.0599	0.0599	151	151	88%	88%
6	113	2,275	0.0497	0.0526	0.0526	120	120	94%	94%
7	107	2,029	0.0527	0.0463	0.0463	94	94	114%	114%
8	101	1,918	0.0527	0.0409	0.0409	78	78	129%	129%
9	53	1,791	0.0296	0.0363	0.0363	65	65	82%	82%
10	52	1,799	0.0289	0.0325	0.0325	58	58	89%	89%
11	53	1,684	0.0315	0.0293	0.0293	49	49	107%	107%
12	55	1,720	0.0320	0.0267	0.0267	46	46	120%	120%
13	52	1,771	0.0294	0.0246	0.0246	44	44	119%	119%
14	44	1,979	0.0222	0.0228	0.0228	45	45	98%	98%
15	44	2,205	0.0200	0.0214	0.0214	47	47	93%	93%
16	36	2,158	0.0167	0.0202	0.0202	44	44	83%	83%
17	31	2,096	0.0148	0.0191	0.0191	40	40	77%	77%
18	28	2,136	0.0131	0.0181	0.0181	39	39	72%	72%
19	36	2,033	0.0177	0.0170	0.0170	35	35	104%	104%
20	24	1,909	0.0126	0.0158	0.0158	30	30	80%	80%
21	18	1,755	0.0103	0.0144	0.0144	25	25	71%	71%
22	18	1,683	0.0107	0.0128	0.0128	22	22	84%	84%
23	12	1,616	0.0074	0.0107	0.0107	17	17	69%	69%
24	14	1,541	0.0091	0.0082	0.0082	13	13	111%	111%
25	13	1,457	0.0089	0.0051	0.0051	7	7	175%	175%
Totals	2,004	50,298				1,976	1,976	101%	101%

TEACHERS
SERVICE BASED WITHDRAWAL EXPERIENCE - MALE

				Assumed Rate		Expected Withdrawal		Actual/Expected	
Service	Actual Withdrawal	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	119	561	0.2121	0.1700	0.1700	95	95	125%	125%
2	225	2,086	0.1079	0.0900	0.0900	188	188	120%	120%
3	148	1,991	0.0743	0.0562	0.0562	112	112	132%	132%
4	109	1,945	0.0560	0.0455	0.0455	88	88	123%	123%
5	66	1,828	0.0361	0.0364	0.0364	67	67	99%	99%
6	57	1,730	0.0329	0.0289	0.0289	50	50	114%	114%
7	51	1,693	0.0301	0.0229	0.0229	39	39	132%	132%
8	31	1,613	0.0192	0.0181	0.0181	29	29	106%	106%
9	28	1,484	0.0189	0.0145	0.0145	22	22	130%	130%
10	19	1,375	0.0138	0.0120	0.0120	17	17	115%	115%
11	21	1,298	0.0162	0.0104	0.0120	13	16	156%	135%
12	29	1,257	0.0231	0.0095	0.0120	12	15	243%	192%
13	16	1,135	0.0141	0.0094	0.0120	11	14	150%	117%
14	15	1,058	0.0142	0.0094	0.0120	10	13	151%	118%
15	15	958	0.0157	0.0094	0.0120	9	11	167%	130%
16	5	844	0.0059	0.0094	0.0120	8	10	63%	49%
17	2	742	0.0027	0.0094	0.0120	7	9	29%	22%
18	7	669	0.0105	0.0094	0.0120	6	8	111%	87%
19	10	610	0.0164	0.0094	0.0120	6	7	174%	137%
20	4	533	0.0075	0.0094	0.0120	5	6	80%	63%
21	1	437	0.0023	0.0094	0.0094	4	4	24%	24%
22	5	384	0.0130	0.0094	0.0094	4	4	139%	139%
23	4	373	0.0107	0.0094	0.0094	4	4	114%	114%
24	4	357	0.0112	0.0094	0.0094	3	3	119%	119%
25	2	351	0.0057	0.0094	0.0094	3	3	61%	61%
Totals	993	27,312				811	833	122%	119%

TEACHERS
SERVICE BASED WITHDRAWAL EXPERIENCE - FEMALE

				Assumed Rate		Expected Withdrawal		Actual/Expected	
Service	Actual Withdrawal	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	175	967	0.1810	0.1300	0.1300	126	126	139%	139%
2	551	5,121	0.1076	0.0759	0.0778	389	399	142%	138%
3	378	5,033	0.0751	0.0656	0.0681	330	343	114%	110%
4	316	4,997	0.0632	0.0566	0.0595	283	298	112%	106%
5	270	4,988	0.0541	0.0486	0.0521	242	260	111%	104%
6	219	4,946	0.0443	0.0418	0.0455	207	225	106%	97%
7	186	4,878	0.0381	0.0359	0.0398	175	194	106%	96%
8	140	4,683	0.0299	0.0309	0.0348	145	163	97%	86%
9	130	4,385	0.0296	0.0267	0.0305	117	134	111%	97%
10	84	4,016	0.0209	0.0233	0.0266	94	107	90%	78%
11	97	3,838	0.0253	0.0205	0.0233	79	89	123%	108%
12	76	3,667	0.0207	0.0183	0.0204	67	75	113%	102%
13	57	3,467	0.0164	0.0165	0.0178	57	62	100%	92%
14	45	3,354	0.0134	0.0152	0.0156	51	52	88%	86%
15	45	3,205	0.0140	0.0142	0.0136	46	44	99%	103%
16	29	3,012	0.0096	0.0134	0.0119	40	36	72%	81%
17	26	2,811	0.0092	0.0128	0.0104	36	29	72%	89%
18	31	2,626	0.0118	0.0122	0.0091	32	24	97%	129%
19	18	2,375	0.0076	0.0116	0.0080	28	19	65%	95%
20	12	2,202	0.0054	0.0109	0.0070	24	15	50%	78%
21	15	1,809	0.0083	0.0101	0.0061	18	11	82%	136%
22	15	1,610	0.0093	0.0090	0.0053	14	9	104%	175%
23	7	1,475	0.0047	0.0075	0.0047	11	7	63%	102%
24	6	1,380	0.0043	0.0056	0.0041	8	6	78%	107%
25	4	1,298	0.0031	0.0033	0.0036	4	5	93%	86%
Totals	2,932	82,143				2,622	2,730	112%	107%

Salary Scale Assumption
State Employees

Year	Average Long Service Increase	CPI	Productivity
2000	7.25%	3.25%	4.00%
2001	3.64%	1.07%	2.57%
2002	4.49%	2.11%	2.38%
2003	1.44%	3.27%	-1.83%
2004	1.31%	2.53%	-1.23%
2005	6.82%	4.32%	2.50%
2006	4.98%	2.69%	2.29%
2007	3.58%	5.02%	-1.44%
2008	2.86%	-1.43%	4.29%
2009	0.87%	1.05%	-0.19%
Average	3.70%	2.37%	1.33%
Proposed	4.00%	2.75%	1.25%

Years of Service	Average Pay Increase	Less Actual Inflation and Productivity Components	Actual Step-Rate/Promotional Component	Proposed Step-Rate/Promotional Component
2	5.13%	(3.70%)	1.43%	3.00%
3	6.61%	(3.70%)	2.91%	3.00%
4	6.51%	(3.70%)	2.81%	2.75%
5	6.71%	(3.70%)	3.01%	2.75%
6	6.97%	(3.70%)	3.27%	2.75%
7	5.19%	(3.70%)	1.48%	1.50%
8	4.34%	(3.70%)	0.64%	1.50%
9	4.52%	(3.70%)	0.81%	1.25%
10	4.75%	(3.70%)	1.05%	1.25%
11	5.72%	(3.70%)	2.02%	1.25%
12	6.26%	(3.70%)	2.56%	1.25%
13	4.49%	(3.70%)	0.79%	1.25%
14	4.63%	(3.70%)	0.93%	1.00%
15	4.64%	(3.70%)	0.94%	1.00%
16	5.50%	(3.70%)	1.80%	1.00%
17	4.38%	(3.70%)	0.68%	0.75%
18	3.93%	(3.70%)	0.23%	0.75%
19	4.20%	(3.70%)	0.50%	0.50%
20	4.21%	(3.70%)	0.51%	0.50%
21	4.68%	(3.70%)	0.98%	0.50%
22	3.73%	(3.70%)	0.03%	0.00%
23	3.48%	(3.70%)	-0.22%	0.00%
24	3.52%	(3.70%)	-0.18%	0.00%
25+	3.70%	(3.70%)	0.00%	0.00%

Salary Scale Assumption
Teachers

Year	Average Long Service Increase	CPI	Productivity
2000	4.16%	3.25%	0.91%
2001	3.74%	1.07%	2.67%
2002	6.34%	2.11%	4.22%
2003	3.29%	3.27%	0.02%
2004	4.30%	2.53%	1.77%
2005	3.30%	4.32%	-1.02%
2006	5.99%	2.69%	3.30%
2007	3.40%	5.02%	-1.62%
2008	2.72%	-1.43%	4.15%
2009	2.40%	1.05%	1.35%
Average	3.96%	2.37%	1.58%
Proposed	4.00%	2.75%	1.25%

Years of Service	Average Pay Increase	Less Actual Inflation and Productivity Components	Actual Step-Rate/Promotional Component	Proposed Step-Rate/Promotional Component
2	11.29%	(3.96%)	7.33%	8.75%
3	10.17%	(3.96%)	6.22%	7.50%
4	9.67%	(3.96%)	5.71%	6.25%
5	9.25%	(3.96%)	5.30%	5.50%
6	8.86%	(3.96%)	4.90%	5.00%
7	8.61%	(3.96%)	4.66%	4.75%
8	8.19%	(3.96%)	4.23%	4.50%
9	8.10%	(3.96%)	4.15%	4.25%
10	7.82%	(3.96%)	3.86%	4.00%
11	5.30%	(3.96%)	1.35%	3.75%
12	3.96%	(3.96%)	0.00%	1.50%

STATE EMPLOYEES (Excluding Correctional Officers)
MALE RETIREMENT EXPERIENCE - SERVICE BASED
For members who reach 28 years of service before age 60

Service Year	Actual Retirement	Total Count	Actual Rate	Assumed Rate		Expected Retirement		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
28	122	552	0.221	0.213	0.213	117	117	104%	104%
29	107	532	0.201	0.186	0.186	99	99	108%	108%
30	77	483	0.159	0.172	0.172	83	83	93%	93%
31	88	463	0.190	0.200	0.200	92	92	95%	95%
32	98	426	0.230	0.218	0.218	93	93	105%	105%
33	88	371	0.237	0.259	0.259	96	96	92%	92%
34	89	291	0.306	0.301	0.301	88	88	102%	102%
35	136	270	0.504	0.470	0.470	127	127	107%	107%
36	71	155	0.458	0.459	0.459	71	71	100%	100%
37	24	80	0.300	0.437	0.437	35	35	69%	69%
38	22	61	0.361	0.448	0.448	27	27	80%	80%
39	8	40	0.200	0.435	0.435	17	17	46%	46%
40	11	33	0.333	1.000	1.000	33	33	33%	33%
41	7	20	0.350	1.000	1.000	20	20	35%	35%
42	5	15	0.333	1.000	1.000	15	15	33%	33%
43	3	10	0.300	1.000	1.000	10	10	30%	30%
44	1	8	0.125	1.000	1.000	8	8	13%	13%
45	1	5	0.200	1.000	1.000	5	5	20%	20%
46	-	4	0.000	1.000	1.000	4	4	0%	0%
47	1	6	0.167	1.000	1.000	6	6	17%	17%
48	-	6	0.000	1.000	1.000	6	6	0%	0%
49	4	25	0.160	1.000	1.000	25	25	16%	16%
Other	-	-	N/A	N/A	N/A	-	-	N/A	N/A
Total	963	3,856	0.250			1,078	1,078	89%	89%

STATE EMPLOYEES (Excluding Correctional Officers)
FEMALE RETIREMENT EXPERIENCE - SERVICE BASED
For members who reach 28 years of service before age 60

				Assumed Rate		Expected Retirement		Actual/Expected	
Age	Actual Retirement	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
28	153	579	0.264	0.238	0.238	138	138	111%	111%
29	138	534	0.258	0.228	0.228	122	122	113%	113%
30	111	445	0.249	0.255	0.255	113	113	98%	98%
31	109	389	0.280	0.253	0.253	98	98	111%	111%
32	83	347	0.239	0.268	0.268	93	93	89%	89%
33	91	306	0.297	0.273	0.273	84	84	109%	109%
34	69	228	0.303	0.315	0.315	72	72	96%	96%
35	94	207	0.454	0.488	0.488	101	101	93%	93%
36	61	125	0.488	0.456	0.456	57	57	107%	107%
37	19	63	0.302	0.432	0.432	27	27	70%	70%
38	19	47	0.404	0.507	0.507	24	24	80%	80%
39	9	25	0.360	0.524	0.524	13	13	69%	69%
40	10	22	0.455	0.968	0.968	21	21	47%	47%
41	2	12	0.167	1.000	1.000	12	12	17%	17%
42	1	8	0.125	1.000	1.000	8	8	13%	13%
43	2	8	0.250	1.000	1.000	8	8	25%	25%
44	2	4	0.500	1.000	1.000	4	4	50%	50%
45	2	4	0.500	1.000	1.000	4	4	50%	50%
46	-	4	0.000	1.000	1.000	4	4	0%	0%
47	-	4	0.000	1.000	1.000	4	4	0%	0%
48	1	4	0.250	1.000	1.000	4	4	25%	25%
49	3	14	0.214	1.000	1.000	14	14	21%	21%
Other	-	-	N/A	1.000	1.000	-	-	N/A	N/A
Total	979	3,379	0.290			1,025	1,025	96%	96%

TEACHERS
MALE RETIREMENT EXPERIENCE - SERVICE BASED
For members who reach 28 years of service before age 60

Service Year	Actual Retirement	Total Count	Actual Rate	Assumed Rate		Expected Retirement		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
28	68	195	0.349	0.210	0.210	41	41	166%	166%
29	39	230	0.170	0.188	0.188	43	43	90%	90%
30	48	246	0.195	0.191	0.191	47	47	102%	102%
31	54	252	0.214	0.232	0.232	59	59	92%	92%
32	69	269	0.257	0.285	0.285	77	77	90%	90%
33	76	230	0.330	0.334	0.334	77	77	99%	99%
34	52	191	0.272	0.440	0.440	84	84	62%	62%
35	71	158	0.449	0.475	0.475	75	75	95%	95%
36	36	93	0.387	0.427	0.427	40	40	91%	91%
37	25	60	0.417	0.400	0.400	24	24	104%	104%
38	11	32	0.344	0.400	0.400	13	13	86%	86%
39	9	25	0.360	0.520	0.520	13	13	69%	69%
40	5	21	0.238	0.886	0.886	19	19	27%	27%
41	6	14	0.429	1.000	1.000	14	14	43%	43%
42	2	8	0.250	1.000	1.000	8	8	25%	25%
43	1	7	0.143	1.000	1.000	7	7	14%	14%
44	3	6	0.500	1.000	1.000	6	6	50%	50%
45	1	3	0.333	1.000	1.000	3	3	33%	33%
46	-	-	N/A	N/A	N/A	-	-	N/A	N/A
47	-	-	N/A	N/A	N/A	-	-	N/A	N/A
48	-	-	N/A	N/A	N/A	-	-	N/A	N/A
49	3	11	0.273	1.000	1.000	11	11	27%	27%
Other	-	-	N/A	N/A	N/A	-	-	N/A	N/A
Total	579	2,051	0.282			659	659	88%	88%

TEACHERS
FEMALE RETIREMENT EXPERIENCE - SERVICE BASED
For members who reach 28 years of service before age 60

				Assumed Rate		Expected Retirement		Actual/Expected	
Age	Actual Retirement	Total Count	Actual Rate	Current	Proposed	Current (3) * (5)	Proposed (3) * (6)	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
28	159	588	0.270	0.181	0.181	106	106	149%	149%
29	137	665	0.206	0.175	0.175	116	116	118%	118%
30	138	618	0.223	0.191	0.191	118	118	117%	117%
31	145	616	0.235	0.231	0.231	142	142	102%	102%
32	178	605	0.294	0.282	0.282	170	170	104%	104%
33	157	525	0.299	0.318	0.318	167	167	94%	94%
34	162	463	0.350	0.397	0.397	184	184	88%	88%
35	195	338	0.577	0.442	0.442	149	149	130%	130%
36	58	145	0.400	0.417	0.417	61	61	96%	96%
37	27	95	0.284	0.400	0.400	38	38	71%	71%
38	15	63	0.238	0.400	0.400	25	25	60%	60%
39	12	45	0.267	0.573	0.573	26	26	47%	47%
40	5	29	0.172	0.938	0.938	27	27	18%	18%
41	5	17	0.294	1.000	1.000	17	17	29%	29%
42	3	11	0.273	1.000	1.000	11	11	27%	27%
43	-	9	0.000	1.000	1.000	9	9	0%	0%
44	2	9	0.222	1.000	1.000	9	9	22%	22%
45	2	7	0.286	1.000	1.000	7	7	29%	29%
46	1	5	0.200	1.000	1.000	5	5	20%	20%
47	1	4	0.250	1.000	1.000	4	4	25%	25%
48	-	3	0.000	1.000	1.000	3	3	0%	0%
49	-	11	0.000	1.000	1.000	11	11	0%	0%
Other	-	-	N/A	1.000	1.000	-	-	N/A	N/A
Total	1,402	4,871	0.288			1,406	1,406	100%	100%

STATE EMPLOYEES (Excluding Correctional Officers)
MALE RETIREMENT EXPERIENCE - AGE BASED
For members who reach age 60 before 28 years of service

				Assumed Rate		Expected Retirement		Actual/Expected	
Age	Actual Retirement	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 60	27	6	4.500	N/A	N/A	-	-	N/A	N/A
60	25	335	0.075	0.113	0.113	38	38	66%	66%
61	31	298	0.104	0.064	0.064	19	19	163%	163%
62	55	271	0.203	0.214	0.214	58	58	95%	95%
63	40	257	0.156	0.179	0.179	46	46	87%	87%
64	34	208	0.163	0.207	0.207	43	43	79%	79%
65	42	211	0.199	0.275	0.275	58	58	72%	72%
66	46	168	0.274	0.274	0.274	46	46	100%	100%
67	32	132	0.242	0.250	0.250	33	33	97%	97%
68	21	111	0.189	0.225	0.225	25	25	84%	84%
69	24	92	0.261	0.261	0.261	24	24	100%	100%
70	18	75	0.240	0.240	0.240	18	18	100%	100%
71	16	56	0.286	0.286	0.286	16	16	100%	100%
72	9	55	0.164	0.255	0.255	14	14	64%	64%
73	5	47	0.106	0.213	0.213	10	10	50%	50%
74	9	40	0.225	0.225	0.225	9	9	100%	100%
Subtotal	434	2,362	0.184			457	457	95%	95%
75 & Over	50	253	0.198	0.213	1.000	253	253	20%	20%
Total	484	2,615	0.185			710	710	68%	68%

STATE EMPLOYEES (Excluding Correctional Officers)
FEMALE RETIREMENT EXPERIENCE - AGE BASED
For members who reach age 60 before 28 years of service

				Assumed Rate		Expected Retirement		Actual/Expected	
Age	Actual Retirement	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 60	10	7	1.500	N/A	N/A	-	-	N/A	N/A
60	73	526	0.139	0.158	0.158	83	83	88%	88%
61	70	501	0.140	0.124	0.124	62	62	113%	113%
62	99	459	0.216	0.246	0.246	113	113	88%	88%
63	82	427	0.192	0.187	0.187	80	80	103%	103%
64	69	353	0.195	0.193	0.193	68	68	101%	101%
65	77	326	0.236	0.270	0.270	88	88	88%	88%
66	97	301	0.322	0.336	0.336	101	101	96%	96%
67	65	209	0.311	0.297	0.297	62	62	105%	105%
68	37	166	0.223	0.265	0.265	44	44	84%	84%
69	33	141	0.234	0.262	0.262	37	37	89%	89%
70	41	123	0.333	0.333	0.333	41	41	100%	100%
71	25	76	0.329	0.316	0.316	24	24	104%	104%
72	15	56	0.268	0.304	0.304	17	17	88%	88%
73	14	46	0.304	0.348	0.348	16	16	88%	88%
74	13	42	0.310	0.286	0.286	12	12	108%	108%
Subtotal	820	3,759	0.218			848	848	97%	97%
75 & Over	53	236	0.225	0.348	1.000	236	236	22%	22%
Total	873	3,995	0.219			1,084	1,084	81%	81%

TEACHERS
MALE RETIREMENT EXPERIENCE - AGE BASED
For members who reach age 60 before 28 years of service

				Assumed Rate		Expected Retirement		Actual/Expected	
Age	Actual Retirement	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 60	5	-	N/A	N/A	N/A	-	-	N/A	N/A
60	24	149	0.161	0.201	0.200	30	30	80%	80%
61	12	121	0.099	0.149	0.150	18	18	67%	67%
62	17	97	0.175	0.299	0.300	29	29	59%	59%
63	15	73	0.205	0.247	0.250	18	18	83%	83%
64	8	55	0.145	0.109	0.100	6	6	133%	133%
65	16	53	0.302	0.358	0.358	19	19	84%	84%
66	11	39	0.282	0.282	0.282	11	11	100%	100%
67	5	28	0.179	0.286	0.286	8	8	63%	63%
68	5	21	0.238	0.238	0.238	5	5	100%	100%
69	-	14	0.000	0.286	0.286	4	4	0%	0%
70	1	11	0.091	0.273	0.250	3	3	33%	33%
71	2	8	0.250	0.250	0.250	2	2	100%	100%
72	1	5	0.200	0.200	0.250	1	1	100%	100%
73	-	3	0.000	0.333	0.250	1	1	0%	0%
74	-	2	0.000	0.500	0.250	1	1	0%	0%
Subtotal	122	679	0.180			156	156	78%	78%
75 & Over	4	22	0.182	0.333	1.000	22	22	18%	18%
Total	126	701	0.180			178	178	71%	71%

TEACHERS
FEMALE RETIREMENT EXPERIENCE - AGE BASED
For members who reach age 60 before 28 years of service

				Assumed Rate		Expected Retirement		Actual/Expected	
Age	Actual Retirement	Total Count	Actual Rate	Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Under 60	26	-	N/A	N/A	N/A	-	-	N/A	N/A
60	110	672	0.164	0.200	0.200	134	134	82%	82%
61	82	537	0.153	0.150	0.150	81	81	102%	102%
62	89	427	0.208	0.250	0.250	107	107	83%	83%
63	46	327	0.141	0.200	0.200	65	65	70%	70%
64	48	253	0.190	0.200	0.200	51	51	95%	95%
65	44	220	0.200	0.350	0.350	86	86	51%	51%
66	53	162	0.327	0.250	0.250	43	43	123%	123%
67	23	94	0.245	0.250	0.250	26	26	90%	90%
68	16	60	0.267	0.250	0.250	16	16	103%	103%
69	8	41	0.195	0.250	0.250	11	11	74%	74%
70	11	31	0.355	0.250	0.250	8	8	142%	142%
71	3	19	0.158	0.250	0.250	5	5	63%	63%
72	4	17	0.235	0.250	0.250	5	4	84%	94%
73	1	12	0.083	0.250	0.250	4	4	29%	29%
74	1	11	0.091	0.250	0.250	3	3	31%	36%
Subtotal	565	2,883	0.196			642	641	88%	88%
75 & Over	10	43	0.233	0.250	1.000	43	43	23%	23%
Total	575	2,926	0.197			685	684	84%	84%

CORRECTIONAL OFFICERS
RETIREMENT EXPERIENCE - SERVICE BASED

Service Year	Actual Retirement	Total Count	Actual Rate	Assumed Rate		Expected Retirement		Actual/Expected	
				Current	Proposed	Current	Proposed	Current (2) / (7)	Proposed (2) / (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
20	6	34	0.176	0.050	0.050	2	2	353%	353%
21	4	35	0.114	0.050	0.050	2	2	229%	229%
22	5	35	0.143	0.050	0.050	2	2	286%	286%
23	2	34	0.059	0.050	0.050	2	2	118%	118%
24	1	50	0.020	0.050	0.050	3	3	40%	40%
25	3	43	0.070	0.050	0.050	2	2	140%	140%
26	5	52	0.096	0.050	0.050	3	3	192%	192%
27	2	56	0.036	0.067	0.067	4	4	53%	53%
28	10	52	0.192	0.141	0.141	7	7	136%	136%
29	1	51	0.020	0.050	0.050	3	3	39%	39%
30	2	36	0.056	0.128	0.128	5	5	43%	43%
31	4	33	0.121	0.154	0.154	5	5	79%	79%
32	8	27	0.296	0.259	0.259	7	7	115%	115%
33	4	20	0.200	0.320	0.320	6	6	63%	63%
34	9	18	0.500	0.410	0.410	7	7	122%	122%
35	5	11	0.455	0.448	0.448	5	5	101%	101%
36	-	4	0.000	0.250	0.250	1	1	0%	0%
37	2	6	0.333	0.375	0.375	2	2	89%	89%
38	-	4	0.000	0.250	0.250	1	1	0%	0%
39	1	2	0.500	0.250	0.250	1	1	200%	200%
40	-	2	0.000	1.000	1.000	2	2	0%	0%
41	-	-	N/A	N/A	1.000	-	-	N/A	N/A
42	-	-	N/A	N/A	1.000	-	-	N/A	N/A
43	-	-	N/A	N/A	1.000	-	-	N/A	N/A
44	-	-	N/A	N/A	1.000	-	-	N/A	N/A
45	-	-	N/A	N/A	1.000	-	-	N/A	N/A
Total	74	605	0.122			70	70	106%	106%